

Oracle® Service Bus

Using the Oracle Service Bus Console

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A. Error Codes

Introduction to Oracle Service Bus

Oracle Service Bus (Oracle Service Bus) is a configuration-based, policy-driven Enterprise Service Bus (ESB). It provides highly scalable and reliable service-oriented integration, service management, and traditional message brokering across heterogeneous IT environments. It combines intelligent message brokering with routing and transformation of messages, along with service monitoring and administration in a unified software product. Oracle Service Bus Console enables you to control the service and policy configurations, and monitor system and operations tasks. Oracle Service Bus relies on WebLogic Server run-time facilities. For more information, see [Oracle Service Bus Concepts and Architecture](#).

Starting Oracle Service Bus Console

1. Start Oracle Service Bus using one of the following methods:

- From the Windows **Start** menu, select:

Start > All Programs > Oracle WebLogic > User Projects > *domain_name* > Start Server for Oracle Service Bus Domain.

Where *domain_name* represents the name you assigned your Oracle Service Bus domain when you created it. **User Projects** is the default location in which your domain is created by default.

- Invoke the `startWebLogic` command from the root of Oracle Service Bus domain:
`startWebLogic.cmd` or `startWebLogic.sh`

A command window is displayed showing status information about WebLogic Server.

If you started the server in production mode, you are required to enter a valid user name and password to start the server. For more information, see the [Oracle Service Bus Installation Guide](#).

2. When the server starts, enter the following URL in your browser:

```
http://hostname:port/sbconsole
```

where *host* represents the name of the machine on which WebLogic Server is running and *port* represents the port number.

For example, if WebLogic Server is running on your local machine using the default port configuration, enter the following URL in your browser:

```
http://localhost:7001/sbconsole
```

The Oracle Service Bus Console login page is displayed.

3. Enter the user name and the password you specified during the installation process.


4. Click **Login**.

To log out, click **Logout** on the banner near the top of the right panel of the Oracle Service Bus Console.

Customizing Table Views

Use the table customizer to display table information according on your specified settings.

Note that the default sort order for any table is determined by the first column in the table.

1. Click the  **Table Customizer** icon. Additional fields are displayed.

You can click **Cancel** at any time to close this table and retain the original settings.

2. In the **Columns** field, select the columns you want to display:

- a. Select a column name from the **Available Columns** field.
- b. Click the arrow to move this column name to the **Selected Columns** field.

An asterisk denotes a required column.

- c. Repeat until you have listed all the column names you want to display in the **Selected Columns** field.

In the **Selected Columns** field, you can use the Up and Down arrows to reorder the column names as required.

3. To remove columns from being displayed, move the column names from the **Selected Columns** field to the **Available Columns** field.
4. From the **Rows** drop-down list, select the number of rows you want to display on a single page.
5. Do one of the following:
 - To save these settings and close the table customizer, click **Apply**.
 - To discard your changes and retain the original settings, click **Reset**.

Change Center

The Change Center allows for team collaboration when services and metadata are being configured in Oracle Service Bus. Each user works in a sandbox session until the user is ready to check in the working configuration to the core configuration of the bus. The change center provides multiple levels of undo, and visibility into conflicts, as multiple users work on the configuration.

Most of the **Change Center** pages display different information based on whether you are in a session (that is, you have clicked **Create** or **Edit** in the **Change Center**) or outside a session. For example, in a session, the **View Configuration Changes** page lists all the changes you have made in that session; outside a session, the page lists all session activations.

[Table 2-1](#) displays Change Center tasks and related session information.

Table 2-1 Change Center Tasks and Session Information

Tasks	Session Information
View conflicts	<p>Inside session only: This link displays the number of conflicts occurring in a session. View and resolve all conflicts between changes in the current session and those made by all other sessions within the Oracle Service Bus Console. A conflict occurs if a resource modified in the current session has already been modified and activated by another session. Two changes to the same resource by two sessions do not cause a conflict until one of the sessions is activated.</p> <p>This page also displays semantic errors for resources in the session.</p>
View changes	<p>Inside session: View the configuration changes you have made during the current session.</p> <p>Outside session: View configuration changes that are caused by previous session activations.</p>
Undo changes	<p>Inside session: Undo a change you have made during the current session.</p> <p>Outside session: Undo an activation of a session.</p>
View all sessions	Inside and outside session: View all existing sessions within the Oracle Service Bus Console.
Activate sessions	Inside session only: Activate the session.
View task details	<p>Inside session: View details of a specific change you made in the current session.</p> <p>Outside session: View details of specific changes made by a previous session activation.</p>

Using the Change Center

The **Change Center** module is the starting point for using the Oracle Service Bus Console to make changes to your configuration. To make configuration changes using the console, you must use the **Change Center** to start a session.

1. Click **Create** to begin a session. The name of the session is displayed under **Change Center**.
2. Make the appropriate changes on the relevant page of the console.
3. Click **Save** on each page where you make a change. All the changes you have made in the current session are saved.

Click **Discard** under **Change Center**, at any time during the session, to discard the changes you have made so far in the current session.

4. When you have finished making changes, click **Activate** under **Change Center**. Continue in [“Activating Sessions” on page 2-3](#).

Activating Sessions

1. Click **Activate** in the **Change Center**. The **Activate Session** page shows the session name, user name, and a description field.

Creating a session and discarding a session proceed regardless of other activity in the system. However, if another session is in the process of being activated, the **Activate Session** page displays an error indicating the user that has the pending WebLogic Server changes. For information on resolving conflicts between changes made in your session and other activated sessions, see [“Viewing and Resolving Conflicts” on page 2-11](#).

2. If there are validation errors, an error message is displayed, indicating that your session has validation errors. View and fix configuration conflicts before you proceed. For information on fixing conflicts, see [“Viewing and Resolving Conflicts” on page 2-11](#).

You will not be able to activate the session until you have viewed all conflicts. If new conflicts arise while you view the existing conflicts, before you activate, a message pops up informing you of the new conflicts.

3. Enter a description in the **Description** field. This description is displayed in the **Description** column when you click **View Changes** under **Change Center** to display configuration changes caused by session activations.
4. To activate the session, click **Submit**. If no new conflicts have arisen in the interim, the session ends and the configuration is deployed to the run time.

Note: When you attempt to activate a session with a JMS endpoint URI on another server (a single server other than the one on which you are working, or a Managed Server in a cluster), ensure that the destination server is available.

Oracle Service Bus does not allow registration of proxy services with JMS transport if the JMS endpoint URL specifies a destination that is unreachable. In other words, for JMS services, Oracle Service Bus checks if the specified connection factory exists; if it does not, a session activation error occurs.

Exiting Sessions

Click **Exit** under **Change Center** at any time to exit the session. However, the session does not end.

You can click **Edit** under **Change Center** to return to the session and continue making changes. This behavior also applies if you click **Logout** to log out of the console or close your browser. The session and all changes that you have made in the session persist even if you log out of the console or the server is restarted.

The session ends *only* after it has been activated. See [“Activating Sessions” on page 2-3](#).

Viewing Configuration Changes

This page displays different information based on whether you are in a session (that is, you have clicked **Create** or **Edit** in the **Change Center**) or outside a session.

- When you are in a session, the **View Configuration Changes** page displays a list of configuration changes that you have made during the current session. See [“Viewing Configuration Changes in a Session” on page 2-4](#).
- When you are outside a session, the **View Configuration Changes** page displays a list of configuration changes that were caused by previous session activations. See [“Viewing Configuration Changes Caused by Session Activations” on page 2-5](#).


Viewing Configuration Changes in a Session

1. If you have not already done so, click **Create** to create a new session for making changes to the current configuration. See [“Using the Change Center” on page 2-2](#).
2. Make at least one change to the configuration.
3. Click **View Changes** under **Change Center**. For each change you have made to the configuration during the current session, the **View Configuration Changes** page displays the information shown in [Table 2-2](#).

Table 2-2 In-Session Configuration Changes

Property	Description
Task	A description of the task that was implemented. The task is a link to the Task Details page. See “Viewing Task Details” on page 2-8 .

Table 2-2 In-Session Configuration Changes (Continued)

Property	Description
Execution Time	The date and time that the task was executed.
User	The name of the user who implemented the change.
Task Status	<p>The status of the task:</p> <p>Completed—the task was completed.</p> <p>Undone—the task was undone.</p> <p>Undo Completed—the undo was completed.</p>
Undone By	The name of the user who undid the task. This field will contain <code>None</code> if the task has not been undone.
Options	<p>Click the  Undo icon to reverse the execution of the task.</p> <p>When you are working in a session, you can undo tasks in any order.</p> <p>As a result of undoing a task, the object of the task reverts to the state it was in before the task in question was performed. Note, however, that any tasks that were performed on the same object after the task that you undo are also undone. See “Undoing Tasks” on page 2-7.</p>



Viewing Configuration Changes Caused by Session Activations

1. Make sure you are not in a session. See [“Exiting Sessions” on page 2-4](#).
2. Click **View Changes** under **Change Center**. For each session you have previously activated, the **View Configuration Changes** page displays the information shown in [Table 2-3](#).

Table 2-3 Activated Configuration Changes

Property	Description
Task	A description of the session that was activated. The task is a link to the Task Details page, which displays the operations that were performed in the session. See “Viewing Task Details” on page 2-8 .
Description	An additional description of the session that was activated, if a description was entered when the session was activated using the Activate Session page.
Execution Time	The date and time that the session was activated.
User	The name of the user who activated the session.

Table 2-3 Activated Configuration Changes (Continued)

Property	Description
Task Status	<p>The status of the session:</p> <p>Activated—the session was activated.</p> <p>Partially Activated—displayed during session activation if one or more servers in a cluster are inaccessible, thus preventing activation of the session on those servers. When the servers become accessible, any unactivated changes will then be activated on them.</p> <p>Undone—the previously activated session was undone and all the operations performed in the session were discarded.</p> <p>Undo Activated—the undo was activated.</p> <p>In Progress—displayed if a session activation is in progress, as session activations can take a long time.</p> <p>Failed—displayed if a session activation fails. Oracle Service Bus tracks session activation failures but not failures due to individual updates inside a session.</p>
Undone By	<p>The name of the user who undid this task. This field will contain <code>None</code> if the session activation has not been undone.</p>
Options	<p>Click the  Undo icon to reverse the session activation and the operations performed in that session. You can undo session activations in any order.</p> <p>Click the  Undo into Session icon to create a new session pre-populated with the tasks needed to undo the changes activated in the session. See “Undoing Into a Session” on page 2-8.</p>

Purging Session Activation History

You can purge sessions activated over a specific period, delimited by start and end dates. This action can only be performed outside a session.

WARNING: Purging session activation history involves deleting data that enables multiple levels of undo. In other words, if you purge session activation history for a specific period, you will not be able to undo sessions activated during that period.

1. Ensure that you are not in an active session, and click **View Changes**.
2. On the **View Configuration Changes** page, click **Purge By Date**. The **Purge Session Activation History by Date** page is displayed.

3. Enter the Start and End dates, in their respective fields, in the format: MM/DD/YYYY.


The session activation history for all sessions between the dates specified will be deleted from Oracle Service Bus.

Undoing Tasks

Use the **View Configuration Changes** page to undo tasks that you have performed in your Oracle Service Bus configuration during your current session, and to undo session activations outside a session. Oracle Service Bus lets you undo multiple levels of session activation, constrained only by your system resources. For more information, see [“Order of Undoing Tasks” on page 2-8](#).

Note: If you upgrade from Oracle Service Bus version 2.1 to version 2.5, you will not be able to undo sessions activated before the upgrade. Sessions activated after the upgrade will be available in the session activation history, for undo.



Undoing a Task in a Session

1. Make sure you are in a session.
2. Click **View Changes** under **Change Center**.
3. In the **Options** column for a specific task, click the  **Undo** icon.

The task is undone.

You can undo any change in the current session. However after that, if you change your mind, you can undo the undo, or if you again change your mind, you can undo the undo that undid a previous undo, and so on.

Undoing a Session That Was Activated Earlier

1. Make sure you are outside a session.
2. Click **View Changes** under **Change Center**.
3. Do one of the following:
 - In the **Options** column for a specific task, click the  **Undo** icon. The session activation is undone.
 - In the **Options** column for a specific task, select the  **Undo into Session** icon. A new session is created pre-populated with the tasks needed to undo the changes


activated in the session. For more information, see [“Undoing Into a Session” on page 2-8](#).

Order of Undoing Tasks

You can undo tasks in any order (provided that individual undo actions result in valid data). The undo operation sets the value of a resource to the value it had before the change to that resource.

In the case that the task that is being undone was one that created an object, there is no previous state to which an object can be returned—in other words, no object existed before this task was performed. Effectively, the undo operation deletes the new object from the session. In this case, errors occur for the objects that reference the one being deleted. You can view such errors on the **View Conflicts** page in the Change Center.

When you are not working in a session, you can access the **View Configuration Changes** page to see the sessions that were previously activated. You can undo these sessions. The system does not allow you to undo a session that was previously activated if an error in the run time configuration would result from the undo action. For example, if you attempt to undo a session activation that results in the removal of an object that is being referenced by another object, that undo action is disallowed.

It is possible to undo an undo action. In the **Options** column of the **Undo of [task]**, click the  **Undo** icon. Oracle Service Bus supports unlimited undo. This means you can undo the undo that undid a previous undo, and so on.

Undoing Into a Session

If semantic errors result from undoing a session activation, you are prevented from doing the undo. However there is an alternative in this case. You can undo the session activation and have the changes put into a new session. You can then fix the semantic errors and activate the session. You can also use this capability of undoing into a session to explore the ramifications of a session activation undo. You can examine all the changes that result, and decide if you really want to do the undo. If you decide that you really want to, you can activate the session.

Viewing Task Details

Use this page to view details of a specific change you made in the current session if you are in the session, and view details of specific changes you made in sessions that have been activated if you are outside a session.

1. Select **View Configuration Changes** under **Change Center**.
2. On the **View Configuration Changes** page, click the name of the task in the **Task** column. The **Task Details** page displays the information shown in [Table 2-4](#).

Table 2-4 Task Details

Property	Description
Task	The type of task you performed: <ul style="list-style-type: none">• Create• Update• Delete• Rename• Move
Resource Type	Any of these resource types: <ul style="list-style-type: none">• Business Service• Proxy Service• WSDL• XML Schema• WS-Policies• XQuery• XSLT• MFL file• Service Account• Alert Rule• JNDI Provider• SMTP Server• Proxy Server• Alert Destination• JAR• POJO• Service Key Provider• UDDI Registry• MQ Connection• Split-Join

Table 2-4 Task Details

Property	Description
Resource	The name and path of the resource. The path is the name of the project and folder in which the resource resides.

3. Click **Back** to return to the **View Configuration Changes** page.

Viewing All Sessions

Use this page to view all existing sessions within the Oracle Service Bus Console. You can view these sessions if you are currently in a session or outside a session.

You can view all sessions *only* if you are using the **Administrator** role. For more information, see [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.

1. Click **View All Sessions** under **Change Center**. For each existing session, the **View All Sessions** page displays the information shown in [Table 2-5](#).

Table 2-5 Session Details

Property	Description
Session Name	The name of the session. The name is a link to the session.
User	The name of the user who created the session.
Creation Time	The date and time the session was created.
Last Modified	The date and time a change was last made during the session.
# of Objects Modified	The number of objects that have been changed during the session.

2. To switch to another session, click the link in the **Session Name** column for that session.

Note: The same user logged in with multiple browsers is not supported. It causes unpredictable behavior in the console.

Viewing and Resolving Conflicts

Use this page to view diagnostic messages about errors in your configuration, and to view and resolve conflicts between changes made in your session and other activated sessions. The view conflicts link also displays the number of live conflicts in the session.

Viewing Conflicts




1. Click **View Conflicts** under **Change Center**. The **View Conflicts** page can display any or all of the following sets of information depending on the nature of the conflicts:
 - Errors (an  **Error** icon denotes non-committable, critical conflicts)—inform you of critical conflicts within your configuration. You cannot commit your changes without resolving the conflicts. See [Table 2-6](#) and “[Resolving Conflicts](#)” on page 2-12.
 - Concurrent Updates (a  **Warning** icon denotes committable, non-critical conflicts)—warn you about incompatible changes with other activated sessions. See [Table 2-7](#).
 - Informational Messages (a  **Warning** icon denotes committable, non-critical conflicts)—inform you of any non-critical conflicts within your configuration.


Table 2-6 Errors

Property	Description
Name	The resource to which the error message refers. The name is a link to that resource.
Path	The project and folder in which the resource resides.
Resource Type	The resource type.
Messages	A description of the conflict. To resolve the conflict, see “ Resolving Conflicts ” on page 2-12.

2. To display details of a specific conflict, click the link in the **Name** column for that conflict.

If the object to which you make changes in a session has changed in the run time since you began the edit of the current session, the **View Conflicts** page displays the information shown in [Table 2-7](#).


Table 2-7 Concurrent Updates

Property	Description
Name	The resource in conflict. The name is a link to that resource.
Your Changes	A description of the changes you made to this object in your session.
Other's Changes	A description of the changes another user made to this object in their session.
Synchronize	Click the  Synchronize icon to return this object to the state in which it is saved in the run time.

Resolving Conflicts

To resolve a conflict, use the information provided in the **Messages** column (as described in [Table 2-6](#)) to understand the problem, and then edit the object that is causing the conflict to fix the problem.

For the scenario in which you have a concurrent update conflict—that is, a conflict that occurs if a resource is modified in the current session that has already been modified and activated by another session (as described in [Table 2-7](#)), you can resolve the conflict in one of two ways:

- Click **Activate** under **Change Center**. This saves your changes to the run time, which means you override changes that are deployed to core data by a previous session activation. In other words, the changes saved by the other user in another session are overwritten by your changes in this session.
- Click the  **Synchronize** icon in the **Synchronize** column of the table (as described in [Table 2-7](#)). This action restores this object, in this session, to the state in which it was saved in the run time.

Working with Projects, Folders, and Resources

The Project Explorer organizes configurations and resources into projects and folders. In the Project Explorer, you can display the [Projects View page](#), which lists all projects in the domain, and [Project/Folder View pages](#), which list folders and resources in each project.

Projects are non-hierarchical, non-overlapping, top-level grouping constructs.

All Oracle Service Bus resources (for example, services, WS-Policies, WSDLs, XQuery transformations, and so on) reside in exactly one project. Projects do not overlap. Resources can be created directly under a project, or they can be further organized into folders. However, you can reference any resource regardless of the project in which it resides.

When you create a domain in Oracle Service Bus, a default project is created.

Naming Projects and Folders

Project names and folder names are limited to 64 characters, and must not contain the following characters:

\, <, >, |, {, }, %, (,), :, ` , /, commas

The names, length, and levels of nesting of projects and folders are ultimately affected by the limits of your operating system. Creating folders or projects with very long names or deeply nesting folders can fail due to the limitations of the operating system.

Qualifying Resource Names Using Projects and Folders

Projects and folders qualify the names of Oracle Service Bus resources. A reference to a resource is constructed as follows:

```
project-name/root-folder/. . ./parent-folder/resource-name
```

If a resource is located directly under a project, the reference is constructed as follows:

```
project-name/resource-name
```






Projects View page

The **Projects View** page lists the projects defined in the current domain. [Table 3-1](#) describes the options and controls on the page.

Table 3-1 Projects View Page - Options and Controls

Option or Control	Description
Enter New Project Name	To create a new project, enter a name in the text field and click Add Project . See “Adding Projects” on page 3-6 . See also “Naming Projects and Folders” on page 3-1 .
Name	Click a project name to display the Project/Folder View page for that project.

Table 3-1 Projects View Page - Options and Controls (Continued)

Option or Control	Description
Options	<p>For any project listed, you can do any of the following:</p> <ul style="list-style-type: none"> Click the  Rename Project icon to rename the project. See “Renaming Projects” on page 3-6. Click the  Move Project icon to move the project. See “Moving Projects (Converting to a Folder)” on page 3-7. Click the  Clone Project icon to clone the project. See “Cloning Projects” on page 3-7. Click the  Delete Project icon to delete the project. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete this resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. See “Deleting Projects” on page 3-9. <p>When you perform any of these actions, the result is saved in the current session. To end the session and deploy the configuration to the run time, click Activate under Change Center.</p>

Project/Folder View page

The **Project/Folder View** page displays details of a single project. [Table 3-2](#) describe the options and controls on the page.

Table 3-2 Project/Folder View Page - Options and Controls

Option or Control	Description
Project Name	
References	Click the number in this field (if greater than 0) to display a list of the resources outside of this project on which resources inside this project depend.

Table 3-2 Project/Folder View Page - Options and Controls (Continued)






Option or Control	Description
Referenced By	Click the number in this field (if greater than 0) to display a list of the resources outside of this project that are dependent on resources inside this project.
Description	Click Edit Description to add or edit a description of this project, then click Submit Description to update it.
Folders	
Enter a New Folder Name	To create a new folder in this project, enter a name in the text field and click Add Folder . See “Adding Folders” on page 3-10 . See also “Naming Projects and Folders” on page 3-1 .
Name	Click a folder name to display the Project/Folder View page for that folder.
Options	<p>For any folder listed, you can do any of the following:</p> <ul style="list-style-type: none"> Click the  Rename Folder icon to rename the folder. See “Renaming Folders” on page 3-10. Click the  Upgrade to Project or Move Folder icon to move the folder or to upgrade it to a project. See “Moving or Upgrading Folders” on page 3-10. Click the  Clone Folder icon to clone the folder. See “Cloning Folders” on page 3-11. Click the  Delete Folder icon to delete the folder. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. See “Deleting Folders” on page 3-12. <p>When you perform any of these actions, the result is saved in the current session. To end the session and deploy the configuration to the run time, click Activate under Change Center.</p>
Delete	To delete folders, select the check boxes next to the names of the folders to delete, then click Delete .
Resources	

Table 3-2 Project/Folder View Page - Options and Controls (Continued)










Option or Control	Description
Create Resource	To create a new resource for this project, select a resource type from the Create Resource list. See “Creating Resources” on page 3-12 .
Name	Click a resource name to display details about the resource.
Resource Type	The type of this resource.
Actions	<p>The actions available for a resource depend on the type of resource:</p> <ul style="list-style-type: none"> • The  Edit Message Flow icon is displayed for proxy services. Click this icon to edit the message of a proxy service. See “Creating, Editing, and Viewing Message Flows” on page 18-1. • The  Launch Test Console icon is displayed for business services, proxy services, XQuery transformations, XSL transformations, and MFL files. Click this icon to invoke the Test Console, which you use to validate and test the design of services and transformations. For services, you can only use the Test Console at run time; that is, when the session is activated. For transformations, you can use the Test Console whether you are inside or outside a session. See “Testing Services” on page 30-1 and “Testing Transformations” on page 30-17. • The  Export WSDL icon is displayed for WSDL-based proxy services. Click this icon to export a WSDL, which you can then view or modify in an external tools such as an IDE. Note that this is different than the Export Resources functionality in the System Administration module, which you use to move and stage resources between two domains. See “Exporting a WSDL” on page 3-24. • The  Generate WSDL icon is displayed for transport-typed business services, such as EJB and Flow. Click this icon to generate a WSDL, which you can then view or modify. See “Generating a WSDL” on page 3-25.

Table 3-2 Project/Folder View Page - Options and Controls (Continued)


Option or Control	Description
Options	<p>The Options column displays the following icons:</p> <ul style="list-style-type: none"> Click the  Rename Resource icon to rename the resource. See “Renaming Resources” on page 3-23 Click the  Move Resource icon to move the resource. See “Moving Resources” on page 3-23. Click the  Clone Resource icon to clone the resource. See “Cloning Resources” on page 3-24 Click the  Delete icon to delete the resource. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete this resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. <p>When you perform any of these actions, the result is saved in the current session. To end the session and deploy the configuration to the run time, click Activate under Change Center.</p>

Adding Projects

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer > Projects** to display the [Projects View page](#).
3. In the **Enter New Project Name** field, enter a unique name for the project, then click **Add Project**. See [“Naming Projects and Folders” on page 3-1](#). The new project is saved in the current session.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Renaming Projects


1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).

2. Select **Project Explorer > Projects** to display the [Projects View page](#).
3. Click the  **Rename Project** icon in the row of the project you want to rename. The **Rename Project** page is displayed.
4. In the **New Project Name** field enter the new name for the project. See [“Naming Projects and Folders” on page 3-1](#).

If you use the name of an existing project, the resources of both projects are merged under that name. For example, consider project `MyProject` with resources A and B, and project `ThisProject` with resources C and D. If you rename `MyProject` as `ThisProject`, the new `ThisProject` will have resources A, B, C, and D.
5. Click **Rename**. The project is renamed in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Moving Projects (Converting to a Folder)

When you “move” a project, the project is converted to a folder in the new location.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer > Projects** to display the [Projects View page](#).
3. Click the  **Move Project** icon in the row of the project you want to move. The **Move Project** page is displayed with the current location of the project highlighted.
4. Under **Location**, select a project or folder to “move” the project into. The project is converted to a folder in the new location and is saved in the current session.

If you move a project to a new location and a folder with the same name already exists in that location, the contents of the project are merged with the contents of the existing folder.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Cloning Projects

There are three ways to clone (copy) a project:


- Clone the project with a new name at the root level. In this case, the original project and its clone exist as peer projects. The cloned project contains the same folders and resources as the original (at least until you modify the source or the clone). For instructions, see [“Cloning a Project at the Root Level” on page 3-8](#).
- Clone the project using the name of an existing project (other than the source project). In this case, the folders and resources from the source project are merged with the folders and resources of the project whose the name was assigned to the clone. The original project remains unchanged. For instructions, see [“Cloning a Project at the Root Level” on page 3-8](#).
- Clone the project in a new location, in an existing project or project folder. In this case, the cloned project is demoted to a folder in the new location. It contains the same folders and resources as the original project.

If you clone a project with the same name and in the same location as an existing folder, the contents (subfolders and resources) of the project are merged with the contents of the target folder.

In either case, the original project remains unchanged.

For instructions, see [“Cloning a Project and Demoting the Clone to a Folder” on page 3-9](#).


Cloning a Project at the Root Level

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer > Projects** to display the [Projects View page](#).
3. Click the  **Clone Project** icon in the row of the project you want to clone. The **Clone Project** page is displayed with the current location of the project highlighted.
4. In the **New Name** field, enter a name for the clone. See [“Naming Projects and Folders” on page 3-1](#).

Use a unique name to create the clone as a new project, or use the name of an existing project to merge the clone with that project.

5. In the **Location** panel, keep the default **Root** location when cloning a project at the root level.
6. Click **Clone Project**. The project is cloned in the current session.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.


Cloning a Project and Demoting the Clone to a Folder

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer > Projects** to display the [Projects View page](#).
3. Click the  **Clone Project** icon in the row of the project you want to clone. The **Clone Project** page is displayed with the current location of the project highlighted.
4. In the **New Name** field, optionally enter a new name for the folder. See [“Naming Projects and Folders” on page 3-1](#).

Use a unique name to create a new folder, or use the name of an existing folder to merge the clone with the existing folder (in the location you will select in the next step).

5. In the **Location** panel, select a project or folder, then click **Clone Project**. The cloned project is converted to a folder in the new location and is saved in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Projects

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer > Projects** to display the [Projects View page](#).
3. Click the  **Delete Project** icon in the row of the project you want to delete. The project is deleted in the current session.

When you delete a project, all resources under the project are deleted. If any resources under this project are referenced by resources under a different project, you can delete the project but with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.


Instead of the  **Delete** icon, a  **Deletion Warning** icon is displayed for these resources.

4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding Folders


1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the new folder.
3. In the **Enter New Folder Name** field of the [Project/Folder View page](#), enter a unique name for the folder. See [“Naming Projects and Folders” on page 3-1](#).
4. Click **Add Folder**. The new folder is saved in the current session.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Renaming Folders

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder containing the folder whose name you want to change. The [Project/Folder View page](#) is displayed.
3. Click the  **Rename Folder** icon in the row of the folder you want to rename. The **Rename Folder** page is displayed.
4. In the **New Folder Name** field, enter a new name for the folder. See [“Naming Projects and Folders” on page 3-1](#).
5. Click **Rename**. The renamed folder is saved in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Moving or Upgrading Folders


1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder that contains the folder that you want to move or upgrade. The [Project/Folder View page](#) is displayed.

3. Click the  **Move Folder** icon in the row of the folder you want to move or upgrade. The **Move Folder** page is displayed with the current location of the folder highlighted.
4. Determine whether you will move the folder to a new location under a different project or upgrade the folder to a project:
 - To move it to a new location, in the **Location** panel, select a project or folder to move the folder into.
 - To upgrade the folder to a project, select the **Root** location.
5. Click **Submit**. The folder (or project, if it was upgraded from a folder) is saved in its new location in the current session.

When you move or upgrade a folder, if another folder already exists in that location with the same name, the contents of the moved or upgraded folder are merged with the contents of the existing folder or project.

6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Cloning Folders

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, navigate to the parent project or folder that contains the folder that you want to clone. The [Project/Folder View page](#) is displayed.
3. Click the  **Clone Folder** icon in the row of the folder you want to clone. The **Clone Folder** page is displayed with the current location of the folder highlighted.
4. Clone the folder in the same location or a different location, or upgrade the folder to a project:, as follows:
 - To clone the folder in the same location, enter a new name in the **New Name** field. See [“Naming Projects and Folders” on page 3-1](#).


When cloning in the same location, either do not select any location at all in the **Location** panel (which is equivalent to selecting the current location), or explicitly select the current project and folder.

- To clone the folder in a different location, optionally enter a new name in the **New Name** field, and select a project and/or folder from the **Location** area. See [“Naming Projects and Folders” on page 3-1](#).

If you use the same name as an existing folder, the contents of the original folder are merged with the contents of the target folder.

- To upgrade the folder to a project, select the **Root** location.
5. Click **Clone Folder**. The folder is cloned in the current session.
When you clone a folder, all folder and resources under the folder are cloned recursively
 6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Folders

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder that contains the folder that you want to delete.
3. On the [Project/Folder View page](#), Click the  **Delete Folder** icon in the row of the folder you want to delete. The folder is deleted in the current session.

When you delete a folder, all resources under the folder are deleted. If any resources under this folder are referenced by resources under a different folder, you can delete the folder but with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.

Instead of the  **Delete** icon, a  **Deletion Warning** icon is displayed for these resources.

4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Creating Resources

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder in which you want to create the resource.

3. From the **Create Resource** drop-down list on the [Project/Folder View page](#), select the type of resource you want to create. Different pages are displayed, depending on the type of resource you select.
4. Follow the prompts to add information to each page to create the resource. For more information about creating each kind of resource, see the appropriate topic, as listed in [Table 3-3](#).

Table 3-3 Creating Resources

To Create this Type of Resource...	See this Topic...
Service	
Proxy Service	Creating and Configuring Proxy Services
Business Service	Creating and Configuring Business Services
Split-Join	Adding Split-Joins
Interface	
WSDL	Adding WSDLs
XML Schema	Adding XML Schemas
WS-Policy	Adding Custom WS-Policies
Transformation	
XQuery Transformation	Adding XQuery Transformations
XSL Transformation	Adding an XSL Transformation
MFL File	Adding MFLs
Security	
Service Account	Adding Service Accounts
Service Key Provider	Adding Service Key Providers
Utility	
JAR	Adding JARs

Table 3-3 Creating Resources (Continued)

To Create this Type of Resource...	See this Topic...
Alert Destination	Adding Alert Destinations
MQ Connection	Adding MQ Connections
Bulk	
Resources from URL	Loading Resources from a URL
Zipped Resources	Loading Resources from a Zip File

- When you create the resource, it is created in the current session.
- To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Loading Resources from a Zip File

You can select a Zip or JAR file that contains the resources you want to load; Oracle Service Bus locates and imports the resources from this Zip file.

Resources like WSDLs or XML Schemas can define full trees of dependent resources. The bulk load feature allows you to upload a set of resources at once; you need not resolve the dependencies manually.

- If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
- Select **Project Explorer**, then select the project or folder to which you want to add resources. The [Project/Folder View page](#) is displayed.
- From the **Create Resource** drop-down list, select **Zipped Resources**. The **Load Resources** page is displayed.
- In the **Select Zip File** field, specify a Zip file to import. Enter the name of the file (qualified by its path); or, click **Browse**, locate the file, then click **Open**.
- Review the mapping of resource types to file extensions. Change or add extensions, according to your needs. Separate multiple extensions with commas.

Each file in the Zip file is a possible resource, and the file extension is the commonly used way to identify the file type. Oracle Service Bus defines a default extension for each resource, but if you have additional extensions to describe those resources, this map enables you to declare those extensions to the loader.

After you define the Zip file and extension map, the Oracle Service Bus loader scans the contents of the Zip file and tries to associate a resource type with each file. A file without an extension or one that does not have an extension defined in the map is considered *unknown* and is automatically excluded from the load.

For known files, the name of the resource is the name of the file without its extension. The folder structure of the Zip file is recreated in the target Oracle Service Bus Console folder.

An extension can only be associated with one file type.

6. Click **Next**.
7. On the [Load Resources - Review Loaded Resources page](#), review the resources you are importing. You can clear the check boxes next to any resources you do not want to include in this import.
8. To import the selected resources, click **Import**.
9. The [Load Resources - Import Result page](#) displays the imported resources. Click **Load Another** to import resources from another file, or proceed with other tasks by selecting a different page from the left navigation pane.
10. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Load Resources - Select Zip File and Review Type Extensions page

Use the **Load Resources - Select Zip File and Review Type Extensions** page to import resources from a Zip file, as documented in [“Loading Resources from a Zip File” on page 3-14](#).

[Table 3-4](#) describes the options and controls on the page.

Table 3-4 Load Resources: Select Zip File and Review Type Extensions page - Options and Controls

Options and Controls	Description
Select Zip File	Enter the fully qualified name of a Zip file to import, or click Browse to select it.
Resource Type and File Extension	<p>Each file in the Zip file is a possible resource, and the file extension is the commonly used way to identify the file type. Oracle Service Bus defines a default extension for each resource, but if you have additional extensions to describe those resources, this map enables you to declare those extensions to the loader.</p> <p>After you define the Zip file and extension map, the Oracle Service Bus loader scans the contents of the Zip file and tries to associate a resource type with each file. A file without an extension or one that does not have an extension defined in the map is considered unknown and is automatically excluded from the load.</p> <p>For known files, the name of the resource is the name of the file without its extension. The folder structure of the Zip file is recreated in the target Oracle Service Bus Console folder.</p>

Loading Resources from a URL

You can perform a bulk import of resources available at a URL or on the file system. Bulk import lets you import a root resource, such as a WSDL, along with its dependents, such as other WSDLs and schemas. The dependency map is resolved automatically.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder to which you want to add resources. The [Project/Folder View page](#) is displayed.
3. From the **Create Resource** drop-down list, select **Resources from URL**. The [Load Resources - Load Resources from URL page](#) is displayed.
4. In the **URL/Path** field, enter the URL or path of the resource.

To specify a local resource, you can use the `file` protocol with a file name fully qualified by its path, for example, `file:///c:/osbresources/ForeachAction.jar`
5. In the **Resource Name** field, enter the resource’s name.

6. From the **Resource Type** drop-down list, select the type of the resource.
7. Click **Next** to display the [Load Resources - Review Loaded Resources page](#). Clear the check boxes next to any resources you do not want to include in this import.
8. To import the selected resources, click **Import**.
9. The [Load Resources - Import Result page](#) displays the imported resources. Click **Load Another** to import resources from another file, or proceed with other tasks by selecting a different page from the left navigation pane.
10. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Load Resources - Load Resources from URL page

Use the **Load Resources - Load Resources from URL** page to import resources from a file available on the Web, as documented in [“Loading Resources from a URL” on page 3-16](#).

[Table 3-5](#) describes the options and controls on the page.

Table 3-5 Load Resources: Load Resources from URL page - Options and Controls

Options and Controls	Description
URL/Path	Enter the URL where the file is located. To specify a local resource, you can use the <code>file</code> protocol with a file name fully qualified by its path, for example, <code>file:///c:/osbresources/ForeachAction.jar</code>
Resource Name	Enter a name for the resource.
Resource Type	Select the type of resource from the list.


Load Resources - Review Loaded Resources page

The **Load Resources - Review Loaded Resources** page displays details about resources being imported from a Zip or other file, as documented in [“Loading Resources from a Zip File” on page 3-14](#) or [“Loading Resources from a URL” on page 3-16](#).

[Table 3-6](#) describes the options and controls on the page.

Table 3-6 Load Resources: Review Loaded Resources page - Options and Controls

Options and Controls	Description
File Name	The file name of the resource, including the file extension.
Name	The name of the resource.
Path	The path of the resource, which is the project and folder where the resource resides.
Resource Type	One of the resource types: <ul style="list-style-type: none"> • WSDL • XML Schema • WS-Policy • XQuery • XSLT • MFL • JAR

A  **Warning** icon next to file name indicates that the resource type is unknown. (A file without an extension or one that does not have an extension defined in the map is considered *unknown*.) Files of unknown file types cannot be imported.

Load Resources - Import Result page

The **Load Resources - Import Result** page displays the results of loading resources from an imported Zip file or from a URL.

Depending on whether you have loaded resources from a Zip file or a URL, make sure you have completed the steps in either [“Loading Resources from a Zip File” on page 3-14](#) or [“Loading Resources from a URL” on page 3-16](#), and make sure you have completed the steps in [“Load Resources - Review Loaded Resources page” on page 3-17](#).

The **Import Result** page is displayed, which displays the following information.

Table 3-7 Project/Folder View Page - Options and Controls

Option or Control	Description
Status	<p>The status of the resource; for example, whether or not it has been imported successfully.</p> <p>A WSDL may be temporarily marked as invalid until all of its dependencies are imported. When the import action is completed, however, the configuration service re-validates the files marked invalid.</p>
Name	The name of the resource.
Path	The path of the resource, which is the project and folder where the resource resides.
Resource Type	<p>One of these resource types:</p> <ul style="list-style-type: none"> • WSDL • XML Schema • WS-Policy • XQuery • XSLT • MFL • JAR • Split-Join
Error Message	Displays the details of the error message if the resource has not been imported successfully.

View References page

Depending on whether you clicked **References** or **Referenced By** on a [Project/Folder View page](#), the **View References** page displays a list of:

- Resources outside of the current project or folder that are referenced by resources inside the project or folder.
- Resources outside of the current project or folder that reference resources inside the project or folder.

[Table 3-8](#) describes the options and controls on the page.

Table 3-8 Project References Page - Options and Controls

Option or Control	Description
Name	Click the name of the resource to display details of the resource.
Resource Type	<p>Displays Project, Folder, or any of the following resource types:</p> <ul style="list-style-type: none"> • Proxy Service • Business Service • WSDL • XML Schema • WS-Policy • XQuery • XSLT • MFL • Service Account • Service Key Provider • JAR • Alert Destination • JNDI Provider • SMTP Server • Proxy Server • MQ Connection • Split-Join

Viewing References to Resources

You can view references to resources whether or not you are in a session. See [“Using the Change Center” on page 2-2](#).

1. Click **References** or **Referenced By** on a project, folder or resource details page in the **Project Explorer** or **Resource Browser** modules.
 - Click **References** to display resources outside of a project or folder that are referenced by resources inside the project or folder.
 - Click **Referenced By** to display resources outside of a project or folder that reference resources inside the project or folder.

The [View References page](#) is displayed.

2. Click a name of a resource to display details about it, or click **Back** to return to the previous page.

View Change History page

The **View Change History** page displays the ten most recent changes to a resource, across all session activations.

[Table 3-9](#) describes the options and controls on the page.

Table 3-9 Change History Page - Options and Controls

Option or Control	Description
Task	The type of task performed: <ul style="list-style-type: none"> • Create • Update • Clone • Rename • Move
User	The user who created or edited this resource.
Execution Time	The date and time that the user created or edited this resource.

Using the Resource Browser


The **Resource Browser** provides tools for locating resources and for performing simple actions on them, such as Display, Edit, Export, and Delete.

1. To display the **Resource Browser**, select **Resource Browser** from the left navigation pane.
2. On the left side of the page, click the name of the type of resource you want to locate. [Table 3-10](#) shows the items you can select and the tasks associated with the page displayed for each one.

Table 3-10 Resource Types Available from the Resource Browser


Resource Type	Associated Task
Service	
Proxy Services	“Locating Proxy Services” on page 17-46
Business Services	“Locating Business Services” on page 16-44
Split-Joins	“Locating Split-Joins” on page 9-1
Interface	
WSDLs	“Locating WSDLs” on page 6-1
XML Schemas	“Locating XML Schemas” on page 4-1
WS-Policies	“Locating Custom WS-Policies” on page 11-2
Transformation	
XQueries	“Locating XQuery Transformations” on page 10-1
XSLTs	“Locating XSL Transformations” on page 12-1
MFLs	“Locating MFLs” on page 13-1
Security	
Service Accounts	“Locating Service Accounts” on page 14-3
Service Key Providers	“Locating Service Key Providers” on page 15-2
Utility	
JARs	“Locating JARs” on page 7-1
Alert Destinations	“Locating Alert Destinations” on page 5-1
MQ Connection	“Locating MQ Connections” on page 8-1

Renaming Resources


1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder containing the resource you want to rename. The [Project/Folder View page](#) is displayed.
3. Click the  **Rename** icon in the row of the resource you want to rename. The **Rename** page is displayed.
4. In the **New Resource Name** field, enter a new name for the resource. Comma (,) and slash (/) characters are not allowed.
5. Click **Rename**.

Note: If you rename a business service imported from the UDDI registry, the service will become detached from the registry
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Moving Resources

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder containing the resource you want to move. The [Project/Folder View page](#) is displayed.
3. Click the  **Move** icon in the row of the resource you want to move. The **Move** page is displayed with the current location of the resource highlighted.
4. In the **Location** field, select the project and folder to which you want to move the file.
5. Click **Move File**. The resource is moved to the new location in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Cloning Resources

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder containing the resource you want to clone. The [Project/Folder View page](#) is displayed.
3. Click the  **Clone Resource** icon in the row of the resource you want to clone. The **Clone Resource** page is displayed with the current location of the resource highlighted.
4. You can clone the resource in the same location or a different location:
 - To clone the resource in the same location, enter a new name in the **New Resource Name** field. Comma (,) or slash (/) characters are not allowed.

To clone in the same location, either do not select any location at all in the **Location** panel (which is equivalent to selecting the current location), or explicitly select the current project and folder.
 - To clone the resource in a different location, optionally enter a new name in the **New Resource Name** field, and select a project and/or folder from the **Location** area.
5. Click **Clone Resource**. The resource is cloned in the current session.


If you clone a business service imported from the UDDI registry, the cloned service will be detached from the registry
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Exporting a WSDL

Use the [Project/Folder View page](#) to export a WSDL associated with a proxy service or a business. The WSDL is exported as a JAR file. You can export a WSDL only when you are outside a session. See [“Using the Change Center” on page 2-2](#).

Use the Export WSDL feature to make a WSDL available for consumption by external tools such as IDEs. Note that this is different than the Export Resources feature in the System Administration module, which you use to move and stage resources between two domains.


1. From the left navigation pane, click a project or folder from under **Project Explorer**. The [Project/Folder View page](#) is displayed.

2. Click the  **Export WSDL** icon in the row of the proxy service whose WSDL you want to export. The **File Download** dialog box is displayed.
3. In the **File Download** dialog box, click **Open** to open the JAR file or click **Save** to save the JAR file to your desktop.

Generating a WSDL

A generated WSDL is a WSDL resource that Oracle Service Bus generates for a service that did not start with a WSDL resource but which can be described using a WSDL. For example, a WSDL created from an EJB-based service is a generated WSDL. For more information, see [How WSDL is Used in Oracle Service Bus](#) in the *Oracle Service Bus User Guide*.

Use the [Project/Folder View page](#) to generate a WSDL associated with an EJB or Flow transport-typed business service.

1. From the left navigation pane, click a project or folder from under **Project Explorer**. The [Project/Folder View page](#) is displayed.
2. Click the  **Generate WSDL** icon in the row of the business service whose WSDL you want to generate. The **Generate WSDL Resource** dialog box is displayed with the current location (project name and the name of the folder in which the business service resides) highlighted.
3. In the **Generate WSDL Resource** dialog box, specify a **New WSDL Resource Name** and location for the WSDL, and click **Generate WSDL**.

After you finish

Continue in [“Editing WSDLs” on page 6-3](#) to view or modify the generated WSDL.



Viewing Resources in a Web Browser

View Oracle Service Bus resources in a standard Web browser, using the following URLs

- Path for **WSDL** resources:
`http://host:port/sbresource?WSDL/project/...wsdlname`
- Path for **WSS** resources:
`http://host:port/sbresource?POLICY/project/...policyname`
- Path for **MFL** resources:
`http://host:port/sbresource?MFL/project/...mflname`

- Path for **SCHEMA** resources:
`http://host:port/sbresource?SCHEMA/project/...schemaname`
- Path for **Proxy Service** resources:
`http://host:port/sbresource?PROXY/project/...proxyname`

Deleting Resources


1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder containing the resources you want to delete.
3. Click the  **Delete** icon in the row of the resource you want to delete. The resource is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

XML Schemas

Schemas describe types for primitive or structured data. XML schemas are an XML vocabulary that describe the rules that XML business data must follow. XML schemas specify the structure of documents, and the data type of each element and attribute contained in the document.

You use XML schemas as references for WSDL resources. You can also use XML schemas in the Message Flow of proxy services to validate an element specified with an XPath expression. See [“Adding Validate Actions” on page 19-32](#).


Locating XML Schemas

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the XML schema.
 - Select **Resource Browser > XML Schemas**. The **Summary of XML Schemas** page displays the information shown in [Table 4-1](#). For a more detailed description of the properties, see [“Editing XML Schemas” on page 4-3](#).
2. To locate a specific XML schema:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - To restrict the number of items in the list, you can filter by name, path, and namespace. In the **Name**, **Path**, and **Namespace** fields, enter the name, path and namespace of the search target(s), then click **Search**.

The path is the project name and the name of the folder in which the XML schema resides.

- Click **View All** to remove the search filters and display all XML schemas.

Table 4-1 XML Schema Information

Property	Description
XML Schema Name	The unique name assigned to the XML schema. The name is a link to the XML Schema Details page. See “Editing XML Schemas” on page 4-3 .
Path	The path is the project name and the name of the folder in which the XML schema resides. It is a link to the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
XML Schema Namespace	The namespace used to qualify any of the definitions included in the XML schema.
Options	Click the  Delete icon to delete a specific XML schema. See “Deleting XML Schemas” on page 4-5 .

Adding XML Schemas

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the new XML schema. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **XML Schema** to display the **Create a New XML Schema Resource** page.
4. In the **Resource Name** field, enter a unique name for this XML schema. This is a required field.
5. In the **Resource Description** field, enter a description for the XML schema.
6. In the **XML Schema** field, do one of the following:
 - Enter text for the new XML schema.
 - Click **Browse** to locate and import an existing XML schema.
 - Copy and paste text from an existing XML schema into this field.

This is a required field.

7. Click **Save**. The new XML schema is saved in the current session.

When you click **Save**, if there are any unresolved references for the new XML schema, the system displays them. See [“Viewing Unresolved XML Schema References” on page 4-5](#).

8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing XML Schemas

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the XML schema, as described in [“Locating XML Schemas” on page 4-1](#).
3. Click the XML schema name. The **View XML Schema Details** page displays the information shown in [Table 4-2](#), [Table 4-3](#), and [Table 4-4](#).

Table 4-2 XML Schema Details

Property	Description
Last Modified By	The user who created this XML schema or imported it into the configuration.
Last Modified On	The date and time that the user created this XML schema or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this XML schema references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this XML schema. If such references exist, click the numeric link to view a list of the objects. For example, if this XML schema is referenced by a specific WSDL, the WSDL is listed as a reference when you click the link. See “Viewing References to Resources” on page 3-20 .
Description	A description of this XML schema, if one exists.

The structural view of the XML schema is displayed by default, which includes the information shown in [Table 4-3](#).

Table 4-3 XML Structure Details

Property	Description
Target Namespace	The namespace used to qualify any of the definitions included in the XML schema.
XML Schema Definitions	The attributes and groups associated with the XML schema: <ul style="list-style-type: none">• XML Schema Types• XML Schema Elements• XML Schema Imports• XML Schema Includes/Redefines
Schema State	Status of the XML schema: <ul style="list-style-type: none">• Valid An XML schema is shown as valid when all of the locations for XML schemas included by the current XML schema are specified. Furthermore, all of the locations for nested XML schemas (XML schemas subsequently included by the included XML schemas) are specified.• Invalid An XML schema is shown as invalid when one or more of the locations for the XML schema is not specified. Additionally, the location for one or more nested XML schemas (XML schemas subsequently included by the included XML schemas) may not be specified. To resolve an invalid XML schema, click Edit References. See “Resolving Unresolved XML Schema References” on page 4-6.

4. Click **Text View** to display a text view of the XML schema details. The text view includes the information shown in [Table 4-4](#).



Table 4-4 XML Schema Text Details

Property	Description
Target Namespace	The namespace used to qualify any of the definitions included in the XML schema.
XML Schema	The text for this XML schema.

5. To make changes to the fields, click **Edit**. See [“Adding XML Schemas”](#) on page 4-2 for descriptions of the fields.

6. Make the appropriate edits.
7. Click **Save** to commit the updates in the current session.
8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting XML Schemas

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > XML Schemas**.
3. Click the  **Delete** icon in the **Options** field of the XML schema you want to delete. The XML schema is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Viewing Unresolved XML Schema References

For each unresolved XML schema reference, this page displays the information shown in [Table 4-5](#).

Table 4-5 Unresolved XML Schema Details

Property	Description
Schema Name	The unique name assigned to the XML schema. Click the name of a specific XML schema to view details for that XML schema. See “Editing XML Schemas” on page 4-3 .
Namespace	The namespace used to qualify any of the definitions included in the XML schema.

To locate a specific reference:

- Resort the list. Click on an underlined column name. Ascending and descending arrows indicate the sort order. Click the column name to change the sort order.

- Scroll through the pages. Use the page controls above or below the table. Go to a page by selecting the page number or by using the arrow buttons to go to the next, previous, first, or last page.

Resolving Unresolved XML Schema References

Use the **Edit the References of an XML Schema Resource** page to resolve unresolved XML schema references by configuring the mapping for XML schema references such as XML schema imports.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. On the **Summary of XML Schemas** page, in the **XML Schema Name** column, click the appropriate XML schema name to view details of the unresolved reference. The **View XML Schema Details** page is displayed.
3. Click **Edit References** to display the **Edit the References of an XML Schema Resource** page.
4. In the **Resource Type** field, select **XML Schema**.
5. Click **Browse**. The **XML Schema Browser** is displayed.
6. In the **XML Schema Browser**, select an XML schema, then select a definition from the **Definitions** pane.
7. Click **Submit**. The XML schema you selected is displayed in the **Resource Name** field.
8. Click **Save** to resolve the reference.
9. On the **XML Schema Details** page, click **OK**. The state of the XML schema is displayed as **Valid**.

Alert Destinations

An alert destination resource captures a list of recipients that can receive alert notifications from the Oracle Service Bus. In typical system monitoring contexts, alerts generated by Oracle Service Bus bear significance to a finite set of users.

In Oracle Service Bus, you can configure each alert destination resource to include a set of recipients according to a given context. Alert destinations are used by Alert actions configured in the message flow, and also by SLA alert rules. An alert destination can include one or more of the following types of destinations: console (default), Reporting Data stream, SNMP trap, e-mail, JMS queue, or JMS topic.

In the case of e-mail and JMS destinations, a destination resource can include a list of e-mail addresses or JMS URIs, respectively.

You can re-use alert destinations across alert configurations for services. See [“Adding Alert Actions” on page 19-33](#).

Locating Alert Destinations

You can view a list of alert destinations in the **Summary of Alert Destinations** page. If you have not yet created an alert destination, and want to do so, create a new alert Destination resource from the Project Explorer. To learn how, see [“Adding Alert Destinations” on page 5-2](#).


1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the alert destination.

- Select **Resource Browser > Alert Destinations**. The **Summary of Alert Destinations** page displays the information shown in [Table 5-1](#).
- 2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, enter the name and path of the search target(s), then click **Search**.

The path is the project name and the name of the folder in which the alert destination resides.

Click **View All** to remove the search filters and display all alert destinations.

Table 5-1 Alert Destination Details

Property	Description
Name	The name of the alert destination resource. The name is a link to the View an Alert Destination - Configuration page. See “Editing Alert Destinations” on page 5-5 .
Path	The path is the project name and the name of the folder in which the alert destination resides. It is a link to the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
Options	Click the  Delete icon to delete a specific Alert Destination. See “Deleting Alert Destinations” on page 5-6 .

Adding Alert Destinations

An alert destination is a destination address for alert notifications in Oracle Service Bus. You can create alert destination resources in the **Create Alert Destination** page.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the alert destination. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **Alert Destination** to display the **Create Alert Destination** page.
4. In the **Resource Name** field, enter a unique name for this alert destination. This is a required field.
5. In the **Resource Description** field, enter a description for the alert destination.
6. Select any or all of the following destinations to be included in this alert destination resource.

Note: By default, all alerts are sent to the Oracle Service Bus console at run time. These alerts can be viewed under **Operations > Dashboard**.

- **SNMP Trap:** If you specify SNMP Trap, alerts are sent as SNMP traps, and can be processed by any third-party enterprise monitoring systems (ESM).
 - **Reporting:** If you specify Reporting, alerts are sent to the Oracle Service Bus Reporting module and can be captured using a custom Reporting Provider that can be developed using the Reporting APIs provided by Oracle Service Bus. This allows third-parties to receive and process alerts in custom Java code.
7. Add an e-mail recipient to the alert destination resource definition. See [“Adding E-Mail Recipients” on page 5-3](#).
 8. Add a JMS Destination to the alert destination resource definition. See [“Adding JMS Destinations” on page 5-4](#).
 9. Click **Save**. The new alert destination is saved in the current session.
 10. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding E-Mail and JMS Recipients

You can add multiple e-mail and JMS recipients to an alert destination.

This section includes the following tasks:

- [“Adding E-Mail Recipients” on page 5-3](#)
- [“Adding JMS Destinations” on page 5-4](#)

Adding E-Mail Recipients

Before you add an e-mail destination, you must configure an SMTP Server (see [“Adding SMTP Servers” on page 28-6](#)), or a JavaMail session in WebLogic Server (see [Configure access to JavaMail](#) in *Administration Console Online Help*). If there are no SMTP Server resources or JavaMail sessions available, configured, you cannot configure an e-mail recipient.

1. Select **Send an alert via e-mail** from the drop-down list and click **Add** to display the **Add E-mail Recipient** page.
2. In the **Mail Recipients** field, enter an e-mail recipient in the format:
`mailto:username@hostname`

This is a required field.

You can specify multiple e-mail recipients by entering the user names and hostnames in a comma-separated list. For example, `mailto:username@hostname`
`[,username_1@hostname_1]...[,username_n@hostname_n]`

Only the first mail recipient needs to be prefixed with the text “mailto:”.

3. In the **SMTP Server** field, select the name of the SMTP Server for the outgoing e-mail. This field is not required if a mail session is selected in the next step.
4. In the **Mail Session** field, select an available mail session. This field is not required if an SMTP Server is selected in the previous step.
5. In the **From Name** field, provide a sender’s name for the alert notification. This field is optional.
6. In the **From Address** field, provide a valid e-mail address. This field is required if a value for “From Name” field is specified.
7. In the **Reply To Name** field, provide a name to which a reply may be addressed. This field is optional.
8. In the **Reply To Address** field, provide an e-mail address to which a reply may be sent. This field is required if a value for “Reply To Name” field is specified.
9. In the **Connection Timeout** field, enter the number of seconds a connection must wait for a response from the server before timing out. The default value is 0.
10. In the **Request Encoding** field, enter a character set encoding value. The default encoding value is `iso-8859-1`.
11. Click **Save**. The e-mail recipient is added to the list of e-mail recipients for this alert destination and saved in the current session.

Adding JMS Destinations

1. Select **Send an alert to a JMS Destination** from the drop-down list and click **Add** to display the **Add JMS Destination** page.
2. In the destination URI field, enter a JMS destination URI in the format:
`jms://host:port/factoryJndiName/destJndiName`
This is a required field.
3. In the **Destination Type** field, select **Queue** or **Topic**.

4. In the **Message Type** field, select **Bytes** or **Text**.
5. In the **Request Encoding** field, enter a character set encoding value. The default encoding value is UTF-8.
6. Click **Save**. The JMS destination is added to the list of JMS destinations to be included for this alert destination and saved in the current session.

Editing Alert Destinations




1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the alert destination, as described in [“Locating Alert Destinations” on page 5-1](#) or [“Finding Alert Destinations” on page 24-10](#).
3. Click the alert destination name. The **View Alert Destination - Configuration** page displays the information shown in [Table 5-2](#).

Table 5-2 Alert Destination Configuration Details

Property	Description
Last Modified By	The user who created or edited this alert destination.
Last Modified On	The date and time that the user created or edited this alert destination. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this alert destination references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this alert destination. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of this alert destination, if one exists.



Table 5-2 Alert Destination Configuration Details (Continued)

Property	Description
General Configuration	SNMP Trap: Yes or No, to indicate whether the SNMP Trap option was specified as a destination for this alert when it was configured.
	Reporting: Yes or No, to indicate whether the Reporting option was specified as a destination for this alert when it was configured.
	E-mail & JMS: Displays a list of e-mail recipients or JMS destinations, or both, if they were configured.

4. You can change your selection of the SNMP Trap or Reporting setting.
5. To edit or delete an e-mail recipient or JMS destination, click **Edit** at the bottom of the page.
 - a. To edit the e-mail recipient, in **E-mail** click the  **Edit** icon under **Options**, for the e-mail recipient you want to edit. Use the **Edit E-mail Recipient** page to make changes to the e-mail recipient information. See [“Adding E-Mail Recipients” on page 5-3](#).
 - b. To edit the JMS destination, in **JMS** click the  **Edit** icon under **Options**, for the JMS destination you want to edit. Use the **Edit JMS Destination** page to make changes to the JMS destination information. See [“Adding JMS Destinations” on page 5-4](#).
 - c. To delete one or all e-mail recipients or JMS destinations, click the  **Delete** icon under **Options**, for the e-mail recipients or JMS destinations you want to delete.
6. Click **Save** to commit the updates in the current session.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Alert Destinations

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > Alert Destinations** to display the **Summary of Alert Destinations** page.

3. Click the  **Delete** icon in the **Options** field of the alert destination you want to delete. The alert destination is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.

To delete particular e-mail recipients or JMS destinations configured within an alert destination, see [“Editing Alert Destinations” on page 5-5](#).

4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Alert Destinations


WSDLs

A WSDL (Web Service Definition Language) is the formal description of a Web Service; in Oracle Service Bus, it describes a proxy service or a business service. A WSDL is used to describe what a Web Service can do, where it resides, and how to invoke it.

You can base SOAP and XML services on an existing WSDL resource. A WSDL document is available for proxy and business services for any transport. See [Create/Edit a Proxy Service - “General Configuration page” on page 17-3](#) and [“Creating and Configuring Business Services” on page 16-1](#).

For more information, see [How WSDL is Used in Oracle Service Bus](#) in the *Oracle Service Bus User Guide*.

Locating WSDLs


1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the WSDL.
 - Select **Resource Browser > WSDLs**. The **Summary of WSDLs** page displays the information shown in [Table 6-1](#). For a more detailed description of the properties, see [“Editing WSDLs” on page 6-3](#).
2. To locate a specific WSDL:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.

- To restrict the number of items in the list, you can filter by name, path, and namespace. In the **Name**, **Path**, and **Namespace** fields, enter the name, path, and namespace of the search target(s), then click **Search**.

The path is the project name and the name of the folder in which the WSDL resides.

- Click **View All** to remove the search filters and display all WSDLs.

Table 6-1 WSDL Details

Property	Description
WSDL Name	The unique name assigned to the WSDL. The name is a link to the View WSDL Details page. See “Editing WSDLs” on page 6-3 .
Path	The path is the project name and the name of the folder in which the WSDL resides. It is a link to the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
WSDL Namespace	The address of the WSDL. It is displayed in the format: <code>http://example.com/example/example</code>
Options	Click the  Delete icon to delete a specific WSDL. See “Deleting WSDLs” on page 6-5 .

Adding WSDLs

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the WSDL. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **WSDL** from under **Interface** to display the **Create a New WSDL Resource** page.
4. In the **Resource Name** field, enter a unique name for this WSDL. This is a required field.
5. In the **Resource Description** field, enter a description for the WSDL.
6. In the **WSDL** field, do one of the following:
 - Enter text for the new WSDL.
 - Click **Browse** to locate and import an existing WSDL.

- Copy and paste text from an existing WSDL into this field.

This is a required field.

7. Click **Save**. The new WSDL is saved in the current session.

When you click **Save**, if there any unresolved references for the new WSDL, the system displays them. See [“Viewing Unresolved WSDL References” on page 6-5](#).

8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing WSDLs

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the WSDL, as described in [“Locating WSDLs” on page 6-1](#).
3. Click the WSDL name. The **View WSDL Details** page displays the information shown in [Table 6-2](#), [Table 6-3](#), and [Table 6-4](#).

Table 6-2 WSDL Details

Property	Description
Last Modified By	The user who created this WSDL or imported it into the configuration.
Last Modified On	The date and time that the user created this WSDL or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this WSDL references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this WSDL. If such references exist, click the numeric link to view a list of the objects. For example, if you select this WSDLs port or binding as the service type for a specific business service or proxy service, the business service or proxy service is listed as a reference when you click the link. See “Viewing References to Resources” on page 3-20 .
Description	A description of this WSDL, if one exists.

The structural view of the WSDL is displayed by default, which includes the information shown in [Table 6-3](#).

Table 6-3 WSDL Structure Details

Property	Description
Target Namespace	The namespace used to qualify any of the definitions included in the WSDL.
WSDL Definitions	<p>The attributes and groups associated with the WSDL:</p> <ul style="list-style-type: none">• WSDL Port Types• WSDL Bindings• WSDL Ports• XML Schema Types• XML Schema Elements• WSDL Imports• XML Schema Imports• WS-Policy References• Implicit WS-Policy References
WSDL State	<p>The status of the WSDL:</p> <ul style="list-style-type: none">• Valid <p>All of the locations for XML schemas or WSDLs included by the current WSDL are specified and are valid. Furthermore, all of the locations for nested XML schemas or WSDLs (XML schemas or WSDLs subsequently included by the included WSDLs or XML schemas) are specified and are valid.</p> <ul style="list-style-type: none">• Invalid <p>One or more of the locations for XML schemas or WSDLs included by the current WSDL is not specified or is not valid. Additionally, the location for one or more of the nested XML schemas or WSDLs (XML schemas or WSDLs subsequently included by the included WSDLs or XML schemas) may not be specified or may not be valid. To resolve an invalid XML schema or WSDL, click Edit References. See “Resolving Unresolved WSDL References” on page 6-6.</p>

4. Click **Text view** to display a text view of the WSDL details. The text view includes the information shown in [Table 6-4](#).



Table 6-4 WSDL Text Details

Property	Description
Target Namespace	The namespace used to qualify any of the definitions included in the WSDL.
Text	The text for this WSDL.

5. To make a change to the fields, click **Edit**. See [“Adding WSDLs” on page 6-2](#) for descriptions of the fields.
6. Make the appropriate edits.
7. Click **Save** to commit the updates in the current session.
8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Note: The **View WSDL Details** page may also include a **Separate Callbacks** button. This button is only displayed if the WSDL has port types with callback operations that can be rewritten. If you click this button, the WSDL is rewritten.

Deleting WSDLs

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > WSDLs**.
3. Click the  **Delete** icon in the **Options** field of the WSDL you want to delete. The WSDL is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Viewing Unresolved WSDL References

The **View Unresolved WSDL References** page displays the information shown in [Table 6-5](#).

Table 6-5 Unresolved WSDL Reference Details

Property	Description
WSDL Name	The name assigned to the WSDL. Click the name of a specific WSDL to view details for that WSDL.
Namespace	The address of the WSDL. It is displayed in the format: <code>http://example.com/example/example</code>

To locate a specific reference:

- Resort the list. Click on an underlined column name. Ascending and descending arrows indicate the sort order. Click the column name to change the sort order.
- Scroll through the pages. Use the page controls above or below the table. Go to a page by selecting the page number or by using the arrow buttons to go to the next, previous, first, or last page.

Resolving Unresolved WSDL References

Use the **Edit the References of a WSDL Resource** page to resolve unresolved WSDL references by configuring the mapping for WSDL references such as WSDL imports and XML schema imports. A WSDL may also have an unresolved reference to a WS-Policy.

Resolving an Unresolved WSDL or XML Schema Reference

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > WSDLs**.
3. On the **Summary of WSDLs** page, in the **WSDL Name** column, click the appropriate WSDL name to view details of the unresolved reference. The **View WSDL Details** page is displayed.
4. Click **Edit References** to display the **Edit the References of a WSDL Resource** page.
5. In the **Resource Type** field, select **WSDL** or select **XML Schema**.
6. Click **Browse**. Depending on the resource type, the **WSDL Browser** or the **XML Schema Browser** is displayed.

7. In the **WSDL Browser** or **XML Schema Browser**, select a WSDL or XML Schema, then select a definition from the **Definitions** pane.
8. Click **Submit**. The WSDL or XML Schema you selected is displayed in the **Resource Name** field.
9. Click **Save** to resolve the reference.
10. On the **View WSDL Details** page, click **OK**. The state of the WSDL is displayed as **Valid**.

Resolving an Unresolved WS-Policy Reference

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > WSDLs**.
3. On the **Summary of WSDLs** page, in the **WSDL Name** column, click the appropriate WSDL name to view details of the unresolved reference. The **View WSDL Details** page is displayed.
4. Click **Edit References** to display the **Edit the References of a WSDL Resource** page.
5. In the **WS-Policy Name** field, click **Browse**. The **Policy Browser** is displayed.
6. In the **Policy Browser**, select a WS-Policy.
7. Click **Submit**. The WS-Policy you selected is displayed in the **WS-Policy Name** field.
8. Click **Save** to resolve the reference.
9. On the **View WSDL Details** page, click **OK**. The state of the WSDL is displayed as **Valid**.

WSDLs

JARs

A JAR (Java ARchive) is a zipped file that contains a set of Java classes. It is used to store compiled Java classes and associated metadata that can constitute a program. A JAR acts like a callable program library for Java code elements (so that a single compilation link provides access to multiple elements, rather than requiring bindings for each element individually). To learn more about JARs, see <http://java.sun.com/docs/books/tutorial/deployment/jar/>

JAR resources in Oracle Service Bus are used in:

- Java callout actions
- EJB-based business services
- Tuxedo-based proxy and business services

Locating JARs


1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the JAR.
 - Select **Resource Browser > JARs**. The **Summary of JARs** page displays the information shown in [Table 7-1](#). For a more detailed description of the properties, see [“Editing JARs” on page 7-3](#).
2. To restrict the number of items in the list or locate a specific JAR, search for a JAR using name and path filters. In the **Name** and **Path** fields, enter the name and path of the search target(s), then click **Search**.

The path is the project name and the name of the folder in which the JAR resides.

This search supports wildcard characters. For example, you can enter “j*” in the **Name** field to get a list of JARs that start with “j”.

Click **View All** to remove the search filters and display all JARs.

Table 7-1 JAR Details

Property	Description
JAR Name	The unique name assigned to the JAR. The name is a link to the View a JAR Resource - JAR Configuration page. See “Editing JARs” on page 7-3 .
Path	The path is the project name and the name of the folder in which the JAR resides. It is a link to the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
No. of Classes	The number of classes the JAR contains.
Size	The size of the JAR in bytes.
Options	Click the  Delete icon to delete a specific JAR. See “Deleting JARs” on page 7-6 .

Adding JARs

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the JAR. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **JAR** from under **Utility** to display the **Create a New JAR Resource** page.
4. In the **Resource Name** field, enter a unique name for this JAR. This is a required field.
5. In the **Resource Description** field, enter a description for the JAR.
6. In the **JAR Source File** field, do one of the following:
 - Enter the path to the location of the JAR.
 - Click **Browse** to locate and import an existing JAR.

This is a required field.

7. Click **Save**. The JAR resource is created and saved in the current session.

If the JAR loads without problems, the contents of the JAR will be available for viewing.
To learn how to view JAR details, see [“Editing JARs” on page 7-3](#).

8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing JARs

Use the **View a JAR Resource - Configuration** page to update JAR files. Updating a JAR file essentially involves pointing the resource to a new version of the JAR, as you cannot edit a JAR using Oracle Service Bus.

1. If you have not already done so, click **Create** to create a new session, or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the JAR, as described in [“Locating JARs” on page 7-1](#).
3. Click the JAR name. The **View a JAR Resource - JAR Configuration** page displays the information shown in [Table 7-2](#).

Table 7-2 JAR Information

Property	Description
Last Modified By	The user who imported this JAR into the configuration.
Last Modified On	The date and time that the user imported this JAR into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of JARs that this JAR references. If such references exist, click the numeric link to view a list of the JARs. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this JAR. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of this JAR, if one exists.

The JAR configuration is displayed by default, which includes the information shown in [Table 7-3](#).

Table 7-3 JAR Configuration Details

Property	Description
JAR Configuration	<p>The list of classes and interfaces in this JAR.</p> <hr/> <p>Click (+) beside the name of a Java class to display a list of methods included in the class.</p>

4. To make a change to the fields, click **Update**.

The only field you can edit is **Description**. You cannot edit a JAR in Oracle Service Bus. To update the JAR, you must select a new JAR to use. To learn how, see [“Adding JARs” on page 7-2](#).

5. Click **Save** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Note: If you change the JAR used by an EJB Business Service (point the JAR resource to a new version of the JAR), you need to redeploy the EJB. You will then have to edit any EJB service that uses this JAR, and reselect the JAR resource, save, and activate. That will repack the EJB business service to use the new JAR.

Java callout actions and Tuxedo-based services, however, will automatically pick up the new JAR.

Editing JAR Dependencies

In Oracle Service Bus, JAR resources can contain classes that depend on other classes in different JARs. Use the **Edit JAR Dependencies** page to add or remove referenced JAR resources.

1. If you have not already done so, click **Create** to create a new session, or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the JAR, as described in [“Locating JARs” on page 7-1](#).
3. Click the JAR name.

On the **View a JAR Resource - JAR Configuration** page, a numeric indicator on the **Dependencies** tab displays the number of referenced JARs configured for this JAR resource, or a zero if there are none.

4. Select the **Dependencies** tab to display referenced JARs or to add them.

The JAR dependencies page includes the information shown in [Table 7-4](#).


Table 7-4 JAR Dependencies Information

Property	Description
Name	The name of the referenced JAR. The name is a link to the View a JAR Resource - JAR Configuration page. See “Editing JARs” on page 7-3 .
Path	The path is the project name and the name of the folder in which the JAR resides.

5. To add or remove referenced JARs, click **Edit**.

The **Edit JAR dependencies** page includes the information shown in [Table 7-5](#).

Table 7-5 JAR Dependencies Details



Property	Description
Manifest Class Path	Class-Path entries in the JAR manifest file.
Name	The name and path of the referenced JAR resource.
Options	<ul style="list-style-type: none"> • Use the Up and Down arrows to change the referenced JARs order of precedence. • Click the  Delete icon to remove a referenced JAR.

6. Click **Add JARS**.
7. In the **JARs Browser**, locate or select referenced JAR resources and click **Submit**.
For example, if you are editing JAR A and adding JARs B and C, JAR A references (depends on) JAR B and JAR A references (depends on) JAR C.

Use the arrows in the **Options** column to reorder the hierarchy of referenced JARs or the **Delete** icon to remove them.

8. Click **Save** to commit the updates in the current session.
9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting JARs

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > JARs**.
3. Click the  **Delete** icon in the **Options** field of the JAR you want to delete. The JAR is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

MQ Connections

Note: See [Product Support Information](#) for the supported versions of WebSphere MQ on Oracle Service Bus. The WebSphere MQ client library is not bundled with the Oracle Service Bus installer. Get the WebSphere MQ client library from your WebSphere MQ installation.

MQ Connections are sharable resources that can be reused across multiple MQ proxy and business services. MQ proxy and business services must connect to an MQ queue manager before accessing an MQ queue. MQ Connection resources provide the connection parameters required for connecting to a MQ queue manager.

Each MQ Connection resource has a connection pool. Every business or proxy service using a given MQ Connection resource to get a connection to a given queue manager uses the same connection pool that was created for that resource. Thus, multiple business services and proxy services using the same queue manager share a connection pool.

To learn more about Oracle Service Bus MQ Connection resources and native MQ transports, see the [MQ Transport User Guide](#).

To learn more about WebSphere MQ Fundamentals, see <http://www.redbooks.ibm.com/redbooks/SG247128/wwhelp/wwhimpl/java/html/wwhelp.htm>.

Locating MQ Connections

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the MQ Connection resource.



- Select **Resource Browser > MQ Connections**. The **Summary of MQ Connections** page displays the information shown in [Table 8-1](#). For a more detailed description of the properties, see [“Editing MQ Connections” on page 8-5](#).
- 2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, enter the name and path of the search target(s), then click **Search**.
- 3. Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - Filter by **Queue Manager Name**. Enter any string, including wildcard characters, then click **Search**.
 - Filter by **Queue Manager Channel Name**. Enter any string, including wildcard characters, then click **Search**.
 - Click **View All** to remove the search filters and display all MQ Connection resources.

Table 8-1 MQ Connection Details

Property	Description
MQ Connection Name	The name assigned to the MQ Connection resource. The name is a link to the MQ Connection Configuration page. See “Editing MQ Connections” on page 8-5 .
Path	The path is the project name and the name of the folder in which the MQ Connection resource resides. It is a link to the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
Options	Click the  Delete icon to delete a specific MQ Connection resource. See “Deleting MQ Connections” on page 8-6 .

Adding MQ Connections

Before you begin

See [Product Support Information](#) for the supported versions of WebSphere MQ on Oracle Service Bus. The WebSphere MQ client library is not bundled with the Oracle Service Bus installer. Get the WebSphere MQ client library from your WebSphere MQ installation.

To configure and use MQ Connection resources and the MQ transport in Oracle Service Bus, you must add the MQ client library to the classpath. One option is to copy the com.ibm.mq.jar library

to your *DOMAIN_NAME/lib* directory, where *DOMAIN_NAME* is the name of the directory in which you located the domain, typically *BEA_HOME\user_projects\domains\DOMAIN_NAME*.

To add a MQ Connection resource

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the MQ Connection resource. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **MQ Connection** from under **Utility** to display the **Create a New MQ Connection Resource** page.

Specify the connection parameters shown in [Table 8-2](#).

Table 8-2 MQ Connection Parameters

Property	To create or edit...
Resource Name	Enter a unique name for this MQ Connection resource. Note: Do not include spaces in the name.
Resource Description	Enter a description for the MQ Connection resource.
Connection Type	Select one of the following modes for connecting to the MQ queue manager: <ul style="list-style-type: none"> • <code>tcp mode</code>—Use TCP/IP to connect to a queue manager that does not reside on the same machine as Oracle Service Bus. • <code>binding mode</code>—Use the bindings mode to connect to a queue manager that is located on the same machine as Oracle Service Bus.
MQ Host Name	For <code>tcp mode</code> connections only: Enter the host name of the MQ queue manager.
MQ Port Number	For <code>tcp mode</code> connections only: Enter the port number of the MQ queue manager listener.
MQ Queue Manager Name	Enter the name of the MQ queue manager to which to connect.

Table 8-2 MQ Connection Parameters (Continued)

Property	To create or edit...
Queue Manager CCSID	<p>For <code>tcp</code> mode connections only:</p> <p>The coded character set identifier (CCSID) to be used when establishing a connection. The CCSID is used mainly for internationalization support.</p> <p>To learn more, see WebSphere MQ Fundamentals at http://www.redbooks.ibm.com/redbooks/SG247128/wwhelp/wwhimpl/java/html/wwhelp.htm.</p>
MQ Queue Manager Channel Name	<p>For <code>tcp</code> mode connections only:</p> <p>Enter the queue manager server connection channel name.</p>
SSL Required	<p>For <code>tcp</code> mode connections:</p> <p>Select the check box to use SSL for sending messages. Only server-side SSL will be enabled when the 2-way SSL Required option is <i>not</i> selected.</p>
Cipher Suite	<p>This option is available only when the SSL Required check box is selected.</p> <p>Select the Cipher Suite algorithm to be used by SSL.</p> <p>The Cipher Suite algorithm is used to encrypt and decrypt message communications between the WebSphere MQ server and the WebSphere MQ client. Thus a Cipher Suite algorithm must be specified when using SSL to communicate with a WebSphere MQ server.</p>
2-way SSL Required	<p>This option is available only when the SSL Required check box is selected.</p> <p>Select the check box to enable both client-side and server-side SSL authentication.</p>
Reference to the Service Key Provider	<p>If you selected 2-way SSL Required, you must provide a reference to the service key provider for obtaining the appropriate key store and trust store information.</p> <p>Enter the path (<code>project/folder</code>) and name of a service key provider, or click Browse to select one from the Select Service Key Provider page.</p>
Reference to the Static Service Account	<p>For <code>tcp</code> mode connections only:</p> <p>Required for user name and password authentication. Enter the path (<code>project/folder</code>) and name of a static service account, or click Browse to select service accounts from a browser.</p>

Table 8-2 MQ Connection Parameters (Continued)

Property	To create or edit...
WebSphere MQ Version	Select the WebSphere MQ version: <ul style="list-style-type: none"> • 5.3 • 6.0
MQ Connection Pool Size	Enter the size of the MQ connection pool.
MQ Connection Timeout	Enter the time interval in seconds after which unused connections are destroyed. The default is 1800 seconds.
MQ Connection Max Wait	Enter the Max Wait in seconds for the amount of time to wait for a connection to become available. If a connection is not made within that time interval, Oracle Service Bus throws an exception. The default is 3 seconds.

4. Click **Save**. The MQ Connection resource is created and saved in the current session.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing MQ Connections

This section describes how to edit existing MQ Connection resources.

1. If you have not already done so, click Create to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the MQ Connection resource, as described in [“Locating MQ Connections” on page 8-1](#).
3. Click the MQ Connection resource name.



The **View MQ Connection - Configuration** page displays the information shown in [Table 8-3](#).

Table 8-3 MQ Connection Details

Property	Description
Last Modified By	The user who created this MQ Connection resource or imported it into the configuration.
Last Modified On	The date and time that the user created this MQ Connection resource or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this MQ Connection resource references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this MQ Connection resource. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of this MQ Connection resource, if one exists.

4. To make a change to the fields, click **Edit**. For descriptions of the fields, see [“Adding MQ Connections” on page 8-2](#).
You cannot change the **Resource Name** field.
5. Click **Save** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting MQ Connections

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > MQ Connections** to display the **Summary of MQ Connections** page.
3. Click the  **Delete** icon in the **Options** field of the MQ Connection resource you want to delete. The MQ Connection resource is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a

warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.

4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

MQ Connections

Split-Joins


Split-Joins let you send message invocations in parallel (in addition to sequentially) and to aggregate the responses. To learn more about Split-Joins, see [Improving Service Performance with Split-Join](#) in the *Oracle Service Bus User Guide*. See also, [Working with Split-Join](#) and the [Split-Join User Interface Reference](#) in Using the Oracle Service Bus Plug-in for Workshop for WebLogic.

You access Split-Joins through Flow transport-typed business services. For more information, see the [“Flow Transport Configuration page” on page 16-18](#).

Locating Split-Joins

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the Split-Join.
 - Select **Resource Browser > Split-Joins**. The **Summary of Split-Joins** page displays the information shown in [Table 9-1](#). For a more detailed description of the properties, see [“Editing Split-Joins” on page 9-3](#).
2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, enter the name and path of the search target(s), then click **Search**.
3. Click **View All** to remove the search filters and display all Split-Joins.

Table 9-1 Split-Join Details

Property	Description
Split-Join Name	The name assigned to the Split-Join. The name is a link to the Split-Join Configuration page. See “Editing Split-Joins” on page 9-3 .
Path	The path is the project name and the name of the folder in which the Split-Join resides. It is a link to the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
Options	Click the  Delete icon to delete a specific Split-Join. See “Deleting Split-Joins” on page 9-4 .

Adding Split-Joins

Before you begin

Split-Joins require a .flow file which is created when you create a Split-Join using the Oracle Service Bus Plug-in for Workshop for WebLogic or when you import a Split-Join configuration JAR into the plug-in. The .flow file might have references to proxy services, business services, or to external WSDL resources. Resources on which the Split-Join depends must be present on the server before activating the Split-Join.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the Split-Join. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **Split-Join** to display the **Create a New Split-Join Resource** page.

Specify the parameters shown in [Table 9-2](#).

Table 9-2 Split-Join Parameters

Property	To create or edit...
Resource Name	Enter a unique name for this Split-Join.
Resource Description	Enter a description for the Split-Join.

Table 9-2 Split-Join Parameters (Continued)

Property	To create or edit...
Split-Join	Click Browse to locate a .flow file on your system, typically located under <i>BEA_HOME\user_projects\workspaces\your_workspace</i> , where <i>BEA_HOME</i> represents the directory in which you installed Oracle Service Bus.
Dispatch Policy	Select the instance of WebLogic Server Work Manager used to create threads (parallel branches) to execute the Split-Join. The default Work Manager is used if no other Work Manager exists.

4. Click **Save**. The Split-Join is created and saved in the current session.

Note: Resources on which the Split-Join depends must be present before activating the Split-Join.

5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing Split-Joins

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the Split-Join, as described in [“Locating Split-Joins” on page 9-1](#).
3. Click the Split-Join name.

The **View a Split-Join - Configuration** page displays the information shown in [Table 9-3](#).

Table 9-3 Split-Join Details

Property	Description
Last Modified By	The user who created this Split-Join or imported it into the configuration.
Last Modified On	The date and time that the user created this Split-Join or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .

Table 9-3 Split-Join Details (Continued)

Property	Description
References	The number of objects that this Split-Join references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this Split-Join. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of this Split-Join, if one exists.



4. You can make the following operational settings to a Split-Join:

Table 9-4 Split-Join Operational Settings

Property	Description
Logs	If you want to capture log information in a Split-Join, select Enable Logging and select the logging level you want to capture.
Execution Tracing	If you want to enable run-time tracing, select Enabled .

5. Click **Update** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Split-Joins

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser** > **Split-Joins** to display the **Summary of Split-Joins** page.
3. Click the  **Delete** icon in the **Options** field of the Split-Join you want to delete. The Split-Join is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

XQuery Transformations

XQuery transformation maps can describe XML-to-XML, XML to non-XML, and non-XML to XML mappings.

Locating XQuery Transformations




1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the XQuery.
 - Select **Resource Browser > XQueries**. The **Summary of XQueries** page displays the information shown in [Table 10-1](#).
2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, under **Search**, enter the name and/or path of the target(s), then click the **Search** button.

The path is the project name and the name of the folder in which the XQuery resides.

Wildcard characters * and ? are allowed. Search is case-sensitive.

Click **View All** to display all XQueries in the domain. This clears the search parameters from the previous search.

Table 10-1 XQuery Transformation Details

Property	Description
XQuery Name	<p>The name assigned to the XQuery transformation. Click the name to display the View XQuery Transformation Details page.</p> <p>See “Editing XQuery Transformations” on page 10-3.</p>
Path	<p>The path is the project name and the name of the folder in which the XQuery resides, for example, <code>MyProject/MyFolder/MyResource</code>.</p> <p>Click the path of an XQuery to display the Project/Folder View page that contains it.</p>
Actions	<p>Click the  Launch Test Console icon to invoke the Test Console, which you use to validate and test the design of your services and transformations. For XQuery transformations, you can use the Test Console whether you are inside or outside a session. To learn more, see “Testing Transformations” on page 30-17.</p>
Options	<p>If you have not already done so, click Create to create a new session or click Edit to enter an existing session. See “Using the Change Center” on page 2-2.</p> <p>Click the  Delete icon to delete the XQuery. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. For more information, see “Deleting an XQuery Transformation” on page 10-4.</p>

Adding XQuery Transformations

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer** to display the [Projects View page](#) or [Project/Folder View page](#).
3. Navigate to the project or a folder to which you want to add the XQuery transformation.
4. From the **Create Resource** list, select **XQuery**. The **Create a New XQuery** page is displayed.
5. In the **Resource Name** field, enter a unique name for this XQuery transformation.

6. In the **Resource Description** field, enter a description for the XQuery transformation.
7. In the **XQuery** field, do one of the following:
 - Enter text for the new XQuery transformation.
 - Click **Browse** to locate and import an existing XQuery transformation.
 - Copy and paste text from an existing XQuery transformation into this field.
8. Click **Save** to commit the updates in the current session.
9. To end the session and deploy the configuration to the run time, select **Activate** under **Change Center**.

Editing XQuery Transformations

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the XQuery transformation, as described in [“Locating XQuery Transformations” on page 10-1](#).
3. Click the XQuery transformation name. The **View XQuery Transformation Details** page displays the information shown in [Table 10-2](#).

Table 10-2 XQuery Transformation Resource Details



Property	Description
Last Modified By	The user who created this XQuery transformation or imported it into the configuration.
Last Modified On	The date and time that the user created this XQuery transformation or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this XQuery transformation references. If such references exist, click the numeric link to view a list of the objects. To learn more, see “Viewing References to Resources” on page 3-20 .

Table 10-2 XQuery Transformation Resource Details (Continued)

Property	Description
Referenced by	The number of objects that reference this XQuery transformation. If such references exist, click the numeric link to view a list of the objects. For example, if you assigned this XQuery transformation to a variable in the Message Flow of a specific proxy service, the proxy service is listed as a reference when you click the link. To learn more, see “Viewing References to Resources” on page 3-20 .
Description	A description of this XQuery transformation, if one exists.
XQuery	The full text of the XQuery transformation.
XQuery Variables	The XQuery variables selected for this XQuery transformation.

- To make a change to the fields, click **Edit**. See [“Adding XQuery Transformations” on page 10-2](#) for a description of the fields.
You cannot change the **Resource Name** field.
- Click **Save** to commit the updates in the current session.
- To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting an XQuery Transformation

- If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
- Select **Resource Browser > XQueries**. The **Summary of XQueries** page is displayed.
- Click the  **Delete** icon in the row of the XQuery transformation you want to delete. The XQuery transformation is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
- To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Custom WS-Policies

Web Services Policy Framework (WS-Policy) is an extensible XML-based framework that extends the configuration of a Web Service with domain specific security assertions and specifies the security requirements, expectations, and capabilities of the Web Service. In Oracle Service Bus, one of the primary uses of WS-Policy is configuring message-level security in proxy services and business services.

Using Oracle Service Bus WS-Policies

Oracle Service Bus includes three simple WS-Policy files that you can use to require clients to authorize, digitally encrypt, or digitally sign SOAP messages: `Auth.xml`, `Encrypt.xml`, and `Sign.xml`. Oracle recommends that unless you have specific security needs, you use these pre-packaged files as often as possible.

For more information about using these policies, see Oracle Service Bus [Policy Statements](#) in *Oracle Service Bus Security Guide*.

Using Custom WS-Policies

If the Oracle Service Bus WS-Policy statements do not meet your security needs, you can write your own WS-Policies (custom WS-Policies), import them to Oracle Service Bus, and refer to them from the WSDL. (The Oracle Service Bus WS-Policy statements are read-only.)

For information about creating and referring to custom WS-Policies, see [Using Web Service Policy to Specify Inbound Message-Level Security](#) in *Oracle Service Bus Security Guide*.



Locating Custom WS-Policies

The **Summary of WS-Policies** page lists the custom Web Service Policies (WS-Policies) that you have added to the current Oracle Service Bus domain. The Oracle Service Bus Console does not display the Oracle Service Bus WS-Policies, which are pre-packaged and available to all Oracle Service Bus domains.

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the WS-Policy.
 - Select **Resource Browser > WS-Policies**. The **Summary of WS-Policies** page displays the information shown in [Table 11-1](#). For a more detailed description of the properties, see [“Locating Custom WS-Policies” on page 11-2](#).
2. To search for a custom WS-Policy, enter part or all of the WS-Policy name in the **Name** field. You can also enter part or all of the WS-Policy project name and folder in the **Path** fields. Click **Search**.

Click **View All** to remove the search filters and display all WS-Policies.

Table 11-1 WS-Policy Information

Property	Description
WS-Policy Name	The unique name assigned to the WS-Policy. Click the name to see the View WS-Policy Details page. See Editing Custom WS-Policies .
Path	The project name and the name of the folder in which the WS-Policy resides. Click on the name to see the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
Options	Contains a  Delete icon. If a business service or proxy service has been configured to use a WS-Policy, a  Deletion Warning icon indicates that you can delete the WS-Policy with a warning confirmation. This might result in conflicts due to unresolved references from the service to the deleted WS-Policy. See Deleting Custom WS-Policies

Adding Custom WS-Policies

You can either import an XML file that contains your WS-Policy or write the WS-Policy directly in the Oracle Service Bus Console.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the WS-Policy. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **WS-Policy** from under **Interface** to display the **Create a New WS-Policy** page.
4. In the **Resource Name** field, enter a unique name for this WS-Policy.
5. In the **Resource Description** field, enter a description of this WS-Policy.
6. In the **Policy** field, do one of the following:
 - Click **Browse** to locate and import an XML file that contains your custom WS-Policy.
 - Enter text for the new WS-Policy.
 - Copy and paste text from an existing WS-Policy into this field.
7. Click **Save**. The WS-Policy is saved in the current session.
8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing Custom WS-Policies

Use the **View WS-Policy Details** page to view and change details of a specific custom Web Service Policy (WS-Policy). The Oracle Service Bus Console does not display the Oracle Service Bus WS-Policies, which are read-only.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the WS-Policy, as described in [“Locating Custom WS-Policies” on page 11-2](#).
3. Click the WS-Policy name. The **View WS-Policy Details** page displays the information shown in [Table 11-2](#).

Table 11-2 WS-Policy Details

Property	Description
Last Modified By	The user who created this WS-Policy or imported it into the configuration.
Last Modified On	The date and time that the user created this WS-Policy or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this WS-Policy references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this WS-Policy. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of this WS-Policy, if one exists.
Policy	The text for this WS-Policy.


4. To make a change to the fields, click **Edit**. See [“Adding Custom WS-Policies” on page 11-2](#) for descriptions of the fields.


You cannot change the **Resource Name** field.

5. Click **Save** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Custom WS-Policies

If any business service or proxy service is configured to use the WS-Policy, remove the WS-Policy from the business service or proxy service.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > WS-Policies**.
3. Click the  **Delete** icon in the **Options** field of the WS-Policy you want to delete.

The WS-Policy is deleted in the current session. If a business service or proxy service has been configured to use a WS-Policy, a  **Deletion Warning** icon indicates that you can delete the WS-Policy with a warning confirmation. This might result in conflicts due to unresolved references from the service to the deleted WS-Policy.

4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Custom WS-Policies

XSL Transformations

Transformation maps describe the mapping between two data types. eXtensible Stylesheet Language Transformation (XSLT) maps describe XML-to-XML mappings.

Locating XSL Transformations




1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the XSL transformation.
 - Select **Resource Browser** > **XSLTs**. The **Summary of XSLTs** page displays the information shown in [Table 12-1](#).
2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, under **Search**, enter the name and/or path of the target(s), then click the **Search** button.

The path is the project name and the name of the folder in which the XSLT resides.

Wildcard characters * and ? are allowed. Search is case-sensitive.

Click **View All** to display all XSLTs in the domain. This clears the search parameters from the previous search.

Table 12-1 XSL Transformation Details

Property	Description
XSLT Name	The name assigned to the XSL transformation. Click the name to display the View XSL Transformation Details page. See “Editing XSL Transformations” on page 12-3 .
Path	The path is the project name and the name of the folder in which the XSL transformation resides, for example, <code>MyProject/MyFolder/MyResource</code> . Click the path of an XSLT to display the Project/Folder View page that contains it.
Actions	Click the  Launch Test Console icon to invoke the Test Console, which you use to validate and test the design of your services and transformations. For XSL transformations, you can use the Test Console whether you are inside or outside a session. To learn more, see “Testing Transformations” on page 30-17 .
Options	If you have not already done so, click Create to create a new session or click Edit to enter an existing session. See “Using the Change Center” on page 2-2 . Click the  Delete icon to delete the XSLT. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. For more information, see “Deleting an XSL Transformation” on page 12-5 .

Adding an XSL Transformation

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer** to display the [Projects View](#) page or [Project/Folder View](#) page.
3. Navigate to the project or a folder to which you want to add the XSL transformation.
4. From the **Create Resource** list, select **XSLT** to display the **Create a New XSLT** page.
5. In the **Resource Name** field, enter a unique name for this XSL transformation.

6. In the **Resource Description** field, enter a description for the XSL transformation.
7. In the **XSLT** field, do one of the following:
 - Enter text for the new XSL transformation.
 - Click **Browse** to locate and import an existing XSL transformation.
 - Copy and paste text from an existing XSL transformation into this field.
8. Click **Save** to commit the updates in the current session.
9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing XSL Transformations

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the XSL transformation, as described in [“Locating XSL Transformations” on page 12-1](#).
3. Click the XSL transformation name. The **View XSL Transformation Details** page displays the structural view of the XSLT by default, which includes the information shown in [Table 12-2](#).

Table 12-2 XSL Transformation Resource Details

Property	Description
Last Modified By	The user who created this XSL transformation or imported it into the configuration.
Last Modified On	The date and time that the user created this XSL transformation or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this XSL transformation references. If such references exist, click the numeric link to view a list of the objects. To learn more, see “Viewing References to Resources” on page 3-20 .

Table 12-2 XSL Transformation Resource Details (Continued)

Property	Description
Referenced by	The number of objects that reference this XSL transformation. If such references exist, click the numeric link to view a list of the objects. For example, if you assigned this XSL transformation to a variable in the Message Flow of a specific proxy service, the proxy service is listed as a reference when you click the link. To learn more, see “Viewing References to Resources” on page 3-20 .
Description	A description of this XSL transformation.
Target Namespace	The namespace used to qualify any of the definitions included in the XSL transformation.
XSLT Dependencies	The attributes and groups associated with the XSLT: <ul style="list-style-type: none"> • The XSLT location
State	The status of the XSL transformation: <ul style="list-style-type: none"> • Valid <p>All of the XSL transformation locations included by the current XSL transformation are specified and are valid. Furthermore, all of the locations for nested XSL transformations (XSL transformations subsequently included by the included XSL transformations) are specified and are valid.</p> • Invalid <p>One or more of the locations for XSL transformations included by the current XSL transformation is not specified or is not valid. Additionally, one or more of the nested XSL transformations (XSL transformations subsequently included by the included XSL transformations) may not be specified or may not be valid. To resolve an invalid XSL transformation, click Edit References. To learn more, see “Resolving Unresolved XSL Transformation References” on page 12-5.</p>



4. Click **Text view** to display a text view of the XSL transformation details. The text view includes the information shown in [Table 12-3](#).

Table 12-3 XSL Transformation Text Details

Property	Description
Target Namespace	The namespace used to qualify any of the dependencies included in the XSL transformation.
XSLT	The full text of the XSL transformation.

- To make a change to the fields, click **Edit**. See [“Adding an XSL Transformation” on page 12-2](#) for a description of the fields.
You cannot change the **Resource Name** field.
- Click **Save** to commit the updates in the current session.

Deleting an XSL Transformation

- If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
- Select **Resource Browser > XSLTs** to display the **Summary of XSLTs** page.
- Click the  **Delete** icon in the row of the XSL transformation you want to delete. The XSL transformation is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
- To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Resolving Unresolved XSL Transformation References

- If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
- Select **Resource Browser > XSLTs** to display the **Summary of XSLTs** page.
- In the **XSLT Name** column, click the appropriate XSLT name to view details of the unresolved reference. The **View XSL Transformation Details** page is displayed.

4. Click **Edit References** to display the **Edit the References of an XSL Transformation Resource** page.
5. In the **Resource Type** field, select **XSLT**.
6. Click **Browse**. The **XSLT Browser** is displayed.
7. In the **XSLT Browser**, select an XSLT, then select a dependency from the **Dependencies** pane.
8. Click **Submit**. The XSLT you selected is displayed in the **Resource Name** field.
9. Click **Save**. The **View XSLT Details** page is displayed.
10. Click **OK**. The state of the XSL transformation is displayed as **Valid**.
11. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

MFLs

A Message Format Language (MFL) document is a specialized XML document used to describe the layout of binary data. It is an Oracle proprietary language used to define rules to transform formatted binary data into XML data. An MFL document conforms to the `mfl.dtd`, which includes elements and attributes used to describe each field of data, as well as groupings of fields (groups), repetition, and aggregation.

When you create a business services or proxy services of Messaging Service type, you can select MFL types as the request message type or the response message type of the service.

You use Oracle Format Builder to create MFLs. When you define the hierarchy of a binary record, the layout of fields, and the grouping of fields and groups, the information is saved as an MFL document that can then be used to perform run-time translations. An MFL document can also be used in Format Builder to generate the corresponding DTD that describes its content model. To learn how to use the Format Builder, see the [Format Builder Online Help](#).

Locating MFLs



1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the MFL.
 - Select **Resource Browser > MFLs**. The **Summary of MFL Files** page displays the information shown in [Table 13-1](#). For a more detailed description of the properties, see [“Editing MFLs” on page 13-3](#).

2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, enter the name and path of the search target(s), then click **Search**.

The path is the project name and the name of the folder in which the MFL file resides.

Click **View All** to remove the search filters and display all MFL files.

Table 13-1 MFL Details

Property	Description
MFL File Name	The unique name assigned to the MFL. The name is a link to the View MFL Resource Details page. See “Editing MFLs” on page 13-3 .
Path	The path is the project name and the name of the folder in which the MFL file resides. It is a link to the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .
Actions	Click the  Launch Test Console icon to invoke the Test Console, which you use to validate and test the design of your services and transformations. For MFLs, you can use the Test Console whether you are inside or outside a session. See “Testing Transformations” on page 30-17 .
Options	Click the  Delete icon to delete a specific MFL. See “Deleting MFLs” on page 13-4 .

Adding MFLs

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the MFL file. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **MFL File** from under **Transformation** to display the **Create a New MFL File Resource** page.
4. In the **Resource Name** field, enter a unique name for this MFL. This is a required field.
5. In the **Resource Description** field, enter a description for the MFL.
6. In the **MFL Text** field, do one of the following:
 - Enter text for the new MFL.

- Click **Browse** to locate and import an existing MFL.
- Copy and paste text from an existing MFL into this field.

This is a required field.

7. Click **Save**. The MFL file resource is created and saved in the current session.
8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing MFLs



1. If you have not already done so, click Create to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the MFL file, as described in [“Locating MFLs” on page 13-1](#).
3. Click the MFL file name. The **View MFL Resource Details** page displays the information shown in [Table 13-2](#).

Table 13-2 MFL Resource Details

Property	Description
Last Modified By	The user who created this MFL file or imported it into the configuration.
Last Modified On	The date and time that the user created this MFL file or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this MFL file references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this MFL file. If such references exist, click the numeric link to view a list of the objects. For example, if you selected this MFL file as the request or response message type for a messaging business service or proxy service, the business service or proxy service is listed as a reference when you click the link. See “Viewing References to Resources” on page 3-20 .
Description	A description of this MFL file, if one exists.
MFL Text	The text for this MFL.

4. To make a change to the fields, click **Edit**. For descriptions of the fields, see [“Adding MFLs” on page 13-2](#).
You cannot change the **Resource Name** field.
5. Click **Save** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting MFLs

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > MFLs** to display the **Summary of MFL Files** page.
3. Click the  **Delete** icon in the **Options** field of the MFL you want to delete. The MFL file is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Service Accounts

A service account provides a user name and password that proxy services and business services use for outbound authentication or authentication to a local or remote resource, such as an FTP server or a JMS server. For example, if a business service is required to supply a user name and password for transport-level authentication with a Web Service, you create a service account that specifies the user name and password, then you configure the business service to include the service-account credentials in its outbound requests.

The user names and passwords that you enter in service accounts are used for **outbound** authentication or for providing credentials to local or remote resources. The user names and passwords that you enter in the Security Configuration module of the Oracle Service Bus Console are used for **inbound** authentication and for authenticating administrative requests. See [“Specifying Service Accounts” on page 14-1](#).

Specifying Service Accounts

You can use the same service account for multiple business services and proxy services. To specify the user name and password that a service account provides, you can use any of the following techniques:

- **Static**
Requires you to save a user name and password with the service account configuration. The service account encodes this user name and password in the outbound request.
- **User name and password pass-through**

Causes the service account to provide the user name and password that it receives from an incoming client request. For example, if an inbound HTTP BASIC request contains “pat” and “patspassword” as the user name and password, the service account encodes “pat” and “patspassword” in the outbound request.

Because this technique requires that client requests include clear-text user names and passwords, it is applicable only for client requests that use either the HTTP BASIC protocol, a Web Services Security Username Token authentication with a clear-text password, or a custom user name and password token.

Oracle recommends that you use this technique only when Oracle Service Bus and the endpoint belong to the same authentication domain. For example, use this technique when you are routing messages within a single organization and both Oracle Service Bus and the message consumer authenticate against a common LDAP server.

The following restrictions apply to this technique:

- It cannot be used in outbound requests that authenticate Oracle Service Bus to a local or remote server or system resource, such as an FTP server or a JMS server.
- It cannot be used with the `fn-bea:lookupBasicCredentials` XQuery function. For more information, see [XQuery Implementation](#) in *Oracle Service Bus User Guide*.

Note: If your proxy is an active WSS intermediary, you can use WS-Security to encrypt a WS-Security Username Token or custom user name/password. In this instance, user name/password pass-through works because the proxy will first decrypt the request and will then have access to the clear-text user name/password.

- **User mapping**

Requires you to correlate (map) the user name that is the result of authenticating an inbound request from a client (the local user name) to a user name and password that you specify (the remote user name and password). When the service account receives a request from an authenticated client that has been mapped, it provides the appropriate remote user name and password for the business service or proxy service outbound request.

If the client authenticates at both transport level and message level, the service account maps the message level user name to the remote user name and password.

You can also map an anonymous user name to a remote user name and password.

The following restrictions apply to this technique:

- It cannot be used in outbound requests that authenticate Oracle Service Bus to a local or remote server or system resource, such as an FTP server or a JMS server.

- It cannot be used with the `fn-bea:lookupBasicCredentials` XQuery function. For more information, see [XQuery Implementation](#) in *Oracle Service Bus User Guide*.

Related Topics

[“Creating and Configuring Business Services” on page 16-1](#)

Create/Edit a Proxy Service - [“E-Mail Transport Configuration page” on page 17-12](#)

Using Service Accounts Data and Sessions



Service accounts and their data participate fully in Oracle Service Bus sessions: you must be in a session to create or modify a service account, and if you discard the session, the service account and its data is also discarded. When you activate a session, Oracle Service Bus saves the user name, password, and other service account data in the user name/password credential mapping provider that is configured for the domain.

Locating Service Accounts

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the service account.
 - Select **Resource Browser > Service Accounts**. The **Summary of Service Accounts** displays the information shown in [Table 14-1](#).
2. To search for a service account, enter part or all of the account name in the **Name** field. You can also enter part or all of the account project name and folder in the **Path** fields. Click **Search**.

Click **View All** to remove the search filters and display all service accounts.

Table 14-1 Service Account Information

Property	Description
Service Account Name	A unique name for the service account. Click on the name to see the View Service Account Details page. See “Editing Service Accounts” on page 14-8.
Path	The project name and the name of the folder in which the service account resides. Click on the name to see the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2.
Options	Contains a  Delete icon. If a business service or proxy service has been configured to use a service account, a  Deletion Warning icon indicates that you can delete the service account with a warning confirmation. This might result in conflicts due to unresolved references from the service to the deleted service account. See “Deleting Service Accounts” on page 14-9.

Adding Service Accounts

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2.](#)
2. Select **Project Explorer**, then select a project or folder in which to add the service account. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **Service Account** to display the **Create a New Service Account** page.
4. In the **Resource Name** field, enter a unique name for this service account.
5. In the **Resource Description** field, enter a description for the service account.
6. Under **Resource Type**, do one of the following:
 - To create a service account that provides the user names and passwords that it receives from incoming client requests, select **Pass Through**.
 - To create a service account that provides a user name and password that you save with the service account configuration, select **Static**.

- To create a service account that maps the user name from one or more authenticated clients to user names and passwords that you specify, select **Mapping**.
7. Depending on the resource type you selected in [step 6](#), do one of the following steps described in [Table 14-2](#).

Table 14-2 Resource Type Options

Selected Resource Type	Complete These Steps
Pass Through	Click Last .

Table 14-2 Resource Type Options (Continued)

Selected Resource Type	Complete These Steps
Static	<div>1. Click Next.</div> <div>2. Enter the user name and password in the User Name field, Password, and Confirm Password fields.</div> <div>3. Click Last.</div>

Table 14-2 Resource Type Options (Continued)

Selected Resource Type	Complete These Steps
Mapping	<p>To create a service account that maps the user name from one or more clients to user names and passwords that you specify, do the following:</p> <ol style="list-style-type: none"> 1. Click Next. 2. In the Enter Authorized Remote User table, do the following: <ol style="list-style-type: none"> a. In the Remote User Name, Password, and Confirm Password fields, enter the user name and password that you want to send in outbound requests. b. Click Add. The user mapping is added to the Remote Users table. c. (Optional) Add additional remote users in the Enter Authorized Remote User table. 3. Click Next. 4. To map <i>authorized</i> clients to remote user names and passwords, do the following in the Enter Authorized Local User table: <ol style="list-style-type: none"> a. In the Local User Name field, enter the name that identifies a client that has been authenticated on its inbound request. If you have not already added this user in the Security Configuration module of the Oracle Service Bus Console, do so before you use this mapping in a runtime environment. See Adding Users. Oracle Service Bus lets you create a mapping for a non-existent local user, but the mapping will never match an authenticated user and will never be used. b. From the Remote User Name list, select the user name that you want to send in outbound requests for the authenticated user you specified in the Local User Name field. c. Click Add. 5. To map <i>anonymous</i> clients to remote user names, do the following: <ol style="list-style-type: none"> a. Select the Map Anonymous Requests check box. b. From the Select Remote User list, select the user name that you want to send in outbound requests for all anonymous users. 6. Click Last.

8. Click **Save**. The service account is created and saved in the current session.
9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing Service Accounts

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the service account, as described in [“Locating Service Accounts” on page 14-3](#).
3. Click the service account name. The **View Service Account Details** page displays the information shown in [Table 14-3](#).

Table 14-3 Service Account Details

Property	Description
Last Modified By	The user who created this service account or imported it into the configuration.
Last Modified On	The date and time that the user created this service account or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this service account references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this service account. If such references exist, click the numeric link to view a list of the objects. For example, if you selected this service account as the JMS service account in a proxy service with a JMS transport protocol, the proxy service is listed as a reference when you click the link. See “Viewing References to Resources” on page 3-20 .
Description	A description of this service account, if one exists.

4. To make a change to the fields, click **Edit**. See [“Adding Service Accounts” on page 14-4](#) for descriptions of the fields.
You cannot change the **Resource Name** field.
5. Click **Save** to commit the updates in the current session.

6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Note: If the service account that you modified is used to authenticate with a WebLogic JMS server, the JMS server might not recognize your modification for up to 60 seconds. By default, WebLogic Server JMS checks permissions for each destination every 60 seconds. To change this behavior, modify the WebLogic Server startup command so that it sets the following system property to the frequency (in seconds) that you want WebLogic Server JMS to check permissions:

```
weblogic.jms.securityCheckInterval
```

A value of 0 (zero) for this property ensures that a permissions check is performed for every send, receive, and getEnumeration action on a JMS resource.

Related Topics


See [Ensuring the Security of Your Production Environment](#) in *Securing a Production Environment*, which is available at the following URL:
http://download.oracle.com/docs/cd/E12840_01/wls/docs103/lockdown/practices.html


Deleting Service Accounts

When you delete a service account, the user name, password, or local-user to remote-user mapping data that the service account contains is also deleted.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. If any business service or proxy service is configured to use the service account, remove the service account from the business service or proxy service.

See [“Editing Business Service Configurations” on page 16-46](#) or [“Editing Proxy Service Configurations” on page 17-47](#).

3. Select **Resource Browser > Service Accounts** to display the **Summary of Service Accounts** page.
4. Click the  **Delete** icon in the **Options** field of the service account you want to delete.

The service account is deleted in the current session. If a business service or proxy service has been configured to use a service account, a  **Deletion Warning** icon indicates that you can delete the service account with a warning confirmation. This might result in conflicts due to unresolved references from the service to the deleted service account.

5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Service Key Providers

A service key provider contains Public Key Infrastructure (PKI) credentials that proxy services use for decrypting inbound SOAP messages and for outbound authentication and digital signatures. A PKI credential is a private key paired with a certificate that can be used for digital signatures and encryption (for Web Service Security) and for outbound SSL authentication. The certificate contains the public key that corresponds to the private key.

Note: To use a service key provider, you must configure a PKI credential mapping provider. See “Configuring the WebLogic Security Framework: Main Steps” under [Understanding Oracle Service Bus Security](#) in *Oracle Service Bus Security Guide*.

A single service key provider can contain all of the following PKI credentials:

- A key-pair for digital encryption

Proxy services use this key-pair to decrypt inbound SOAP messages that have been encrypted to conform with a Web Services Policy statement. If you want the service key provider to support digital encryption, the key store that is associated with the PKI credential mapper must contain at least one X.509 certificate that supports encryption.

- A key-pair for digital signatures

Proxy services use this key-pair when its endpoint is a Web Service and the Web Service requires clients to sign one or more parts of a SOAP envelope.

- A key-pair for SSL client authentication (two-way SSL)

Proxy services use this key-pair to authenticate when acting as a client during an outbound TLS/SSL (Secure Sockets Layer) connection; that is, when routing a message to an HTTPS business service or proxy service that requires client-certificate authentication.

You can use the same service key provider for multiple proxy services.

Locating Service Key Providers

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the service key provider.
 - Select **Resource Browser > Service Key Providers**. The **Summary of Service Key Providers** displays the information shown in [Table 15-1](#).
2. To search for a service key provider, enter part or all of the provider name in the **Name** field. You can also enter part or all of the provider project name and folder in the **Path** fields. Click **Search**.

Click **View All** to remove the search filters and display all service key providers.

Table 15-1 Service Key Provider Information

Property	Description
Name	A unique name for the service key provider. Click on the name to see the View Service Key Provider Details page. See “Editing Service Key Providers” on page 15-4 .
Path	The project name and the name of the folder in which the service key provider resides. Click on the name to see the project or folder that contains this resource. See “Qualifying Resource Names Using Projects and Folders” on page 3-2 .

Adding Service Key Providers

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select a project or folder in which to add the service key provider. The **Project/Folder View** page is displayed.
3. From the **Create Resource** drop-down list, select **Service Key Provider** to display the **Create a New Service Key Provider** page.
4. In the **Service Key Provider Name** field, enter a unique name for this service key provider.

5. In the **Description** field, enter a description for the service key provider.
6. Do any of the following steps, shown in [Table 15-2](#).

Table 15-2 Authentication Options

To Add a Key-Pair for...	Complete These Steps...
Digital encryption	<ol style="list-style-type: none"> 1. Next to Encryption Key, click Browse. The Select an alias for Encryption Key window displays the key aliases from the key store that your realm's PKI credential mapper is using. 2. In the Select an alias for Encryption Key window, enter the password that you use to secure access to the key store. (You set the password when you create the keystore.) 3. Select a key alias that maps to an X.509 certificate and that supports encryption. 4. Click Submit. <p>When you associate this service key provider with a proxy service, Oracle Service Bus embeds the X.509 certificate into the proxy service's WSDL. The proxy service then uses this certificate to encrypt the messages that it sends to its endpoint. The proxy service uses the private key in the PKI credential to decrypt the messages that the endpoint returns.</p>

Table 15-2 Authentication Options (Continued)

To Add a Key-Pair for...	Complete These Steps...
Digital signatures	<ol style="list-style-type: none">Next to Digital Signature Key, click Browse. The Select an alias for Digital Signature Key window displays the key aliases from the key store that your realm’s PKI credential mapper is using.In the Select an alias for Digital Signature Key window, enter the password that you use to secure access to the key store. (You set the password when you create the keystore.)Select a key alias.Click Submit.
SSL client authentication (two-way SSL)	<ol style="list-style-type: none">Next to SSL Client Authentication Key, click Browse. The Select an alias for SSL Client Authentication Key window displays the key aliases from the key store that your realm’s PKI credential mapper is using.In the Select an alias for SSL Client Authentication Key window, enter the password that you use to secure access to the key store. (You set the password when you create the keystore.)Select a key alias.Click Submit.

- Click **Save**. The service key provider is saved in the current session.
- To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing Service Key Providers

Use the **View Service Key Provider Details** page to view and change details of a specific service key provider.

- If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
- Locate the service key provider, as described in [“Locating Service Key Providers” on page 15-2](#).

3. Click the service key provider name. The **View Service Key Provider Details** page displays the information shown in [Table 15-3](#).



Table 15-3 Service Key Provider Details

Property	Description
Service Key Provider Name	The name of this service key provider.
Last Modified By	The user who created this service key provider or imported it into the configuration.
Last Modified On	The date and time that the user created this service key provider or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this service key provider references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this service key provider. If such references exist, click the numeric link to view a list of the objects. For example, if you selected this service key provider as the service provider for a specific proxy service, the proxy service is listed as a reference when you click the link. See “Viewing References to Resources” on page 3-20 .
Description	A description of this service key provider, if one exists.

4. To make a change to the fields, click **Edit**. See [“Adding Service Key Providers” on page 15-2](#) for descriptions of the fields.
5. Click **Save** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Service Key Providers

When you delete a service key provider, Oracle Service Bus also deletes the associated alias to key-pair bindings from PKI credential mapping provider. Oracle Service Bus does not delete the associated key-certificate pair from the key store.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. If any proxy service is configured to use the service key provider, remove the service key provider from the proxy service. See [“Editing Proxy Service Configurations” on page 17-47](#).
3. Select **Resource Browser > Service Key Providers** to display the **Summary of Service Key Providers** page.
4. Click the  **Delete** icon in the **Options** field of the service key provider you want to delete. The service key provider is deleted in the current session. If a business service or proxy service has been configured to use a service account, a  **Deletion Warning** icon indicates that you can delete the service key provider with a warning confirmation. This might result in conflicts due to unresolved references from the service to the deleted service key provider.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Business Services: Creating and Managing

Business services are Oracle Service Bus definitions of the enterprise services with which you want to exchange messages. You define business services using WSDLs (Web Services Definition Language) just as you would define a proxy service. However, the configuration of business services differs from that of proxy services in that a business service does not have a pipeline. Therefore, a business service is any service not implemented by the Oracle Service Bus pipelines.

For more information, see [Proxy Service and Business Service Configuration](#) in *Oracle Service Bus User Guide*.

Creating and Configuring Business Services

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder to which you want to add the business service.
3. On the [Project/Folder View page](#), select **Business Service** from the **Create Resource** drop-down list.
4. On the **Create/Edit a Business Service - General Configuration page**, provide a name for the service and select the type of service to create.
5. Click **Next**. The pages that follow depend on the choices you made on the first page. Enter the appropriate information on each of the subsequent pages, until you reach the summary page, then click **Save** to save the service in the current session.

For detailed instructions on completing each page, see the following:

- [“General Configuration page” on page 16-3](#)
- [“Message Type Configuration page” on page 16-5](#)
- [“Transport Configuration page” on page 16-7](#)
- [“Protocol-Specific Transport Configuration page” on page 16-10](#)
- [“SOAP Binding Configuration page” on page 16-41](#)
- [“Message Content Handling Configuration page” on page 16-41](#)
- [“Summary page” on page 16-43](#)

If a business service is created from a WSDL that includes WS-Policy attachments, the policies (read-only) are displayed on the [Protocol-Specific Transport Configuration page](#). If any of the service's WS-Policies specifies authentication, then you must select a service account. A proxy service that routes to this business service will use this service account to authenticate to the business service.

Create/Edit a Business Service - Page Reference

Create a business service by selecting **Business Service** from the **Create Resource** drop-down list on the [Project/Folder View page](#). When you select that option, it displays the first in a series of pages for configuring and adding business services. The pages displayed vary, depending on the options you choose along the way. The pages are:

- [“General Configuration page” on page 16-3](#)
- [“Message Type Configuration page” on page 16-5](#)
- [“Transport Configuration page” on page 16-7](#)
- [“Protocol-Specific Transport Configuration page” on page 16-10](#)
- [“SOAP Binding Configuration page” on page 16-41](#)
- [“Message Content Handling Configuration page” on page 16-41](#)
- [“Summary page” on page 16-43](#)

General Configuration page

The **Create/Edit a Business Service - General Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to modify general configuration settings for a business service.

When you create a business service, this is the first page displayed in a series of pages for configuring the service. The pages displayed after this one differ depending on the choices you make on this page.

[Table 16-1](#) describes how to use the page.

Table 16-1 Create/Edit a Business Service - General Configuration Page

Option	To create or edit...
Service Name	Enter a unique name for the business service.
Description	Enter a description.

Table 16-1 Create/Edit a Business Service - General Configuration Page

Option	To create or edit...
Service Type	<p data-bbox="350 392 1134 447">A service type defines the types and packaging of the messages exchanged by the service. Select the type of business service to create:</p> <ul style="list-style-type: none"> <li data-bbox="350 458 1157 574"> WSDL Web Service - Select this option to create a business service based on a WSDL. Then, enter the WSDL name, qualified by its path (for example, <code>myProject/myFolder/myWSDL</code>). Alternatively, click Browse to select a WSDL from the Select a WSDL page. <li data-bbox="350 585 1157 756"> (port or binding) - Enter the name of a port (defined in the WSDL) to describe an actual transport address, or enter the name of a binding (defined in the WSDL) to map to a transport address. If you use Browse to select a WSDL, as described above, the Select a WSDL Definition page lists any ports and bindings defined in the WSDL. When you choose a port or a binding on that page, the (port or binding) field is filled with the selected name. <li data-bbox="350 767 1157 822"> Transport Typed Service - Select this option to create a service that uses the EJB or Flow transport. <li data-bbox="350 833 1134 979"> Messaging Service - Select this option to create a service that exchanges messages of very different content-type. These exchanges can be either request/response or one-way. It can also just have a response with no request when used with the HTTP 'GET' option for the HTTP transport. Unlike Web Services, the content-type of the request and response need not be the same. <li data-bbox="350 989 1143 1083"> Any SOAP Service - Select this option to create a SOAP service that does not have an explicitly defined, concrete interface. Keep the default SOAP 1.1, or select SOAP 1.2 from the drop-down list. <li data-bbox="350 1093 1134 1187"> Any XML Service - Select this option to create an XML service that does not have an explicitly defined, concrete interface. HTTP GET is only supported for messaging services and this service type. <li data-bbox="350 1197 1157 1388"> Business Service - Select this option to clone an existing business service. Enter the path (<code>project/folder</code>) and the name of the business service; or click Browse to select the business service from the Summary of Business Services page. Since Oracle Service Bus does not accept the same URI for multiple services, you must change the URI for the cloned service. <li data-bbox="350 1399 1157 1454"> Proxy Service - Select this option to create a business service based on an existing proxy service.

Table 16-1 Create/Edit a Business Service - General Configuration Page

Option	To create or edit...
Service Type (continued)	<p>Note: When a service is created from another service, alert rules are maintained in the following way:</p> <ul style="list-style-type: none"> – When a proxy service is created from a business service or a business service is created from a proxy service, the alert rules, if any, are removed. – When a proxy service is created from another proxy service or a business service is created from another business service, the alert rules, if any, are retained.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

Message Type Configuration page

The **Create/Edit a Business Service - Message Type Configuration** page is one in a series of pages for creating and editing business services, as described in “[Creating and Configuring Business Services](#)” on page 16-1 and “[Editing Business Service Configurations](#)” on page 16-46.

Use this page to configure message types for a business service whose type is Messaging Service.

The binding definition for messaging services consists of configuring the content-type of the messages that are exchanged. The content-type for the response does not need to be the same as for the request; therefore, the response is configured separately (for example, the service could accept an MFL message and return an XML acknowledgment receipt).

Note: E-mail, File, FTP, or SFTP transport business services whose type is Messaging Service support one-way messaging *only*; the **Response Message Type** should be `none`. If you select an option other than `none`, the file, ftp, or sftp protocol will not be available on the Transport Configuration page.

[Table 16-2](#) describes how to use **Create/Edit a Business Service - Message Type Configuration** page.

Table 16-2 Create/Edit a Business Service - Message Type Configuration Page

Option	To create or edit...
Request Message Type	<p>Select a message type for the request message:</p> <ul style="list-style-type: none"> • None - Select this option if there is no request message (HTTP GET example) • Binary - Select this option if the content-type of the message is unknown or not important. • Text - Select this option if the message can be restricted to text. • MFL - Select this option if the message is a binary document conforming to an MFL definition. You can configure only one MFL file. For MFLs, you can click Browse to select an MFL from the MFL Browser, then click Submit. • XML - Select this option if the message is an XML document. To provide some type information, you can choose to declare the XML schema type of the XML document exchanged.
Response Message Type	<p>Select a message type for the response message:</p> <ul style="list-style-type: none"> • None - Select this option if there is no response message. • Binary - Select this option if the content-type of the message is unknown or not important. • Text - Select this option if the message can be restricted to text. • MFL - Select this option if the message is a binary document conforming to an MFL definition. You can configure only one MFL file. For MFLs, you can click Browse to select an MFL from the MFL Browser, then click Submit. • XML - Select this option if the message is an XML document. To provide some type information, you can choose to declare the XML schema type of the XML document exchanged.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

Transport Configuration page

The **Create/Edit a Business Service - Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to select a transport protocol for the business service and to set other general transport configuration settings.

Outbound transport-level security applies to the connections between Oracle Service Bus proxy services and business services. For more information about transport-level security, see [Configuring Transport-Level Security](#) in the *Oracle Service Bus Security Guide*.

[Table 16-3](#) describes how to use this page.

Table 16-3 Create/Edit a Business Service - Transport Configuration Page

Option	To create or edit...
Protocol	<p>Select a transport protocol from the list. The protocols available differ, depending on the service type you are creating:</p> <ul style="list-style-type: none"> • WSDL Web Service: bpel-10g, dsp, http, jca, jms, jpd, sb, ws • Transport-Typed Service: ejb, flow • Messaging Service: email, file, ftp, http, jms, mq (if available), sftp, tuxedo • Any SOAP Service: dsp, http, jms, jpd, sb • Any XML Service: dsp, email, file, ftp, http, jms, jpd, mq (if available), sb, sftp, tuxedo
Load Balancing Algorithm	<p>Select one of these load-balancing algorithms:</p> <ul style="list-style-type: none"> • Round-robin - This algorithm dynamically orders the URLs that you enter in the Endpoint URI field for this business service. If the first one fails, it tries the next one, and so on until the retry count is exhausted. For every new message, there is a new order of URLs. • Random - This algorithm randomly orders the list of URLs that you enter in the Endpoint URI field for this business service. If the first one fails, it tries the next one, and so on until the retry count is exhausted. • Random-weighted - This algorithm randomly orders the list of URLs that you enter in the Endpoint URI field for this business service, but some are retried more than others based on the value you enter in the Weight field. • None - This algorithm orders the list of URLs that you enter in the Endpoint URI field for this business service from top to bottom.

Table 16-3 Create/Edit a Business Service - Transport Configuration Page

Option	To create or edit...
Endpoint URI	<p>Enter an endpoint URL in the format based on the transport protocol you selected in the Protocol field, above: The formats are:</p> <ul style="list-style-type: none"> bpel-10g - protocol:// host [:port] [/protocol-path]/domain/process[/version[/partnerlink/role]] Optional URI elements are shown in square brackets. For more information, see the Oracle BPEL Process Manager User Guide. dsp - t3://dsp-ip-address:port/dsp-app-name ejb - ejb:provider:jndiname In the URI, provider is the name of the JNDI provider resource, and JNDIname is the JNDI name in the JNDI server for the EJB. If the JNDI provider is located on the same server, the JNDI provider need not be specified. The URI then would be ejb::jndiname email - mailto:java-net@java.sun.com file - file:///drivename:/somename flow - flow:<reference path to split-join resource> reference path to split-join resource is the path (project/folder) and name of the Split-Join; for example, batchorderProcessing/batchorder. ftp - ftp://host:port/directory http - http://host:port/someService The HTTP transport supports both HTTP and HTTPS endpoints. jca - jca://<resource_adapter_jndi> jms - jms://host:port/factoryJndiName/destJndiName To target a JMS destination to multiple servers, use the following URI format: jms://host1:port,host2:port/QueueConnectionFactory/DestName In a cluster: The host names in the JMS URI must exactly match the host names of the cluster servers as they are configured in WebLogic Server. jpd - jpd:[<jndi_provider_name>]:<jpd_uri> jndi_provider_name (optional) is the name of the JNDI provider which corresponds to the WLI JNDI Provider resource. When omitted, the JNDI provider on the local server is used. <jpd uri> is the relative URL of the JPD on the WLI server. For example, if processes.Process.jpd is in the SampleApp Web project, then the relative URL of the JPD is /SampleApp/processes/Process.jpd.

Table 16-3 Create/Edit a Business Service - Transport Configuration Page

Option	To create or edit...
Endpoint URI (continued)	<ul style="list-style-type: none"> mq - mq://<local-queue-name>?conn=<mq-connection-resource-ref> local-queue-name is the name of the MQ queue from which the business service reads messages. mq-connection-resource-ref is the path (project/folder) and name of the MQ connection resource; for example, default/my_MQconnection. Note: The Endpoint URI cannot contain spaces, so do not create MQ Connection resources or projects/folders with spaces in the names. To make the MQ transport available in Oracle Service Bus, see “MQ Connections” on page 8-1. sb - sb://[<jndi_provider_name/>]service_name jndi_provider_name (optional) is the name of the Oracle Service Bus JNDI Provider resource. When omitted, the default context is used. service_name is a target service and corresponds to the remote proxy service URI. sftp - sftp://hostname:port/directory tuxedo - tuxedo:resourcenam[/remotename] In the URI, resourcenam corresponds to a WTC Import name and remotename corresponds to the service name exported by the remote Tuxedo domain. The URI resourcenam is required, and the remotename is optional. If more than one URI is specified, you must have unique resource names for the endpoints. If no remote name is specified, its value is the value of the resource name. If no remote name is entered or if remote and resource name are the same, only one URI is allowed. In this case resource name and remote name have the same value. This allows already defined WTC Imports to make use of WTC load-balancing and failover. For more information, see Oracle Service Bus Interoperability Solution for Tuxedo. ws - http://host:port/somename or https://host:port/somename <p>Click Add to add one or more additional URIs. At run time, the URLs are selected based on the load balancing algorithm you selected in the Load Balancing Algorithm field.</p> <p>If you selected Random-weighted in the Load Balancing Algorithm field, you can also enter a weight in the Endpoint URI field. The default is 1.</p> <p>If you have multiple endpoint defined, and you selected None in the Load Balancing Algorithm field, the order of endpoints is significant. You can reorder the endpoints using the Up and Down arrows in the Options column.</p> <p>Oracle Service Bus does not support duplicate endpoint URIs within the same business service.</p>

Table 16-3 Create/Edit a Business Service - Transport Configuration Page

Option	To create or edit...
Retry Count	<p>In case of delivery failure when sending outbound requests, specify the number of times to retry individual URL endpoints; in other words, the number of failover attempts.</p> <p>For example, a business service has one configured URI (U1) and the number of retries is set to 3. If U1 fails on the first attempt, the system retries the U1 endpoint 3 more times.</p> <p>If a business service has 2 configured URIs (U1 and U2) and a retry count of 3, if the first attempt (for example, to U1) fails, the system tries (fails over to) the next URI (U2). If that also fails, the system makes two more attempts, once to U1 and once to U2.</p>
Retry Iteration Interval	<p>Specify the number of seconds the system pauses before iterating over all the endpoint URIs in the list again.</p> <p>For example, a business service has two configured URIs (U1 and U2) and a retry count of 2 with a retry iteration interval of 5 seconds. If the first attempt (to U1) fails, the system tries U2 right away. But if U2 also fails, the system waits for 5 seconds and retries U1 once more.</p>
Retry Application Errors	<p>Select Yes or No.</p> <p>In case of delivery failure when sending outbound requests, specify whether or not to retry endpoint URIs based on application errors (for example, a SOAP fault).</p> <p>This field is available only for these transports, HTTP, EJB, JMS, DSP, JPD, Tuxedo, SB, and WS. For more information, see How to Suppress Retries in Case of Application Errors in <i>Oracle Service Bus Operations Guide</i>.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary** page.

Protocol-Specific Transport Configuration page

The **Create/Edit a Business Service - Protocol-Specific Transport Configuration** page is one in a series of pages for creating and editing business services, as described in “[Creating and Configuring Business Services](#)” on page 16-1 and “[Editing Business Service Configurations](#)” on page 16-46.

- “[BPEL-10g Transport Configuration Page](#)” on page 16-11
- “[DSP Transport Configuration page](#)” on page 16-14
- “[EJB Transport Configuration page](#)” on page 16-15

- “E-Mail Transport Configuration page” on page 16-17
- “File Transport Configuration page” on page 16-18
- “Flow Transport Configuration page” on page 16-18
- “FTP Transport Configuration page” on page 16-19
- “HTTP Transport Configuration Page” on page 16-20
- “JCA Transport Configuration Page” on page 16-23
- “JMS Transport Configuration page” on page 16-26
- “JPD Transport Configuration page” on page 16-30
- “MQ Transport Configuration page” on page 16-31
- “SB Transport Configuration page” on page 16-35
- “SFTP Transport Configuration page” on page 16-36
- “Tuxedo Transport Configuration page” on page 16-37
- “WS Transport Configuration page” on page 16-39

BPEL-10g Transport Configuration Page

Use this page to configure transport settings for a business service using the BPEL-10g (Oracle BPEL Process Manager) transport protocol. For more information on using Oracle Service Bus with Oracle BPEL Process Manager, see the [Oracle BPEL Process Manager Transport User Guide](#).

Property	Description
Role	<p>The BPEL transport is used to send request messages from Oracle Service Bus to Oracle BPEL Process Manager. The business service can serve one of the following roles:</p> <ul style="list-style-type: none"> Synchronous Client For synchronous communication with an Oracle Service Bus client, the only location information that is required is the BPEL address. This address is captured statically as the endpoint URI and/or dynamically through URI rewriting. Asynchronous Client For asynchronous communication with an Oracle Service Bus client, a callback from Oracle BPEL Process Manager to Oracle Service Bus is sent on a different connection than the request, and you must configure Oracle Service Bus to provide the correct callback address. For more information, see “Creating a Callback Proxy for Asynchronous Communication” in the Oracle BPEL Process Manager Transport User Guide. Service Callback If the business service is designed to be a service callback to Oracle BPEL Process Manager (where Oracle BPEL Process Manager is calling an external service through Oracle Service Bus), the callback address is known only at run time. Use an Endpoint URI of <code>bpel://callback</code>. If you configure the business service with the marker URI, configure your pipeline logic to dynamically set the URI on \$outbound; for example, using the <code>TransportHeader</code> action. <p>Note: A Service Callback business service does not support load balancing or failover.</p>
Callback Proxy	<p>This optional field is available only for the Asynchronous Client role. This field lets you select the proxy service (must be either an SB or HTTP proxy of type Any SOAP) that will be used to route callbacks to the Oracle Service Bus client that made the request. For more information, see “Creating a Callback Proxy for Asynchronous Communication” in the Oracle BPEL Process Manager Transport User Guide.</p>

Property	Description
Service Account	<p>For JNDI context security, used to access the Oracle BPEL Process Manager delivery service. Click Browse and select a service account. If no service account is specified, an anonymous subject is used.</p> <p>There is no restriction on the type of service account that can be configured, such as static or pass-through, but the run time must be able to access a user name and password.</p>
Suspend Transaction	<p>Selecting Suspend Transaction makes the business service non-transactional even if the business service is invoked by a transaction.</p> <p>If you do not select Suspend Transaction:</p> <ul style="list-style-type: none"> • If the protocol indicates a WebLogic Server-supported protocol (t3, iiop, http), the transaction is propagated. • If the protocol indicates an OC4J server (ormi, opmn), the BPEL transport throws an exception, since OC4J does not support transaction propagation. <p>The BPEL transport ignores the Suspend Transaction option in the following situations:</p> <ul style="list-style-type: none"> • The business service is called with quality of service (QoS) “best-effort.” The BPEL transport automatically suspends any transaction that does not support QoS. • The business service is called with QoS set to “exactly-once” and there is no transaction. <p>For a description of transaction propagation, see “Transaction Propagation” in the Oracle BPEL Process Manager Transport User Guide.</p>
Dispatch Policy	<p>Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists.</p> <p>For information about Work Managers, see the following WebLogic Server Administration Console Online Help topics:</p> <ul style="list-style-type: none"> • “Using Work Managers to Optimize Scheduled Work” at http://download.oracle.com/docs/cd/E12840_01/wls/docs103/config_wls/self_tuned.html • “Create Global Work Managers” at http://download.oracle.com/docs/cd/E12840_01/wls/docs103/ConsoleHelp/taskhelp/work/CreateGlobalWorkManager.html

DSP Transport Configuration page

The **Create/Edit a Business Service - DSP Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

For more information, see [Accessing Data Services Through Oracle Service Bus](#).

Use this page to configure transport settings for a business service using the DSP (Oracle Data Service Integrator) transport protocol. [Table 16-4](#) describes how to use this page.

Table 16-4 Create/Edit a Business Service - DSP Transport Configuration Page

Option	To create or edit...
Debug Level	Specify one of the following <ul style="list-style-type: none"> • 0 - for no debug information • 1 - to output information on the request message • 3 - to output information on the request and the response message
Service Account	Click Browse and select a service account from the list displayed. If no service account is specified, an anonymous subject is used. For more information: <ul style="list-style-type: none"> • “Service Accounts” on page 14-1 • “Adding Service Accounts” on page 14-4
Dispatch Policy	Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists. The Work Manager is used to post the reply message for response processing. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Global Work Managers in the <i>WebLogic Server Administration Console Online Help</i> .

For more information on accessing Oracle Data Service Integrator from Oracle Service Bus, see [Accessing Data Services Through Oracle Service Bus](#).

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

EJB Transport Configuration page

The **Create/Edit a Business Service - EJB Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to configure transport settings for a business service using the EJB transport protocol. [Table 16-5](#) describes how to use the page.

Table 16-5 Create/Edit a Business Service - EJB Transport Configuration Page

Option	To create or edit...
Pass Caller's Subject	Select this check box to have Oracle Service Bus pass the authenticated subject from the proxy service when invoking the EJB and no service accounts are configured. Note that the Service Account field is disabled when this option is selected.
Service Account	Click Browse and select a service account from the list displayed. If no service account is specified, an anonymous subject is used. For more information: <ul style="list-style-type: none"> • “Service Accounts” on page 14-1 • “Adding Service Accounts” on page 14-4
Supports Transaction	Select this check box to specify transaction support.
Client Jar	Click Browse and select an EJB client JAR resource from the list displayed. To learn about creating JAR resources, see “JARs” on page 7-1 . This is a required field.
Converter Jar	Click Browse and select an EJB converter class JAR resource from the list displayed. To learn more about EJB client JAR resources and converter classes, see EJB Transport in the <i>Oracle Service Bus User Guide</i> .
Home Interface	Select the required EJBHome interface from the options populated by the JAR. The JNDI name in this URI sample must be associated with the EJBHome interface you select here. If the EJB is not of the required type or an EJBHome interface is not specified in the client-jar, a warning will be displayed.
Remote Interface	This field is automatically populated depending on the configuration of the Home Interface.

Table 16-5 Create/Edit a Business Service - EJB Transport Configuration Page

Option	To create or edit...
Target Namespace	This field is populated by information picked up from the JAR.
Style	<p>Select Document Wrapped or RPC according to your requirements. If two or more methods of your stateless session EJB have the same number and data type of parameters, and you want the operations to be document-oriented, you must specify that they be document-wrapped.</p> <p>The style is important because when routing or publishing to the EJB, <code>\$body</code> must have content that matches the style. Also when calling out to an EJB, the style affects the parameter contents, especially for document wrapped. Secondly one usage pattern is to define an EJB business service and then create a proxy service with the same WSDL that routes to the EJB. In this case care must be taken on the style of the WSDL because the client tool used to invoke the proxy might have limitations on the style of the WSDL.</p>
Encoding	Select Encoded or Literal .
Methods	Select the required methods (you can select multiple methods). Click + to expand the method and; edit the default parameter values and select a converter if provided (or required).
Exceptions	<p>This field appears if a method throws a business exception. If an EJB method throws an exception that has data types not supported by Java Web Services (JWS), such as an ArrayList, use the Exceptions field to select a converter class that converts the exception to a type supported by JWS.</p> <p>Your converter class must implement com.bea.wli.sb.transports.ejb.ITypeConverter. Converter classes can only be configured for checked exceptions and not for run-time exceptions.</p> <p>Package the converter class and the converted exception class in the client or converter JAR.</p> <p>For more information, see the Interoperability with EJB Transport guide.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

E-Mail Transport Configuration page

The **Create/Edit a Business Service - E-Mail Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to configure transport settings for a business service using the e-mail transport protocol. [Table 16-6](#) describes how to use the page.

Table 16-6 Create/Edit a Business Service - E-Mail Transport Configuration Page

Option	To create or edit...
SMTP Server	Select an SMTP server. This is a required field if you do not select a JNDI name in the Mail Session field.
Mail Session	Select the JNDI name of a configured session. This is a required field if you do not enter an SMTP server name in the Mail Server address field.
From Name	Enter a display name for the originating e-mail account for this service.
From Address	Enter the originating e-mail account for this service.
Reply To Name	Enter a display name for the reply to e-mail account.
Reply To Address	Enter an e-mail address to reply to.
Connection Timeout	Enter the timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout.
Request Encoding	Accept the default ISO-8859-1 as the character set encoding for requests in e-mail transports, or enter a different character set encoding.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

File Transport Configuration page

The **Create/Edit a Business Service - File Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to configure transport settings for a business service using the file transport protocol. [Table 16-7](#) describes how to use this page.

Table 16-7 Create/Edit a Business Service - File Transport Configuration Page

Option	To create or edit...
Prefix	Enter a prefix to be prepended to the file name. Do not enter * in this field. This character causes a run-time exception.
Suffix	Enter a suffix to be appended to the file name. This is a required field. Do not enter * in this field. This character causes a run-time exception.
Request Encoding	Accept the default utf-8 as the character set encoding for requests in File transports, or enter a different character set encoding.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

Flow Transport Configuration page

The **Create/Edit a Business Service - Flow Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

You use Flow transport-typed business services to access Split-Joins. To learn more about Split-Joins, see [Improving Service Performance with Split-Join](#) in the *Oracle Service Bus User Guide*.

Use this page to configure transport settings for a business service using the Flow transport protocol. [Table 16-8](#) describes how to use this page.

Table 16-8 Create/Edit a Business Service - Flow Transport Configuration Page

Option	To create or edit...
Timeout	Enter the number of seconds to wait for a response. This value is ignored for a request-only (one-way) operation.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

FTP Transport Configuration page

The **Create/Edit a Business Service - FTP Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to configure transport settings for a business service using the ftp transport protocol. [Table 16-9](#) describes how to use this page.

Table 16-9 Create/Edit a Business Service - FTP Transport Configuration Page

Option	To create or edit...
User Authentication	Select anonymous if the user of the FTP server is anonymous, or select external user if the user of the FTP server is an externally configured account.
Identity (E-mail id)	This field is available only if the User Authentication option is set to anonymous . Enter the mail ID for the anonymous user.
Service Account	This field is available only if the User Authentication option is set to external user . Enter the service account for the external user. For more information: <ul style="list-style-type: none"> • “Service Accounts” on page 14-1 • “Adding Service Accounts” on page 14-4.
Timeout	Enter the socket timeout interval, in seconds, before the connection is dropped. The default is 60 seconds.

Table 16-9 Create/Edit a Business Service - FTP Transport Configuration Page

Option	To create or edit...
Prefix for destination File Name	Enter a prefix for the file name under which the file is stored on the remote server. Do not enter * in this field. This character causes a run-time exception.
Suffix for destination File Name	Enter a suffix for the file name under which the file is stored on the remote server. Do not enter * in this field. This character causes a run-time exception.
Transfer Mode	Select ASCII or binary as the transfer mode.
Request Encoding	Accept the default UTF-8 as the character set encoding for requests in ftp transports, or enter a different character set encoding.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - [Summary page](#)**.

HTTP Transport Configuration Page

The HTTP transport supports both HTTP and HTTPS endpoints.

The **Create/Edit a Business Service - HTTP Transport Configuration** page is one in a series of pages for creating and editing business services, as described in “[Creating and Configuring Business Services](#)” on page 16-1 and “[Editing Business Service Configurations](#)” on page 16-46.

Use this page to configure transport settings for a business service using the HTTP transport protocol. [Table 16-10](#) describes how to use the page.

Table 16-10 Create/Edit a Business Service - HTTP Transport Configuration Page (Continued)

Option	To create or edit...
Timeout	Enter the response timeout interval in seconds. If you enter 0, there is no timeout.

Table 16-10 Create/Edit a Business Service - HTTP Transport Configuration Page (Continued)

Option	To create or edit...
HTTP Request Method	<p>This parameter lets you to use one of the following HTTP methods in a request:</p> <ul style="list-style-type: none"> • POST – Passes all its data, of unlimited length, directly over the socket connection as part of its HTTP request body. The exchange is invisible to the client, and the URL does not change. For REST-based requests, POST tells the transport to perform a create/replace operation or perform an action with the request. • GET – You can include as part of the request some of its own information that better describes what to get. This information is passed as a sequence of characters appended to the request URL in a query string. You can use GET in a business service with a Service Type of “Any XML Service,” or with a Service Type of “Messaging Service” when the Request Message Type is set to “None.” For REST-based requests, GET retrieves a representation of a remote resource. • PUT – You can use PUT in a business service with a Service Type of “Any XML Service” or “Messaging Service.” PUT tells the transport to perform a create/replace operation with a REST-based request, such as uploading a file to a known location. • HEAD – You can use HEAD in a business service with a Service Type of “Any XML Service,” or with a Service Type of “Messaging Service” when the Response Message Type is set to “None.” HEAD tells the transport to get header information for a remote resource rather than getting a full representation of the resource in a REST-based request. • DELETE – You can use PUT in a business service with a Service Type of “Any XML Service” or “Messaging Service.” DELETE tells the transport to perform a delete operation with a REST-based request. <p>Note: If a method is already set in the \$outbound/transport/request/http:http-method variable, that value takes precedence over any method you select for HTTP Request Method.</p>

Table 16-10 Create/Edit a Business Service - HTTP Transport Configuration Page (Continued)

Option	To create or edit...
Authentication	<p>Select one of the following:</p> <ul style="list-style-type: none"> • None - Specifies that authentication is not required to access this service. • Basic - Specifies that basic authentication is required to access this service. Basic authentication instructs WebLogic Server to authenticate the client using a user name and password against the authentication providers configured in the security realm, such as a Lightweight Directory Access Protocol (LDAP) directory service and Windows Active Directory. The client must send its user name and password on the HTTP request header. Basic authentication is strongly discouraged over HTTP because the password is sent in clear text. However, it is safe to send passwords over HTTPS because HTTPS provides an encrypted channel. Warning: By default, all users (authorized and anonymous) can access a business service. To limit the users who can access a business service, create a transport-level authorization policy. See “Editing Transport-Level Access Policies” on page 22-16. • Client Certificate - Specifies encrypted communication and strong client authentication (two-way SSL). To learn more, see Configuring Transport-Level Security in the <i>Oracle Service Bus Security Guide</i>.
Service Account	<p>Enter a service account. A service account is an alias resource for a user name and password. This is a required field if you selected the Basic Authentication Required field.</p> <p>For more information:</p> <ul style="list-style-type: none"> • “Service Accounts” on page 14-1 • “Adding Service Accounts” on page 14-4.
Follow HTTP redirects	<p>Select this check box to specify that HTTP redirects (which are requests with a response code 3xx) should be automatically followed. A re-redirect occurs when you send an outbound request to the URL of a business service, and that service returns a response code (for example, 302) that says the URL is no longer valid and this request needs to be sent to another URL.</p> <p>If the Follow HTTP Redirects check box is selected, Oracle Service Bus automatically re-sends the request to the new URL without any action on your part. Deselect this check box if you do not want the HTTP redirects to be automatically followed.</p>

Table 16-10 Create/Edit a Business Service - HTTP Transport Configuration Page (Continued)

Option	To create or edit...
Dispatch Policy	Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Global Work Managers in the <i>WebLogic Server Administration Console Online Help</i> .
Request Encoding	Accept the default <code>iso-8859-1</code> as the character set encoding for requests in HTTP transports, or enter a different character set encoding.
Response Encoding	Accept the default <code>iso-8859-1</code> as the character set encoding for responses in HTTP transports, or enter a different character set encoding.
Proxy Server	Enter a proxy server resource or click Browse to choose an entry from the list of configured proxy server resources.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the [Create/Edit a Business Service - Summary page](#).

JCA Transport Configuration Page

Use this page to configure transport settings using the JCA transport protocol. For more information on using the JCA transport, see the [JCA Transport User Guide](#).

Table 16-11 JCA transport configuration

Option	Description
Adapter Name	A read-only value showing the name of the adapter that the JCA service will use.
Adapter Type	A read-only value showing the adapter type.

Table 16-11 JCA transport configuration (Continued)

Option	Description
Dispatch Policy	<p>Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists.</p> <p>For information about Work Managers, see the following <i>WebLogic Server Administration Console Online Help</i> topics:</p> <ul style="list-style-type: none"> • Using Work Managers to Optimize Scheduled Work • Create Global Work Managers
JNDI Service Account	<p>JNDI Service Account is for JNDI context security, used to access the EIS adapter managed connection factory. Click Browse and select a service account. If no service account is specified, an anonymous subject is used.</p> <p>For JCA business services, there is no restriction on the type of JNDI service account that can be configured, such as static or pass-through, but the run time must be able to access a user name and password. JCA proxy services can use only static JNDI service accounts.</p> <p>For more information on JNDI service accounts, see “Security” in the JCA Transport User Guide.</p>
Always use configuration from JCA WSDL	<p>This option determines whether or not connection factory properties, activation spec properties (proxy services), and interaction spec properties (business services) are always used from the WSDL.</p> <p>If this option is selected (default), the JCA transport interacts with the JCA framework in the following ways, depending on whether you are using managed or non-managed mode:</p> <ul style="list-style-type: none"> • Managed mode – The activation/interaction spec defined in the JCA WSDL. The Activation/Interaction Spec Properties field is read-only; and if Connection Mode is set to Managed, the Connection Factory Properties field is read-only. • Non-managed mode – Connection factory properties defined in the JCA WSDL. The Activation/Interaction Spec Properties field is read-only. <p>If this option is deselected, you can override the Activation/Interaction Spec Properties of the WSDL; and in non-managed mode you can override the Connection Factory Properties of the WSDL. At run time the JCA transport interacts with the JCA framework using the JCA WSDL and any activation/interaction spec or connection factory overrides you have provided.</p> <p>For more information on using this option, see “Endpoint Redeployment” in the JCA Transport User Guide.</p>

Table 16-11 JCA transport configuration (Continued)

Option	Description
Connection Mode	<p>This option determines how the service connects to the associated JCA adapter for the EIS system.</p> <p>Managed – Recommended for production. The JCA transport connects to the JCA adapter through the JCA adapter-managed connection factory configured in WebLogic Server. For authentication, specify a JNDI service account. If no JNDI service account is specified, an anonymous subject is used. In managed mode, Connection Factory Authentication Properties are read-only.</p> <p>Non-Managed – The JCA transport connects to the JCA adapter through the JCA adapter framework, which acts as a container for the JCA adapter. For authentication, specify a JNDI service account. If no JNDI service account is specified, an anonymous subject is used. In non-managed mode, Connection Factory Authentication Properties are editable for overrides.</p> <p>Note: If you want to change from Non-Managed mode to Managed mode, be sure to deselect the Overwrite Connection Authentication Properties option before changing modes.</p>
Overwrite Connection Authentication Properties	<p>This option indicates whether or not the user name/password in the adapter connection factory is overwritten by the Connection Authentication Service Account credentials. If no JNDI Service Account is specified, an anonymous subject is used.</p> <p>This option, which is displayed only if the connection factory properties contain user name/password properties, is available in non-managed mode with “Always use configuration from JCA WSDL” deselected.</p>
Connection Authentication Service Account	<p>This field is enabled if “Overwrite Connection Authentication Properties” is enabled and selected. This service account browser displays available service accounts. If the “Overwrite Connection Authentication Properties” option is selected, you must select a service account. For proxy services, only static service accounts are available.</p> <p>This field is displayed only if the connection factory properties contain user name password properties.</p>
Connection Factory Authentication Properties	<p>This field is displayed only if the Connection Factory Properties contain a user name and password. This field is always read-only.</p>

Table 16-11 JCA transport configuration (Continued)

Option	Description
Connection Factory Properties	<p>This field shows the connection factory properties from the WSDL's <jca:address> element.</p> <p>Development and Testing: You can override this value if you deselect “Always use configuration from JCA WSDL” and make the Connection Mode Non-Managed. In production environments, use managed mode, which makes the JCA transport connect to the adapter connection factory configured in WebLogic Server.</p>
Operation Name	<p>Displays a read-only name of the selected WSDL operation. An operation can have its own activation/interaction spec properties, shown in the Activation/Interaction Spec Properties field.</p>
Activation/Interaction Spec Properties	<p>“Activation Spec Properties” is the field name for proxy services; “Interaction Spec Properties” is the field name for business services.</p> <p>If this service is an inbound service invoked by an EIS application, this field displays the activation spec properties for the JCA inbound operation shown in Operation Name field.</p> <p>You can override the activation/interaction spec properties if you deselect “Always use configuration from JCA WSDL.”</p> <p>Note: For Oracle Adapter Suite adapters, activation/interaction spec properties are displayed as read-only. The Oracle Adapter Suite adapters store their own configurations, which you must change in the Oracle Adapter Suite management tools.</p>
TopLink File Browser	<p>For Oracle Database or Oracle Applications adapters that depend on a database, use this field to select a TopLink mapping file from the file system. The content of the TopLink mapping file is displayed in an editable text box.</p> <p>Generate a TopLink mapping file in Oracle JDeveloper and import it into Oracle Service Bus.</p>

JMS Transport Configuration page

The **Create/Edit a Business Service - JMS Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

For more information, see the [Oracle Service Bus Interoperability Solutions for JMS](#).

Use this page to configure transport settings for a business service using the JMS transport protocol. [Table 16-12](#) describes how to use the page.

Table 16-12 Create/Edit a Business Service - JMS Transport Configuration Page (Continued)

Option	To create or edit...
Destination Type	<p>Select a type for the JMS bridge destination:</p> <ul style="list-style-type: none"> • Queue (for point-to-point) • Topic (for publish/subscribe)
Message Type	<p>Select one of the following:</p> <ul style="list-style-type: none"> • Bytes (for a stream of uninterpreted bytes) • Text (for text messages)
Is Response Required	<p>This option is available only when Queue is selected for the Destination Type.</p> <p>Select this option to specify that a response is expected after an outbound message is sent.</p>
Response Correlation Pattern	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Select one of the following:</p> <ul style="list-style-type: none"> • Select JMSMessageID for JAX-RPC services running on WebLogic Server 9.2. • Select JMSCorrelationID for all other services. When you select this option, you must also enter a Response URI, below.
Response URI	<p>This option is available only when JMSCorrelationID is selected for the Response Correlation Pattern.</p> <p>Enter a response URI in the format:</p> <pre>jms://host:port/factoryJndiName/destJndiName</pre> <p>To target multiple servers, use the following format:</p> <pre>jms://host1:port,host2:port/QueueConnectionFactory/DestName</pre>

Table 16-12 Create/Edit a Business Service - JMS Transport Configuration Page (Continued)

Option	To create or edit...
Response Connection Factory	<p>This option is available only when JMSMessageID is selected for the Response Correlation Pattern.</p> <p>Enter a response connection factory URI.</p> <p>If a connection factory is not specified, the connection factory for the request is used for the response.</p>
Response JNDI Names	<p>This option is available only when JMSMessageID is selected for the Response Correlation Pattern.</p> <p>Enter a list of JNDI destination names</p>
Response Timeout	Enter the amount of time to wait for the response, in seconds. This field is required if you selected Is Response Required .
Request Encoding	Accept the default UTF-8 as the character set encoding for requests in JMS transports, or enter a different character set encoding.
Response Encoding	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Accept the default UTF-8 as the character set encoding for responses in JMS transports, or enter a different character set encoding.</p>
Dispatch Policy	<p>Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists.</p> <p>For example, if the business service has a JMS transport protocol, the business service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy.</p>
Advanced Settings	

Table 16-12 Create/Edit a Business Service - JMS Transport Configuration Page (Continued)

Option	To create or edit...
Use SSL	<p>Select only if the requests are made over a TLS/SSL connection.</p> <p>TLS/SSL (Secure Sockets Layer) provides secure connections by allowing two applications connecting over a network to authenticate the other's identity and by encrypting the data exchanged between the applications. Authentication allows a server, and optionally a client, to verify the identity of the application on the other end of a network connection. Additionally, if the administrator has restricted access to individual JMS destinations (queues or topics) by setting access control on the JNDI entry for the destination, the Business Service must authenticate when looking up the entry in the JNDI tree with a user name and password.</p>
Expiration	<p>The time interval in milliseconds after which the message will expire. Default value is 0, which means that the message never expires.</p>
Unit of Order	<p>Enter a message unit-of-order. Message unit-of-order enables message producers to group messages into a single unit with respect to the processing order. This single unit-of-order requires that all messages in that unit be processed sequentially in the order they were created.</p>
Pass Caller's Subject	<p>Select this check box to have Oracle Service Bus pass the authenticated subject when sending a message.</p> <p>When you enable this field and the business service targets JMS resources in a different domain, enable global trust on both domains. See Configuring Security for a WebLogic Domain in <i>Securing WebLogic Server</i>.</p>
JMS Service Account	<p>Select a service account to use for the JMS resource managed by the JMS server. A service account is an alias resource for a User ID and its associated password. The same service account is used for both JNDI and JMS purposes.</p> <p>For more information:</p> <ul style="list-style-type: none"> • “Service Accounts” on page 14-1 • “Adding Service Accounts” on page 14-4

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

JPD Transport Configuration page

The **Create/Edit a Business Service - JPD Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

For more information, see the *JPD Transport User Guide*.

Use this page to configure transport settings for a business service using the JPD transport protocol. [Table 16-13](#) describes how to use the page.

Table 16-13 Create/Edit a Business Service - JPD Transport Configuration Page (Continued)

Option	To create or edit...
System Service Account	<p>Enter the service account for the user, or click Browse to select one from the list displayed.</p> <p>The system service account specifies the user credentials for the invocation of the WLI stateless session bean that the JPD transport uses to send incoming messages.</p> <p>If no service account is specified, the inbound request subject is used. If there is no inbound request subject, an anonymous subject is used.</p>
Process Service Account	<p>Enter the service account for the user, or click Browse to select one from the list displayed.</p> <p>The process service account specifies the user credentials for the invocation of the JPD.</p> <p>If no service account is specified, the inbound request subject is used. If there is no inbound request subject, an anonymous subject is used</p>

Table 16-13 Create/Edit a Business Service - JPD Transport Configuration Page (Continued)

Option	To create or edit...
Callback Proxy Location	<p>Enter the location of the proxy service for receiving callbacks from the JPD, specified in the following format:</p> <pre>jms://[host:port[,host:port]*]/MyFactory/MyQueue</pre> <p>Where:</p> <ul style="list-style-type: none"> • <code>host</code>: (optional) Host name of the Oracle Service Bus server where the callback proxy service is configured • <code>port</code>: (optional) Port number on which Oracle Service Bus is listening for incoming requests • <code>MyFactory</code>: JNDI name of the Queue connection factory • <code>MyQueue</code>: JNDI name of the Queue where the Oracle Service Bus proxy service is waiting for callback requests <p>In a clustered environment, specify the host name and port numbers of the Managed Servers, separated by a comma (,).</p> <p>The Callback Proxy Location will be ignored if the JPD being invoked is a synchronous JPD or an asynchronous JPD without callbacks.</p>
Dispatch Policy	<p>Select the default dispatch policy or a configured Work Manager instance for the outbound response. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Global Work Managers in the <i>WebLogic Server Administration Console Online Help</i>.</p>
Propagate Transaction	<p>Select the check box to propagate the existing transaction within Oracle Service Bus to the JPD.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary** page.

MQ Transport Configuration page

The **Create/Edit a Business Service - MQ Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services”](#) on page 16-1 and [“Editing Business Service Configurations”](#) on page 16-46.

For more information, see the [MQ Transport User Guide](#).

Before you begin

Configure a MQ Connection resource. See [“MQ Connections” on page 8-1](#).

To configure the MQ transport

Use this page to configure transport settings for a business service using the native MQ transport protocol. [Table 16-14](#) describes how to use the page.

Table 16-14 Create/Edit a Business Service - MQ Transport Configuration Page

Option	To create or edit...
Message Type	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Select one of the following:</p> <ul style="list-style-type: none"> • Bytes (for a stream of uninterpreted bytes) • Text (for text messages)
Is Response Required	<p>Select this option to specify that a response is expected after an outbound message is sent.</p>
Polling Interval	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Enter a polling interval, in milliseconds. The default is 1000.</p>
Response Correlation Pattern	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Specify whether the response correlation pattern should be based on MessageID or CorrelationID.</p>
Auto-generate Correlation Value	<p>Select this check box to automatically generate a CorrelationID or MessageID.</p>
MQ Response URI	<p>This option is available only when the Is Response Required check box is selected.</p> <p>The destination to which the response should be published. Enter a response URI in the same format as the endpoint URI: mq://<local-queue-name>?conn=<mq-connection-resource-ref></p> <p>For more detailed information, see the MQ Transport User Guide.</p>

Table 16-14 Create/Edit a Business Service - MQ Transport Configuration Page (Continued)

Option	To create or edit...
Response Timeout	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Enter the number of seconds to wait for a response before dropping the connection.</p>
Dispatch Policy	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Select a dispatch policy for this endpoint.</p> <p>Dispatch policy refers to the instance of WLS Work Manager that you want to use for the service endpoint. For information about work managers, see Using Work Managers to Optimize Scheduled Work and Create Work Manager in the WebLogic Server Administration Console Online Help.</p>

Table 16-14 Create/Edit a Business Service - MQ Transport Configuration Page (Continued)

Option	To create or edit...
Endpoint URI 'PUT' options	<p>Enter the MQ PUT message options from among the following:</p> <ul style="list-style-type: none"> • MQC.MQPMO_ALTERNATE_USER_AUTHORITY • MQC.MQPMO_DEFAULT_CONTEXT • MQC.MQPMO_FAIL_IF QUIESCING • MQC.MQPMO_LOGICAL_ORDER • MQC.MQPMO_NEW_CORREL_ID • MQC.MQPMO_NEW_MSG_ID • MQC.MQPMO_NO_CONTEXT • MQC.MQPMO_NO_SYNCPOINT • MQC.MQPMO_NONE • MQC.MQPMO_PASS_ALL_CONTEXT • MQC.MQPMO_PASS_IDENTITY_CONTEXT • MQC.MQPMO_RESOLVE_LOCAL_Q • MQC.MQPMO_SET_ALL_CONTEXT • MQC.MQPMO_SET_IDENTITY_CONTEXT • MQC.MQPMO_SYNCPOINT • MQC.MQPMO_VERSION_1 • MQC.MQPMO_VERSION_2 <p>You can use either “ ” or “+” to separate multiple options. For example, you can specify the following:</p> <p>MQC.MQPMO_LOGICAL_ORDER MQC.MQPMO_NEW_MSG_ID</p> <p>The MQ PUT message options are applied when the message is placed in the outbound queue.</p>
MQ Unrecognized Response URI	<p>Enter the URI representing the queue to which unrecognized response messages should be sent. Note that this setting is enabled only when the Auto-generate Correlation Value check box is selected.</p> <p>If you do not specify a value for this field, unrecognized response messages are deleted.</p>
Process RFH2 Headers	<p>Select this option to parse WebSphere MQ RFH2 headers from a message payload and automatically generate an RFH2Headers transport header containing the RFH2 data.</p> <p>If you do not select this option, the payload is passed through as received.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

SB Transport Configuration page

The **Create/Edit a Business Service - SB Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

For more information, see the [SB Transport User Guide](#).

Use this page to configure transport settings for a business service using the SB (Service Bus) transport protocol. [Table 16-15](#) describes how to use the page.

Table 16-15 Create/Edit a Business Service - SB Configuration Page

Option	To create or edit...
Dispatch policy	Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Global Work Managers in the <i>WebLogic Server Administration Console Online Help</i> .
Timeout	The amount of time in seconds it takes the service to time out. Note: The timeout will be ignored when the quality of service is Exactly-Once.
Service Account	Click Browse and select a service account from the list displayed. If no service account is specified, an anonymous subject is used. For more information: <ul style="list-style-type: none"> • “Service Accounts” on page 14-1 • “Adding Service Accounts” on page 14-4

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

SFTP Transport Configuration page

The **Create/Edit a Business Service - SFTP Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

For more information, see the [HTTP and Poller Transports User Guide](#).

Use this page to configure transport settings for a business service using the sftp transport protocol. [Table 16-16](#) describes how to use this page.

Table 16-16 Create/Edit a Business Service - SFTP Transport Configuration Page

Option	To create or edit...
User Authentication	<p>Select one of the following:</p> <ul style="list-style-type: none"> • Username Password Authentication - Specifies that a static service account is associated with this authentication method and the client is authenticated using the provided credentials. • Host Based Authentication - Specifies that a user name and service key provider is required to use this authentication method. Any user connecting from a known host is authenticated using the private key of the host. • Public Key Authentication - Specifies that a user name and service key provider is required to use this authentication method. Every user has their own private key.
Service Account	Enter the service account for the user, or click Browse to select service accounts from a browser.
Service Key Provider	<p>This option is available only when Host Based or Public Key Authentication is selected.</p> <p>Enter a service key provider in the Service Key Provider field. You can click Browse to select service key providers from a browser. This is a required field.</p>
Username	<p>This option is available only when Host Based or Public Key Authentication is selected.</p> <p>Enter the user name.</p>
Timeout	Enter the socket timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout. The default value is 60.
Prefix for destination File Name	Enter the prefix for the file name under which the file is stored on the remote server.

Table 16-16 Create/Edit a Business Service - SFTP Transport Configuration Page

Option	To create or edit...
Suffix for destination File Name	Enter the suffix for the file name under which the file is stored on the remote server.
Request Encoding	Accept the default UTF-8 as the character set encoding for requests in SFTP transports.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

Tuxedo Transport Configuration page

The **Create/Edit a Business Service - Tuxedo Transport Configuration** page is one in a series of pages for creating and editing business services, as described in “[Creating and Configuring Business Services](#)” on page 16-1 and “[Editing Business Service Configurations](#)” on page 16-46.

For more information, see *Oracle Service Bus Interoperability Solution for Tuxedo*.

Use this page to configure transport settings for a business service using the Tuxedo transport protocol. [Table 16-17](#) describes how to use the page.

Table 16-17 Create/Edit a Business Service - Tuxedo Transport Configuration Page (Continued)

Option	To create or edit...
Field Table Classes	Enter the name of the class or classes describing the FML/FML32 buffer received. These are used for the FML/FML32-to-XML conversion routines to map field names to element names. This is a space separated list of fully qualified class names.
View Classes	Enter the name of the class or classes describing the VIEW/VIEW32 buffer received or sent. These are used for the VIEW-to-XML or VIEW32-to-XML conversion routines to map field names to element names. This is a space separated list of fully qualified class names.
Classes Jar	Select a JAR Resource that contains a JAR file with the FML/FML32 or VIEW/VIEW32 classes necessary for this endpoint operation.

Table 16-17 Create/Edit a Business Service - Tuxedo Transport Configuration Page (Continued)

Option	To create or edit...
Remote Access Point(s)	<p>Select a remote access point from the drop down list that is associated with the Import. The list contains remote access points configured in WTC. A business service cannot be created if there is no associated remote access point.</p> <p>If no remote access points exist or to create a new one, select New. Enter the corresponding Access Point Name and Network Address in the adjacent fields. Upon validation of the endpoint, the access point is added to the WTC configuration for each WTC server. If no WTC server exists, one is created.</p> <p>If more than one URI has been specified, there will be one remote access point field per URI and the URI displays for informative purposes. If more than one URI exists, each requires a different remote access point. If the URI specified already corresponds to an existing WTC resource, the corresponding remote access point displays, but cannot be modified.</p>
Local Access Point(s)	<p>This field appears only when you select New in the Remote Access Point field.</p> <p>From the drop-down list, select a local access point to be associated with the newly created remote access point. If none exist or to create a new one, select New. Enter the corresponding Local Access Point Name and Local Network Address in the adjacent fields.</p>
Request Buffer Type	Select the type of buffer that the remote Tuxedo service will receive.
Request Buffer Subtype	This option is enabled if the previous Request Buffer Type value is VIEW or VIEW32. Enter the buffer subtype with which to associate the request buffer.
Response Required?	Select this check box to indicate a bidirectional call. If not checked, the underlying <code>tpcall</code> is invoked with <code>TPNOREPLY</code> flag, and a null response is posted asynchronously.
Suspend Transaction?	Select this check box to suspend the transaction, if it exists. This is useful when the remote service does not support transactions.

Table 16-17 Create/Edit a Business Service - Tuxedo Transport Configuration Page (Continued)

Option	To create or edit...
Dispatch Policy	<p>Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists.</p> <p>This Work Manager is used to asynchronously post a null reply in the case of a one-way invocation. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Global Work Managers in the WebLogic Server <i>Administration Console Online Help</i>.</p>
Request Encoding	Specify a character set encoding for requests in Tuxedo transports.
Response Encoding	Specify a character set encoding for responses in Tuxedo transports.
Timeout	Specify the maximum amount of time (in seconds) that the transport run time waits for replies; an integer value that is greater than or equal to 0. If not specified or set to zero (default), replies will time out at BLOCKTIME, the maximum number of seconds that the local WTC access point allows for a blocking call.
Transformation Style	<p>Select one of the following:</p> <ul style="list-style-type: none"> • None - (default) The order of fields may not be respected. • Ordered - The fields are presented with all their occurrences in the correct order. • Ordered and Grouped - If the fields are logically structured as records, the fields are ordered by occurrence and grouped by record.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the [Create/Edit a Business Service - Summary](#) page.

WS Transport Configuration page

The **Create/Edit a Business Service - WS Transport Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services”](#) on page 16-1 and [“Editing Business Service Configurations”](#) on page 16-46.

For more information, see the [WS Transport User Guide](#).

Use this page to configure transport settings for a business service using the WS transport protocol. [Table 16-18](#) describes how to use the page.

Table 16-18 Create/Edit a Business Service - WS Transport Configuration Page

Option	To create or edit...
Response Timeout	<p>Enter the number of seconds to wait for a response.</p> <p>Leaving this field blank indicates that there is no response timeout. The business service will wait for the duration of the sequence timeout configured in the RM policy.</p> <p>If you enter a zero (0) value, there is no timeout; as such, it will never time out.</p>
Service Account	<p>Enter a service account or click Browse to select one from the list displayed.</p> <p>The service account specifies the credentials to use when there is an HTTP basic authentication policy on this service.</p>
Advanced Settings	
Queue Error Messages	<p>Select the check box to enable sending error messages to the configured error queue.</p>
Error Queue URI	<p>This option is available only when the Queue Error Messages check box is selected.</p> <p>Enter the URI of the JMS queue for storing error messages, in the following format:</p> <p><code>jms://host:port/connFactoryJndiName/queueJndiName</code></p>
JMS Error Queue Service Account	<p>This option is available only when the Queue Error Messages check box is selected.</p> <p>Enter a service account or click Browse to select one from the list displayed.</p> <p>The service account specifies the credentials to use for JNDI lookups and sending error messages to the error queue.</p>
Use SSL for Error Queue	<p>This option is available only when the Queue Error Messages check box is selected.</p> <p>Select the check box to use SSL for connecting to the error queue.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

SOAP Binding Configuration page

The **Create/Edit a Business Service - SOAP Binding Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to configure the SOAP Binding for a business service based on a WSDL.

Select **Enforce WS-I Compliance** to specify whether or not the service is to conform to the Basic Profile defined by the Web Services Interoperability Organization. This option is available for or SOAP 1.1 services only

When a service is marked WS-I compliant, checks are performed against the messages sent to and from that service.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Business Service - Summary page**.

Message Content Handling Configuration page

The **Create/Edit a Business Service - Message Content Handling Configuration** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to specify how Oracle Service Bus is to encode outbound messages sent by business services and whether Oracle Service Bus should stream attachments in outbound response messages instead of buffering the attachment contents in memory.

Using this page, you can enable the business service to encode outbound messages in MTOM/XOP format. SOAP Message Transmission Optimization Mechanism (MTOM) is a method of sending binary data to and from Web services. MTOM uses XML-binary Optimized Packaging (XOP) to transfer the binary data.

Using this page, you can also enable the business service to store attachments in outbound response messages to a disk file and then process the data in a streaming fashion without buffering the attachment contents in memory. This enables the business service to process large attachments robustly and efficiently.

Table 16-19 Create/Edit a Business Service - Message Content Handling Configuration Page

Option	To create or edit...
XOP/MTOM Support	<p>Oracle Service Bus supports XOP/MTOM using the following transports:</p> <ul style="list-style-type: none"> • HTTP/S • Local • SB <p>Select the Enabled check box to enable the business service to encode outbound messages in MTOM/XOP format. Note that this option is disabled for imported business services that are based on previous release configurations.</p> <p>If XOP/MTOM Support is enabled, select how to handle binary data in the \$header and \$body message context variables from among the following options:</p> <ul style="list-style-type: none"> • Include Binary Data by Reference: (Default) In an outbound response message, replace xop:Include elements with ctx:binary-content elements when setting up the \$body message context variable. • Include Binary Data by Value: In an outbound response message, replace xop:Include elements with Base64-encoded text versions of corresponding binary data when setting up the \$body message context variable. <p>Note that if XOP/MTOM Support is enabled for a business service, it is not required that every outbound message be in the MTOM format. Instead, this setting specifies that the business service is capable of handling an MTOM payload.</p> <p>Since Oracle Service Bus does not support a combination of MTOM and SwA, the system issues a runtime error when Oracle Service Bus attempts to dispatch an outbound request to a business service and the business service is both MTOM/XOP-enabled and the \$attachments message context variable is not null.</p>
Attachments	<p>Oracle Service Bus supports streaming MIME attachments using the HTTP/S transport.</p> <p>Select the Page Attachments to Disk check box to enable the business service to stream attachments in outbound response messages.</p> <p>Note that if you enable XOP/MTOM Support, the Attachments option is only available if you choose the Include Binary Data by Reference option under XOP/MTOM Support. Note also that payloads that contain attachments must conform to RFC 822. Specifically, lines containing Internet headers need to be terminated with CRLF (carriage return line feed).</p>

After you finish

Click **Next** to review and save this configuration on the **Create/Edit a Business Service - Summary** page.

Summary page

The **Create/Edit a Business Service - Summary** page is one in a series of pages for creating and editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“Editing Business Service Configurations” on page 16-46](#).

Use this page to view or modify the configuration settings for a business service before saving it.

To view or modify settings, click **Edit** in the row of the appropriate category (for example, **General Configuration**, **Transport Configuration**, etc.). The pages you can edit depend on what pages you configured when creating the business service. The following list shows all pages:

- [“General Configuration page” on page 16-3](#)
- [“Message Type Configuration page” on page 16-5](#)
- [“Transport Configuration page” on page 16-7](#)
- [“Protocol-Specific Transport Configuration page” on page 16-10](#)
- [“BPEL-10g Transport Configuration Page” on page 16-11](#)
- [“DSP Transport Configuration page” on page 16-14](#)
- [“EJB Transport Configuration page” on page 16-15](#)
- [“E-Mail Transport Configuration page” on page 16-17](#)
- [“File Transport Configuration page” on page 16-18](#)
- [“Flow Transport Configuration page” on page 16-18](#)
- [“FTP Transport Configuration page” on page 16-19](#)
- [“HTTP Transport Configuration Page” on page 16-20](#)
- [“JCA Transport Configuration Page” on page 16-23](#)
- [“JMS Transport Configuration page” on page 16-26](#)
- [“JPD Transport Configuration page” on page 16-30](#)

- [“MQ Transport Configuration page” on page 16-31](#)
- [“SB Transport Configuration page” on page 16-35](#)
- [“SFTP Transport Configuration page” on page 16-36](#)
- [“Tuxedo Transport Configuration page” on page 16-37](#)
- [“WS Transport Configuration page” on page 16-39](#)

Exporting a WSDL Associated with a Business Service


You can export the WSDL of a WSDL-based business service, so you can view or modify the WSDL in an external tool such as an IDE. The WSDL is exported as a JAR file.

Note that this is different than the Export Resources functionality in the System Administration module, which you use to move and stage resources between two domains. See [“Exporting Resources” on page 26-7](#).

Before you begin

You can only export a WSDL when you are outside a session. See [“Using the Change Center” on page 2-2](#).

To export a WSDL

1. Do either of the following:
 - Select **Resource Browser > Business Services** to display the **Summary of Business Services** page.
 - Select **Project Explorer**, then select the project or folder containing the business service you want to export as a WSDL. The [Project/Folder View page](#) is displayed.
2. Click the  **Export WSDL** icon in the row of the business service whose WSDL you want to export. A dialog box prompts you to open or save the exported JAR file.
3. In the dialog box, click **Open** to open the file, or click **Save** to save it.

Locating Business Services

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the business service.

- Select **Resource Browser > Business Services**. The **Summary of Business Services** page displays the information shown in [Table 16-20](#). For a more detailed description of the properties, see [“Editing Business Service Configurations” on page 16-46](#).
- 2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, under **Search**, enter the name and/or path of the target(s), then click the **Search** button.

The path is the project name and the name of the folder in which the business service resides.






Wildcard characters * and ? are allowed. Search is case-sensitive.

Click **View All** to display all business services in the domain. This clears the search parameters from the previous search.

Table 16-20 Summary of Business Services Page

Property	Description
Name	<p>A unique name for the business service. Click the name to display the View a Business Service - Configuration Details page.</p> <p>See “Editing Business Service Configurations” on page 16-46.</p>
Path	<p>The path is the project name and the name of the folder in which the business service resides, for example, UDDI/BusServices/OSB_services.</p> <p>Click the path of a business service to display the Project/Folder View page that contains it.</p>

Table 16-20 Summary of Business Services Page


Property	Description
Actions	<p>Do any of the following:</p> <ul style="list-style-type: none"> Click the  Launch Test Console icon to invoke the Test Console, which you use to validate and test the design of your services and transformations. For business services, you can only use the Test Console at run time; that is, when the session is activated. For transformations, you can use the Test Console whether you are inside or outside a session. See “Testing Services” on page 30-1 and “Testing Transformations” on page 30-17. The  Export WSDL icon is displayed for WSDL-based business services. Click this icon to export a WSDL, which you can then view or modify in an external tools such as an IDE. See Note that this is different than the Export Resources functionality in the System Administration module, which you use to move and stage resources between two domains. See “Exporting a WSDL” on page 3-24. The  Generate WSDL icon is displayed for transport-typed business services, such as EJB and Flow. Click this icon to generate a WSDL, which you can then view or modify. See “Generating a WSDL” on page 3-25
Options	<ul style="list-style-type: none"> Click the  Delete icon to delete the service. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. For more information, see “Deleting Business Services” on page 16-57.

Editing Business Service Configurations

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).

You don’t have to enter a session if you only want to view details.

2. Locate the business service you want to view or edit, as explained in [“Locating Business Services” on page 16-44](#).
3. Click the business service name. The [View a Business Service - Configuration Details](#) page displays configuration information for the selected business service.

4. To view or modify settings, do either of the following:
 - Click the  **Edit** icon next to the name of the category whose properties you want to view or edit (for example, **General Configuration**, **Transport Configuration**, etc.). The pages you can edit depend on what pages you configured when creating the business service.

For a list of all those pages, see [“View a Business Service - Configuration Details page” on page 16-47](#).
 - Click **Edit** at the bottom of the page to display the **Create/Edit a Business Service - General Configuration page**, which is the first page in the sequence of pages for configuring this business service.
5. Continue to view or edit, as described in [“Creating and Configuring Business Services” on page 16-1](#).
6. On the **Edit a Business Service - Summary page**, click **Save** to commit the updates in the current session.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

View a Business Service - Configuration Details page

The **View Business Service - Configuration Details** page displays the configuration details of a business service. [Table 16-21](#) describes all the properties that can appear on this page. (Properties vary depending on the details of the business service.)

The categories listed on this page correspond to the **Create/Edit a Business Service** pages used for creating and editing business service configurations, as described in [“Create/Edit a Business Service - Page Reference” on page 16-2](#).

Click the **Edit** link next to any category name to display the associated configuration page.

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
Last Modified By	The user who created this business service or imported it into the configuration.
Last Modified On	The date and time that the user created this business service or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this business service references. If such references exist, click the numeric link to view a list of the objects. To learn more, see “Viewing References to Resources” on page 3-20 .
Referenced by	The number of objects that reference this business service. If such references exist, click the numeric link to view a list of the objects. To learn more, see “Viewing References to Resources” on page 3-20 .
Description	A description of this business service, if one exists.
General Configuration - Shows properties configured on the General Configuration page .	
Service Type	The service type
Message Type Configuration - Shows properties configured on the Message Type Configuration page .	
Request Message Type	A message type for the request message: None , Binary , Text , MFL , or XML .
Response Message Type	A message type for the response message: None , Binary , Text , MFL , or XML .
Transport Configuration - Shows properties configured on the Transport Configuration page .	
Protocol	The transport protocol
Load Balancing Algorithm	The load balancing algorithm
Endpoint URI	The endpoint URI
Retry Count	The retry count
Retry Interval	The retry interval

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
BPEL-10g Transport Configuration - Shows properties configured on the BPEL-10g Transport Configuration Page .	
DSP Transport Configuration - Shows properties configured on the DSP Transport Configuration page .	
Debug Level	Specifies the output of debug information.
Service Account	If you selected one, a service account for this transport.
Dispatch Policy	Refers to the instance of WLS Work Manager that you want to use for the service endpoint.
EJB Transport Configuration - Shows properties configured on the EJB Transport Configuration page .	
Pass Caller's Subject	Whether Oracle Service Bus is to pass the authenticated subject from the proxy service when invoking the EJB and no service accounts are configured.
Service Account	The service account selected for this business service.
Supports Transaction	Selecting the check box indicates Yes. Transactions will be supported.
Client Jar*	The name of the client JAR that this EJB transport service invokes.
Converter Jar	The name of the converter class JAR that this EJB transport service requires.
Home Interface*	The Home interface URI selected for this service.
Remote Interface*	The Remote Interface URI for the service.
Target Namespace*	The target namespace picked from the JAR information.
Style	Whether the service uses Document Wrapped or RPC Style.
Encoding	Whether the coding for the outbound message should be encoded or literal.
Methods	A list of methods to be invoked by this service.
E-Mail Transport Configuration - Shows properties configured on the E-Mail Transport Configuration page .	

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
Mail Server Address	The SMTP server for this service
Service Account	The service account for this mail server
Mail Session	The mail session for this service
From Name	The originating display name for this service
From Address	The originating address for this service
Reply to Name	The reply to display name for this service
Reply to Address	The reply to address for this service
Request Encoding	The character set encoding for requests in E-mail transports.
File Transport Configuration - Shows properties configured on the File Transport Configuration page .	
Prefix	A prefix that is prepended to the file name.
Suffix	A suffix that is appended to the file.
Request Encoding	The character set encoding for requests in File transports.
Flow Transport Configuration - Shows properties configured on the Flow Transport Configuration page .	
Timeout	The number of seconds to wait for a response before timing out.
FTP Transport Configuration - Shows properties configured on the FTP Transport Configuration page .	
User Authentication	The user authentication method: anonymous or externally configured account.
Identity (E-mail id) or Service Account	The mail ID for an anonymous user or service account for an externally configured account.
Timeout	The socket timeout, in seconds.
Prefix for destination File Name	The prefix for the file name under which the file is stored on the remote server.

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
Suffix for destination File Name	The suffix for the file name under which the file is stored on the remote server.
Transfer Mode	The transfer mode: Binary or ASCII.
Request Encoding	The character set encoding for requests in FTP transports.
HTTP Transport Configuration - Shows properties configured on the HTTP Transport Configuration Page .	
Timeout	The amount of time in seconds it takes the service to time out.
HTTP Request Method	The HTTP request method.
Basic Authentication Required	Whether or not basic authentication is required: displays Enabled if it is required.
Follow HTTP Redirects	Whether or not a re-direct occurs when you send an outbound request to the URL of a business service, and that service returns a response code (for example, 302) that says the URL is no longer valid and this request needs to be sent to another URL. Displays Enabled if Oracle Service Bus automatically re-sends the request to the new URL without any action on your part.
Service Account	If you selected one, a service account for this transport.
Request Encoding	The character set encoding for requests in HTTP transports.
Response Encoding	The character set encoding for responses in HTTP transports.
Proxy Server	The proxy server resource configured for the business service.
JCA Transport Configuration - Shows properties configured on the JCA Transport Configuration Page .	
JMS Transport Configuration - Shows properties configured on the JMS Transport Configuration page .	
Destination Type	The destination type: Queue or Topic.
Use SSL	Displays Enabled if the requests are made over a TLS/SSL connection.
Message Type	The message type: Text or Bytes.

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
Expiration	The expiration or time-to-live value for a message, in seconds. If it is 0, the message never expires.
Is Response Required	Whether or not a response is expected after an outbound message is sent.
Response URI	A response URI in the format <code>jms://host:port/factoryJndiName/destJndiName</code> . To target multiple servers, use the following URI format: <code>jms://host1:port,host2:port/QueueConnectionFactory/DestName</code>
Response Timeout	The amount of time to wait for the response, in seconds.
Unit of Order	The Message Unit-of-Order that enables message producers to group messages into a single unit with respect to the processing order. This single unit requires that all messages from that unit be processed sequentially in the order they were created.
Pass Caller's Subject	Whether Oracle Service Bus is to pass the authenticated subject when sending a message.
Request Encoding	The character set encoding for requests in JMS transports.
Response Encoding	The character set encoding for responses in JMS transports.
JMS service account	The service account to use for the JMS resource managed by the JMS server.
JPD Transport Configuration - Shows properties configured on the JPD Transport Configuration page .	
System Service Account	The service account to use for the invocation of the WLI stateless session bean.
Process Service Account	The service account to use for the invocation of the JPD.
Callback Proxy Location	The location of the proxy service for receiving callbacks from the JPD.
Dispatch Policy	Refers to the instance of WLS Work Manager that you want to use for the outbound response.
Propagate Transaction	Whether or not to propagate the existing transaction within Oracle Service Bus to the JPD.

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
MQ Transport Configuration - Shows properties configured on the MQ Transport Configuration page .	
SB Transport Configuration - Shows properties configured on the SB Transport Configuration page .	
Dispatch Policy	Refers to the instance of WLS Work Manager that you want to use for the service endpoint.
Service Account	A service account for this transport.
Timeout	The socket timeout, in seconds.
SFTP Transport Configuration - Shows properties configured on the SFTP Transport Configuration page .	
Authentication Mode	The authentication method: Username Password, Host-Based, or Public Key Authentication.
Service Account	The service account for this sftp server.
Service Key Provider	The service key provider for this sftp server.
Username	The user name for this sftp server.
Timeout	The socket timeout, in seconds.
Prefix for destination File Name	The prefix for the file name under which the file is stored on the remote server.
Suffix for destination File Name	The suffix for the file name under which the file is stored on the remote server.
Request Encoding	Displays the character set encoding for requests in SFTP transports. The default is <code>utf-8</code> .
Tuxedo Transport Configuration - Shows properties configured on the Tuxedo Transport Configuration page .	
Field Table Classes	The space separated list of fully qualified FML Files class names for buffer mapping.
View Classes	The space separated list of fully qualified View class names for buffer mapping.

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
Classes Jar	A JAR Resource that contains a JAR file with the FML/FML32 or VIEW/VIEW32 classes necessary for the endpoint operation.
Remote Access Point for URI	The remote access point for the URI Endpoint associated with the WTC Import Service.
Request Buffer Type	The buffer type: CARRAY, FML, FML32, MBSTRING, STRING, VIEW, VIEW32, X_COMMON, X_C_TYPE, XML, X_OCTET.
Request Buffer Subtype	The buffer subtype with which to associate the reply buffer if the buffer type is VIEW or VIEW32.
Response Required	Selecting the check box indicates Yes. A response is required. Otherwise, no response is required.
Suspend Transaction	Selecting the check box indicates Yes . If a transaction exists, it will be suspended. Otherwise the transaction will run.
Dispatch Policy	Refers to the instance of WLS Work Manager that you want to use for the service endpoint.
Request Encoding	The character set encoding for requests in Tuxedo transports.
Response Encoding	The character set encoding for responses in Tuxedo transports.
Timeout	The maximum amount of time (in seconds) that the transport run time waits for replies.
Transformation Style	The ordering or grouping of elements when FML or FML32 buffers are transformed into XML.
WS Transport Configuration - Shows properties configured on the WS Transport Configuration page .	
Response Timeout	The amount of time to wait for the response, in seconds.
Service Account	The service account to use when there is an HTTP basic authentication policy on this service.
Queue Error Messages	Whether or not to send error messages to the configured error queue.
Error Queue URI	The error queue URI in the format: <code>jms://host:port/connFactoryJndiName/queueJndiName</code>

Table 16-21 View a Business Service: Configuration Details Page

Properties	Description
JMS Error Queue Service Account	The service account to use for JNDI lookups and sending error messages to the error queue.
Use SSL for Error Queue	Displays Enabled if the requests are made over a TLS/SSL connection.
Message Content Handling Configuration - Shows properties configured on the Message Content Handling Configuration page .	
XOP/MTOM Support	Indicates whether the business service is Enabled or Disabled to encode outbound messages in MTOM/XOP format. If the business service is enabled for XOP/MTOM Support, the field displays whether the binary data is included By Reference or By Value .
Attachments	Indicates whether the business service is configured to Page Attachments to Disk to stream attachments in outbound response messages.

View a Business Service - Policies page

The **View a Business Service - Policies Configuration** page is one in a series of pages for editing business services, as described in “[Creating and Configuring Business Services](#)” on page 16-1 and “[View a Business Service - Configuration Details page](#)” on page 16-47.

Use this page to configure policy settings for a business service that has a WSDL-based policy or that uses custom policy bindings (both WSDL-based and Any SOAP services). [Table 16-22](#) describes how to use the page.

Note that for WSDL-based services, all policies bound to the service are exposed (inlined) in the effective WSDL, regardless of which binding model is used. Abstract policies are pre-processed before they are inlined.

Table 16-22 View a Business Service - Policies Page

Option	To edit...
Service Policy Configuration	<p>There are two options in the Service Policy Configuration field:</p> <ul style="list-style-type: none"> WSDL-Based Policy, in which one or more Web Services Policy (WS-Policy) statements in a WSDL document express the business service's message-level security requirements. Custom Policy Bindings, in which you add service-level policies, operation-level policies (in which case the policy applies to both the request and response messages), request policies, and response policies from the console. <p>Note: The two policy binding models are mutually exclusive. If you bind policies directly to the service, all WSDL-based policies are ignored.</p>
Service Level Policies (Custom Policy Bindings Only)	<p>To specify policies that apply to the entire service, expand the service name entry. Click Add to search for and select your policies.</p> <p>You can select from your own existing WS-Policy resources, or from predefined policies.</p> <p>You can bind multiple policies to the service.</p> <p>Update the policy binding.</p>
Operation Level Policies (WSDL-Based Policy Only)	<p>Provides a read-only view of the request and response policies from the WSDL.</p>
Operation Level Policies (Custom Policy Bindings Only)	<p>To specify policies that apply to an operation, the request/response of that operation, or any request or any response in the case of Any SOAP services, expand the operation name entry. Click Add to search for and select your policies.</p> <p>You can select from your own existing WS-Policy resources, or from predefined policies.</p> <p>You can bind multiple policies to the service.</p> <p>Update the policy binding.</p>

After you finish

Click **Update** to save this configuration; or click **Reset** to undo your changes.

View a Business Service - Security page

The **View a Business Service - Security Configuration** page is one in a series of pages for editing business services, as described in [“Creating and Configuring Business Services” on page 16-1](#) and [“View a Business Service - Configuration Details page” on page 16-47](#).

All policies bound to the service are exposed (inlined) in the effective WSDL, regardless of which binding model is used. Abstract policies are pre-processed before they are inlined.

Use this page to configure security settings for a business service that has a WSDL-based policy or that uses custom policy bindings. [Table 16-23](#) describes how to use the page.



Table 16-23 View a Business Service - Security Page

Option	To edit...
Service Account	<p>Click Browse and select a service account from the list displayed. If no service account is specified, an anonymous subject is used.</p> <p>For more information:</p> <ul style="list-style-type: none"> • “Specifying Service Accounts” on page 14-1 • “Adding Service Accounts” on page 14-4

After you finish

Click **Update** to save this configuration; or click **Reset** to undo your changes.

Deleting Business Services

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > Business Services** to display the **Summary of Business Services** page.
3. Click the  **Delete** icon in the row of the business service you want to delete. The business service is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.

4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Proxy Services: Creating and Managing

Proxy services are Oracle Service Bus definitions of services implemented locally on WebLogic Server.

For more information, see [Proxy Service and Business Service Configuration](#) in *Oracle Service Bus User Guide*.

Creating and Configuring Proxy Services

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Project Explorer**, then select the project or folder to which you want to add the proxy service.
3. On the [Project/Folder View page](#), select **Proxy Service** from the **Create Resource** drop-down list.
4. On the [General Configuration page](#), provide a name for the service and select the type of service to create.
5. Click **Next**. The pages that follow depend on the choices you made on the first page. Enter the appropriate information on each of the subsequent pages, until you reach the summary page, then click **Save** to save the service in the current session.

For detailed instructions on completing each page, see the following:

- [“General Configuration page” on page 17-3](#)

- “Message Type Configuration page” on page 17-6
 - “Transport Configuration page” on page 17-8
 - “Protocol-Specific Transport Configuration Pages” on page 17-12
 - “E-Mail Transport Configuration page” on page 17-12
 - “File Transport Configuration page” on page 17-14
 - “FTP Transport Configuration page” on page 17-16
 - “HTTP Transport Configuration Page” on page 17-18
 - “JCA Transport Configuration Page” on page 17-20
 - “JMS Transport Configuration page” on page 17-24
 - “MQ Transport Configuration page” on page 17-28
 - “SB Transport Configuration page” on page 17-31
 - “SFTP Transport Configuration page” on page 17-32
 - “Tuxedo Transport Configuration page” on page 17-34
 - “WS Transport Configuration page” on page 17-37
 - “Operation Selection Configuration page” on page 17-38
 - “Message Content Handling page” on page 17-41
 - “Summary page” on page 17-44
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.
 7. After you create a proxy service, the next step is to configure its message flow. The message flow defines the implementation of a proxy service. To learn more, see “[Creating, Editing, and Viewing Message Flows](#)” on page 18-1.

Create/Edit a Proxy Service - Page Reference

Create a proxy service by selecting **Proxy Service** from the **Create Resource** drop-down list on the [Project/Folder View page](#). When you select that option, it displays the first in a series of pages for configuring and adding proxy services. The pages displayed vary, depending on the options you choose along the way. The pages are:

- “General Configuration page” on page 17-3

- [“Message Type Configuration page” on page 17-6](#)
- [“Transport Configuration page” on page 17-8](#)
- [“Protocol-Specific Transport Configuration Pages” on page 17-12](#)
- [“E-Mail Transport Configuration page” on page 17-12](#)
- [“File Transport Configuration page” on page 17-14](#)
- [“FTP Transport Configuration page” on page 17-16](#)
- [“HTTP Transport Configuration Page” on page 17-18](#)
- [“JCA Transport Configuration Page” on page 17-20](#)
- [“JMS Transport Configuration page” on page 17-24](#)
- [“MQ Transport Configuration page” on page 17-28](#)
- [“SB Transport Configuration page” on page 17-31](#)
- [“SFTP Transport Configuration page” on page 17-32](#)
- [“Tuxedo Transport Configuration page” on page 17-34](#)
- [“WS Transport Configuration page” on page 17-37](#)
- [“Operation Selection Configuration page” on page 17-38](#)
- [“Message Content Handling page” on page 17-41](#)
- [“Summary page” on page 17-44](#)

General Configuration page

The **Create/Edit a Proxy Service - General Configuration** page is one in a series of pages for creating and editing proxy services, as described in [“Creating and Configuring Proxy Services” on page 17-1](#) and [“Editing Proxy Service Configurations” on page 17-47](#).

Use this page to modify general configuration settings for a proxy service.

When you create a proxy service, this is the first page displayed in a series of pages for configuring the service. The pages displayed after this one differ depending on the choices you make on this page.

[Table 17-1](#) describes how to use the page.

Table 17-1 Create/Edit a Proxy Service - General Configuration Page

Option	To create or edit...
Service Name	Enter a unique name for the proxy service.
Description	Enter a description.

Table 17-1 Create/Edit a Proxy Service - General Configuration Page (Continued)

Option	To create or edit...
Service Type	<p data-bbox="417 392 817 418">Select the type of proxy service to create:</p> <ul style="list-style-type: none"> <li data-bbox="417 430 1224 670"> <p>WSDL Web Service - Select this option to create a proxy service based on a WSDL. Then enter the WSDL name, qualified by its path (for example, <code>myProject/myFolder/myWSDL</code>). Alternatively, click Browse to select a WSDL from the Select a WSDL Definition page.</p> <p>(port or binding) - Enter the name of a port (defined in the WSDL) to describe an actual transport address, or enter the name of a binding (defined in the WSDL) to map to a transport address. If you use Browse to select a WSDL, the Select a WSDL Definition page lists any defined ports and bindings.</p> <li data-bbox="417 690 1224 808"> <p>Note: If you are going to use the SOAP Body Type for operations, ensure that the WSDL does not have two operations with the same input message. The SOAP Body Type operation cannot be uniquely identified by inspecting the input message.</p> <li data-bbox="417 817 1224 973"> <p>Messaging Service - Select this option to create a service that can receive messages of one data type and respond with messages of a different data type. These exchanges can be either request/response or one-way.</p> <p>(HTTP GET is supported only in the Any XML Service and Messaging Service service types.)</p> <li data-bbox="417 982 1224 1100"> <p>Any SOAP Service - Select this option to create a SOAP service that does not have an explicitly defined, concrete interface.</p> <p>Select SOAP 1.1 or SOAP 1.2 from the drop-down list to specify the SOAP version to be used.</p> <li data-bbox="417 1112 1224 1237"> <p>Any XML Service - Select this option to create an XML service that does not have an explicitly defined, concrete interface.</p> <p>(HTTP GET is supported only in the Any XML Service and Messaging Service service types.)</p> <li data-bbox="417 1246 1224 1550"> <p>Business Service - Select this option to create a proxy service with a route node that routes to the business service you select. You cannot create a proxy service from a transport typed business service. If you create a proxy service from a DSP transport business service, Oracle Service Bus switches the transport type of the proxy service to HTTP, because the DSP transport cannot be used for proxy services. You can change the transport type of the proxy service to any other available transport.</p> <p>Enter the path (<code>project/folder</code>) and the name of the business service; or click Browse to select the business service from the Select Business Service page.</p> <li data-bbox="417 1558 1224 1643"> <p>Proxy Service - Select this option to clone an existing proxy service. Since Oracle Service Bus does not accept the same URI for multiple services, you must change the URI for the cloned service.</p>

Table 17-1 Create/Edit a Proxy Service - General Configuration Page (Continued)

Option	To create or edit...
Service Type (continued)	<p>Note: When a service is created from another service, alert rules are maintained in the following way:</p> <ul style="list-style-type: none"> – When a proxy service is created from a business service or a business service is created from a proxy service, the alert rules, if any, are removed. – When a proxy service is created from another proxy service or a business service is created from another business service, the alert rules, if any, are retained.
Service Key Provider	<p>If needed, enter the path (<code>project/folder</code>) and name of a service key provider, or click Browse to select one from the Select Service Key Provider page.</p> <p>A service key provider is only required in certain cases:</p> <ul style="list-style-type: none"> • Outbound two-way TLS/SSL, where the proxy service routes messages to HTTPS services that require client-certificate authentication. • In some Web Service security scenarios, for example, if the proxy service requires messages to be encrypted. <p>To add a Web service security-enabled proxy service, you must create the proxy service from a WSDL (port or binding) with WS-Policy attachments.</p> <p>For more information, see “Service Key Providers” on page 15-1. To learn how to create a service key provider, see “Adding Service Key Providers” on page 15-2.</p>
Publish to Registry	<p>This option appears only when a default UDDI registry exists.</p> <p>Select this option to publish the proxy service to the default registry automatically.</p> <p>For more information, see “Using Auto-Publish” on page 27-10.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary page**.

Message Type Configuration page

The **Create/Edit a Proxy Service - Message Type Configuration** page is one in a series of pages for creating and editing proxy services, as described in [“Creating and Configuring Proxy Services” on page 17-1](#) and [“Editing Proxy Service Configurations” on page 17-47](#).

Use this page to configure message types for a proxy service whose type is Messaging Service.

The binding definition for messaging services consists of configuring the `content-type` of the messages that are exchanged. The `content-type` for the response does not have to be the same as for the request; therefore, the response is configured separately (for example, the service could accept an MFL message and return an XML acknowledgment receipt).

Note: E-mail, File, FTP, or SFTP transport proxy services whose type is Messaging Service support one-way messaging *only*; the **Response Message Type** should be `none`. If you select an option other than `none`, the E-mail, File, FTP, or SFTP protocols will not be available on the Transport Configuration page.

Table 17-2 describes how to use **Create/Edit a Proxy Service - Message Type Configuration** page.

Table 17-2 Create/Edit a Proxy Service - Message Type Configuration Page

Option	To create or edit...
Request Message Type	<p>Select a message type for the request message:</p> <ul style="list-style-type: none"> • None - Select this option if there is no request message. • Binary - Select this option if the content-type of the message is unknown or not important. • Text - Select this option if the message can be restricted to text. • MFL - Select this option if the message is a binary document conforming to an MFL definition. Enter the MFL file name (qualified by its path), or click Browse to select a file. You can configure only one MFL file. <p>Note: To support multiple MFL files, define the content as binary or text and use the MFL action in the message flow to convert to XML.</p> <ul style="list-style-type: none"> • XML - Select this option if the message is an XML document. Enter the XML file name (qualified by its path), or click Browse to select a file. Optionally provide some type information by declaring (in the element or type field) the XML schema type of the XML document exchanged.

Table 17-2 Create/Edit a Proxy Service - Message Type Configuration Page (Continued)

Option	To create or edit...
Response Message Type	<p>Select a message type for the response message:</p> <ul style="list-style-type: none">• None - Select this option if there is no response message.• Binary - Select this option if the content-type of the message is unknown or not important.• Text - Select this option if the message can be restricted to text.• MFL - Select this option if the message is a binary document conforming to an MFL definition. Enter the MFL file name (qualified by its path), or click Browse to select a file. You can configure only one MFL file. Note: To support multiple MFL files, define the content as binary or text and use the MFL action in the message flow to convert to XML.• XML - Select this option if the message is an XML document. Enter the XML file name (qualified by its path), or click Browse to select a file. Optionally provide some type information by declaring (in the element or type field) the XML schema type of the XML document exchanged.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

Transport Configuration page

The **Create/Edit a Proxy Service - Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

Use this page to select a transport protocol for the proxy service and to set other general transport configuration settings. [Table 17-3](#) describes how to use the page.

Note: Inbound transport-level security applies to the client applications and Oracle Service Bus proxy services. Outbound transport-level security applies to the connections between Oracle Service Bus proxy services and business services. To learn more about transport-level security, see [Configuring Transport-Level Security](#) in the *Oracle Service Bus Security Guide*.

Table 17-3 Create/Edit a Proxy Service - Transport Configuration Page

Option	To create or edit...
Protocol	<p>Select a transport protocol from the list. The protocols available differ, depending on the service type you are creating:</p> <ul style="list-style-type: none">• WSDL Web Service: http, jca, jms, local, sb, ws• Messaging Service: email, file, ftp, http, jms, local, mq (if available), sftp, tuxedo• Any SOAP Service: http, jms, local, sb• Any XML Service: email, file, ftp, http, jms, local, mq (if available), sb, sftp, tuxedo

Table 17-3 Create/Edit a Proxy Service - Transport Configuration Page (Continued)

Option	To create or edit...
Endpoint URI	<p>Enter an endpoint URI in the format based on the transport protocol you selected in the Protocol field, above: The formats are:</p> <ul style="list-style-type: none"> • email - mailfrom:mail-server-hostname:mail-server-port • file - file:///drivename:/somename • ftp - ftp://hostname:port/directory • http - someName <p>The HTTP transport supports both HTTP and HTTPS endpoints.</p> <ul style="list-style-type: none"> • jca - jca://<resource_adapter_jndi> • jms - jms://host:port/factoryJndiName/destJndiName <p>To target a target a JMS destination to multiple servers, use the following URI format: jms://host1:port,host2:port/QueueConnectionFactory/DestName</p> <p>Note that when you create a proxy service, you can configure a JMS endpoint URI even if the server at that endpoint is not available. However, in the case of JMS, when you activate the session, the endpoint must be available. To learn more, see “Activating Sessions” on page 2-3.</p> <p>In a cluster: The host names in the JMS URI must exactly match the host names of the cluster servers as they are configured in WebLogic Server.</p> <ul style="list-style-type: none"> • local <p>This transport does not require an endpoint URI.</p> <ul style="list-style-type: none"> • mq - <p>mq://<local-queue-name>?conn=<mq-connection-resource-ref></p> <p>local-queue-name is the name of the MQ queue from which the proxy service reads messages.</p> <p>mq-connection-resource-ref is the path (project/folder) and name of the MQ connection resource; for example, default/my_MQconnection.</p> <p>Note: The Endpoint URI cannot contain spaces, so do not create MQ Connection resources or projects/folders with spaces in the names.</p> <p>To make the MQ transport available in Oracle Service Bus, see “MQ Connections” on page 8-1.</p> <ul style="list-style-type: none"> • sb - service_name <p>service_name is the unique identifier for the proxy service. By default, this name will be the proxy service name.</p> <p>service_name must only contain characters permitted in URIs (as described in RFC2396), except it cannot contain forward slash (/) or colon (:) characters.</p> <ul style="list-style-type: none"> • sftp - sftp://hostname:port/directory

Table 17-3 Create/Edit a Proxy Service - Transport Configuration Page (Continued)

Option	To create or edit...
Endpoint URI (continued)	<ul style="list-style-type: none"> • tuxedo - <code>exportname</code> The URI <code>exportname</code> corresponds to a WTC Export that the remote Tuxedo domain identifies as a Tuxedo service. If more than one URI is specified, you must have unique resource names for the endpoints. If no remote name is specified, its value is the value of the resource name. If no remote name is entered or if remote and resource name are the same, only one URI is allowed. In this case resource name and remote name will have the same value. This allows users using already defined WTC Imports to make use of WTC load-balancing and failover. Note: If you configure two identical URIs, an error indicates that the service name already exists. • ws - <code>/contextPath</code> <code>contextPath</code> must be unique for proxy services that use either HTTP or WS transport.
Get All Headers	<p>Select Yes to retrieve all the headers from the transport.</p> <p>Select No to retrieve a defined set of headers. If you select No, enter a set of headers in the Header field, then click Add. (This step does not apply to Local transport.)</p> <p>Note: Oracle Service Bus does not pass the HTTP Authorization header from the request to the pipeline because it opens a security vulnerability. You could inadvertently create a log action that writes the user name and unencrypted password to a log file. If your design pattern requires the HTTP Authorization header to be in the pipeline, do the following:</p> <ol style="list-style-type: none"> In the startup command for Oracle Service Bus, set the following system property to true: <code>com.bea.wli.sb.transports.http.GetHttpAuthorizationHeaderAllowed</code> In the Oracle Service Bus Console, on the Transport Configuration page, select Get All Headers or select User-specified Headers and specify Authorization. Restart Oracle Service Bus. <p>Oracle Service Bus will pass the Authorization header to the pipeline.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

***Protocol-Specific* Transport Configuration Pages**

The **Create/Edit a Proxy Service - Transport-Type Configuration** pages are each one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

This page differs, depending on what kind of transport you chose to configure. It can be:

- “[E-Mail Transport Configuration page](#)” on page 17-12
- “[File Transport Configuration page](#)” on page 17-14
- “[FTP Transport Configuration page](#)” on page 17-16
- “[HTTP Transport Configuration Page](#)” on page 17-18
-
- “[JMS Transport Configuration page](#)” on page 17-24
- “[MQ Transport Configuration page](#)” on page 17-28
- “[SB Transport Configuration page](#)” on page 17-31
- “[SFTP Transport Configuration page](#)” on page 17-32
- “[Tuxedo Transport Configuration page](#)” on page 17-34
- “[WS Transport Configuration page](#)” on page 17-37

E-Mail Transport Configuration page

The **Create/Edit a Proxy Service - E-Mail Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

Use this page to configure transport settings for a proxy service using the e-mail transport protocol. [Table 17-4](#) describes how to use the page.

Table 17-4 Create/Edit a Proxy Service - E-Mail Transport Configuration Page

Option	To create or edit...
Service Account	Enter a service account name, or click Browse to select service accounts from a browser.
Managed Server	This field is available only in a clustered domain. Select the Managed Server to act as the polling server. All of the Managed Servers can process the message, but only one can poll for the message.
Polling Interval	Enter a polling interval, in seconds.
E-Mail Protocol	Select POP3 or IMAP as the server type for the e-mail account.
Read Limit	Specify the maximum number of messages to read per polling sweep. Enter 0 to specify no limit.
Pass By Reference	Select this check box to stage the file in the archive directory and pass it as a reference in the headers. By default when you create a new service, the Pass By Reference option is selected and you must specify the archive directory location.
Pass Attachments by Reference	Select this check box to stage the attachments in the archive directory and pass them as a reference in the headers. By default, when the Pass By Reference option is selected, the Pass Attachments By Reference option is implicitly true and you must specify the archive directory location.
Post Read Action	Select what happens to a message after it has been read: <ul style="list-style-type: none"> • Archive - The message is archived. • Delete - The message is deleted. • Move - The message is moved. Move is only available with the IMAP protocol.
Attachments	Select how attachments are handled: <ul style="list-style-type: none"> • Archive - Attachments are saved to the archive directory. • Ignore - Attachments are ignored.
IMAP Move Folder	Enter the folder to which the message is moved if the Post Read Action field is set to Move .

Table 17-4 Create/Edit a Proxy Service - E-Mail Transport Configuration Page (Continued)

Option	To create or edit...
Download Directory	Enter a temporary location for downloading e-mails.
Archive Directory	Specify the path to the archive location if the Post Read Action field is set to Archive . This field is required if the Pass By Reference or Pass Attachments By Reference option is selected.
Error Directory	Enter the file system directory path to write the message and any attachments if there is a problem.
Request Encoding	Accept the default ISO-8859-1 as the character set encoding for requests in E-mail transports, or enter a different character set encoding.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

File Transport Configuration page

The **Create/Edit a Proxy Service - File Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

Use this page to configure transport settings for a proxy service using the file transport protocol. [Table 17-5](#) describes how to use this page.

Table 17-5 Create/Edit a Proxy Service - File Transport Configuration Page

Option	To create or edit...
File Mask	Enter the regular expression for the files to be picked. The default is *.*.
Managed Server	This field is available only in a clustered domain. Select the Managed Server to act as the polling server. All of the Managed Servers can process the message, but only one can poll for the message.
Polling Interval	Enter a polling interval, in seconds. The default is 60.

Table 17-5 Create/Edit a Proxy Service - File Transport Configuration Page (Continued)

Option	To create or edit...
Read Limit	Specify the maximum number of messages to read per polling sweep. Enter 0 to specify no limit. The default is 10.
Sort By Arrival	Select this check box to specify that events are delivered in the order of arrival. Note that when this option is selected for a proxy service that is executed in a clustered environment, messages are always sent to the same server. In other words, load balancing across servers is ignored when this option is selected.
Scan Subdirectories	Select this check box to recursively scan all the directories.
Pass By Reference	Select this check box to stage the file in the archive directory and pass it as a reference in the headers.
Post Read Action	Select what happens to a message after it has been read: <ul style="list-style-type: none"> • Archive - The message is archived. • Delete - The message is deleted.
Stage Directory	Enter an intermediate directory to temporarily stage the files while processing them. Do not put the stage directory inside of the polling directory (the directory identified in the URL of the file transport proxy service; for example, file:///c:/dir1/dir2).
Archive Directory	Specify the path to the archive location if the Post Read Action option is set to Archive . The Archive Directory field is also a required field if you have selected the Pass By Reference field. Do not put the archive directory inside of the polling directory.
Error Directory	Enter the location where messages and attachments are posted if there is a problem. Do not put the error directory inside of the polling directory.
Request Encoding	Accept the default UTF-8 as the character set encoding for requests in file transports, or enter a different character set encoding.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

FTP Transport Configuration page

The **Create/Edit a Proxy Service - FTP Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in [“Creating and Configuring Proxy Services” on page 17-1](#) and [“Editing Proxy Service Configurations” on page 17-47](#).

Use this page to configure transport settings for a proxy service using the ftp transport protocol. [Table 17-6](#) describes how to use this page.

Table 17-6 Create/Edit a Proxy Service - FTP Transport Configuration Page

Option	To create or edit...
User Authentication	Select anonymous if the user of the FTP server is anonymous, or select external user if the user of the FTP server is an externally configured account.
Identity (E-Mail ID)	This field is available only if the User Authentication option is set to anonymous . Enter the mail ID for the anonymous user.
Service Account	This field is available only if the User Authentication option is set to external user . Enter the service account for the user. This is a required field when the User Authentication option is set to external user .
Pass By Reference	Select this check box to stage the file in the archive directory and pass it as a reference in the headers.
Remote Streaming	Select this check box to stream the FTP files directly from the remote server at the time of processing. When you select this option, the archive directory is the remote directory on the remote FTP server machine. Therefore, you should specify the archive directory as relative to the FTP user directory.
File Mask	Enter the regular expression for the files to be picked. The default is *.*.
Managed Server	This field is available only in a clustered domain. Select the Managed Server to act as the polling server. All of the Managed Servers can process the message, but only one can poll for the message.
Polling Interval	Enter a polling interval, in seconds. The default is 60.
Read Limit	Specify the maximum number of messages to read per polling sweep. Enter 0 to specify no limit. The default is 10.

Table 17-6 Create/Edit a Proxy Service - FTP Transport Configuration Page (Continued)

Option	To create or edit...
Post Read Action	<p>Select what happens to a message after it has been read.</p> <ul style="list-style-type: none"> • Archive - The message is archived. • Delete - The message is deleted.
Transfer Mode	Select ASCII or binary as the transfer mode.
Archive Directory	<p>Specify the path to the archive location if the Post Read Action option is set to Archive. This field is required if the Pass By Reference option is selected.</p> <p>Note: The Archive, Download, and Error directories are absolute paths, and they are automatically created. If you specify a relative path, the files are created relative to the Java process that starts the WebLogic Server.</p>
Download Directory	<p>Enter the directory on your local machine where files are downloaded during the file transfer.</p> <p>Note: The Archive, Download, and Error directories are absolute paths, and they are automatically created. If you specify a relative path, the files are created relative to the Java process that starts the WebLogic Server.</p>
Error Directory	<p>Enter the location where messages are posted if there is a problem.</p> <p>Note: The Archive, Download, and Error directories are absolute paths, and they are automatically created. If you specify a relative path, the files are created relative to the Java process that starts the WebLogic Server.</p>
Request Encoding	Accept the default UTF-8 as the character set encoding for requests in FTP transports.
Advanced Settings	
Scan Subdirectories	Select this check box to recursively scan all directories
Sort By Arrival	Select this check box to deliver events in the order of arrival.
Timeout	Enter the socket timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout.
Retry Count	Specify the number of retries for FTP connection failures.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

HTTP Transport Configuration Page

The HTTP transport now supports both HTTP and HTTPS endpoints.

The **Create/Edit a Proxy Service - HTTP Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

Use this page to configure transport settings for a proxy service using the HTTP transport protocol. [Table 17-7](#) describes how to use the page.

Table 17-7 Create/Edit a Proxy Service - HTTP Transport Configuration Page

Option	To create or edit...
HTTPS required	Select this check box for inbound HTTPS endpoints. To learn more, see Configuring Transport-Level Security in the <i>Oracle Service Bus Security Guide</i> .

Table 17-7 Create/Edit a Proxy Service - HTTP Transport Configuration Page (Continued)

Option	To create or edit...
Authentication	<p>Select one of the following:</p> <ul style="list-style-type: none"> • None - Specifies that authentication is not required. • Basic - Specifies that basic authentication is required to access this service. Basic authentication instructs WebLogic Server to authenticate the client using a user name and password against the authentication providers configured in the security realm, such as a Lightweight Directory Access Protocol (LDAP) directory service and Windows Active Directory. The client must send its user name and password on the HTTP request header. Basic authentication is strongly discouraged over HTTP because the password is sent in clear text. However, it is safe to send passwords over HTTPS because HTTPS provides an encrypted channel. Warning: By default, all users (authorized and anonymous) can access a proxy service. To limit the users who can access a proxy service, create a transport-level authorization policy. See “Editing Transport-Level Access Policies” on page 22-16. • Client Certificate - Specifies encrypted communication and strong client authentication (two-way SSL). To learn more, see Configuring Transport-Level Security in the <i>Oracle Service Bus Security Guide</i>. • Custom Authentication - Specifies that an authentication token is contained in an HTTP header. The client's identity is established through the use of this client-supplied token. You must configure an Identity Assertion provider that maps the token to an Oracle Service Bus user. The custom authentication token can be of any active token type supported by a configured WebLogic Server Identity Assertion provider.
Dispatch Policy	<p>Select a dispatch policy for this endpoint. Leave blank to use the default dispatch policy.</p> <p>Dispatch policy refers to the instance of WLS Work Manager that you want to use for the service endpoint. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Work Manager in the <i>WebLogic Server Administration Console Online Help</i>.</p>

Table 17-7 Create/Edit a Proxy Service - HTTP Transport Configuration Page (Continued)

Option	To create or edit...
Request Encoding	<ul style="list-style-type: none"> For HTTP inbound transports: If the character set encoding parameter of the <code>Content-Type</code> header is not specified in Client Request, enter a character set encoding parameter. If you do not enter a value, the field defaults to <code>ISO-8859-1</code>. For HTTP outbound transports: If you have not configured a request encoding, the Oracle Service Bus run time decides the most appropriate encoding while it makes a request to the business service. In the case of a non-passthrough scenario, the default character encoding is <code>UTF-8</code> at run time. However if it is a passthrough scenario, the run time will pass through the encoding received with the outbound response.
Response Encoding	Accept the default <code>ISO-8859-1</code> as the character set encoding for responses in HTTP transports, or enter a different character set encoding.
Advanced Settings	
Authentication Header	Enter the HTTP header (any except <code>Authorization</code>) from which Oracle Service Bus is to extract the token. This field is available only if you selected the Custom Authentication check box. For example, <code>client-xyz-token</code> .
Authentication Token Type	Select an authentication token type. Only the active token types configured for an Identity Assertion provider are available. (See Configuring Identity Assertion Providers for Custom Tokens for more information.) This field is available only if you selected the Custom Authentication check box.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary page**.

JCA Transport Configuration Page

Use this page to configure transport settings using the JCA transport protocol. For more information on using the JCA transport, see the [JCA Transport User Guide](#).

Table 17-8 JCA transport configuration

Option	Description
Adapter Name	A read-only value showing the name of the adapter that the JCA service will use.
Adapter Type	A read-only value showing the adapter type.
Dispatch Policy	<p>Select the instance of WebLogic Server Work Manager that you want to use for the dispatch policy for this endpoint. The default Work Manager is used if no other Work Manager exists.</p> <p>For information about Work Managers, see the following <i>WebLogic Server Administration Console Online Help</i> topics:</p> <ul style="list-style-type: none"> • Using Work Managers to Optimize Scheduled Work • Create Global Work Managers
JNDI Service Account	<p>JNDI Service Account is for JNDI context security, used to access the EIS adapter managed connection factory. Click Browse and select a service account. If no service account is specified, an anonymous subject is used.</p> <p>For JCA business services, there is no restriction on the type of JNDI service account that can be configured, such as static or pass-through, but the run time must be able to access a user name and password. JCA proxy services can use only static JNDI service accounts.</p> <p>For more information on JNDI service accounts, see “Security” in the JCA Transport User Guide.</p>

Table 17-8 JCA transport configuration (Continued)

Option	Description
Always use configuration from JCA WSDL	<p data-bbox="431 392 1143 479">This option determines whether or not connection factory properties, activation spec properties (proxy services), and interaction spec properties (business services) are always used from the WSDL.</p> <p data-bbox="431 491 1143 578">If this option is selected (default), the JCA transport interacts with the JCA framework in the following ways, depending on whether you are using managed or non-managed mode:</p> <ul data-bbox="431 588 1163 769" style="list-style-type: none"> • Managed mode – The activation/interaction spec defined in the JCA WSDL. The Activation/Interaction Spec Properties field is read-only; and if Connection Mode is set to Managed, the Connection Factory Properties field is read-only. • Non-managed mode – Connection factory properties defined in the JCA WSDL. The Activation/Interaction Spec Properties field is read-only. <p data-bbox="431 781 1163 925">If this option is deselected, you can override the Activation/Interaction Spec Properties of the WSDL; and in non-managed mode you can override the Connection Factory Properties of the WSDL. At run time the JCA transport interacts with the JCA framework using the JCA WSDL and any activation/interaction spec or connection factory overrides you have provided.</p> <p data-bbox="431 942 1163 999">For more information on using this option, see “Endpoint Redeployment” in the JCA Transport User Guide.</p>
Connection Mode	<p data-bbox="431 1029 1110 1086">This option determines how the service connects to the associated JCA adapter for the EIS system.</p> <p data-bbox="431 1098 1163 1242">Managed – Recommended for production. The JCA transport connects to the JCA adapter through the JCA adapter-managed connection factory configured in WebLogic Server. For authentication, specify a JNDI service account. If no JNDI service account is specified, an anonymous subject is used. In managed mode, Connection Factory Authentication Properties are read-only.</p> <p data-bbox="431 1255 1163 1399">Non-Managed – The JCA transport connects to the JCA adapter through the JCA adapter framework, which acts as a container for the JCA adapter. For authentication, specify a JNDI service account. If no JNDI service account is specified, an anonymous subject is used. In non-managed mode, Connection Factory Authentication Properties are editable for overrides.</p> <p data-bbox="431 1421 1163 1508">Note: If you want to change from Non-Managed mode to Managed mode, be sure to deselect the Overwrite Connection Authentication Properties option before changing modes.</p>

Table 17-8 JCA transport configuration (Continued)

Option	Description
Overwrite Connection Authentication Properties	<p>This option indicates whether or not the user name/password in the adapter connection factory is overwritten by the Connection Authentication Service Account credentials. If no JNDI Service Account is specified, an anonymous subject is used.</p> <p>This option, which is displayed only if the connection factory properties contain user name/password properties, is available in non-managed mode with “Always use configuration from JCA WSDL” deselected.</p>
Connection Authentication Service Account	<p>This field is enabled if “Overwrite Connection Authentication Properties” is enabled and selected. This service account browser displays available service accounts. If the “Overwrite Connection Authentication Properties” option is selected, you must select a service account. For proxy services, only static service accounts are available.</p> <p>This field is displayed only if the connection factory properties contain user name password properties.</p>
Connection Factory Authentication Properties	<p>This field is displayed only if the Connection Factory Properties contain a user name and password. This field is always read-only.</p>
Connection Factory Properties	<p>This field shows the connection factory properties from the WSDL’s <jca:address> element.</p> <p>Development and Testing: You can override this value if you deselect “Always use configuration from JCA WSDL” and make the Connection Mode Non-Managed. In production environments, use managed mode, which makes the JCA transport connect to the adapter connection factory configured in WebLogic Server.</p>
Operation Name	<p>Displays a read-only name of the selected WSDL operation. An operation can have its own activation/interaction spec properties, shown in the Activation/Interaction Spec Properties field.</p>

Table 17-8 JCA transport configuration (Continued)

Option	Description
Activation/Interaction Spec Properties	<p>“Activation Spec Properties” is the field name for proxy services; “Interaction Spec Properties” is the field name for business services.</p> <p>If this service is an inbound service invoked by an EIS application, this field displays the activation spec properties for the JCA inbound operation shown in Operation Name field.</p> <p>You can override the activation/interaction spec properties if you deselect “Always use configuration from JCA WSDL.”</p> <p>Note: For Oracle Adapter Suite adapters, activation/interaction spec properties are displayed as read-only. The Oracle Adapter Suite adapters store their own configurations, which you must change in the Oracle Adapter Suite management tools.</p>
TopLink File Browser	<p>For Oracle Database or Oracle Applications adapters that depend on a database, use this field to select a TopLink mapping file from the file system. The content of the TopLink mapping file is displayed in an editable text box.</p> <p>Generate a TopLink mapping file in Oracle JDeveloper and import it into Oracle Service Bus.</p>

JMS Transport Configuration page

The **Create/Edit a Proxy Service - JMS Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in [“Creating and Configuring Proxy Services” on page 17-1](#) and [“Editing Proxy Service Configurations” on page 17-47](#).

For more information, see the [Oracle Service Bus Interoperability Solutions for JMS](#).

Use this page to configure transport settings for a proxy service using the JMS transport protocol. [Table 17-9](#) describes how to use the page.

Table 17-9 Create/Edit a Proxy Service - JMS Transport Configuration Page

Option	To create or edit...
Destination Type	<p>Select one of the following:</p> <ul style="list-style-type: none"> • Queue (for a point-to-point destination type) • Topic (for a publish/subscribe destination)

Table 17-9 Create/Edit a Proxy Service - JMS Transport Configuration Page (Continued)

Option	To create or edit...
Is Response Required	<p>This option is available only when Queue is selected for the Destination Type.</p> <p>Select this option to specify that a response is expected after an outbound message is sent.</p>
Response Correlation Pattern	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Select one of the following:</p> <ul style="list-style-type: none"> • Select JMSMessageID for JAX-RPC services running on WebLogic Server 9.2. • Select JMSCorrelationID for all other services. When you select this option, you must also enter a Response URI, below.
Response URI	<p>This option is available only when JMSCorrelationID is selected for the Response Correlation Pattern.</p> <p>Enter a response URI in the format:</p> <pre>jms://host:port/factoryJndiName/destJndiName</pre> <p>To target multiple servers, use the following format:</p> <pre>jms://host1:port,host2:port/QueueConnectionFactory/DestName</pre>
Response Connection Factory	<p>This option is available only when JMSMessageID is selected for the Response Correlation Pattern.</p> <p>Enter a response connection factory URI.</p> <p>If a connection factory is not specified, the connection factory for the request is used for the response.</p>
Response Message Type	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Select one of the following:</p> <ul style="list-style-type: none"> • Bytes (for a stream of uninterpreted bytes) • Text (for text messages)
Request Encoding	<p>Accept the default UTF-8 as the character set encoding for requests in JMS transports, or enter a different character set encoding.</p>

Table 17-9 Create/Edit a Proxy Service - JMS Transport Configuration Page (Continued)

Option	To create or edit...
Response Encoding	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Accept the default UTF-8 as the character set encoding for responses in JMS transports, or enter a different character set encoding.</p>
Client Response Timeout	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Enter the number of seconds to wait for a server response before dropping the connection. This only applies if the client is another proxy service in the same domain.</p>
Dispatch Policy	<p>Select a dispatch policy for this endpoint. Default signifies the default dispatch policy.</p> <p>Dispatch policy refers to the instance of WLS Work Manager that you want to use for the service endpoint to process the request. For example, if the proxy service has a JMS transport protocol, the proxy service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy.</p>
Advanced Settings	
Use SSL	<p>Select only if the requests are made over a TLS/SSL connection.</p> <p>TLS/SSL (Secure Sockets Layer) provides secure connections by allowing two applications connecting over a network to authenticate the other's identity and by encrypting the data exchanged between the applications. Authentication allows a server, and optionally a client, to verify the identity of the application on the other end of a network connection. Additionally, if the administrator has restricted access to individual JMS destinations (queues or topics) by setting access control on the JNDI entry for the destination, the Business Service must authenticate when looking up the entry in the JNDI tree with a user name and password.</p>
Message Selector	<p>Enter a message selector expression.</p> <p>Only messages with properties matching the expression are processed</p>

Table 17-9 Create/Edit a Proxy Service - JMS Transport Configuration Page (Continued)

Option	To create or edit...
Durable Subscription	<p>This option is available only if Topic is selected for the Destination Type.</p> <p>Select this check box if the subscription is durable or leave it blank if the subscription is not durable</p>
Retry Count	Enter the number of delivery retries a message can have before it is moved to the error destination. This field only applies to WebLogic Server JMS destinations.
Retry Interval	Enter the amount of time, in milliseconds, before rolled back or recovered messages are redelivered. This field only applies to WebLogic Server JMS destinations.
Error Destination	Enter the name of the target destination for messages that have reached their redelivery limit. This field only applies to WebLogic Server JMS destinations.
Expiration Policy	Select an Expiration Policy to use when an expired message is encountered on a destination. This field only applies to WebLogic Server JMS destinations.
Is XA Required	<p>Select this check box if your connection factory is XA.</p> <p>This value is taken into account when the remote connection factory is unavailable. If your connection factory is available and this value is true, make sure that the connection factory is defined as transactional.</p>
Synchronous Transactional	<p>Select this check box to have the response pipeline inherit the transaction from the request pipeline. This means that the transaction will not commit until both pipelines have completed.</p> <p>This field is enabled only when the Is Response Required field is checked.</p> <p>Synchronous Transactional consumes a request thread until the response thread is completed.</p>
JMS Service Account	Select a service account to use for the JMS resource managed by the JMS server. A service account is an alias resource for a User ID and its associated password. The same service account is used for both JNDI and JMS purposes. To learn more about service accounts, see “Service Accounts” on page 14-1 .

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

MQ Transport Configuration page

The **Create/Edit a Proxy Service - MQ Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

For more information, see the [MQ Transport User Guide](#).

Before you begin

Configure a MQ Connection resource. See “[MQ Connections](#)” on page 8-1.

To configure the MQ transport

Use this page to configure transport settings for a proxy service using the native MQ transport protocol. [Table 17-10](#) describes how to use the page.

Table 17-10 Create/Edit a Proxy Service - MQ Transport Configuration Page

Option	To create or edit...
Polling Interval	Enter a polling interval, in milliseconds. The default is 1000.
Is Response Required	Select this option to specify that a response is expected after an outbound message is sent.
Response Correlation Pattern	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Specify whether the response correlation pattern should be based on MessageID or CorrelationID.</p>
MQ Response URI	<p>This option is available only when the Is Response Required check box is selected.</p> <p>The destination to which the response should be published. Enter a response URI in the same format as the endpoint URI: <code>mq://<local-queue-name>?conn=<mq-connection-resource-ref></code></p> <p>For more detailed information, see the MQ Transport User Guide.</p>

Table 17-10 Create/Edit a Proxy Service - MQ Transport Configuration Page (Continued)

Option	To create or edit...
Response Message Type	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Select one of the following:</p> <ul style="list-style-type: none"> • Bytes (for a stream of uninterpreted bytes) • Text (for text messages)
Client Response Timeout	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Enter the number of seconds to wait for a response before dropping the connection.</p>
Dispatch Policy	<p>This option is available only when the Is Response Required check box is selected.</p> <p>Select a dispatch policy for this endpoint.</p> <p>Dispatch policy refers to the instance of WLS Work Manager that you want to use for the service endpoint. For information about work managers, see Using Work Managers to Optimize Scheduled Work and Create Work Manager in the WebLogic Server Administration Console Online Help.</p>
Backout Threshold	<p>Enter a value representing the number of times the pipeline should retry a message before redirecting the message to the queue specified in the Dead Letter URI field.</p> <p>If you do not specify a value for this field, the message is redirected to the dead letter queue without attempting any retries.</p>
MQ Dead Letter URI	<p>Enter the URI of the dead letter queue to which request messages should be redirected after attempting the number of retries specified in the Backout Threshold field.</p> <p>If you do not specify a value for this field, the message is discarded after retrying the number of times specified in the Backout Threshold field. The Dead Letter URI uses the same format as the EndPoint URI.</p>

Table 17-10 Create/Edit a Proxy Service - MQ Transport Configuration Page (Continued)

Option	To create or edit...
Endpoint URI 'GET' options	<p data-bbox="460 390 1072 416">Enter the MQ GET message options from among the following:</p> <ul style="list-style-type: none"> <li data-bbox="460 430 978 456">• MQC.MQGMO_ACCEPT_TRUNCATED_MSG <li data-bbox="460 465 938 491">• MQC.MQGMO_ALL_MSGS_AVAILABLE <li data-bbox="460 499 844 526">• MQC.MQGMO_BROWSE_FIRST <li data-bbox="460 534 844 560">• MQC.MQGMO_BROWSE_NEXT <li data-bbox="460 569 857 595">• MQC.MQGMO_COMPLETE_MSG <li data-bbox="460 604 783 630">• MQC.MQGMO_CONVERT <li data-bbox="460 638 897 664">• MQC.MQGMO_FAIL_IF QUIESCING <li data-bbox="460 673 736 699">• MQC.MQGMO_LOCK <li data-bbox="460 708 864 734">• MQC.MQGMO_LOGICAL_ORDER <li data-bbox="460 743 938 769">• MQC.MQGMO_MARK_BROWSE_CO_OP <li data-bbox="460 777 931 803">• MQC.MQGMO_MARK_SKIP_BACKOUT <li data-bbox="460 812 850 838">• MQC.MQGMO_NO_SYNCPOINT <li data-bbox="460 847 736 873">• MQC.MQGMO_NONE <li data-bbox="460 881 776 907">• MQC.MQGMO_NO_WAIT <li data-bbox="460 916 803 942">• MQC.MQGMO_SYNCPOINT <li data-bbox="460 951 985 977">• MQC.MQGMO_SYNCPOINT_IF_PERSISTENT <li data-bbox="460 986 770 1012">• MQC.MQGMO_UNLOCK <li data-bbox="460 1020 971 1046">• MQC.MQGMO_UNMARK_BROWSE_CO_OP <li data-bbox="460 1055 998 1081">• MQC.MQGMO_UNMARK_BROWSE_HANDLE <li data-bbox="460 1090 985 1116">• MQC.MQGMO_UNMARKED_BROWSE_MSG <li data-bbox="460 1124 796 1150">• MQC.MQGMO_VERSION_1 <li data-bbox="460 1159 796 1185">• MQC.MQGMO_VERSION_2 <li data-bbox="460 1194 796 1220">• MQC.MQGMO_VERSION_3 <li data-bbox="460 1229 729 1255">• MQC.MQGMO_WAIT <p data-bbox="460 1333 1153 1385">You can use either “ ” or “+” to separate multiple options. For example, you can specify the following:</p> <p data-bbox="460 1402 951 1454">MQC.MQGMO_ACCEPT_TRUNCATED_MSG MQC.MQGMO_LOCK</p> <p data-bbox="460 1472 1166 1524">The MQ GET message options are applied when reading a message from the inbound queue.</p>

Table 17-10 Create/Edit a Proxy Service - MQ Transport Configuration Page (Continued)

Option	To create or edit...
Process RFH2 Headers	<p>Select this option to parse WebSphere MQ RFH2 headers from a message payload and automatically generate an RFH2Headers transport header containing the RFH2 data.</p> <p>If you do not select this option, the payload is passed through as received.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - [Summary page](#)**.

SB Transport Configuration page

The **Create/Edit a Proxy Service - SB Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

For more information, see the [SB Transport User Guide](#).

Use this page to configure transport settings for a proxy service using the SB (Service Bus) transport protocol. [Table 17-11](#) describes how to use the page.

Table 17-11 Create/Edit a Proxy Service - SB Transport Configuration Page

Option	To create or edit...
Dispatch Policy	<p>Select a dispatch policy for this endpoint or use the default dispatch policy.</p> <p>Dispatch policy refers to the instance of WLS Work Manager that you want to use for the service endpoint to process the request. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Work Manager in the <i>WebLogic Server Administration Console Online Help</i>.</p>
Use SSL	<p>When specified, requests must be sent over an SSL connection.</p> <p>However, unsecured connections are not forbidden. The administrator must close all unsecured protocols on the server (for example, t3 or http) to strictly enforce secured client connections.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

SFTP Transport Configuration page

The **Create/Edit a Proxy Service - SFTP Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

For more information, see the *HTTP and Poller Transports User Guide*.

Use this page to configure transport settings for a proxy service using the sftp transport protocol. [Table 17-12](#) describes how to use this page.

Table 17-12 Create/Edit a Proxy Service - SFTP Transport Configuration Page

Option	To create or edit...
User Authentication	Select one of the following: <ul style="list-style-type: none">• Username Password Authentication - Specifies that a static service account is associated with this authentication method and the client is authenticated using the provided credentials.• Host Based Authentication - Specifies that a user name and service key provider is required to use this authentication method. Any user connecting from a known host is authenticated using the private key of the host.• Public Key Authentication - Specifies that a user name and service key provider is required to use this authentication method. Every user has their own private key.
Service Account	Enter the service account for the user, or click Browse to select service accounts from a browser.
Service Key Provider	This option is available only when Host Based or Public Key Authentication is selected. Enter a service key provider in the Service Key Provider field. You can click Browse to select service key providers from a browser. This is a required field.
Username	This option is available only when Host Based or Public Key Authentication is selected. Enter the user name.

Table 17-12 Create/Edit a Proxy Service - SFTP Transport Configuration Page (Continued)

Option	To create or edit...
Pass By Reference	Select this check box to stage the file in the archive directory and pass it as a reference in the headers.
Remote Streaming	Select this check box to stream the SFTP files directly from the remote server at the time of processing. When you select this option, the archive directory is the remote directory on the remote SFTP server machine. Therefore, you should specify the archive directory as relative to the SFTP user directory.
File Mask	Enter the regular expression for the files to be picked. The default is * . * .
Managed Server	This field is available only in a clustered domain. Select the Managed Server to act as the polling server. All of the Managed Servers can process the message, but only one can poll for the message.
Polling Interval	Enter the interval in seconds at which the file is polled from the specified location. The default is 60.
Read Limit	Specify the maximum number of messages to read per polling sweep. Enter 0 to specify no limit. The default is 10.
Post Read Action	Select what happens to a message after it has been read. <ul style="list-style-type: none"> • Archive - The message is archived. • Delete - The message is deleted.
Archive Directory	Specify the path to the archive location if the Post Read Action option is set to Archive . This field is required if the Pass By Reference option is selected. Note: The Archive, Download, and Error directories are absolute paths, and they are automatically created. If you specify a relative path, the files are created relative to the Java process that starts the WebLogic Server.
Download Directory	Enter the directory on your local machine where files are downloaded during the file transfer. Note: The Archive, Download, and Error directories are absolute paths, and they are automatically created. If you specify a relative path, the files are created relative to the Java process that starts the WebLogic Server.

Table 17-12 Create/Edit a Proxy Service - SFTP Transport Configuration Page (Continued)

Option	To create or edit...
Error Directory	Enter the location where messages are posted if there is a problem. Note: The Archive, Download, and Error directories are absolute paths, and they are automatically created. If you specify a relative path, the files are created relative to the Java process that starts the WebLogic Server.
Request Encoding	Accept the default UTF-8 as the character set encoding for requests in SFTP transports.
Advanced Settings	
Scan Subdirectories	Select this check box to recursively scan all directories
Sort By Arrival	Select this check box to deliver events in the order of arrival.
Timeout	Enter the socket timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout. The default value is 60.
Retry Count	Specify the number of retries for SFTP connection failures.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - [Summary page](#)**.

Tuxedo Transport Configuration page

The **Create/Edit a Proxy Service - Tuxedo Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

For more information, see *[Oracle Service Bus Interoperability Solution for Tuxedo](#)*.

Use this page to configure transport settings for a proxy service using the Tuxedo transport protocol. [Table 17-13](#) describes how to use the page.

Table 17-13 Create/Edit a Proxy Service - Tuxedo Transport Configuration Page

Option	To create or edit...
Field Table Classes	<p>Enter the name of the class or classes describing the FML/FML32 buffer received. These are used for the FML/FML32-to-XML conversion routines to map field names to element names. This is a space separated list of fully qualified class names.</p>
View Classes	<p>Enter the name of the class or classes describing the VIEW/VIEW32 buffer received or sent. These are used for the VIEW-to-XML or VIEW32-to-XML conversion routines to map field names to element names. This is a space separated list of fully qualified class names.</p> <p>X_C_TYPE and X_COMMON Tuxedo buffer types are handled in the same manner as VIEW/VIEW32 buffers.</p> <p>If an incoming request contains a VIEW, then the corresponding VIEW class should be specified in the Oracle Service Bus CLASSPATH.</p>
Classes Jar	<p>Select a JAR resource that contains a JAR file with the FML/FML32 or VIEW/VIEW32 classes necessary for this endpoint operation.</p>
Local Access Point	<p>Select a local access point from the drop-down list that is associated with the export. The drop-down list contains local access points configured in WTC. A proxy service cannot be created if there is not an associated local access point.</p> <p>If no local access points exist or to create a new one, select New. Enter the corresponding Local Access Point Name and Local Network Address in the adjacent fields. Upon validation of the endpoint, the access point is added to the WTC configuration for each WTC server. If no WTC server exists, one is created.</p> <p>You can enter an existing access point name after selecting the New option. This causes the existing information to be updated with the new parameters. You can change only the host name and port number.</p>

Table 17-13 Create/Edit a Proxy Service - Tuxedo Transport Configuration Page (Continued)

Option	To create or edit...
Remote Access Point	<p>This field appears only when you select New in the Local Access Point field.</p> <p>From the drop-down list, select a remote access point to be associated with the newly created local access point. If none exist or to create a new one, select New. Enter the corresponding Access Point Name and Network Address in the adjacent fields.</p> <p>You can enter an existing access point name after selecting the New option. This causes the existing information to be updated with the new parameters. You can change only the host name and port number.</p> <p>The remote access point will also be the authentication principal for the WTC connection for inbound requests. Optionally, you can create a user with the same access point ID in the default security realm to allow incoming calls. To do so, select Yes from the Create User? drop-down list. The password will be randomly generated using a temporary variable to avoid security issues.</p>
Reply Buffer Type	<p>This option is available only if the Response Required? field is selected.</p> <p>Select the type of buffer that the remote Tuxedo client will receive.</p>
Reply Buffer Subtype	<p>This option is available only when the Response Required? option is selected and the Reply Buffer Type value is VIEW or VIEW32.</p> <p>Enter the buffer subtype with which to associate the reply buffer.</p>
Response Required?	<p>Select this check box if this service is expected to send a response.</p> <p>The default status is that this option is selected.</p> <p>This option is cleared and the unavailable if the service type is Messaging Service and the response message type is None.</p>
Request Encoding	Specify a character set encoding for requests in Tuxedo transports.
Response Encoding	Specify a character set encoding for responses in Tuxedo transports.
Transformation Style	<p>Select one of the following:</p> <ul style="list-style-type: none"> • None - (default) The order of fields may not be respected. • Ordered - The fields are presented with all their occurrences in the correct order. • Ordered and Grouped - If the fields are logically structured as records, the fields are ordered by occurrence and grouped by record.

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

WS Transport Configuration page

The **Create/Edit a Proxy Service - WS Transport Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

For more information, see the [WS Transport User Guide](#).

Use this page to configure transport settings for a proxy service using the WS transport protocol. [Table 17-14](#) describes how to use the page.

Table 17-14 Create/Edit a Proxy Service - WS Transport Configuration Page

Option	To create or edit...
Dispatch Policy	<p>Select a dispatch policy for this endpoint or use the default dispatch policy.</p> <p>Dispatch policy refers to the instance of WLS Work Manager that you want to use for the service endpoint. For information about Work Managers, see Using Work Managers to Optimize Scheduled Work and Create Work Manager in the <i>WebLogic Server Administration Console Online Help</i>.</p>
Advanced Settings	
Retry Count	<p>The number of times to retry delivery of a message to the pipeline.</p> <p>If an unhandled exception occurs in the request pipeline of a proxy service, the incoming WS transport message will be redelivered to the pipeline up to the number of times specified by the retry count. This value is important for reliably processing WS transport messages.</p>
Retry Delay	The number of seconds the system pauses before retrying to send a message to the pipeline after an error.
Synchronous	<p>Select this check box to have the response pipeline inherit the transaction from the request pipeline. This means that the transaction will not commit until both pipelines have completed.</p> <p>Synchronous consumes a request thread until the response thread is completed.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

Operation Selection Configuration page

The **Create/Edit a Proxy Service - Operation Selection Configuration** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47. This page is displayed only if the service you are creating has operations.

Use this page to enforce WS-I compliance (for SOAP 1.1 services only) and select the selection algorithm to use to determine the operation called by this proxy service. This option is only available for SOAP or XML services defined from a WSDL.

The WSDL specification defines a default algorithm to compute which operation is called based on the type of the SOAP message received. However, there are cases (for example, performance issues, signature/encryption issues, or the default algorithm is not applicable) when you may need to select the operation based on other means.

Oracle Service Bus provides additional algorithms. Each of them follows the same pattern and are based on the evaluation of an expression to get a value that is then used to lookup the corresponding operation in a static table.

Oracle Service Bus is generally very forgiving if an inbound message is either missing data such that the operation cannot be determined, or has data that does not correspond to a valid operation. Both of these conditions result in `$operation` being empty. Rather than reject all such messages, Oracle Service Bus does not initialize the operation variable in the context but otherwise continues to process the message.

However, security requirements are enforced if the proxy service is WSDL-based and at least one of the following conditions is true:

- The WSDL has a WS-Security policy and the proxy is an active intermediary.
- The proxy has message-level custom authentication (either custom token or username/password).

If these conditions are met, then there is a runtime check to make sure the operation selection algorithm returns a valid operation name. If the operation selection returns null or an operation that is not in the WSDL, then the message is rejected and an error is raised.

[Table 17-15](#) describes how to use the **Create/Edit a Proxy Service - Operation Selection Configuration** page.

Table 17-15 Create/Edit a Proxy Service - Operation Selection Configuration Page

Option	To create or edit...
Enforce WS-I Compliance	<p>For SOAP 1.1 services only:</p> <p>Select this check box if you want to specify whether or not the service is to conform to the Basic Profile defined by the Web Services Interoperability Organization.</p> <p>When a service is marked WS-I compliant, checks are performed against the messages sent to and from that service. For proxies, checks are performed against request messages received by the proxy. For invoked services (i.e. services invoked by a proxy via service callout action or route node), checks are performed against the response messages received from those services. Note that it is the WS-I compliance property of the invoked service and not the proxy that determines whether or not checks are performed against messages received from the invoked service. If you specify WS-I compliance testing for an invoked service, the message flow generates a fault for response errors.</p>

Table 17-15 Create/Edit a Proxy Service - Operation Selection Configuration Page (Continued)

Option	To create or edit...
Selection Algorithm	<p>Select one of the following and perform any required additional steps:</p> <ul style="list-style-type: none"> Transport Header - Select this algorithm to define the transport header that contains the lookup value. Then: <ul style="list-style-type: none"> In the Header Name field, enter the transport header that extracts the value used as a key to select the operation being invoked. Under the Operation Mapping field, specify the value for each operation in the Value field. The value is used as the key of the operation. SOAPAction Header - Select this algorithm to specify that operation mapping be done automatically from the WSDL associated with this proxy service. WS-Addressing - Select this algorithm to specify that the lookup value is contained by the WS-Addressing <code>Action</code> tag located in the SOAP headers of the SOAP message. Then, under the Operation Mapping field, specify the value for each operation in the Value field. The value is used as the key of the operation. SOAP Header - Select this algorithm to define an XPath expression to be evaluated against the SOAP headers. This allows you to get the lookup value. Then: <ul style="list-style-type: none"> In the XPath Expression field, specify the XPath expression that extracts the value used as a key to select the operation being invoked. Under the Operation Mapping field, specify the value for each operation in the Value field. The value is used as the key of the operation. SOAP Body Type - This is the default algorithm defined by the WSDL specification to compute which operation is called based on the type of the SOAP message received. <p>If the proxy service is configured for a Web Service security pass-through scenario with an encrypted body, you cannot select this algorithm. A similar caveat applies to pass-through encrypted SOAP headers.</p> <p>If you have a WSDL that has two operations with the same input message, do not select this algorithm for operations, because the operation cannot be uniquely identified by inspecting the input message.</p> Payload Type - Available only for XML services based on a WSDL port or WSDL binding.

Table 17-15 Create/Edit a Proxy Service - Operation Selection Configuration Page (Continued)

Option	To create or edit...
Header Name	<p>This option is available only when the Selection Algorithm option is set to Transport Header.</p> <p>Enter the transport header that extracts the value used as a key to select the operation being invoked.</p>
XPath Expression	<p>This option is available only when the Selection Algorithm option is set to SOAPHeader.</p> <p>Specify the XPath expression that extracts the value used as a key to select the operation being invoked.</p>
Operation Mapping	<p>This option is available only when the Selection Algorithm option is set to Transport Header, WS-Addressing, or SOAP Body Type.</p> <p>Specify the value for each operation in the Value field. The value is used as the key of the operation.</p>

After you finish

Click **Next** to continue configuring this service on the next page; or click **Last** to review and save this configuration on the **Create/Edit a Proxy Service - Summary page**.

Message Content Handling page

The **Create/Edit a Proxy Service - Message Content Handling** page is one in a series of pages for creating and editing proxy services, as described in [“Creating and Configuring Proxy Services” on page 17-1](#) and [“Editing Proxy Service Configurations” on page 17-47](#).

Use this page to specify whether the proxy service should stream message content, how the service is to decode request messages received and encode response messages sent, and whether the proxy service should stream MIME attachments instead of buffering the attachment contents in memory.

Using this page, you can enable the proxy service to stream message content rather than storing it in memory. You can also enable the proxy service to decode and parse inbound messages in MTOM/XOP format and to send responses using the MTOM/XOP format, when appropriate. SOAP Message Transmission Optimization Mechanism (MTOM) is a method of sending binary data to and from Web services. MTOM uses XML-binary Optimized Packaging (XOP) to transfer the binary data.

Using this page, you can also enable the proxy service to store MIME attachment content to a disk file and then process the data in a streaming fashion without buffering the attachment contents in memory. This enables the proxy service to process large attachments robustly and efficiently.

[Table 17-16](#) describes how to use the **Create/Edit a Proxy Service - Message Content Handling** page.

Table 17-16 Create/Edit a Proxy Service - Message Content Handling Page

Option	To create or edit...
Content Streaming	<p>Select this option to stream message content rather than store it in memory.</p> <p>Select the Enabled check box and choose the following:</p> <ul style="list-style-type: none">• Whether to buffer the intermediate content in memory (Memory Buffer) or to a disk file (Disk Buffer)• Whether to enable Compression <p>For more information, see Streaming body Content in the <i>Oracle Service Bus User Guide</i>.</p>

Table 17-16 Create/Edit a Proxy Service - Message Content Handling Page (Continued)

Option	To create or edit...
XOP/MTOM Support	<p data-bbox="471 390 1177 416">Oracle Service Bus supports XOP/MTOM using the following transports:</p> <ul data-bbox="471 428 588 526" style="list-style-type: none"> • HTTP/S • Local • SB <p data-bbox="471 543 1220 656">Select the Enabled check box to enable the proxy service to decode and parse inbound messages in MTOM/XOP format and to send responses using the MTOM/XOP format, when appropriate. Note that this option is disabled for imported proxy services that are based on previous release configurations.</p> <p data-bbox="471 673 1188 755">If XOP/MTOM Support is enabled, select how to handle binary data in the \$header and \$body message context variables from among the following options:</p> <ul data-bbox="471 769 1224 977" style="list-style-type: none"> • Include Binary Data by Reference: (Default) In an inbound request message, replace xop:Include elements with ctx:binary-content elements when setting up the \$header and \$body message context variables. • Include Binary Data by Value: In an inbound request message, replace xop:Include elements with Base64-encoded text versions of corresponding binary data when setting up the \$header and \$body message context variables. <p data-bbox="471 994 1210 1076">Use Include Binary Data by Reference when you need direct access to binary data, for example to pass data to a Java callout or Message Format Language (MFL) transform.</p> <p data-bbox="471 1093 1022 1119">Use Include Binary Data by Value in the following cases:</p> <ul data-bbox="471 1131 1224 1340" style="list-style-type: none"> • To bridge between MTOM and non-MTOM services. For example, consider an MTOM-enabled proxy service that receives a request that is then routed to a non-MTOM-enabled service. You could use this option to comply with existing standards for sending binary data in XML in Base64-encoded form. • To validate the contents of the message against an XML schema that requires a base64binary element to be used in place of binary data <p data-bbox="471 1357 1210 1527">Note that if XOP/MTOM Support is enabled for a proxy service, it is not required that every inbound message be in the MTOM format. Instead, this setting specifies that when an MTOM-formatted message arrives, the proxy service should handle it accordingly. Note also that when proxy services not enabled for XOP/MTOM Support receive an MTOM-formatted message, the service rejects the message and issues a runtime error.</p>

Table 17-16 Create/Edit a Proxy Service - Message Content Handling Page (Continued)

Option	To create or edit...
Attachments	<p>Oracle Service Bus supports streaming MIME attachments using the following transports:</p> <ul style="list-style-type: none"> • HTTP/S • Local (when chained through an HTTP proxy with streaming attachments enabled) <p>Select the Page Attachments to Disk check box to enable the proxy service to stream MIME attachments. When enabled for HTTP proxy services, the option applies to proxy service inbound request messages.</p> <p>Note that if you select XOP/MTOM Support, the Attachments option is only available if you choose the Include Binary Data by Reference option under XOP/MTOM Support. Note also that payloads that contain attachments must conform to RFC 822. Specifically, lines containing Internet headers need to be terminated with CRLF (carriage return line feed).</p>

After you finish

Click **Next** to review and save this configuration on the **Create/Edit a Proxy Service - Summary** page.

Summary page

The **Create/Edit a Proxy Service - Summary** page is one in a series of pages for creating and editing proxy services, as described in “[Creating and Configuring Proxy Services](#)” on page 17-1 and “[Editing Proxy Service Configurations](#)” on page 17-47.

Use this page to view or modify the configuration settings for a proxy service before saving it.

To view or modify settings, click **Edit** in the row of the appropriate category (for example, **General Configuration**, **Transport Configuration**, etc.). The pages you can edit depend on what pages you configured when creating the proxy service. The following list shows all pages:

- “[General Configuration page](#)” on page 17-3
- “[Message Type Configuration page](#)” on page 17-6
- “[Transport Configuration page](#)” on page 17-8
- “[Protocol-Specific Transport Configuration Pages](#)” on page 17-12

- “E-Mail Transport Configuration page” on page 17-12
- “File Transport Configuration page” on page 17-14
- “FTP Transport Configuration page” on page 17-16
- “HTTP Transport Configuration Page” on page 17-18
- “JCA Transport Configuration Page” on page 17-20
- “JMS Transport Configuration page” on page 17-24
- “MQ Transport Configuration page” on page 17-28
- “SB Transport Configuration page” on page 17-31
- “SFTP Transport Configuration page” on page 17-32
- “Tuxedo Transport Configuration page” on page 17-34
- “WS Transport Configuration page” on page 17-37
- “Operation Selection Configuration page” on page 17-38
- “Message Content Handling page” on page 17-41

Exporting a WSDL Associated with a Proxy Service

You can export the WSDL of a WSDL-based proxy service, so you can view or modify the WSDL in an external tool such as an IDE. The WSDL is exported as a JAR file.


Note that this is different than the Export Resources functionality in the System Administration module, which you use to move and stage resources between two domains. See [“Exporting Resources” on page 26-7](#).

Before you begin

You can only export a WSDL when you are outside a session. See [“Using the Change Center” on page 2-2](#).

To export a WSDL

1. Do either of the following:
 - Select **Resource Browser > Proxy Services** to display the **Summary of Proxy Services** page.

- Select **Project Explorer**, then select the project or folder containing the proxy service you want to export as a WSDL. The [Project/Folder View page](#) is displayed.
- 2. Click the  **Export WSDL** icon in the row of the proxy service whose WSDL you want to export. A dialog box prompts you to open or save the exported JAR file.
- 3. In the dialog box, click **Open** to open the file, or click **Save** to save it.

Locating Proxy Services

1. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the proxy service.
 - Select **Resource Browser > Proxy Services**. The **Summary of Proxy Services** page displays the information shown in [Table 17-17](#). For a more detailed description of the properties, see [“Editing Proxy Service Configurations” on page 17-47](#).
2. To restrict the number of items in the list, you can filter by name, path, or both. In the **Name** and **Path** fields, under **Search**, enter the name and/or path of the target(s), then click the **Search** button.

The path is the project name and the name of the folder in which the proxy service resides.






Wildcard characters * and ? are allowed. Search is case-sensitive.

Click **View All** to display all proxy services in the domain. This clears the search parameters from the previous search.

Table 17-17 Summary of Proxy Services Page


Property	Description
Name	<p>A unique name for the proxy service. Click the name to display the View a Proxy Service - Configuration Details page.</p> <p>See “Editing Proxy Service Configurations” on page 17-47.</p>
Path	<p>The path is the project name and the name of the folder in which the proxy service resides, for example, <code>UDDI/Proxies/OSB_services</code>.</p> <p>Click the path of a proxy service to display the Project/Folder View page that contains it.</p>

Table 17-17 Summary of Proxy Services Page (Continued)

Property	Description
Actions	<p>Do any of the following:</p> <ul style="list-style-type: none"> Click the  Edit Message Flow icon to edit the message flow of the proxy service. See “Creating, Editing, and Viewing Message Flows” on page 18-1. Click the  Launch Test Console icon to invoke the Test Console, which you use to validate and test the design of your services and transformations. For business services, you can only use the Test Console at run time; that is, when the session is activated. For transformations, you can use the Test Console whether you are inside or outside a session. See “Testing Services” on page 30-1 and “Testing Transformations” on page 30-17. The  Export WSDL icon is displayed for WSDL-based business services. Click this icon to export a WSDL, which you can then view or modify in an external tools such as an IDE. See Note that this is different than the Export Resources functionality in the System Administration module, which you use to move and stage resources between two domains. See “Exporting a WSDL” on page 3-24.
Options	<p>Click the  Delete icon to delete the service. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. For more information, see “Deleting Proxy Services” on page 17-63.</p>

Editing Proxy Service Configurations

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the proxy service you want to view or edit. See [“Locating Proxy Services” on page 17-46](#).
3. Click the proxy service name. The [View a Proxy Service - Configuration Details](#) page displays configuration information for the selected proxy service.
4. To view or modify settings, do either of the following:

- Click the  **Edit** icon next to the name of the category whose properties you want to view or edit (for example, **General Configuration**, **Transport Configuration**, etc.). The pages you can edit depend on what pages you configured when creating the proxy service.

For a list of all those pages, see [“View a Proxy Service - Configuration Details page” on page 17-48](#).

- Click **Edit** at the bottom of the page to display the **Create/Edit a Proxy Service - General Configuration page**, which is the first page in the sequence of pages for configuring this proxy service.
5. Continue to view or edit, as described in [“Creating and Configuring Proxy Services” on page 17-1](#).
 6. On the **Edit a Proxy Service - Summary page**, click **Save** to commit the updates in the current session.
 7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

View a Proxy Service - Configuration Details page

The **View Proxy Service - Configuration Details** page displays the configuration details of a proxy service. [Table 17-18](#) describes all the properties that can appear on this page. (Properties vary depending on the details of the proxy service.)

The categories listed on this page correspond to the **Create/Edit a Proxy Service** pages used for creating and editing proxy service configurations, as described in [“Create/Edit a Proxy Service - Page Reference” on page 17-2](#).

Click the **Edit** link next to any category name to display the associated configuration page.

Table 17-18 View a Proxy Service: Configuration Details Page

Properties	Description
Last Modified By	The user who created this proxy service or imported it into the configuration.
Last Modified On	The date and time that the user created this proxy service or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
References	The number of objects that this proxy service references. If such references exist, click the numeric link to view a list of the objects.
Referenced by	The number of objects that reference this proxy service. If such references exist, click the numeric link to view a list of the objects.
Description	A description of this proxy service, if one exists.
General Configuration - Shows properties configured on the General Configuration page .	
Service Type	The service type.
Service Key Provider	The name of the service key provider.
Message Type Configuration - Shows properties configured on the Message Type Configuration page .	
Request Message Type	A message type for the request message: None , Binary , Text , MFL , or XML .
Response Message Type	A message type for the response message: None , Binary , Text , MFL , or XML .
Transport Configuration - Shows properties configured on the Transport Configuration page .	
Protocol	The transport protocol.
Endpoint URI	The endpoint URI.
Get All Headers	Whether all the headers or a defined set of headers are retrieved from the transport.
E-Mail Transport Configuration - Shows properties configured on the E-Mail Transport Configuration page .	
E-mail Protocol	A server type for the E-mail account: <ul style="list-style-type: none"> • pop3 • imap
Service Account	The service account for this mail server.
Managed Server	The Managed Server for polling in a clustered domain.
Polling Interval	A polling interval, in seconds.

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Read Limit	The maximum number of messages read per polling sweep. 0 signifies no limit.
Pass By Reference	Whether or not the file is staged in the archive directory and passed as a reference in the headers.
Pass Attachments by Reference	Whether or not the attachments are staged in the archive directory and passed as a reference in the headers.
Post Read Action	<p>Whether or not a message is archived, deleted, or moved after it has been read:</p> <ul style="list-style-type: none"> • Archive - the message is archived. • Delete - the message is deleted. • Move - the message is moved. <p>Note: Move is only available with the IMAP protocol.</p>
Attachments	<p>Whether or not attachments are archived or ignored:</p> <ul style="list-style-type: none"> • Archive - attachments are saved to the Archive Directory. • Ignore - attachments are ignored.
IMAP Move Folder	The folder to which the message is moved if the Post Read Action field is set to Move .
Download Directory	The temporary location for downloading E-mails.
Archive Directory	<p>The path to the archive location if the Post Read Action field is set to Archive.</p> <p>The Archive Directory field is also a required field if you have selected the Pass By Reference or the Pass Attachments By Reference field.</p>
Error Directory	The file system directory path to write the message and any attachments if there is a problem.
Request Encoding	Displays the character set encoding for requests in E-mail transports. The default is <code>iso-8859-1</code> .
File Transport Configuration - Shows properties configured on the File Transport Configuration page .	
File Mask	The regular expression applied for this file to be picked.

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Managed Server	The Managed Server for polling in a clustered domain.
Polling Interval	The polling interval, in seconds.
Read Limit	The maximum number of messages to read per polling sweep. 0 signifies no limit.
Sort by Arrival	Whether or not events are delivered in the order of arrival.
Scan Subdirectories	Whether or not all the directories are recursively scanned.
Pass By Reference	Whether or not the file is staged in the archive directory and passed as a reference in the headers.
Post Read Action	Whether or not a message is archived or deleted after it has been read: <ul style="list-style-type: none"> • Archive - the message is archived. • Delete - the message is deleted.
Stage Directory	The intermediate directory where files are temporarily staged while they are processed.
Error Directory	The file system directory path to write the message and any attachments if there is a problem.
Archive Directory	The path to the archive location if the Post Read Action field is set to Archive . The Archive Directory field is also a required field if you have selected the Pass By Reference field.
Request Encoding	Displays the character set encoding for requests in File transports. The default is <code>utf-8</code> .
FTP Transport Configuration - Shows properties configured on the FTP Transport Configuration page .	
Identity (E-mail id)/ Service Account	The mail ID for an anonymous user or service account for an externally configured user.
Timeout	The socket timeout, in seconds.
File Mask	The regular expression applied for this file to be picked.
Scan Subdirectories	Whether or not all the directories are recursively scanned.

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Pass By Reference	Whether or not the file is staged in the archive directory and passed as a reference in the headers.
Remote Streaming	Whether or not the ftp files are directly streamed from the remote server at the time of processing.
Post Read Action	Whether or not a message is archived or deleted after it has been read: <ul style="list-style-type: none"> • Archive - the message is archived. • Delete - the message is deleted.
Archive Directory	The path to the archive location if the Post Read Action field is set to Archive . The Archive Directory field is also a required field if you have selected the Pass By Reference field.
Download Directory	The temporary location for downloading FTP files.
Error Directory	The file system directory path to write the message and any attachments if there is a problem.
Retry Count	The number of retries for FTP connection failures.
Managed Server	The Managed Server for polling in a clustered domain.
Polling Interval	The polling interval, in seconds.
Read Limit	The maximum number of messages to read per polling sweep. 0 signifies no limit.
Sort By Arrival	Whether or not events are delivered in the order of arrival.
Transfer Mode	The transfer mode: Binary or ASCII.
Request Encoding	Displays the character set encoding for requests in FTP transports. The default is <code>utf-8</code> .
HTTP Transport Configuration - Shows properties configured on the HTTP Transport Configuration Page .	
HTTPS required	Whether or not there are inbound HTTPS endpoints
Authentication	The client authentication method: None, Basic, or Custom Authentication.

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Request Encoding	Displays the character set encoding for requests in HTTP transports. The default is <code>iso-8859-1</code> .
Response Encoding	Displays the character set encoding for responses in HTTP transports. The default is <code>iso-8859-1</code> .
JCA Transport Configuration - Shows properties configured on the JCA Transport Configuration Page .	
JMS Transport Configuration - Shows properties configured on the JMS Transport Configuration page .	
Destination Type	The destination type: Queue or Topic .
Is Response Required	Whether or not a response is expected after an outbound message is sent.
Response Correlation Pattern	Correlation pattern options: <ul style="list-style-type: none"> • JMSCorrelationID • JMSMessageID
Response URI	The Response URI for the JMSCorrelationID.
Response Connection Factory	The Response Connection Factory URI for MessageID.
Response Message Type	Format for response message.
Request Encoding	The character set encoding for requests in JMS transports. The default is <code>utf-8</code> .
Response Encoding	The character set encoding for responses in JMS transports. The default is <code>utf-8</code> .
Client Response Timeout	The number of seconds to wait for a client response before timing out.
Dispatch Policy	The dispatch policy for this endpoint.
Use SSL	Whether or not the requests are made over a TLS/SSL connection.
Message Selector	The Message selector pattern.
Durable Subscription	Whether the subscription is durable or not.

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Retry Count	The number of delivery retries configured before the message is sent to the error destination.
Retry Interval	The retry interval in seconds.
Error Destination	The name of the target destination for messages that have reached their delivery limit.
Expiration Policy	The expiration policy used when an expired message is encountered on a destination.
Is XA Required	Whether the Connection Factory is transactional or not.
Synchronous Transactional	Whether the response pipeline inherits the transaction from the request pipeline. If set to true, the transaction does not commit until both pipelines have completed.
JMS service account	The service account to use for the JMS resource managed by the JMS server.
MQ Transport Configuration - Shows properties configured on the MQ Transport Configuration page .	
SB Transport Configuration - Shows properties configured on the SB Transport Configuration page .	
Dispatch Policy	The dispatch policy for this endpoint.
Use SSL	Whether or not the requests are made over an SSL connection.
SFTP Transport Configuration - Shows properties configured on the SFTP Transport Configuration page .	
Authentication Mode	The authentication method: Username Password, Host-Based, or Public Key Authentication.
Service Account	The service account for this sftp server.
Service Key Provider	The service key provider for this sftp server.
Username	The user name for this sftp server.
Timeout	The socket timeout, in seconds.
File Mask	The regular expression applied for this file to be picked.

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Scan Subdirectories	Whether or not all the directories are recursively scanned.
Pass By Reference	Whether or not the file is staged in the archive directory and passed as a reference in the headers.
Remote Streaming	Whether or not the remote file is directly streamed at the time of processing.
Post Read Action	Whether or not a message is archived or deleted after it has been read: <ul style="list-style-type: none"> • Archive - the message is archived. • Delete - the message is deleted.
Archive Directory	The path to the archive location if the Post Read Action field is set to Archive . The Archive Directory field is also a required field if you have selected the Pass By Reference field.
Download Directory	The temporary location for downloading SFTP files.
Error Directory	The file system directory path to write the message and any attachments if there is a problem.
Retry Count	The number of retries for SFTP connection failures.
Managed Server	The Managed Server for polling in a clustered domain.
Polling Interval	The polling interval, in seconds.
Read Limit	The maximum number of messages to read per polling sweep. 0 signifies no limit.
Sort By Arrival	Whether or not events are delivered in the order of arrival.
Request Encoding	Displays the character set encoding for requests in SFTP transports. The default is <code>utf-8</code> .
Tuxedo Transport Configuration - Shows properties configured on the Tuxedo Transport Configuration page .	
Field Table Classes	The space separated list of fully qualified FML Files class names for buffer mapping.
View Classes	The space separated list of fully qualified View class names for buffer mapping.

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Classes Jar	A JAR Resource that contains a JAR file with the FML/FML32 or VIEW/VIEW32 classes necessary for the endpoint operation.
Local Access Point for URI	The local access point for the URI Endpoint associated with the WTC Export Service.
Reply Buffer Type	The buffer type buffer that the remote Tuxedo client will receive. This field is enabled if the Response Required field is selected. Valid types are: CARRAY, FML, FML32, MBSTRING, STRING, VIEW, VIEW32, X_COMMON, X_C_TYPE, XML, X_OCTET.
Reply Buffer Subtype	The buffer subtype with which to associate the reply buffer if the buffer type is VIEW or VIEW32.
Response Required	Selecting the check box indicates Yes. A response is required. Otherwise, no response is required. The default status is selected, and deselected if the service type is Messaging Service and the response message type is None . In this case, the field is not enabled.
Request Encoding	The character set encoding for requests in Tuxedo transports.
Response Encoding	The character set encoding for responses in Tuxedo transports.
Transformation Style	The ordering or grouping of elements when FML or FML32 buffers are transformed into XML.
WS Transport Configuration - Shows properties configured on the WS Transport Configuration page .	
Dispatch Policy	The dispatch policy for this endpoint.
Retry Count	The number of retries for message delivery.
Retry Delay	The retry interval in seconds.
Synchronous	Whether the response pipeline inherits the transaction from the request pipeline. If set to true, the transaction does not commit until both pipelines have completed.
Message Level Security Configuration - Shows properties configured on the View a Proxy Service - Security page .	

Table 17-18 View a Proxy Service: Configuration Details Page (Continued)

Properties	Description
Custom Authentication	The client message-level authentication method: None , Custom Username and Password , or Custom Token .
Process WS-Security	Indicates whether the proxy service behaves as an active intermediary.
Operation Selection Configuration - Shows properties configured on the Operation Selection Configuration page .	
Enforce WS-I Compliance	For SOAP 1.1 services only: Displays Yes if you selected this option to specify whether or not the service is WS-I compliant, and displays No if you did not want to specify this.
Selection Algorithm	The selection algorithm that determines the operation called by this proxy service.
Header Name	If you selected Transport Header in the Selection Algorithm field for this proxy service, this field displays the transport header that extracts the value used as a key to select the operation being invoked.
XPath Expression	If you selected SOAP Headers in the Selection Algorithm field for this proxy service, this field displays the XPath expression that extracts the value used as a key to select the operation being invoked.
Operation Mapping	If you selected Transport Headers , WS-Addressing or SOAP Headers in the Selection Algorithm field for this proxy service, this field displays the value for each operation. The value is used as the key of the operation.
Message Content Handling Configuration - Shows properties configured on the Message Content Handling page .	
Content Streaming	Indicates whether to stream message content, whether to buffer intermediate content in memory or to a disk file, and whether to apply compression.
XOP/MTOM Support	Indicates whether the proxy service is Enabled or Disabled to decode and parse inbound messages in MTOM/XOP format and to send responses using the MTOM/XOP format, when appropriate. If the proxy service is enabled for XOP/MTOM Support, the field displays whether the binary data is included By Reference or By Value .
Page Attachments to Disk	Indicates whether the proxy service is configured to Page Attachments to Disk to stream MIME attachments.

View a Proxy Service – Policies page

The **View a Proxy Service - Policies** page is one in a series of pages for editing proxy services, as described in [“Creating and Configuring Proxy Services” on page 17-1](#) and [“Editing Proxy Service Configurations” on page 17-47](#).

Use this page to configure policy settings for a proxy service that has a WSDL-based policy or that uses custom policy bindings (both WSDL-based and Any SOAP services). [Table 17-19](#) describes how to use the page.

Note that for WSDL-based services, all policies bound to the service are exposed (inlined) in the effective WSDL regardless of which binding model is used. Abstract policies are pre-processed before they are inlined.

Table 17-19 View a Proxy Service - Policy Page

Option	To edit...
Service Policy Configuration	<p>There are two options in the Service Policy Configuration field:</p> <ul style="list-style-type: none"> WSDL-Based Policy, in which one or more Web Services Policy (WS-Policy) statements in a WSDL document express the proxy service's message-level security requirements. Custom Policy Bindings, in which you add service-level policies, operation-level policies (in which case the policy applies to both the request and response messages), request policies, and response policies from the console. <p>Note: The two policy binding models are mutually exclusive. If you bind policies directly to the service, all WSDL-based policies are ignored.</p>
Service Level Policies (Custom Policy Bindings Only)	<p>To specify policies that apply to the entire service, expand the service name entry. Click Add to search for and select your policies.</p> <p>You can select from your own existing WS-Policy resources, or from predefined policies.</p> <p>You can bind multiple policies to the service.</p> <p>Update the policy binding.</p>

Table 17-19 View a Proxy Service - Policy Page (Continued)

Option	To edit...
Operation Level Policies (WSDL-Based Policy Only)	Provides a read-only view of the request and response policies from the WSDL.
Operation Level Policies (Custom Policy Bindings Only)	<p>To specify policies that apply to an operation, the request/response of that operation, or any request or any response in the case of Any SOAP services, expand the operation name entry. Click Add to search for and select your policies.</p> <p>You can select from your own existing WS-Policy resources, or from predefined policies.</p> <p>You can bind multiple policies to the service.</p> <p>Update the policy binding.</p>

After you finish

Click **Update** to save this configuration; or click **Reset** to undo your changes.

View a Proxy Service - Security page

The **View a Proxy Service - Security** page is one in a series of pages for editing proxy services, as described in [“Creating and Configuring Proxy Services” on page 17-1](#) and [“Editing Proxy Service Configurations” on page 17-47](#).

Use this page to configure security settings for a proxy service.

The fields available on this page depend on the configuration of the proxy service. For example, if the proxy service is WSDL-based and the WSDL has a security policy or if the proxy service is an Any SOAP service and has a security policy, the page displays the Process WS-Security Header control. Depending on how that control is set, the Message Access control may also be displayed.

The configuration for both custom user name/password and custom token is similar. In both cases, you specify XPath expressions that enable Oracle Service Bus to locate the necessary information. The root of these XPath expressions is as follows:

- Use `soap-env:Envelope/soap-env:Header` if the service binding is AnySOAP or WSDL-SOAP.

- Use `soap-env:Body` if the service binding is not SOAP based.

All XPath expressions must be in a valid XPath 2.0 format. The XPath expressions must use the XPath "declare namespace" syntax to declare any namespaces used, as follows:

```
declare namespace
ns='http://webservices.mycompany.com/MyExampleService';)
```

[Table 17-20](#) describes the **View a Proxy Service - Security Configuration** page for a WSDL-based proxy service, in which the WSDL has a security policy, the transport is HTTP, and HTTPS is required.

Table 17-20 View a Proxy Service - Security Configuration Page

Option	To edit...
General Configuration	
Service Key Provider	<p>If needed, enter the path (project/folder) and name of a service key provider, or click Browse to select one from the Select Service Key Provider page.</p> <p>For more information, see “Service Key Providers” on page 15-1. To learn how to create a service key provider, see “Adding Service Key Providers” on page 15-2.</p>
Web Services Security Configuration	
Process WS-Security Header	<p>If a client request includes a WS-Security security header, decide whether or not to process this header:</p> <ul style="list-style-type: none"> • Select Yes: In an active intermediary scenario, the client applies WS-Security to the request and/or response messages. The proxy service processes the security header and enforces the WS-Security policy. • Select No: In a WS-Security pass-through scenario, the client applies WS-Security to the request and/or response messages. The proxy service does not process the security header. Instead, it passes the secured request message untouched to a business service.
Access Control	
Transport Access Control	For all proxy services, you can create a transport-level policy, which applies a security check when a client attempts to establish a connection with the proxy service. Only requests from users who are listed in the transport-level policy are allowed to proceed.

Table 17-20 View a Proxy Service - Security Configuration Page (Continued)

Option	To edit...
Message Access Control	<p>A message-level access control policy applies a security check when a client attempts to invoke a proxy service with message-level security. You can create a message-level access control policy in the following cases:</p> <ul style="list-style-type: none"> For proxy services that are active Web Service security intermediaries; that is, you process the WS-Security header. For proxy services for which you set custom authentication on this page. <p>Only users who are listed in the message-level policy are allowed to invoke the operation.</p>
Custom Authentication (Message-Level)	
Authentication Type	<p>Select one of the following:</p> <ul style="list-style-type: none"> Select None if the proxy service will not use custom authentication. Custom User Name and Password When you select this option, you must also enter values in the User Name XPath field and the User Password XPath field. Custom Token When you select this option, you must also select a Token Type and enter values for the Token XPath field.
User Name XPath	<p>This option is available only when the Custom Authentication Settings option is set to Custom User Name and Password. When available, this option is required.</p> <p>Enter the user name as an XPath expression.</p> <p>The XPath expression is evaluated against the message headers or payload, as appropriate, which allows Oracle Service Bus to obtain the user name and for custom authentication.</p>
User Password XPath	<p>This option is available only when the Custom Authentication Settings option is set to Custom User Name and Password. When available, this option is required.</p> <p>Enter the password as an XPath expression.</p> <p>The XPath expression is evaluated against the message headers or payload, as appropriate, which allows Oracle Service Bus to obtain the password values for custom authentication.</p>

Table 17-20 View a Proxy Service - Security Configuration Page (Continued)



Option	To edit...
Token Type	<p>This option is available only when the Custom Authentication Settings option is set to Custom Token. When available, this option is required.</p> <p>Select the token type from the drop-down list. Only the active token types configured for a WebLogic Server Identity Assertion provider are available. See Configuring Identity Assertion Providers for Custom Tokens for more information.</p>
Token XPath	<p>This option is available only when the Custom Authentication Settings option is set to Custom Token. When available, this option is required.</p> <p>Enter an XPath expression to specify a path to the custom token. Oracle Service Bus evaluates the Token XPath expression against the message headers or payload, as appropriate, to obtain the token for custom authentication.</p>
Context Properties	<p>Optionally, specify one or more context properties to pass additional context information to the Authentication (Custom User Name and Password) or Identity Assertion (Custom Token) security provider.</p> <p>Context Properties provide a way (the <code>ContextHandler</code> interface) to pass additional information to the WebLogic Security Framework so that a security provider can obtain contextual information. See Context Properties Are Passed to Security Providers for possible values.</p> <p>Enter the Property Name as a literal string, and the Value Selector as a valid XPath expression. (XPath expressions can also be literal strings.)</p> <p>The XPath expressions are evaluated against the same message-part that is used for the custom token or custom user name/password. That is, the Value Selector XPath expressions for SOAP-based proxy services evaluate against the header and against the payload for non-SOAP-based proxy services.</p> <p>The XPath expression is evaluated at runtime to produce the property's value. A <code>ContextHandler</code> is essentially a name/value list and, as such, it requires that a security provider know what names to look for. Therefore, the XPath expressions are evaluated only if a security provider asks for the value of one of these user-defined properties.</p> <p>Click Add Property to add this context property. You can add multiple context properties.</p>

After you finish

Click **Update** to save this configuration; or click **Reset** to undo your changes.

Deleting Proxy Services

Deleting a proxy service deletes all of the ACLs referenced by the proxy from the repository controlled by Oracle Service Bus, as well as from the appropriate authorization provider.


1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > Proxy Services** to display the **Summary of Proxy Services** page.
3. Click the  **Delete** icon in the row of the proxy service you want to delete. The proxy service is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Proxy Services: Creating and Managing

Proxy Services: Message Flow

Message flows define the implementations of proxy services.

Creating, Editing, and Viewing Message Flows

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the proxy service whose message flow you want to view or edit. Do either of the following:
 - Select **Project Explorer** to display the [Projects View page](#) or the [Project/Folder View page](#). Then navigate through projects and folders to find the proxy service.
 - Select **Resource Browser > Proxy Services** to display the **Summary of Proxy Services** page.
3. Click the  **Edit Message Flow** icon in the row of the proxy service whose message flow you want to view or edit.
 - If no message flow has yet been created for the selected proxy service, the **Edit Message Flow** page is displayed with a single icon on the page, the  **Proxy Service** icon. This is the starting node for the proxy service. Click this icon to begin constructing the message flow.
 - If the proxy service already has a message flow, the page contains a graphic representation of the flow. Click the icons to view or edit the parts of the message flow.

See “[Edit Message Flow page](#)” on page 18-2 for information about what you can do to construct a message flow on that page.


4. Click **Save** to commit the updates in the current session.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Edit Message Flow page

Use the **Edit Message Flow** page to construct a message flow for a proxy service.

The left navigation pane of the **Edit Message Flow** page shows a tree view of the nodes and objects in the message flow. When the details of an object are defined on a separate page, you can click the name of the object to display the associated page.

The right pane provides a field upon which to construct the message flow. When a message flow

has not yet been defined, the pane includes a single  **Proxy Service** icon that signifies the starting node for the service. Click the icon to add pipeline pair nodes, route nodes, conditional branches, operational branches, and error handling for the service.

When you add objects to the page, icons are displayed on the page to represent the objects. The relationships among the objects are shown with lines and bounding boxes. Click an icon on the **Edit Message Flow** page to display a menu of the actions you can perform on that object. The options available on the menu may differ, depending on context. See [Table 18-1](#) for a complete list of icons and options.

Table 18-1 Edit Message Flow Page Icons and Options

Icon	Description	Menu Options
 Proxy Service	The starting node for the message flow.	<ul style="list-style-type: none"> • Add Pipeline Pair - See “Adding Pipeline Pair Nodes to Message Flows” on page 18-6. • Add Route - See “Adding Route Nodes to Message Flows” on page 18-11. • Add Conditional Branch - See “Adding Conditional Branches to Message Flows” on page 18-7. • Add Operational Branch - See “Adding Operational Branches to Message Flows” on page 18-8. • Add Service Error Handler - See “Adding Proxy Service Error Handlers” on page 21-1.
 Pipeline Pair Node	A pipeline pair node consists of a request pipeline and a response pipeline.	<ul style="list-style-type: none"> • Edit Name and Annotation • Add Pipeline Pair - See “Adding Pipeline Pair Nodes to Message Flows” on page 18-6. • Add Conditional Branch - See “Adding Conditional Branches to Message Flows” on page 18-7. • Add Operational Branch - See “Adding Operational Branches to Message Flows” on page 18-8. • Paste Route - This option is available only if you have cut or copied a route node and it is on the Clipboard.
 Response Pipeline	See pipeline pair node above.	<ul style="list-style-type: none"> • Add Stage - See “Adding Stages to Pipelines” on page 18-10. • Add Pipeline Error Handler - See “Adding Pipeline Error Handlers” on page 21-2.
 Request Pipeline	See pipeline pair node above.	<ul style="list-style-type: none"> • Add Stage - See “Adding Stages to Pipelines” on page 18-10. • Add Pipeline Error Handler - See “Adding Pipeline Error Handlers” on page 21-2.

Table 18-1 Edit Message Flow Page Icons and Options (Continued)











Icon	Description	Menu Options
 Pipeline with Error Handler	A pipeline with an error handler defined for it.	<ul style="list-style-type: none"> • Edit Pipeline Error Handler - See “Adding Pipeline Error Handlers” on page 21-2. • Delete Pipeline Error Handler
 Route Node	Route node actions define the handling of messages as they flow through the route node.	<ul style="list-style-type: none"> • Edit Route - See “Adding Route Nodes to Message Flows” on page 18-11. • Edit Name and Annotation • Add Route Error Handler - See “Adding Route Node Error Handlers” on page 21-4.
 Route Node with Error Handler	A route node with an error handler defined for it.	<ul style="list-style-type: none"> • Edit Route Error Handler - See “Adding Route Node Error Handlers” on page 21-4. • Delete Route Error Handler
 Stage Node	A stage node is a container of actions.	<ul style="list-style-type: none"> • Edit Stage - See “Adding Stages to Pipelines” on page 18-10. • Edit Name and Annotation • Add Stage - See “Adding Stages to Pipelines” on page 18-10. • Add Stage Error Handler - See “Adding Stage Error Handlers” on page 21-3.
 Stage Node with Error Handler	A stage node with an error handler defined for it.	<ul style="list-style-type: none"> • Edit Stage Error Handler - See “Adding Stage Error Handlers” on page 21-3. • Delete Stage Error Handler
 Conditional Branch Node	A conditional branch node allows processing to proceed down exactly one of several possible paths.	<ul style="list-style-type: none"> • Edit Branch - See “Adding Conditional Branches to Message Flows” on page 18-7. • Edit Name and Annotation

Table 18-1 Edit Message Flow Page Icons and Options (Continued)

Icon	Description	Menu Options
 Operational Branch Node	An operational branch node determines what branch to follow based on specified operations.	<ul style="list-style-type: none"> • Edit Branch - See “Adding Operational Branches to Message Flows” on page 18-8. • Edit Name and Annotation
 Branch Node	A branch node is one of the alternative nodes defined by a conditional branch node or an operational branch node.	<ul style="list-style-type: none"> • Add Pipeline Pair - See “Adding Pipeline Pair Nodes to Message Flows” on page 18-6. • Add Route - See “Adding Route Nodes to Message Flows” on page 18-11. • Add Conditional Branch - See “Adding Conditional Branches to Message Flows” on page 18-7. • Add Operational Branch - See “Adding Operational Branches to Message Flows” on page 18-8. • Paste Route - This option is available only if you have cut or copied a route node and it is on the Clipboard.
 Error Handler	An error handler provides the logic for resending errors in the message flow.	<ul style="list-style-type: none"> • Add Service Error Handler - See “Adding Proxy Service Error Handlers” on page 21-1.

Edit Stage Configuration Page

Use the **Edit Stage Configuration** page to add actions to pipeline stages, error handler stages, and route nodes in a message flow.

- When nothing has yet been defined on the **Edit Stage Configuration** page, the only object displayed is the  **Add an Action** icon. Click that icon to get started.
- When a stage or a route node has already been configured, the actions and objects defined for that stage or route node appear on the page. Edit the existing actions, as appropriate, or click any of the icons representing actions to add more actions to the stage.

See [“Adding and Editing Actions in Message Flows”](#) on page 19-1 for instructions on working with all the kinds of actions you can add to a stage.



Adding Pipeline Pair Nodes to Message Flows

Message flows can include zero or more pipeline pair nodes: request and response pipelines for the proxy service (or for the operations on the service), and error handler pipelines that can be defined for stages, pipelines, and proxy services. pipelines can include one or more stages, which in turn include actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Pipeline Pair node to a message flow

1. Click the  **Proxy Service** icon, then click **Add Pipeline Pair**.
2. To change the default name and add a description for the pipeline pair node, do the following:
 - a. Click the  **Pipeline Pair Node** icon, then click **Edit Name and Annotation**.
 - b. Change the name and description, as desired.
 - c. Click **Save**.

Note: When you rename a pipeline or a route node, the number of messages displayed on the **Dashboard** page in the **Monitoring** module may not correlate with those of other components due to the pipeline counters being reset to zero. This is because Oracle Service Bus treats the rename as a delete and recreate action. The numbers should correlate again after a time period equal to the service's monitoring interval has elapsed.

3. To add stages to the pipeline, see [“Adding Stages to Pipelines” on page 18-10](#)
4. To add actions to stages in the pipeline. See [“Adding and Editing Actions in Message Flows” on page 19-1](#)
5. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
6. Click **Save** to commit the updates in the current session.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding Conditional Branches to Message Flows

A branch node allows processing to proceed along exactly one of several possible paths. Branching is driven by an XPath-based switch table. Each branch in the table specifies a condition (for example, `<500`) that is evaluated in order down the message flow against a single XPath expression (for example, `./ns:PurchaseOrder/ns:totalCost on $body`). Whichever condition is satisfied first determines which branch is followed. If no branch condition is satisfied, then the default branch is followed. A branch node may have several descendants in the message flow: one for each branch, including the default branch.





If the proxy service is not based on a WSDL and receives multiple document types as input, consider using a conditional branch node.

Conditional branching is driven by a lookup table with each branch tagged with a simple, but unique, string value. A variable in the message context is designated as the lookup variable for that node, and at run time, its value is used to determine which branch to follow. If no branch matches the value of the lookup variable, the default branch is followed. You should design the proxy service in such a way that the value of the lookup variable is set before reaching the branch node.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a conditional branch to a message flow

1. Click a  **Pipeline Pair Node** icon or a  **Branch Node** icon, then click **Create Conditional Branch**. The conditional branch node is added, and any existing nodes after the inserted branch node are moved to the default branch of the new conditional branch node.
2. To change the default name and add a description for the branch node, do the following:
 - a. Click the  **Conditional Branch** icon, then click **Edit Name and Annotation**.
 - b. Change the name and description, as desired.
 - c. Click **Save**.
3. To add branch definitions, click the  **Conditional Branch** icon, then click **Edit Branch**. The **Edit Branch Node** page is displayed.

4. Do the following:
 - a. In the **Selected Path** field, click **Edit** to add an XPath expression for specifying the path. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
 - b. In the **Variable** field, enter a context variable.
 - c. From the **Operator** field, select a comparison operator.
 - d. In the **Value** field, enter a value for the branch.
 - e. In the **Label** field, enter a label for the branch.
5. Optionally, under **Options**:
 - Click **Add a New Branch** to add a new branch definition to this branch node.
 - Click **Delete this Branch** to delete a branch definition.
 - Click **Move Branch Up** or click **Move Branch Down** to change the positions of branch definitions. This option displays only when more than one branch definition exists.
6. Click **Save** to commit the updates in the current session.
7. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
8. Click **Save** to commit the updates in the current session.
9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding Operational Branches to Message Flows

When message flows define Web Services Description Language (WSDL)-based proxy services, operation-specific processing is required. Instead of configuring a branching node based on operations manually, Oracle Service Bus provides a minimal configuration branching node that automatically branches based on operations. In other words, when you create an operational branch node in a message flow, you can quickly build your branching logic based on the operations defined in the WSDL because the Oracle Service Bus Console presents those operations in the branch node configuration page.





A branch node allows processing to proceed along exactly one of several possible paths. Branching is driven by an XPath-based switch table. Each branch in the table specifies a

condition (for example, <500) that is evaluated in order down the message flow against a single XPath expression (for example, `./ns:PurchaseOrder/ns:totalCost on $body`). Whichever condition is satisfied first determines which branch is followed. If no branch condition is satisfied, then the default branch is followed. A branch node may have several descendants in the message flow: one for each branch, including the default branch.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add an operation branch to a message flow

1. Click a  **Pipeline Pair Node** icon or a  **Branch Node** icon, then click **Create Operational Branch**. The operational branch node is added, and any existing nodes after the inserted branch node are moved to the default branch of the new operational branch node.
2. To change the default name and add a description for the branch node, do the following:
 - a. Click the  **Operational Branch** icon, then click **Edit Name and Annotation**.
 - b. Change the name and description, as desired.
 - c. Click **Save**.
3. To add branch definitions, click the  **Operational Branch** icon, then click **Edit Branch**. The **Edit Branch Node** page is displayed.
4. In the **Operation Branch Definitions** panel, select a service operation.
5. Optionally, under **Options**:
 - Click **Add a New Branch** to add a new branch definition to this branch node.
 - Click **Delete this Branch** to delete a branch definition.
 - Click **Move Branch Up** or click **Move Branch Down** to change the positions of branch definitions. This option displays only when more than one branch definition exists.
6. Click **Save**.
7. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).







8. Click **Save** to commit the updates in the current session.
9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding Stages to Pipelines

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a stage to a Pipeline



1. If necessary, click the plus sign to the left of the  **Pipeline Pair Node** icon to expand it.
A pipeline pair contains a  **Request Pipeline** and a  **Response Pipeline**.
2. Click the pipeline to which you want to add the stage, then click **Add Stage**.
3. To change the default name and add a description for the stage, do the following:
 - a. Click the  **Stage** icon, then click **Edit Name and Annotation**.
 - b. Change the name and description, as desired.
 - c. Click **Save**.
4. To add actions to the stage, click the  **Stage** icon, then click **Edit Stage**. See [“Adding and Editing Actions in Message Flows” on page 19-1](#).
5. To add error handling to the stage, click the  **Stage** icon, then click **Add Stage Error Handler**. See [“Adding Stage Error Handlers” on page 21-3](#). The **Edit Message Flow** page is displayed.
6. Continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
7. Click **Save** to commit the updates in the current session.
8. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.


Adding Route Nodes to Message Flows

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Route Node to a Message Flow

1. Click the  **Pipeline Pair Node** icon of a pipeline pair, then click **Add Route**.
2. To change the default name and add a description for the route node, click the  **Route Node** icon, then click **Edit Name and Annotation**. Change the name and description, as desired, then click **Save**.


Note: When you rename a pipeline or a route node, the number of messages displayed on the **Dashboard** page in the **Monitoring** module may not correlate with those of other components due to the pipeline counters being reset to zero. This is because Oracle Service Bus treats the rename as a delete and recreate action. The numbers should correlate again after a time period equal to the service's monitoring interval has elapsed.
3. To add actions to the route node, click the  **Route Node** icon, then click **Edit Route**. The **Edit Message Flow** page is displayed. See the following sections for information about the actions you can add to route nodes:
 - [“Adding If... Then... Actions” on page 19-21](#)
 - [“Adding Dynamic Routing to Route Nodes” on page 19-16](#)
 - [“Adding Routing Actions to Route Nodes” on page 19-17](#)
 - [“Adding Routing Tables to Route Nodes” on page 19-19](#)
 - [“Adding Route Node Error Handlers” on page 21-4](#)
4. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
5. Click **Save** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.


Cutting, Copying, and Pasting Stages and Route Nodes

You can cut, copy, and paste stages and route nodes.

- To cut a stage or a route node, click its icon and select **Cut** or **Copy**.
- To paste a stage that you cut or copied from a different pipeline pair within the message flow of this proxy service or from the message flow of a different proxy service, do one of the following:

- Click the  **Request Pipeline** or  **Response Pipeline** icon, then click **Paste Stage**.

- Click the  **Stage** icon in a pipeline, then click **Paste**.

- To paste a route node that you cut or copied from the message flow of another proxy service, click the  **Pipeline Pair Node** icon for the pipeline pair, then click **Paste Route**.

Proxy Services: Actions

Actions are the elements of pipeline stages, error handler stages, route nodes, and branch nodes that define how messages are to be defined as they flow through a proxy service.

Adding and Editing Actions in Message Flows

Actions are the elements of pipeline stages, error handler stages, route nodes, and branch nodes that define how messages are to be defined as they flow through a proxy service.



Before you begin





These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

They also assume you have already added a pipeline stage, a route node, and/or an error handler stage. See:

- [“Adding Pipeline Pair Nodes to Message Flows” on page 18-6](#)
- [“Adding Stages to Pipelines” on page 18-10](#)
- [“Adding Proxy Service Error Handlers” on page 21-1](#)

To add an action to a message flow

1. Select the component to which you want to add an action. For example, click the  **Stage** icon, then click **Edit Stage**, or click the  **Route Node** icon, then click **Edit Route**.

2. Depending on whether actions have already been added to the stage or to the route node, do one of the following:
 - If no actions have yet been added, the **Edit Stage Configuration** page displays only the  **Add an Action** icon. Click that icon, then select an action type.
 - If one or more actions have already been added, the **Edit Stage Configuration** page displays one or more icons representing those actions, for example, a  **Publish** icon or a  **Routing** icon, etc. Click the appropriate icon, click **Add an Action**, then select an action type.
 - Some actions, such as request and response actions in publish actions, include an  **Add an Action** link where an action is appropriate. Click that icon, then select an action type.

There are no restrictions on what actions may be chained together in a message flow.

Table 19-1 lists the actions you can configure for message flows.

Table 19-1 Message Flow Actions





Action	Description	More Information
Communication		
 Dynamic Publish	Publish a message to a service identified by an Xquery expression	Adding Dynamic Publish Actions
 Publish	Publish a message to a statically specified service.	Adding Publish Actions
 Publish Table	Publish a message to zero or more statically specified services. Switch-style condition logic is used to determine at run time which services will be used for the publish.	Adding Publish Table Actions
 Routing Options	Modify any or all of the following properties in the outbound request: URI, Quality of Service, Mode, Retry parameters, Message Priority.	Adding Routing Options Actions

Table 19-1 Message Flow Actions (Continued)












 Service Callout	Configure a synchronous (blocking) callout to an Oracle Service Bus-registered proxy or business service.	Adding Service Callout Actions
 Transport headers	Set the transport header values in messages	Adding Transport Header Actions
 Dynamic Routing	Assign a route for a message based on routing information available in an XQuery resource.	Adding Dynamic Routing to Route Nodes
 Routing	Identify a target service for the message and configure how the message is routed to that service:	Adding Routing Actions to Route Nodes
 Routing Table	Assign a set of routes wrapped in a switch-style condition table. Different routes are selected based upon the results of a single XQuery expression.	Adding Routing Tables to Route Nodes
Flow Control		
 For each	Iterate over a sequence of values and execute a block of actions	Adding For Each Actions
 If...then...	Perform an action or set of actions conditionally, based on the Boolean result of an XQuery expression.	Adding If... Then... Actions
 Raise error	Raise an exception with a specified error code (a string) and description.	Adding Raise Error Actions
 Reply	Specify that an immediate reply be sent to the invoker.	Adding Reply Actions
 Resume	Resume message flow after an error is handled by an error handler.	Adding Resume Actions
 Skip	Specify that at run time, the execution of the current stage is skipped and the processing proceeds to the next stage in the message flow.	Adding Skip Actions

Table 19-1 Message Flow Actions (Continued)

Message Processing		
 Assign	Assign the result of an XQuery expression to a context variable.	Adding Assign Actions
 Delete	Delete a context variable or a set of nodes specified by an XPath expression.	Adding Delete Actions
 Insert	Insert the result of an XQuery expression at an identified place relative to nodes selected by an XPath expression.	Adding Insert Actions
 Java callout	Invoke a Java method from the pipeline.	Adding Java Callout Actions
 MFL transform	Convert non-XML to XML or XML to non-XML in the pipeline.	Adding MFL Transform Actions
 Rename	Rename elements selected by an XPath expression without modifying the contents of the element.	Adding Rename Actions
 Replace	Replace a node or the contents of a node specified by an XPath expression.	Adding Replace Actions
 Validate	Validate elements selected by an XPath expression against an XML schema element or a WSDL resource.	Adding Validate Actions
Reporting		Reporting
 Alert	Send an alert notification based on pipeline message context.	Adding Alert Actions
 Log	Construct a message to be logged.	Adding Log Actions
 Report	Enable message reporting for a proxy service.	Adding Report Actions

- When you have finished adding actions, you can further configure the actions in stage or route node, as described in [Table 19-2](#).

Table 19-2 Edit Stage Configuration Tasks

To...	Complete This Step...
Delete an action	Click the appropriate icon, then click Delete this Action .
Move an action down (demote)	<p>Click the appropriate icon, then click Move Action Down. The action is moved below the next action contained in this stage.</p> <p>This option is displayed only when a stage contains two or more actions.</p>
Move an action up (promote)	<p>Click the appropriate icon, then click Move Action Up. The action is moved above the previous action contained in this stage.</p> <p>This option is displayed only when the stage contains two or more actions.</p>
Cut an action	Click the appropriate icon, then click Cut .
Copy an action	Click the appropriate icon, then click Copy .
Paste an action that you have cut or copied	<p>Click the appropriate icon, then click Paste Action.</p> <p>You can copy and paste actions across stages. However, in the case of Assign, Replace or Insert actions, note the following:</p> <ul style="list-style-type: none"> • All variable-related and user-defined namespaces from the source (copied) stage are added as user-defined namespaces in the target (pasted) stage. • Duplicate namespaces (identical namespaces in both source and target stage) are not copied. • Conflicting namespaces (namespace declarations that use the same prefix but different URIs) are copied. Users will be able to save the configuration, but will not be able to activate it until the conflicting namespace declarations in stage B are removed.
Validate a stage	In the Edit Stage Configuration page, click Validate to validate all the actions configured in that stage.

4. Click **Save** to commit the updates in the current session.

5. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
6. Click **Save** to commit the updates in the current session.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding Publish Actions

Use a publish action to identify a statically specified target service for a message and to configure how the message is packaged and sent to that service.

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Select **Add an Action > Communication > Publish**.
3. Click **<Service>**. The **Select Service** page is displayed.
4. Select a service from the list, then click **Submit**. This is the target service for the message.
5. If the service has operations defined, you can specify an operation to be invoked by selecting it from the **Operation** list.
6. To make the outbound operation the same as the inbound operation, select the **Use inbound operation for outbound** check box.
7. To configure how the message is packaged and sent to the service, in the **Request Actions** field, click **Add an Action**. Then select an action to associate with the service. You can add more than one action. See [“Adding and Editing Actions in Message Flows” on page 19-1](#).

After you finish



When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Publish Table Actions

Use a publish table action to publish a message to zero or more statically specified services. Switch-style condition logic is used to determine at run time which services will be used for the publish.

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows”](#) on page 19-1.
2. Select **Add an Action > Communication > Publish Table**.
3. Click **<Expression>**. The **XQuery Expression Editor** page is displayed. Create an XQuery expression, which at run time returns the value upon which the routing decision will be made. See [“Creating and Editing Inline XQuery and XPath Expressions”](#) on page 20-1.
4. From the **Operator** list, select a comparison operator. Then, in the adjacent field, enter a value against which the value returned from the XQuery expression will be evaluated.
5. Click **<Service>** to select a service to which messages are to be published if the expression evaluates true for the value you specified. The **Select Service** page is displayed.
6. Select a service from the list, then click **Submit**. This is the target service for the message.
7. If the service has operations defined, you can specify the operation to be invoked by selecting it from the **invoking** list.
8. If you want the outbound operation to be the same as the inbound operation, select the **Use inbound operation for outbound** check box.
9. In the **Request Actions** field, to configure how the message is packaged and sent to the service, click **Add an Action**, then select one or more actions that you want to associate with the service. To learn more about the type of action you want to add, see [“Adding and Editing Actions in Message Flows”](#) on page 19-1.

Note: There is a nesting limit of four cumulative levels in the stage editor. If you attempt to add a fifth level, nesting action is not displayed. Cumulative levels include all branching actions: if... then... conditions, publish tables, and route tables. For example, you can have 2 levels of conditionals, then a publish table with a route table inside of it, bringing the total to 4 levels. If you attempt to add another conditional (to the last publish table), the conditional is not displayed.

10. To insert a new case, click the  **Case** icon, then select **Insert New Case**.
11. Repeat steps 4-8 for the new case.
12. Add additional cases as dictated by your business logic.
13. Click the  **Case** icon of the last case you define in the sequence, then select **Insert Default Case** to add a default case at the end.

14. Configure the default case—the configuration of this case specifies the routing behavior in the event that none of the preceding cases is satisfied.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Dynamic Publish Actions

Use a dynamic publish action to publish a message to a service specified by an XQuery expression.

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Communication > Dynamic Publish**.
3. Click **<Expression>**.
4. In the **XQuery Expression Editor**, enter an Xquery expression or select an XQuery resource that provides a result similar to:

```
<ctx:route>
  <ctx:service
    isProxy="false">project/folder/businessservicename</ctx:service>
  <ctx:operation>foo</ctx:operation>
</ctx:route>
```

Note: The element `operation` is optional.

5. Click **Save**.
6. In the **Request Actions** field, click **Add an Action** to add an action, then select an action that you want to associate with the service. You can add more than one action. To learn more about the type of actions you can add, see the table of actions in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Routing Options Actions

Use the Routing Options action to modify any or all of the following properties for the outbound request in `$outbound`: URI, Quality of Service, Mode, Retry parameters. Although these properties can be modified using Assign, Insert, Replace, or Delete actions on `$outbound`, using Routing options provides a simpler way to perform this task, without requiring knowledge of XPath, XQuery, or the structure of the `$outbound` context variable.

The Routing Options action can only be used where the context variable `$outbound` is valid. It can be added to the following actions:

- Publish
- Dynamic Publish
- Publish Table
- Service Callout
- Route
- Dynamic Route
- Route Table

To configure a routing options action:

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Communication > Routing Options**.
3. Complete any or all of the following steps:
 - To set the URI for the outbound message: Select **URI**, and click the **XQuery Expression Editor**. Enter an expression that returns a URI. This overrides the URI for the invoked service.

- To set the Quality of Service element: Select **Quality of Service**, and select the Quality of Service option from the drop-down list. This overrides the default that is auto computed.
- To set the Mode: Select **Mode**, and select either request, or request-response from the drop-down list.
Note: This is normally already automatically set, based on the interface of the service invoked. However, in some cases like Any Soap or Any XML services, this is not so.
- To set the Retry Interval: Select **Retry Interval**, and specify the number of seconds between retries. This overrides the default configured with the invoked service.
- To set the Retry Count: Select **Retry Count**, and specify the number of retries the system must attempt before discontinuing the action. This overrides the default configured with the invoked service.
- To set the Message Priority: Select **Priority**, and click the **XQuery Expression Editor**. Enter an expression that returns a positive integer.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Service Callout Actions

Use a service callout action to configure a synchronous (blocking) callout to an Oracle Service Bus-registered proxy or business service.

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Communication > Service Callout**.
3. Click **<Service>**. The Service Browser is displayed.
4. Select a service from the list of registered proxy or business services, then click **Submit**.
5. If the service you chose in step 3, above, is WSDL-based and has operations that can be invoked on the service, those operations are listed in the **invoking <Operation>** drop-down list. Select an operation to be invoked on the service.

6. Specify how you want to configure the request and response messages by selecting one of the following options:
 - Select **Configure SOAP Body** to configure the SOAP Body. Selecting this option allows you to use `$body` directly.

Note: This option supports SOAP-RPC encoded, which is not supported when configuring payload parameters or document.
 - Select **Configure Payload Parameters** or **Configure Payload Document** to configure the payload.
7. Subsequent configuration options depend on the kind of service you selected in step 3 and on the kind of configuration options you chose for that service in step 5. [Table 19-3](#) shows the options available for each service type.

Table 19-3 Service Callout Configuration Options for Each Service Type

Selected Service Type	“Configure SOAP Body” Options	“Configure Payload Parameters” Options or “Configure Payload Document” Options
<ul style="list-style-type: none"> SOAP RPC 	<ul style="list-style-type: none"> SOAP Request Body and SOAP Response Body SOAP Request Header and SOAP Response Header (optional) 	<ul style="list-style-type: none"> Request Parameters and Response Parameters SOAP Request Header and SOAP Response Header (optional)
<ul style="list-style-type: none"> SOAP Document Any SOAP 	<ul style="list-style-type: none"> SOAP Request Body and SOAP Response Body SOAP Request Header and SOAP Response Header (optional) 	<ul style="list-style-type: none"> Request Document and Response Document SOAP Request Header and SOAP Response Header (optional)
<ul style="list-style-type: none"> XML Any XML Messaging 	<ul style="list-style-type: none"> SOAP Request Body and SOAP Response Body 	<ul style="list-style-type: none"> Request Document and Response Document

[Table 19-4](#), below, provides instructions for each of the options listed in [Table 19-3](#), above.

Table 19-4 Service Callout Configuration Options

For These Options...	Follow These Steps...
SOAP Request Body and SOAP Response Body	<p>To configure these options,</p> <ul style="list-style-type: none"> In the SOAP Request Body field, enter the name of a variable to hold the XML of the SOAP Body element for the callout request. In the SOAP Response Body field, enter the name of a variable to which the XML of the SOAP Body element on the response will be bound.
SOAP Request Header and SOAP Response Header	<p>To configure these options,</p> <ul style="list-style-type: none"> In the SOAP Request Header field, enter the name of a variable to hold the XML of the SOAP Header element for the callout request <p>You must wrap the input document for the SOAP Request Header with <code><soap-env:Header>...</soap-env:Header></code>.</p> In the SOAP Response Header field, enter the name of a variable to which the XML of the SOAP Headers on the response, if any, will be bound.
Request Parameters and Response Parameters	<p>To configure options,</p> <ul style="list-style-type: none"> In the Request Parameters fields, enter names for the variables that will be evaluated at run time to provide values for the request parameters. <p>You must provide only the core payload documents in the input variable—the SOAP package is created for you by Oracle Service Bus. In other words, do not wrap the input document with <code><soap-env:Body>...</soap-env:Body></code>.</p> <p>For example, when creating a body input variable that is used for this request parameter, you would define that variable's contents using the XPath statement <code>body/*</code> (to remove the wrapper <code>soap-env:Body</code>), not <code>\$body</code> (which results in keeping the <code>soap-env:Body</code> wrapper).</p> In the Response Parameters fields, enter the names of the variables to which the responses will be assigned at run time.

Table 19-4 Service Callout Configuration Options (Continued)

For These Options...	Follow These Steps...
Request Document and Response Document	<p>To configure these options,</p> <ul style="list-style-type: none"> In the Request Document Variable field, enter the name of a variable to assign a request document to. <p>For <i>SOAP Document-type</i> services, the variable is evaluated at runtime to form the body of the SOAP message sent to the service. For <i>Any XML</i> services, the variable is evaluated at runtime to form the body of the XML message sent to the service.</p> <p>For SOAP Document-type services and for Any XML services, you provide only the core payload documents in the input variable—the SOAP package is created for you by Oracle Service Bus. In other words, do not wrap the input document with <code><soap-env:Body> . . . </soap-env:Body></code>.</p> <p>For example, when creating a body input variable that is used for this request parameter, you would define that variable's contents using the XPath statement <code>body/*</code> (to remove the wrapper <code>soap-env:Body</code>), not <code>\$body</code> (which results in keeping the <code>soap-env:Body</code> wrapper).</p> <p>For <i>Messaging</i> services, the variable is evaluated to form the body of the message, based on the type of data expected by the service. The following restrictions apply to variables used with Messaging services:</p> <ul style="list-style-type: none"> For services that expect binary data, the variables must have a <code>ctx:binary-content</code> element. For services that expect MFL data, the variable must have the XML equivalent. For services that expect text data, the variable is a string. In the Response Document Variable field, enter the name of the variable to which a response document will be assigned at run time.

8. Optionally, add one or more transport headers. For more information, see [“Adding Transport Header Actions” on page 19-14](#).

Note: In addition to the transport headers you specify, headers are added by the Oracle Service Bus binding layer. For more information, see [Configuring Transport Headers in Message Flows](#) in *Oracle Service Bus User Guide*.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows”](#) on page 19-1.

Adding Transport Header Actions

Use a transport header action to set the header values in messages.

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows”](#) on page 19-1.
2. Click the appropriate icon, then select **Add an Action > Communication > Transport Headers**.
3. From the **Set Transport Headers for** list, select one of the following, to specify to the run time which of the message context locations are to be modified:

- **Outbound Request** - Select this option to set header values for outbound requests (the messages sent out by a proxy service in route, publish, or service callout actions). This header element is located in the message context as follows:

```
$outbound/ctx:transport/ctx:request/tp:headers
```

- **Inbound Response** - Select this option to set header values for inbound responses (the response messages a proxy service sends back to clients). This header element is located in the message context as follows:

```
$inbound/ctx:transport/ctx:response/tp:headers
```

4. Optionally, select **Pass all Headers through Pipeline** to pass all headers through from the inbound message to the outbound message or vice versa. Every header in the source set of headers will be copied to the target header set, overwriting any existing values in the target header set.

For information about using this option in conjunction with the header-specific pass through option, see [Configuring Transport Headers in Message Flows](#) in *Oracle Service Bus User Guide*.

5. Complete the following steps for each Header you want to add:

- a. In the **Transport Headers** table, click **Add Header** to display fields for configuring the header.
- b. Specify a header by doing either of the following:
 - From the drop-down list in the **Name** column, select a header name. The list contains all of the predefined header names for the target transport (for example, **Content-Type** for HTTP transports, **JMSCorrelationID** for JMS transports, etc.).
 - Enter a header name in the **Other** field. If that header name is not one of the predefined headers for this service's transport, it becomes a user-header, as defined by the transport specification.
- c. Select one of the options in the **Action** column to specify how to set the headers value:

Set Header to Expression

Selecting this option allows you to use an XQuery or XSLT expression to set the value of the header. The expression can be simple (for example, "text/xml") or a complex XQuery or XSLT expression.

Because the Oracle Service Bus transport layer defines the XML representation of all headers as string values, the result of any expression is converted to a string before the header value is set. Expressions that return nothing result in the header value being set to the empty string. You cannot delete a header using an expression.

Warning: Not all of the header settings you can specify in this action are honored at run time. For information about which of the headers for a given transport you can set and which of those set are honored at run time, see [Configuring Transport Headers in Message Flows](#) in *Oracle Service Bus User Guide*.

Delete Header

Specifies that the header is removed from the request or response metadata.

Copy Header from Inbound Request (if you are setting transport headers for the Outbound Request)

or


Copy Header from Outbound Response (if you are setting transport headers for the Inbound Response)

Specifies that this header is copied directly from the corresponding header of the same name from the inbound message to the outbound message and vice versa. For example, if you want to set the SOAPAction header for an outbound request, selecting **Copy Header from Inbound Request** causes the run time to copy the value from the

SOAPAction request header of `$inbound`. In the case of inbound response headers, the source of the header to copy is the response headers of `$outbound`.

If the **Copy Header...** option is selected for a header that does not exist in the source, this option is ignored and no action is performed on the target for this header.

For information about using this option in conjunction with the global **Pass all Headers through Pipeline** option, see [Configuring Transport Headers in Message Flows](#) in *Oracle Service Bus User Guide*.

6. To add additional Headers to the table, click the  **Header** icon, then click **Add Header**.

The table is expanded to include an additional row, which includes a new set of options that you can use to configure another transport header. You can add as many headers as necessary to this table. You do not have to order the headers in the table, because the run time declares namespaces and places header elements in their proper order when generating the corresponding XML.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows”](#) on page 19-1.

Adding Dynamic Routing to Route Nodes


Assign a route for a message based on routing information available in an XQuery resource.


This is a terminal action, which means you cannot add another action after this one. However, this action can contain request and response actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows”](#) on page 18-1.

To add Dynamic Routing to a Route Node

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows”](#) on page 19-1.
2. Click the  **Route Node** icon, then click **Edit Route**. The **Edit Stage Configuration** page is displayed.

3. Click the  **Add an Action** icon, then select **Communication > Dynamic Routing**.
4. Click **<Expression>**. The **XQuery Expression Editor** is displayed.
5. In the **XQuery Expression Editor**, enter an Xquery expression, the result of which is similar to:

```
<ctx:route>
    <ctx:service isProxy='true'>{$service}</ctx:service>
    <ctx:operation>{$operation}</ctx:operation>
</ctx:route>
```

Note: If a proxy service is being invoked, `isProxy` attribute should be set to true.

- The service name is the fully qualified service name.
- The operation element is optional

6. Click **Save**.
7. In the **Request Actions** field, click **Add an Action** to add an action, then select an action that you want to associate with the service. You can add more than one action. To learn more about the type of actions you want to add, see the table of actions in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
8. In the **Response Actions** field, click **Add an Action** to add an action, then select an action that you want to associate with the service. You can add more than one action. To learn more about the type of actions you want to add, see the table of actions in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
9. Click **Save**.
10. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
11. Click **Save** to commit the updates in the current session.
12. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding Routing Actions to Route Nodes

Identify a target service for the message and configure how the message is routed to that service.

This is a terminal action, which means you cannot add another action after this one. However, this action can contain request and response actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Routing Action to a Route Node

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the  **Route Node** icon, then click **Edit Route**. The **Edit Stage Configuration** page is displayed.
3. Click the  **Add an Action** icon, then select **Communication > Routing**.
4. Click **Service**. The Service Browser is displayed.
5. Select a service from the list, then click **Submit**. The service is displayed instead of the default link.
6. If you want the outbound operation to be the same as the inbound operation, select the **Use inbound operation for outbound** check box.
7. In the **Request Actions** field, click **Add an Action** to add an action, then select an action that you want to associate with the service. You can add more than one action. To learn more about the type of actions you can add, see the table of actions in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
8. In the **Response Actions** field, click **Add an Action** to add an action, then select an action that you want to associate with the service. You can add more than one action. To learn more about the type of actions you can add, see the table of actions in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
9. Click **Save**.
10. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
11. Click **Save** to commit the updates in the current session.

12. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding Routing Tables to Route Nodes

A routing table is a set of routes wrapped in a switch-style condition table. It is a short-hand construct that allows different routes to be selected based upon the results of a single XQuery expression.

There is a nesting limit of four cumulative levels in the stage editor. If you attempt to add a fifth level, this nesting action is not displayed. Cumulative levels include all branching actions: If... Then... conditions, publish tables, and route tables. For example, you can have 2 levels of conditionals, then a publish table with a route table inside of it, bringing the total to 4 levels. If you attempt to add another conditional (to the last publish table), the conditional is not displayed.



Identify target services for messages and configure how the messages are routed to these services:

This is a terminal action, which means you cannot add another action after this one. However, this action can contain request and response actions.



Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Routing Table to a Route Node

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the  **Route Node** icon, then click **Edit Route**. The **Edit Stage Configuration** page is displayed.
3. Click the  **Add an Action** icon, then select **Communication > Routing Table**. The routing table action is displayed.
4. From the **Operator** list, select a comparison operator, then enter a value expression in the adjacent field.
5. Click **<Service>**. The **Select Service** page is displayed.
6. Select a service from the list, then click **Submit**.
7. If you want to invoke an operation on the service, select an operation from the **Operation** list

8. If you want the outbound operation to be the same as the inbound operation, select the **Use inbound operation for outbound** check box.
9. In the **Request Actions** field, click **Add an Action** to add an action, then select an action that you want to associate with the service. You can add more than one action.
10. In the **Response Actions** field, click **Add an Action** to add an action, then select an action that you want to associate with the service. You can add more than one action.

To learn more about the types of request and response actions you can add, see [“Adding and Editing Actions in Message Flows” on page 19-1](#).
11. To insert a new case, click the  **Case** icon, then select **Insert New Case**.
12. Repeat steps 2-7 for the new case. You can click the  **Case** icon, then select **Insert Default Case** to add a default case at the end whose routes are selected if none of the preceding cases is satisfied.
13. Click **Save**.
14. On the **Edit Message Flow** page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).
15. Click **Save** to commit the updates in the current session.
16. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Adding For Each Actions

Use the for each action to iterate over a sequence of values and execute a block of actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a For Each action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Flow Control > For Each**.

3. Enter variable names in the ...**variable** fields, click **<XPath>** to open the XPath editor to create an XPath expression, and configure the actions in the **Do ()** loop.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding If... Then... Actions

Use an if...then... action to perform an action or set of actions conditionally, based on the Boolean result of an XQuery expression.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).


To add an If...Then action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Flow Control > If...Then**.
3. Click **<Condition>** to display the XQuery Condition Editor page.

The condition you create is used as the test that is executed before the `then()` clause is entered, per standard if...then logic. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

4. When you finish editing the XQuery condition, click **Add an Action**, then select an action that you want to associate with the condition. To learn more about the type of action you want to add, see [“Adding and Editing Actions in Message Flows” on page 19-1](#).

In the route node, you can select only the routing, dynamic routing, or routing table actions. However, these actions can contain request and response actions inside of them.

5. As your logic requires, click the  **If...Then...** icon, then click **Add else-if Condition** or **Add else Condition** to add `else-if` conditions or `else` conditions. Click **Add an Action** to associate actions with these conditions.

Condition actions can be nested. However, there is a nesting limit of four cumulative levels in the stage editor. If you attempt to add a fifth level, this nesting action is not displayed.

Cumulative levels include all branching actions:if...then... conditions, publish tables, and route tables. For example, you can have two levels of conditionals, then a publish table with a route table inside of it, bringing the total to four levels. If you attempt to add another conditional action (to the last publish table), it is not displayed.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Raise Error Actions

Use the raise error action to raise an exception with a specified error code (a string) and description.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Raise Error action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Flow Control > Raise Error**.
3. In the **error code** field, enter the error code you want to raise.
4. In the **error message** field, enter a description of the error code.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Transactions

If a service is transactional, a triggered Raise Error action aborts the transaction in the request (asynchronous) or in either the request or response (synchronous). For example, you may introspect messages and determine conditions under which a Raise Error action should occur even if no SOAP fault occurs, and Raise Error causes the transaction to be aborted.

Adding Reply Actions

Use the reply action to specify that an immediate reply be sent to the invoker.

The reply action can be used in the request, response or error pipeline. You can configure it to result in a reply with success or failure. In the case of reply with failure where the inbound transport is HTTP, the reply action specifies that an immediate reply is sent to the invoker.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Reply action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Flow Control > Reply**.
3. Select **With Success** to reply that the message was successful, or select **With Failure** to reply that the message has a fault.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Resume Actions

Use the resume action to resume message flow after an error is handled by an error handler. This action has no parameters and can only be used in error pipelines.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Resume action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Flow Control > Resume**.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Skip Actions

Use the skip action to specify that at run time, the execution of this stage is skipped and the processing proceeds to the next stage in the message flow. This action has no parameters and can be used in the request, response or error pipelines.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Skip action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Flow Control > Skip**.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Assign Actions

Use the assign action to assign the result of an XQuery expression to a context variable.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add an Assign action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Message Processing > Assign**.

3. Click **<Expression>**. The **XQuery Expression Editor** page is displayed. The XQuery expression is used to create the data that will be assigned to the named variable. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
4. When you finish editing the expression, enter a context variable in the variable field. To learn more about context variables, see [Inbound and Outbound Variables](#) and [Constructing Messages to Dispatch](#) in the *Oracle Service Bus User Guide*.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Delete Actions

Use the delete action to delete a context variable or a set of nodes specified by an XPath expression. The delete action is one of a set of update actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Delete action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. To delete a context variable, select the **Variable** radio button, then enter the name of a context variable in the **Variable** field. To learn more about context variables, see [Appendix A, “Message Context.”](#)

Alternatively, to delete all nodes selected by an XPath expression, select the **XPath** radio button, then click **<XPath>**. The **XPath Expression Editor** page is displayed. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#). After you save the expression, enter a context variable in the **variable** field. To learn more about context variables, see [Appendix A, “Message Context.”](#)

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Insert Actions

Use the insert action to insert the result of an XQuery expression at an identified place relative to nodes selected by an XPath expression. The insert action is one of a set of update actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add an Insert action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Message Processing > Insert**.
3. Click **<Expression>** to edit an XQuery expression. The XQuery expression is used to create the data that will be inserted at a specified location in a named variable. The **XQuery Expression Editor** page is displayed. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
4. When you finish editing the expression, select the relative location from the drop-down list. The relative location is used to control where the insert is performed relative to the result of the XPath expression:
 - **Before**—as sibling before each element or attribute selected by the XPath expression
 - **After**—as sibling after each element or attribute selected by the XPath expression
 - **As first child of**—as first child of each element identified by the XPath expression. An error occurs if the result of the XPath returns attributes.
 - **As last child of**—as last child of each element identified by the XPath expression. An error occurs if the XPath returns attributes.
5. Click **XPath**. The **XPath Expression Editor** page is displayed. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

Valid configurations include those in which:

- XQuery and XPath expressions both return elements.
- The XQuery and XPath expressions both return attributes—in which case, the XQuery expression must return attributes.

6. When you finish editing the XPath expression, enter a context variable in the in variable field. The XPath evaluates the contents of this variable. To learn more about context variables, see [Appendix A, “Message Context.”](#)

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1.](#)

Adding Java Callout Actions

Use the Java callout action to invoke a Java method, or EJB business service, from within the message flow.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1.](#)

To add a Java Callout action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1.](#)
2. Click the appropriate icon, then select **Add an Action > Message Processing > Java Callout.**
3. Click **<Method>**. The **Select a JAR** page is displayed. Select a JAR resource from the list. The **Select a Class and Method** page is displayed.
4. From the list of Java classes listed, click the + beside the appropriate class, to display a list of methods. Select a method and click **Submit**. The Java callout action is displayed on the **Edit Stage** page, as follows:
 - **<Method>** is replaced by the name of the Java method you selected in steps 2 and 3. This name is a link to the **Select a Class and Method** page. You can click this link to change your selection of Java method.

The method must be a static method.
 - **Parameters:** An **<Expression>** link to the **XQuery Expression Editor** page is provided for each argument the Java method requires. A label for each link indicates the data type for the argument, which will be one of the following:
 - `Java.lang.String`

- Primitive types, and their corresponding class types (e.g., `int` vs. `java.lang.Integer`)
 - `java.lang.BigDecimal`, and `java.lang.BigInteger` (these types are used in financial calculations where round-off errors or overflows are not tolerable)
 - only `org.apache.xbeans.XmlObject` and no typed xml beans.
 - `byte[]`
 - `java.lang.String[]` (INPUT ONLY)
 - `XmlObject []` (INPUT ONLY)
- **Result:** A **Result** field in which you enter the variable to which the result is to be assigned. The label for the field indicates the data type of the result.
- Note:** If the result is a byte array (the only possible array returned), the binary-content XML element is returned.
- **Attach a Service Account:** A **Service Account** link allows you to specify an optional Service Account if there is a security context for this Java method. To learn more about security contexts and service accounts, see [“Service Accounts” on page 14-1](#).
- In the case of fixed and mapped service accounts, the userid/password from the service account is authenticated in the local system and the security context propagated to the Java callout. In the case of `passthru`, the security context is propagated to the Java callout. This context is the message level context if defined (with WS-Security). Else it is the transport level context.
5. Under **Parameters**, click **<Expression>**. The **XQuery Expression Editor** page is displayed. Use the XQuery Expression Editor to provide the arguments required by the Java method. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#)
- If the type of the input value you enter does not match the declared input argument type, Oracle Service Bus tries to automatically typecast input values to the declared type of the input argument. For example a string value of "123" will be converted to integer 123 if the declared type of the input argument is java primitive `int`.
6. In the **Result** field, assign a variable for the result returned by the Java method.
7. If there is a security context for the Java method, select the check box and click **<Service Account>**. The **Select Service Account** page is displayed. Select the required service account from the list, and click **Submit**.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding MFL Transform Actions

Use the MFL (Message Format Language) transform action to convert message content from XML to non-XML, or vice versa, in the message pipeline. An MFL is a specialized XML document used to describe the layout of binary data. It is an Oracle proprietary language used to define rules to transform formatted binary data into XML data, or vice versa. See [“MFLs” on page 13-1](#).

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add an MFL Transform action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Message Processing > MFL Transform**.
3. From the **Apply MFL Transformation** drop-down list, select **XML to Non-XML** or **Non-XML to XML**, according to your requirement.
4. Click **<Expression>**. Using the XQuery Expression Editor, specify the variable on which the MFL transformation action is to be performed. This input must be text or binary when transforming to XML, and must be XML when transforming to non-XML. Binary content in the message context is represented by the binary-content XML element. This XML should be the result of the Xquery expression when the input needs to be binary. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
5. Select one of the following options:
 - **MFL Resource:** click the **<resource>** link. The **Select MFL** page is displayed. Select the static MFL resource that will perform the MFL transform action.
 - **MFL Resource from:** click the **Expression** link. The **XQuery Expression Editor** page is displayed. Using the XQuery Expression Editor, create or edit an XQuery expression to dynamically specify an MFL resource that will perform the transform

action, in the format `project/folder/MFLresourceName`. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

6. In the **Assign to Variable** field, enter the name of the variable to which the result of this transform action is to be assigned. The result will be a binary-content XML element.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Rename Actions

Use the rename action to rename elements selected by an XPath expression without modifying the contents of the element. The rename action is one of a set of update actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Rename action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Message Processing > Rename**.
3. Click **<XPath>**. The **XPath Expression Editor** page is displayed. The XPath expression is used to specify the data (in the named variable) that will be renamed. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
4. In **variable** field, enter the context variable that holds the element you want to rename. To learn more about context variables, see [Appendix A, “Message Context.”](#)
5. Do one of the following:
 - To rename selected elements using a localname, select the first **localname** radio button, then enter a local name in the **localname** field.
 - To rename selected elements using a namespace, select the first **namespace** radio button, then enter a namespace in the **namespace** field.

- To rename selected elements using a local name and namespace, select the **localname and namespace** radio button, then enter a local name and namespace in the **localname and namespace** fields.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Replace Actions

Use a replace action to replace a node or the contents of a node specified by an XPath expression. The node or its contents are replaced with the value returned by an XQuery expression.

A replace action can be used to replace simple values, elements and even attributes. An XQuery expression that returns nothing is equivalent to deleting the identified nodes or making them empty, depending upon whether the action is replacing entire nodes or just node contents.

The replace action is one of a set of update actions.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Replace action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Message Processing > Replace**.
3. Click **<XPath>**. The **XPath Expression Editor** page is displayed. The XPath expression is used to specify the data (in the named variable) that will be replaced. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
4. When you finish editing the XPath expression, enter a context variable in the **in variable** field. See [Appendix A, “Message Context.”](#)
5. Click **<Expression>**. The **XQuery Expression Editor** page is displayed. The XQuery expression is used to create the data that replaces the data specified by the XPath in the named variable. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
6. When you finish editing the XQuery expression, select one of the options:

- **Replace entire node**—to specify that the nodes selected by the XPath expression you defined are replaced along with all of its contents
- **Replace node contents**—to specify that the node is not replaced; only the contents are replaced.

Note: Selecting the **Replace node contents** option and leaving the **XPath** field blank is more efficient than selecting the **Replace entire node** option and setting the XPath to `./*`

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Validate Actions

Use a validate action to validate elements selected by an XPath expression against an XML schema element or a WSDL resource. You can validate global elements only; Oracle Service Bus does not support validation against local elements.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Validate action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Message Processing > Validate**.
3. Click **XPath**, to construct an XPath expression that specifies the elements to be validated. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#). When you are finished constructing the expression in the XPath Expression Editor, click **Save**, to insert the expression on the **Edit Stage Configuration** page.
4. In the **in variable** field, enter the name of the variable to hold the element to be validated.
5. Click **resource**, then select **WSDL** or **Schema**.
6. From the WSDL Browser or XML Schema Browser, do the following:
 - a. Select the WSDL or XML schema

- b. Select the WSDL or XML schema type or element
 - c. Click **Submit**.
7. To save the result of this validation (a boolean result), select **Save result of validation in variable** and enter the name of the variable in which you want to save the result.

Alternatively, to raise an error if the element fails validation against the WSDL or XML schema element, select **Raise Error** on validation failure.

After you are finished

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Alert Actions

Use the alert action to generate alerts based on message context in a pipeline, to send to an alert destination. Unlike SLA alerts, notifications generated by the alert action are primarily intended for business purposes, or to report errors, and not for monitoring system health. Alert destinations should be configured and chosen with this in mind. To learn more about alert destinations, see [“Alert Destinations” on page 5-1](#).

If pipeline alerting is not enabled for the service or at the domain level, the configured alert action is bypassed during message processing.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add an Alert action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Reporting > Alert**.
3. Click **<Destination>**. The **Select Alert Destination** page is displayed. Select the required alert destination from the list and click **Submit**.

By default, the alert will always go to the console.

4. Click **<Expression>**. The **XQuery Expression Editor** page is displayed. You specify the message context to be added to the alert message through XQuery expressions on context variables. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
5. In the **alert summary** field, enter a short description of the alert. This will be the subject line in the case of an E-mail notification, and can contain no more than 80 characters. If no description is provided, a predefined subject line that reads, “Oracle Service Bus Alert”, will be used instead.
6. In the **severity level** drop-down list, select a severity level for this alert from among: **Normal**, **Warning**, **Minor**, **Major**, **Critical**, and **Fatal**.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Tip: In order to prevent exceptions from aborting the message being processed, when generating a pipeline alert, it is recommended that an error handler for the alert action be defined to handle and contain such exceptions locally, rather than having them bubble up to a global error handler.

Adding Log Actions

Use the log action to construct a message to be logged and to define a set of attributes with which the message is logged.

Before you begin

These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a Log action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Reporting > Log**.
3. Click **<Expression>**. The **XQuery Expression Editor** page is displayed. You specify the message context to be logged through XQuery expressions on context variables. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

4. In the **Annotation** field, enter notes for this log action. These notes are logged along with the result of the previously defined expression.
5. In the **severity level** drop-down list, select one of the options.

Table 19-5 Log Action Severity Levels

Severity Level	Typical Usage
Info	Used for reporting normal operations; a low-level informational message.
Warning	A suspicious operation or configuration has occurred but it might not affect normal operation.
Error	A user error has occurred. The system or application can handle the error with no interruption and limited degradation of service.
Debug	While your application is under development, you might find it useful to create and use messages that provide verbose descriptions of low-level activity within the application.

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Adding Report Actions

Use the report action to enable message reporting for a proxy service.

Before you begin



These instructions assume you are already editing a message flow in the **Edit Message Flow** page, as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To add a report action

1. Navigate to where you want to add the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).
2. Click the appropriate icon, then select **Add an Action > Reporting > Report**.

3. Click **<Expression>**. The **XQuery Expression Editor** page is displayed. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#). The XQuery expression is used to create the data that will be reported to the Oracle Service Bus dashboard.
4. When you finish editing the XQuery expression, click **Add a Key**. Two fields are displayed: a **Key Name** field and a **Key Value** field, which includes an XPath link that you can click to edit an XPath expression and an in variable field in which you can enter a context variable.

You use key value pairs to extract key identifiers from any message context variable or message payload, and ignore the rest of the message. The keys are a convenient way to identify a message. They are displayed as report indexes in the Reporting module. See [“Viewing Reporting Messages” on page 25-1](#) and [“Viewing Message Details” on page 25-3](#).

- a. Enter a key name in the **Key Name** field.
- b. Click **<XPath>**. The **Edit an XPath Expression** page is displayed. See [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
- c. Enter a context variable in the in **variable** field. To learn about context variables, see [Appendix A, “Message Context.”](#)
- d. To add more key values, click the  **Key** icon, then select **Add a Key**. To delete a key, click the  **Key** icon, then select **Delete this Key**.

For example, consider a report action configured on an error handler in a stage. The action reports the contents of the `fault` context variable in the event of an error. The report action is configured as follows:

- Key name = `errorCode`
- Key value = `./ctx:errorCode` in variable `fault`

Each time this action is executed at run time, a message is reported via the Reporting Data Stream. The following table shows the results after the report action is executed twice.

Report Index	DB TimeStamp	Inbound Service	Error Code
errorCode=BEA-382505	04/26/07 9:45 AM	MortgageBroker/ProxySvc/loanGateway3	BEA-382505
errorCode=BEA-382505	04/26/07 9:45 AM		BEA-382505

After you finish

When you complete the configuration of this action, continue by configuring other actions or by saving your configuration, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Proxy Services: Actions

Proxy Services: XQuery and XPath Editors

In the message flow of a proxy service, you can assign XQuery expressions to message context variables, assign If...Then... actions based on the Boolean result of an XQuery expression, insert the result of an XQuery expression at an identified place relative to an XPath expression, specify the message context that you want to log through XQuery expressions on context variables, and so on.

The XQuery Expression Editor, the XQuery Condition Editor, and the XPath Expression Editor are available in the appropriate context in message flows to construct the kind of expression called for in the context.

Creating and Editing Inline XQuery and XPath Expressions

When you add actions to stages or route nodes on the [Edit Stage Configuration Page](#), a skeleton structure is displayed on the page that prompts for configuration details. [Figure 20-1](#) shows an example.

Figure 20-1 Example of Action Configuration Skeleton



Replace `<XPath>` in variable with `<Expression>`



Whenever it is appropriate for the context, the skeleton provides links for accessing the XQuery editors, where you can construct expressions that will be executed inline, as required by the context in the action.

Before you begin

These instructions assume you are creating or editing an action in the [Edit Stage Configuration Page](#) of a pipeline stage, an error handler stage, or a route node. See “[Creating, Editing, and Viewing Message Flows](#)” on page 18-1 and “[Adding and Editing Actions in Message Flows](#)” on page 19-1.

To create or modify an inline expression

1. On the **Edit Stage Configuration** page, locate the place in the action where you want to add or edit the expression.
2. Click the expression link to open the editor that is appropriate for the context. When an expression has not yet been defined, the link tells what kind of expression you can use in that position:
 - Click **<Expression>** to create an XQuery expression. You can also import an XQuery or XSLT resource created outside Oracle Service Bus, then bind it to the inline XQuery.
 - Click **<Condition>** to create an XQuery conditional expression for an if..then... action.
 - Click **<XPath>** to create an XPath expression for a message context variable.

When an expression has already been defined in a position, the **<Expression>**, **<Condition>**, or **<XPath>** link is replaced by a link that shows expression itself, for example `true()` , or a fragment of the expression it is too long to fit, for example `$body/urn:Posta...` . Click the expression (or expression fragment) to open the expression in the appropriate editor.

3. Build the expression, as described in the following topics:
 - “[Building Expressions in the Editor Workspace Text Fields](#)” on page 20-4
 - “[Creating Namespaces to Use in Inline Expressions](#)” on page 20-8
 - “[Creating Variable Structures in the XQuery Editors](#)” on page 20-9
 - “[Binding External XQuery Resources to Inline XQueries](#)” on page 20-14
 - “[Binding External XSLT Resources to Inline XQueries](#)” on page 20-15
 - “[Binding Dynamic XQuery Expressions to Inline XQueries](#)” on page 20-16
 - “[Entering XQuery Comparison Expressions Using the Builder Option](#)” on page 20-17
 - “[Entering Unary Expressions Using the Builder Option](#)” on page 20-19
4. Optionally, do either or both of the following:

- Click **Validate** to validate the expression.
 - Click **Test** to test the expression. See [“Performing XQuery Testing” on page 30-22](#).
5. Click **Save** to close the editor and insert the expression in the action.

After you finish

Continue configuring the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Understanding XQuery Editor Layouts and Tasks

The XQuery Expression Editor, the XQuery Condition Editor, and the XPath Expression Editor are each composed of the following components:

- [Palettes](#)
- [Workspace](#)
- [Property Inspector](#)

Palettes

The left panel of the each editor contains the palettes listed below. In any of the editors, click the name of a palette to display it. Each palette contains entities that you can insert into expressions in the editors.

- The **Namespace Definitions** palette lists default Oracle Service Bus namespaces, variable namespaces, and user-defined namespaces. You can define new namespaces, which are then added to the list of user-defined namespaces.

For more information, see:

- [“Building Expressions in the Editor Workspace Text Fields” on page 20-4](#)
- [“Creating Namespaces to Use in Inline Expressions” on page 20-8](#)

- The **XQuery Functions** palette lists a set of standard XQuery functions. When you insert a function into an expression, placeholders are used for parameter values you must supply.

For more information, see:

- [“Building Expressions in the Editor Workspace Text Fields” on page 20-4](#)
- [“Binding External XQuery Resources to Inline XQueries” on page 20-14](#)

- The **Variable Structures** palette provides a set of tools for inserting variables and paths to the variables, using XPath expressions.

Variable structures are graphical representations of variables or variable paths that are displayed in the editor. They can help you visualize the variable structure, and you can use them to construct inline XQuery expressions that reference the content of the variable.

Note: Variable structures do not create variables. Variables are created at runtime as the target of the Assign action in the stage.

Oracle Service Bus provides several predefined message context variables (*attachments*, *body*, *header*, *outbound*, and *inbound*), whose contents you can display as variable structures. You can also define your own variable structures.

For more information, see

- [“Building Expressions in the Editor Workspace Text Fields” on page 20-4](#)
- [“Creating Variable Structures in the XQuery Editors” on page 20-9](#)

Workspace

The right side of the page provides a workspace for constructing the XQuery expression, XQuery condition, or XPath. The workspace is different in the three editors.

Property Inspector

In all three editors, the **Property Inspector** is displayed on the bottom right of the page. When you select an item from one of the palettes to add to the expression, that item appears in the Property Inspector. You can then paste the item into the workspace. See [“Building Expressions in the Editor Workspace Text Fields” on page 20-4](#).

Building Expressions in the Editor Workspace Text Fields

The **XQuery Expression Editor**, the **XQuery Condition Editor**, and the **XPath Expression Editor** all provide text fields in which you can build expressions by typing directly or by pasting items from the palettes.

Before you begin

These instructions assume you are creating or editing an expression in the **XQuery Expression Editor**, **XQuery Condition Editor**, or **XPath Expression Editor**, as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

To build an expression in a text field:

1. Display the panel containing the text field. Depending on the editor, do one of the following:
 - In the **XQuery Expression Editor**, select **XQuery Text** (located under the workspace button bar), if it is not already selected.
 - In the **XQuery Condition Editor**, select **Text** (located under the workspace button bar), if it is not already selected.
 - In the **XPath Expression Editor**, you do not have to select anything, because there are no options for selecting other tools.

Note: Selecting any of the above links displays a text field where you can create a complete expression appropriate for the context. However, the tools and techniques described in this topic can be used wherever text fields are provided in the editors, for example when binding variables from imported resources to the inline expression, as described in [“Binding External XQuery Resources to Inline XQueries” on page 20-14](#) and [“Binding External XSLT Resources to Inline XQueries” on page 20-15](#).
2. If desired, type or paste an expression or expression fragment into the field. If you create the complete expression this way, skip to [step 7](#), below. Otherwise, proceed to the next step.
3. Select the palette containing the item(s) you want to add to the expression, and locate the item you want to add, as described in [Table 20-1](#), below.

Table 20-1 Palettes

Palette	Description and Use
Namespace Definitions	<p>Lists default Oracle Service Bus namespaces, variable namespaces, and user-defined namespaces. Namespace abbreviations are listed when defined.</p> <p>Scroll through the lists to find the desired namespace.</p> <p>You can also define a namespace. See “Creating Namespaces to Use in Inline Expressions” on page 20-8.</p>

Table 20-1 Palettes (Continued)

XQuery Functions	<p>Contains a set of standard XQuery functions, organized alphabetically and by type:</p> <ul style="list-style-type: none">• Service Bus Functions• Accessors• Error Functions• XML Functions• Constructors• Numerics• Strings• URIs• Booleans• Durations, Dates, and Times• QNames• Nodes• Sequences• Context Functions• Alphabetical <p>Expand or collapse nodes in the tree by clicking the plus sign (+) or minus sign (-).</p> <p>See also:</p> <ul style="list-style-type: none">• “XQuery Transformations” on page 10-1• XQuery Implementation in the <i>Oracle Service Bus User Guide</i>.
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Table 20-1 Palettes (Continued)

Variable Structures	<p>Displays variables and their contents as trees, which can help you to visualize.</p> <p>To display a variable structure and its contents</p> <ul style="list-style-type: none"> • Select the name of the structure from the drop-down list at the top of the palette. The list displays Built-in message context variables (<code>attachments</code>, <code>body</code>, <code>header</code>, <code>outbound</code>, and <code>inbound</code>), as well as any user-defined structures, organized by type (XML Type, Service Interface, and Simple Type). • Expand or collapse nodes in the tree by clicking the plus sign (+) or minus sign (-). <p>You can also define your own variable structures. See “Creating Variable Structures in the XQuery Editors” on page 20-9.</p> <p>Variable structures do not create variables. Variables are created at runtime as the target of the Assign action in the stage.</p> <p>When you insert an item from the a variable structure tree into the text field, it is inserted as an XPath expression that describes the path.</p> <p>See also “XQuery Transformations” on page 10-1.</p>
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4. Paste the desired item into the text field using any of the methods shown below in [Table 20-2](#):

Table 20-2 Ways to Paste Items Into the Editor Text Fields

From this palette...	Do this...
Namespace Definitions palette	<p>Use standard mouse or keyboard select, copy, and paste a namespace, for example:</p> <ol style="list-style-type: none"> 1. Select the entire namespace string (or its abbreviation, if one exists) by dragging the mouse pointer over the string. 2. Press Ctrl-C to copy the string. 3. Click the location in the text field where you want to insert the namespace. 4. Press Ctrl-V to paste the string.
XQuery Functions palette or Variable Structures palette	<p>Drag an item from the palette to the text field.</p> <p>Note: Dragging from the palette to the workspace is supported only in Internet Explorer.</p>

Table 20-2 Ways to Paste Items Into the Editor Text Fields (Continued)

XQuery Functions palette or Variable Structures palette	<ol style="list-style-type: none"> 1. Click an item in the palette. The item is displayed in the Property Inspector pane: <ul style="list-style-type: none"> – Functions are displayed with placeholders for any values you have to supply. – Variables and their attributes are displayed as XPath expressions. 2. Click in the text field where you want to insert the item 3. Click Copy Property to paste the item into the location selected in the text field.
XQuery Functions palette or Variable Structures palette	<ol style="list-style-type: none"> 1. Click an item in the palette. The item is displayed in the Property Inspector pane. 2. Select and copy the item in the Property Inspector, using standard keyboard or mouse actions. 3. Select a location in the text field, and paste the item into the text field, using standard keyboard or mouse actions.

5. Continue to drag and drop functions to build the desired expression.
6. Edit the expression in the text field, as needed.
7. Optionally, do either or both of the following:
 - Click **Validate**. A message is displayed if the expression is validated successfully.
 - Click **Test** to test the expression. See [“Performing XQuery Testing” on page 30-22](#).
8. Click **Save** to close the editor and insert the expression in the action.

After you finish

Continue configuring the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Creating Namespaces to Use in Inline Expressions

The **Namespace Definitions** palette includes a list of default namespaces, but you can also define new ones.

Before you begin

These instructions assume you are creating or editing an expression in the **XQuery Expression Editor**, **XQuery Condition Editor**, or **XPath Expression Editor**, as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

To create and use a namespace in an inline expression

1. Select **Namespace Definitions**. The **Namespace Definitions** palette includes a list of default namespaces, plus lists of variable namespaces and user defined namespaces, if any exist.
2. To define and add a user namespace,
 - a. Click **Add Namespace**.
 - b. In the **Prefix** field, enter a unique identifier for the namespace. You cannot use the same prefix more than once.
 - c. In the **URI** field, enter a URL for this namespace in the format `http://url/.../` or enter a URN in the format `uddi:server:`.
 - d. Click **Add** to add the namespace to the **User Defined Namespaces** list.
 - e. Copy and paste the user-defined namespace into the XQuery expression, XQuery condition, or XPath, as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

After you finish

Continue as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

Creating Variable Structures in the XQuery Editors

The **Variable Structures** palette in the XQuery and XPath editors displays graphical representations of the contents of variables. It includes by default the built-in message context variables `attachments`, `body`, `header`, `outbound`, and `inbound`.

Each variable structure mapping entry has a label and maps a variable or variable path to one or more structures. The scope of these mappings is a stage or a route node.

You can also declare your own variable structures, based on:

- XML types, including
 - Schema elements
 - WSDL elements

- Schema types
- WSDL types
- MFLs
- Service interfaces
- Simple types (string or any XML)

You can use this feature directly for all user-defined variables, as well as `$inbound`, `$outbound`, and `$fault`. However, you cannot use it directly to access XML attachments in `$attachments`, headers in `$header`, or documents and RPC parameters in `$body`, with one exception— you can use it directly to access documents and parameters in `$body` for request messages received by a WSDL proxy service.

Before you begin

These instructions assume you are creating or editing an expression in the **XQuery Expression Editor**, **XQuery Condition Editor**, or **XPath Expression Editor**, as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

To create a variable structure:

1. Select **Variable Structures**.
2. In the **Variable Structures** palette, click **Add New Structure**.
3. Continue with any of the tasks listed in [Table 20-3](#), below.

Table 20-3 Create a New Variable Structure

To...	Complete these steps...
Create a variable structure that maps a variable to an XML Schema type	<ol style="list-style-type: none"> 1. Select XML Type at the top of the Variable Structures palette, if it is not already selected. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Path field, enter the path of the variable structure at run time. The path must begin with \$. 4. Under the Type field, select the appropriate radio button, then select Schema Type. 5. Click Browse. The XML Schema Browser is displayed. Select an XML Schema from the list, select an XML Schema type from the Definitions pane, then click Submit. 6. Click Add to create the variable structure.
Create a variable structure that maps a variable to a WSDL type	<ol style="list-style-type: none"> 1. Select XML Type at the top of the Variable Structures palette, if it is not already selected. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Path field, enter the path of the variable structure at run time. 4. Under the Type field, select the appropriate radio button, then select WSDL Type. 5. Click Browse. The WSDL Browser is displayed. Select a WSDL from the list of WSDLs, select a WSDL type from the Definitions pane, then click Submit. 6. Click Add to create the variable structure.

Table 20-3 Create a New Variable Structure (Continued)

To...	Complete these steps...
Create a variable structure that maps a variable to an XML Schema element	<ol style="list-style-type: none"> 1. At the top of the Variable Structures palette, select XML Type, if it is not already selected. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Path field, enter the path of the variable structure at run time. 4. Under the Type field, select the appropriate radio button, then select Schema Element. 5. Click Browse. The XML Schema Browser is displayed. Select an XML Schema from the list, select an XML Schema type from the Definitions pane, then click Submit. 6. Click Add to create the variable structure.
Create a variable structure that maps a variable to a WSDL element	<ol style="list-style-type: none"> 1. At the top of the Variable Structures palette, select XML Type, if it is not already selected. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Path field, enter the path of the variable structure at run time. 4. Under the Type field, select the appropriate radio button, then select WSDL Element. 5. Click Browse. The WSDL Browser is displayed. Select a WSDL from the list of WSDLs, select a WSDL element from the Definitions pane, then click Submit. 6. Click Add to create the variable structure.

Table 20-3 Create a New Variable Structure (Continued)

To...	Complete these steps...
Create a variable structure that maps a variable to a child element	<ol style="list-style-type: none"> 1. At the top of the Variable Structures palette, select XML Type, if it is not already selected. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Path field, enter the path of the variable structure at run time. 4. Under the Type field, select the type of variable you want to create: To create an XML Schema Element or WSDL Element variable, select the radio button associated with this option, then select Schema Element or WSDL Element. To create an MFL variable, select the radio button associated with this option, then select MFL. 5. For the XML Schema, WSDL, or MFL, click Browse to select an object from the list that the browser displays, then click Submit. For example, select an MFL from a list of MFLs, then click Submit. 6. Select the Set as child check box to set the element as a child of the structure being created. 7. Click Add to create the variable structure.
Create a variable structure that uses an MFL resource	<ol style="list-style-type: none"> 1. At the top of the Variable Structures palette, select XML Type, if it is not already selected. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Path field, enter the path of the variable structure at run time. 4. Under the Type field, select the appropriate radio button, then click Browse. The MFL Browser is displayed. 5. Select an MFL from the list of MFLs, then click Submit. 6. Click Add to create the variable structure.

Table 20-3 Create a New Variable Structure (Continued)

To...	Complete these steps...
Create a Service Interface variable structure	<ol style="list-style-type: none"> 1. At the top of the Variable Structures palette, select Service Interface. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Path field, the default is already set as \$body. You cannot change this field. 4. In the WSDL Based Service field, select the Service Browser icon, select a service from the list of services the Service Browser displays, then click Submit. The service you selected is displayed in the WSDL Based Service field. 5. In the Operation field, select an operation or select None to not include an operation. 6. Click Add to create the variable.
Create a Simple variable structure	<ol style="list-style-type: none"> 1. At the top of the Variable Structures palette, select Simple Type. 2. In the Structure Label field, enter a display name for the variable you want to create. This display name enables you to give a meaningful name to the structure so you can recognize it at design time but it has no impact at run time. 3. In the Structure Name field, enter a name for the variable structure you want to create. 4. Under the Type field, select String or Any XML. 5. Click Add to create the variable.

After you finish

Continue as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

Binding External XQuery Resources to Inline XQueries

You can bind XQuery resources to inline XQuery expressions, so they will be executed inline as part of an action.

Before you begin

These instructions assume you are creating or editing an expression in the **XQuery Expression Editor**, **XQuery Condition Editor**, or **XPath Expression Editor**, as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

To bind an XQuery Resource to an inline expression:

1. Click **Variable Structures**.
2. In the workspace (under the button bar), select **XQuery Resources**.
3. In the **1. Select an XQuery resource to execute** box, click **Browse**.
4. In the **XQuery Browser**, select the radio button associated with the XQuery you want to use, then click **Submit**.
5. In the **2. Bind Variables** box, define the input parameters for the transformation. For each variable listed under **Variable Name** enter an XQuery expression to be mapped to it. You must define a mapping for each parameter. For example, if an XQuery transformation has two input parameters named **one** and **two**, the **Variable Name** field has two labels—**one** and **two**. A text box, into which the XQuery expression is entered, is associated with each label.

The following XQuery expressions are examples of valid input to this field:

```
$body/*[1]
```

```
$body/po:PurchaseOrder
```

Note: The following variable name is not a valid entry for this field and results in an exception:
body

6. After you finish, continue with any of the following tasks.
 - Click **Validate**. A message is displayed if the expression is validated successfully.
 - Click **Test**. See [“Performing XQuery Testing” on page 30-22](#).
 - Save or discard your changes.

Binding External XSLT Resources to Inline XQueries

The **XQuery Expression Editor** page allows you to select an XSLT resource for execution. To learn more about this editor, see [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

To Select an XSLT Resource for Execution

1. Select the **XSLT Resources** option.
2. Under the **Select the XSLT resource to execute** field, select the **XSLT Browser** icon.
3. In the **XSLT Browser**, select the radio button associated with the XSLT you want to execute, then click **Submit**.
4. Under the **Bind Variables** field, a label and a corresponding text box is displayed for each input parameter of the transformation. Each label corresponds to the name of a parameter, and each text box is for defining an XQuery expression to be mapped to the parameter. You must define a mapping for each parameter. For example, if an XSL transformation has two input parameters named **one** and **two**, the **Variable Mapping** field has two labels—**one** and **two**—with a text box associated with each into which the XQuery expression is entered. In addition to the mapping for any input variables, you must also specify an XQuery expression for the Input Document to the transformation. The mapping is specified in the text box with the label **Input Document**.

The following XQuery expressions are examples of valid input to this field:

```
$body/*[1]
```

```
$body/po:PurchaseOrder
```

Note: The following variable name is not a valid entry for this field and results in an exception:
body

5. Continue with any of the following tasks:
 - [“Creating Namespaces to Use in Inline Expressions” on page 20-8.](#)
 - [“Creating Variable Structures in the XQuery Editors” on page 20-9.](#)
 - [“Building Expressions in the Editor Workspace Text Fields” on page 20-4.](#)
 - [“Binding External XQuery Resources to Inline XQueries” on page 20-14.](#)
 - Click **Validate**. A message is displayed if the expression is validated successfully.
 - Click **Test**. See [“Performing XQuery Testing” on page 30-22.](#)

Binding Dynamic XQuery Expressions to Inline XQueries

The **XQuery Expression Editor** page allows you to specify a dynamic XQuery expression that evaluates at runtime to the name of a pre-registered XQuery resource. To learn more about this editor, see [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1.](#)

To define a dynamic XQuery expression

1. Select the **Dynamic XQuery** option.
2. In the **Enter Expression for XQuery Resource** area, enter the XQuery expression that will evaluate at runtime to the name of a pre-registered XQuery resource.

The following shows the syntax for the XQuery resource (representing the full name of the resource):

```
Project/folder1/folder2/XQueryResourceName
```

3. In the **Bind Variables using XQuery Template of Custom Variables** area, define the input parameters for the transformation.
 - Click **Browse** in the **Select XQuery Template** field to select an existing registered resource to serve as a template for the shape of the query (the number and names of the variables). After selecting a template, the variables appear in the **Bind Variables** area. Note that the template is not persisted with the configuration. Instead, the template serves as a quick start to help you specify the variables for the query.
 - Type a variable name in the **Add Custom Variable** field, and click **Add**. For each variable listed under **Variable Name**, enter an XQuery expression to be mapped to it. You must define a mapping for each parameter. For example, if an XQuery transformation has two input parameters named **one** and **two**, the **Variable Name** field has two labels—**one** and **two**. A text box, into which the XQuery expression is entered, is associated with each label.

The following XQuery expressions are examples of valid input to the variable fields:

```
$body/*[1]
```

```
$body/po:PurchaseOrder
```

4. After you finish, continue with any of the following tasks.
 - Click **Validate**. A message is displayed if the expression is validated successfully.
 - Click **Test**. See [“Performing XQuery Testing” on page 30-22](#).
 - Save or discard your changes.

Entering XQuery Comparison Expressions Using the Builder Option

Before you begin

These instructions assume you are creating or editing an XQuery conditional expression in the **XQuery Condition Editor**, as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).





To enter an XQuery comparison expression:

1. In the **XQuery Condition Editor**, select **Builder** (located under the workspace button bar), if it is not already selected. option.
2. In the **Expression Builder** box, select **Comparison Expression** if it is not already selected.
3. In the **Operand** field, enter a context variable, namespace definition, or XQuery function.

To build the operand, you can paste XQuery functions from the **XQuery Functions** palette and namespaces from the **Namespace Definitions** palette. See [step 3](#) and [step 4](#) in [“Building Expressions in the Editor Workspace Text Fields” on page 20-4](#).

4. From the **Operator** list, select a comparison operator.
5. In the **Value** field, enter text or enter a context variable.
You must enter text in quotations—for example, "true" is valid; true is not.
6. Click **Add**. The text you entered is displayed in the **Expressions** pane.
7. Repeat steps 3-6 to build additional conditions. Each condition is added to the end of the list of conditions.

Consider the following when using multiple conditions:

- When you build additional expressions, make sure to select the **And** or the **Or** options in the **Conjunction** field.
 - You can select a condition and click the  **Up** arrow to move it up in the list of conditions or click the  **Down** arrow to move it down the list of conditions. You can also click the  **Edit** icon to update a condition, or click the  **Delete** icon to delete it.
 - Unary expressions may be intermixed with Comparison expressions in the overall definition of a condition.
8. Optionally, do either or both of the following:
 - Click **Validate**. A message is displayed if the expression is validated successfully.
 - Click **Test** to test the expression. See [“Performing XQuery Testing” on page 30-22](#).

9. Click **Save** to close the editor and insert the expression in the action.

After you finish

Continue configuring the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Entering Unary Expressions Using the Builder Option

Before you begin

These instructions assume you are creating or editing an XQuery conditional expression in the **XQuery Condition Editor**, as described in [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).





To enter an XQuery comparison expression:

1. In the **XQuery Condition Editor**, select **Builder** (located under the workspace button bar), if it is not already selected. option.
2. In the **Expression Builder** box, select **Unary Expression** if it is not already selected.
3. Select the **Not** check box to make this a negative expression, or leave it blank.
4. Enter a context variable, namespace definition or XQuery function in the **Expression** field.

To build the expression, you can paste XQuery functions from the **XQuery Functions** palette and namespaces from the **Namespace Definitions** palette. See [step 3](#) and [step 4](#) in [“Building Expressions in the Editor Workspace Text Fields” on page 20-4](#).

5. Click **Add** to add the text to the **Expressions** pane.
6. Repeat steps 3-5 to build additional conditions. Each condition is added to the end of the list of conditions.

Consider the following when building unary expressions.

- When you build additional expressions, make sure to select the **And** or the **Or** options in the **Conjunction** field.
- You can select a condition and click the  **Up** arrow to move it up in the list of conditions, click the  **Down** arrow to move it down the list of conditions, click the  **Edit** icon to update it, or click the  **Delete** icon to delete it.

- Unary expressions may be intermixed with Comparison expressions in the overall definition of a condition.
7. Optionally, do either or both of the following:
 - Click **Validate**. A message is displayed if the expression is validated successfully.
 - Click **Test** to test the expression. See [“Performing XQuery Testing” on page 30-22](#).
 8. Click **Save** to close the editor and insert the expression in the action.

After you finish

Continue configuring the action, as described in [“Adding and Editing Actions in Message Flows” on page 19-1](#).

Proxy Services: Error Handlers

You can configure error handling at the message flow, pipeline, route node, and stage level.

Edit Error Handler page

You can configure error handling at the message flow, pipeline, route node, and stage level.

Configure error handlers on the **Edit Error Handler** page. You must always add at least one stage to the page to specify how the error handler will work. See the following topics:




- [Adding Proxy Service Error Handlers](#)
- [Adding Pipeline Error Handlers](#)
- [Adding Stage Error Handlers](#)
- [Adding Route Node Error Handlers](#)
- [Editing Error Handlers](#)
- [Handling Errors in Message Flows](#) in the *Oracle Service Bus User Guide*

Adding Proxy Service Error Handlers

Before you begin

These instructions assume you are already editing a message flow in the [Edit Message Flow page](#), as explained in “[Creating, Editing, and Viewing Message Flows](#)” on page 18-1.

To add a proxy service Error Handler

1. Click the  **Proxy Service** icon, then click **Add Service Error Handler**. The **Edit Error Handler** page is displayed.
2. Click the  **Error Handler** icon, then click **Add Stage**.
3. Click the  **Stage** icon, then click **Edit Stage**. The **Edit Stage Configuration** page is displayed.
4. Click **Add an Action**, then select the action you want to add.

An error handler is a pipeline and is therefore configured like any other pipeline. For example, you can use the **Publish** action to send error notifications to other services, use the **Assign** action to modify the context variables, and so on. See [“Adding and Editing Actions in Message Flows” on page 19-1](#). There is no restriction on what actions may be chained together.

Three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**.

5. Add other actions and make other edits on the **Edit Stage Configuration** page, as desired.
6. On the **Edit Stage Configuration** page, click **Save** to commit the updates in the current session.
7. On the **Edit Error Handler** page, click **Save** to commit the updates in the current session.

After you finish

On the [Edit Message Flow page](#), continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).







Adding Pipeline Error Handlers

Before you begin

These instructions assume you are already editing a message flow in the [Edit Message Flow page](#), as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

The instructions also assume you have created a pipeline pair node, as explained in [“Adding Pipeline Pair Nodes to Message Flows” on page 18-6](#).

To add a Pipeline Error Handler

1. Navigate to the pipeline pair node containing the pipeline to which you want to add an error handler. If the pipeline pair is not already expanded, click the plus sign next to the icon   to display the pipelines.
2. Click the  **Request Pipeline** icon or the  **Response Pipeline** icon, then click **Add Pipeline Error Handler**. The **Edit Error Handler** page is displayed.
3. Click the  **Error Handler** icon, then click **Add Stage**.
4. Click the  **Stage** icon, click **Edit Stage**. The **Edit Stage Configuration** page
5. Click **Add an Action**, then select the action you want to add.

An error handler is a pipeline and is therefore configured like any other pipeline. For example, you can use the **Publish** action to send error notifications to other services, use the **Assign** action to modify the context variables, and so on. To learn more about the type of action you want to add, see the appropriate procedure in [“Adding and Editing Actions in Message Flows” on page 19-1](#). There is no restriction on what actions may be chained together.

Three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**.

6. Add other actions and make other edits on the **Edit Stage Configuration** page, as desired.
7. On the **Edit Stage Configuration** page, click **Save** to commit the updates in the current session.
8. On the **Edit Error Handler** page, click **Save** to commit the updates in the current session.

After you finish

On the [Edit Message Flow page](#), continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).



Adding Stage Error Handlers

Before you begin

These instructions assume you are already editing a message flow in the [Edit Message Flow page](#), as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

The instructions also assume you have added a stage to a pipeline, as explained in [“Adding Stages to Pipelines” on page 18-10](#).

To add a Stage Error Handler

1. Navigate to the stage to which you want to add error handling.
2. Click the  **Stage** icon, then click **Add Stage Error Handler**. The **Edit Error Handler** page is displayed.
3. Click the **Error Handler** icon, then click **Add Stage**.
4. Click the  **Stage** icon, then click **Edit Stage**. The **Edit Stage Configuration** page is displayed.
5. Click **Add an Action**, then select the action you want to add.

An error handler is a pipeline and is therefore configured like any other pipeline. For example, you can use the **Publish** action to send error notifications to other services, use the **Assign** action to modify the context variables, and so on. To learn more about the type of action you want to add, see the appropriate procedure in [“Adding and Editing Actions in Message Flows” on page 19-1](#). There is no restriction on what actions may be chained together.

Three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**.

6. Add other actions and make other edits on the **Edit Stage Configuration** page, as desired.
7. Click **Save** to commit the updates in the current session.

After you finish

On the [Edit Message Flow page](#), continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).



Adding Route Node Error Handlers

Before you begin

These instructions assume you are already editing a message flow in the [Edit Message Flow page](#), as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

The instructions also assume you have created a route node, as explained in [“Adding Route Nodes to Message Flows” on page 18-11](#).

To add a Route Node Handler

1. Click the  **Route Node** icon, then click **Add Error Handler**. The **Edit Error Handler** page is displayed.
2. Click the **Error Handler** icon, then click **Add Stage**.
3. Click the  **Stage** icon, then click **Edit Stage**. The **Edit Stage Configuration** page is displayed.
4. Click **Add an Action**, then select the action you want to add.

Since an error handler is another pipeline, it is configured like any other pipeline. For example, the **Publish** action may be used to send error notifications to other services, the **Assign** action may be used to modify the context variables, and so on. To learn more about the type of action you want to add, see the appropriate procedure in [“Adding and Editing Actions in Message Flows” on page 19-1](#). There is no restriction on what actions may be chained together.

Three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**.

5. Add other actions and make other edits on the **Edit Stage Configuration** page, as desired.
6. On the **Edit Stage Configuration** page, click **Save** to commit the updates in the current session.
7. On the **Edit Error Handler** page, click **Save** to commit the updates in the current session.

After you finish

On the [Edit Message Flow page](#), continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

Editing Error Handlers






Before you begin

These instructions assume you are already editing a message flow in the [Edit Message Flow page](#), as explained in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

To view and change an Error Handler

1. Do one of the following.

Table 21-1 Viewing and Changing the Error Handler

To...	Complete This Step...
View and change the proxy service message flow error handler	Click the  Proxy Service icon, then click Edit Service Error Handler . The Edit Error Handler page is displayed. See “Adding Proxy Service Error Handlers” on page 21-1 .
View and change the pipeline error handler	Click the appropriate  Request Pipeline icon or the  Response Pipeline icon, then click Edit Pipeline Error Handler . The Edit Error Handler page is displayed. See “Adding Pipeline Error Handlers” on page 21-2 .
View and change the route node error handler	Click the appropriate  Route Node icon, then click Edit Route Error Handler . The Edit Error Handler page is displayed. See “Adding Route Node Error Handlers” on page 21-4 .
View and change the stage error handler	Click the appropriate  Stage icon, then click Edit Stage Error Handler . The Edit Error Handler page is displayed. See “Adding Stage Error Handlers” on page 21-3 .

After you finish

On the [Edit Message Flow](#) page, continue to construct the message flow, as described in [“Creating, Editing, and Viewing Message Flows” on page 18-1](#).

Security Configuration

You use the **Security Configuration** module to create and modify security data that is used in Oracle Service Bus inbound security and administrative security.

Inbound transport-level security and message-level security use the user, group, and role data to authenticate inbound client requests. It applies access control policies to determine which authenticated users are authorized to use proxy services and business services.

Administrative security uses the user, group, and role data to determine which authenticated users are authorized to create or modify Oracle Service Bus configuration data or to monitor Oracle Service Bus performance. For more information, see [“Understanding Users, Groups, Security Roles and Policies” on page 22-1](#). See also [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.

Note: You cannot export users, groups, or roles when you export a configuration because these objects are located in security provider stores. You must create these objects again when you import the exported configuration or use WebLogic Server tools (if available) to export and import them.

Understanding Users, Groups, Security Roles and Policies

This section includes the following topics:

- [“Users” on page 22-2](#)
- [“Groups” on page 22-2](#)

- [“Roles” on page 22-3](#)
- [“Access Control Policies” on page 22-3](#)
- [“Security Configuration Data and Sessions” on page 22-4](#)

Users

Users are entities that can be authenticated. A user can be a person or a software entity, such as a Web Services client. You must give each user a unique identity (name) within a security realm.

Typically, the users that you create fall into two categories:

- Client users who can access your proxy services or business services.
If you create a large number of client users, consider organizing them into security groups.
- Administrative users who can use the Oracle Service Bus Console to create or modify proxy services, business services, and other Oracle Service Bus resources.

Oracle Service Bus uses role-based security for its administrative functions. Instead of giving access privileges directly to users, Oracle Service Bus gives administrative privileges only to security roles. To give administrative privileges to a user, you place the user in one of the default security groups, which is in one of the pre-defined security roles.

Groups

To facilitate administering a large number of users, you can organize users into named groups. Then, instead of giving access privileges or role identities to individual users, you give privileges or identities to groups.

Administrative Security Groups

Oracle Service Bus provides default security groups to facilitate giving users access to administrative functions such as creating proxy services. Each group is in one of the pre-defined Oracle Service Bus security roles that have been granted administrative privileges.

For more information, see [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.

Roles

A security role is an identity that can be granted to a user or group based on conditions in the runtime environment. When you create access control policies, you can grant access to a role, group, or user.

For example, you can create two of your groups, `MyCustomersEast` and `MyCustomersWest`. You create a security role named `PrivilegedCustomer` and create conditions so that the `MyCustomersWest` group is in the role from 8am to 8pm EST, while the `MyCustomersEast` group is in the role from 8pm to 8am EST. Then you create an access control policy for a proxy service that gives the `PrivilegedCustomer` role access to the service. Different users will have access at different times depending on whether they are in the `MyCustomersEast` and `MyCustomersWest` group.

Administrative Security Roles

Oracle Service Bus provides four, pre-defined security roles (plus four pre-defined roles from WebLogic Server) that give administrative privileges. You cannot change the access privileges for the Oracle Service Bus administrative security roles, but you can change the conditions under which a user or group is in one of the roles.

For more information about these roles and the privileges available for each role, see [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.

Access Control Policies

An access control policy specifies conditions under which users, groups, or roles can access a proxy service. For example, you can create a policy that always allows users in the `GoldCustomer` role to access a proxy service and that allows users in the `SilverCustomer` role to access the proxy service only after 12pm on weeknights.

For all proxy services, you can create a transport-level policy, which applies a security check when a client attempts to establish a connection with the proxy service. Only requests from users who are listed in the transport-level policy are allowed to proceed.

A message-level access control policy applies a security check when a client attempts to invoke a proxy service with message-level security. You can create a message-level access control policy in the following cases:

- For proxy services that are active Web Service security intermediaries
- For proxy services that have message level custom authentication

Only users who are listed in the message-level policy are allowed to invoke the operation.

Security Configuration Data and Sessions

Users, groups, and roles are persisted in security providers, which are not governed by Oracle Service Bus sessions. Therefore, you can create or modify this data when you are in or out of a session. Any additions or modifications to this data take effect immediately and are available to all sessions. If you discard a session in which you added or modified the data, the security data is **not** discarded.

Access control policies are persisted in authorization providers. And there is now a reference to them in the Oracle Service Bus repository.

Access control policies are managed within an Oracle Service Bus design session and not outside the session. Because the changes are made within a session, you can commit or discard the changes as with other resources.

Although ACLs can be managed from the Oracle Service Bus console, you can change policies outside Oracle Service Bus. However, changing policies outside of Oracle Service Bus can make the reference in Oracle Service Bus out-of-date and invalid.

Therefore, for consistent management, either completely manage ACLs outside of Oracle Service Bus sessions (using the authorization provider MBeans or third-party authorization provider tools) or completely manage them from within Oracle Service Bus sessions. Any combination of the two approaches can result in an inconsistent view of policies.


Locating Users

1. Select **Security Configuration > Users**. The **Summary of Users** page displays the information shown in [Table 22-1](#). For a more detailed description of the properties, see [“Editing Users” on page 22-6](#).
2. To restrict the number of items in the list or locate a specific user, you can filter by user name. Enter part or all of the user name in the **Name** field and click **Search**.

You can use the asterisk (*) wildcard character. (Other wildcard characters are not supported.)

Click **View All** to remove the search filters and display all users.

Table 22-1 Users Information

Property	Description
User Name	The name assigned to the user. The name is a link to the View User Details page. See “Editing Users” on page 22-6 .
Group Membership	The name of the group to which this user belongs. The name is a link to the View Group Details page. See “Editing Groups” on page 22-9 .
Authentication Provider	The authentication provider for this user.
Options	Click the  Delete icon to delete a specific user. See “Deleting Users” on page 22-7 .

Adding Users

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Select **Security Configuration** to display the **Summary of Users** page.
3. Click **Add New** to display the **Create a New User - General Configuration** page.
You can add a user from inside or outside a session.
4. In the **User Name** field, enter a unique name. This is a required field.
5. In the **Password** field, enter a password. This is a required field.
Note: Authentication providers can impose a minimum password length. For a user defined in the WebLogic Authentication provider, the default minimum password length is 8 characters. You can customize this setting using the WebLogic Server Administration Console. (The WebLogic Authentication provider is configured in the default security realm with the name DefaultAuthenticator.)
6. In the **Confirm Password** field, enter the same password you entered for the **Password** field. This is a required field.
7. In the **Authentication Provider** field, select the authentication provider for this user.

If multiple authentication providers are configured in the security realm, they will appear in the list. Select the authentication provider database that should store information for the new user. See [Supported Standards and Security Providers](#) in *Oracle Service Bus Security Guide*.

8. In the **Group Membership** field, select a group for this user.
 - a. Select a group from the **Available Groups** field.
 - b. Click the arrow to move the group into the **Current Groups** field.
9. Click **Save** to create the user.

Oracle Service Bus Console saves the user and the user becomes available immediately to all sessions. If you are in a session when you add the user and then you discard the session, Oracle Service Bus Console does not delete the new user.

Editing Users

Use the **View User Details** page to view and change details of a specific user.

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Locate the user. See [“Locating Users” on page 22-4](#).
3. Click the user name. The **View User Details** page displays the information shown in [Table 22-2](#).

Table 22-2 User Details

Property	Description
User Name	The name of this user
Authentication Provider	The authentication provider that contains this user definition.
Group Membership	The name of the group to which this user belongs.

4. To edit the user details, click **Reconfigure** to display the **Edit User Details** page.

You can edit user details from inside or outside a session.

5. Make the appropriate changes to the **New Password**, **Confirm Password**, and **Group Membership** fields. See [“Adding Users” on page 22-5](#) for descriptions of the fields.

You cannot change the **User Name** field.

6. Click **Save Changes** to update the user.

Oracle Service Bus Console updates the user details and the update becomes available immediately to all sessions. If you are in a session when you update the user and then you discard the session, Oracle Service Bus Console does not delete the updates.

Deleting Users


Use the **Summary of Users** page to delete a selected user or multiple users.

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Select **Security Configuration** to display the **Summary of Users** page.
3. Select the user you want to delete. You can select multiple users if necessary.

You can delete a user from inside or outside a session.

4. Click **Delete**. A message prompting you to confirm that you want to delete the user is displayed.
5. To delete the user, click **OK**.

Oracle Service Bus Console deletes the user. If you are in a session when you delete the user and then you discard the session, Oracle Service Bus Console does not delete the updates.

6. Alternatively, you can click the  **Delete** icon in the **Options** column of the user you want to delete.

Locating Groups


1. Select **Security Configuration > Groups**. The **Summary of Groups** page displays the information shown in [Table 22-3](#). For a more detailed description of the properties, see [“Editing Groups” on page 22-9](#).

2. To restrict the number of items in the list or locate a specific group, you can filter by group name. Enter part or all of the group name in the **Name** field and click **Search**.

You can use the asterisk (*) wildcard character. (Other wildcard characters are not supported.)

Click **View All** to remove the search filters and display all groups.

Table 22-3 Group Information

Property	Description
Group Name	The name of the group. The name is a link to the View Group Details page. See “Editing Groups” on page 22-9 .
Group Membership	The group to which this group belongs. The name is a link to the View Group Details page. See “Editing Groups” on page 22-9 .
Authentication Provider	The authentication provider that contains this group definition.
Delete	Click the  Delete icon to delete a specific group. See “Deleting Groups” on page 22-10 .

Adding Groups

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Select **Security Configuration > Groups** to display the **Summary of Groups** page.
3. Click **Add New**.

You can add a group from inside or outside a session.
4. In the **Group Name** field, enter a unique name. Note that you cannot enter spaces or special characters. This is a required field.
5. In the **Authentication Provider** field, select the authentication provider.
6. In the **Group Membership** field, select a group to which this group belongs.
 - a. Select a group from the **Available Groups** field.
 - b. Click the arrow to move the group into the **Current Groups** field.

7. Click **Save** to create the group.

Oracle Service Bus Console saves the group and the group becomes available immediately to all sessions. If you are in a session when you add the group and then you discard the session, Oracle Service Bus Console does not delete the new group.

Editing Groups

Use the **View Group Details** page to view and change details of a specific group.

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Locate the group. See [“Locating Groups” on page 22-7](#).
3. Click the group name. The **View Group Details** page displays the information shown in [Table 22-4](#).

Table 22-4 Group Details

Property	Description
Group Name	The name of this group.
Authentication Provider	The authentication provider that contains this group definition.
Groups	The group to which this group belongs.

4. To edit the group details, click **Reconfigure** to display the **Edit Group Details** page.
You can edit group details from inside or outside a session.
5. Make the appropriate changes to the **Group Membership** field. See [“Adding Groups” on page 22-8](#) for descriptions of the field.
You cannot change the **Group Name** field.
6. Click **Save Changes** to update the group.


Oracle Service Bus Console updates the group details and the update becomes available immediately to all sessions. If you are in a session when you update the group and then you discard the session, Oracle Service Bus Console does not delete the updates.

Deleting Groups

Use the **Summary of Groups** page to delete a selected group or multiple groups.

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Select **Security Configuration** to display the **Summary of Groups** page.
3. Select the group you want to delete. You can select multiple groups if necessary.
You can delete groups from inside or outside a session.
4. Click **Delete**. A message prompting you to confirm that you want to delete the group is displayed.
5. To delete the group, click **OK**.

Oracle Service Bus Console deletes the group. If you are in a session when you delete the group and then you discard the session, Oracle Service Bus Console does not un-delete the group.

6. Alternatively, you can click the  **Delete** icon in the **Options** column of the group you want to delete.

Locating Roles

1. Select **Security Configuration > Roles**. The **Global Roles** page displays the information shown in [Table 22-5](#). For a more detailed description of the properties, see [“Editing Roles” on page 22-14](#).
2. To restrict the number of items in the list or locate a specific role, scroll through the pages. Use the page controls above or below the table.

Table 22-5 Role Information

Property	Description
Role Name	The name of the role. The name is a link to the View Role Details page. See “Editing Roles” on page 22-14 .
Provider Name	The authentication provider for this group.

Adding Roles

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.

2. Select **Security Configuration > Roles** to display the **Global Roles** page.

3. Click **New**.

You can add a role from inside or outside a session.

4. In the **Role Name** field, enter a unique name. This is a required field.

Be sure that there are no spaces or < > characters in the security role name. Security role names are case sensitive. The Oracle convention is that all security role names are singular.

5. To create the role, click **OK**.

Oracle Service Bus Console saves the role and the role becomes available immediately to all sessions. If you are in a session when you add the role and then you discard the session, Oracle Service Bus Console does not delete the new role.

When you click **OK** to create the role, the next step is to define the conditions under which the role applies.

6. Continue in [“Defining Role Conditions”](#) on page 22-11.

Defining Role Conditions

1. On the **Global Roles** page, click the name of the new global role to display the **Global Role Conditions** page.

2. Under **Role Conditions**, click **Add Condition**.

The following prompt is displayed:

Choose the predicate you wish to use as your new condition

3. Choose a predicate from the list box. Typically, you choose **Group**. When a group is used to create a security role, the security role can be granted to all members of the group (that is, multiple users).
4. Click **Next**. Depending on what you chose for your condition predicate, do one of the following steps, described in [Table 22-6](#).

Table 22-6 Condition Predicate Options

Condition Predicate...	Complete These Steps...
If you selected Group , enter one or more arguments that define the group or groups that should hold this role	<ol style="list-style-type: none"> 1. In the Group Argument Name field, enter an argument that defines the group. 2. Click Add. 3. If necessary, repeat steps 1 and 2 until you have finished adding arguments. You can click Remove to remove the arguments from the list. 4. Click Finish.
If you selected User , enter one or more arguments that define the user or users that should hold this role	<ol style="list-style-type: none"> 1. In the User Argument Name field, enter an argument that defines the user. 2. Click Add. 3. If necessary, repeat steps 1 and 2 until you have finished adding arguments. You can click Remove to remove the arguments from the list. 4. Click Finish.
If you selected Server is in development mode , Allow access to everyone or Deny access to everyone	Click Finish .
If you selected a time-constrained predicate such as Access occurs between specified hours , select start and end times and a GMT offset	<ol style="list-style-type: none"> 1. In the Starting Time field, enter the earliest permissible time in the format hh:mm:ss AM PM. For example, enter 12:45:00 AM. 2. In the Ending Time field, enter the latest permissible time in the format hh:mm:ss AM PM. For example, enter 12:45:00 AM. 3. In the GMT offset field, enter the time ahead of GMT in the format GMT+hh:mm, or behind GMT in the format GMT-hh:mm. For example, Eastern Standard Time in the USA is GMT-5:00. 4. Click Finish.
If you selected Context element defined , enter a context element name	<ol style="list-style-type: none"> 1. In the Context element name field, enter the name of the context element. 2. Click Finish.

Table 22-6 Condition Predicate Options (Continued)

Condition Predicate...	Complete These Steps...
If you selected Context element's value equals a numeric constant , Context element's value is greater than a numeric constant , or Context element's value is less than a numeric constant , enter a context element name and a numeric value to compare it against	<ol style="list-style-type: none"> 1. In the Context element name field, enter the name of the context element the value of which is to be evaluated. 2. In the Numeric Value field, enter a numeric value. 3. Click Finish.
If you selected Context element's value equals a string value , enter a context element name and a string value to compare it against	<ol style="list-style-type: none"> 1. In the Context element name field, enter the name of the context element the value of which is to be evaluated. 2. In the String Value field, enter the string value that you want to compare. 3. Click Finish.
If you selected a time-constrained predicate such as Access occurs before or Access occurs after	<ol style="list-style-type: none"> 1. In the Date field, enter a date in the format <code>mm/dd/yy</code>. For example, enter 1/1/04. You can add an optional time in the format <code>hh:mm:ss AM PM</code>. For example, you can enter 1/1/04 12:45:00 AM. 2. Click Finish.
If you selected the time-constrained predicate Access occurs on specified days of the week , select the day of the week and a GMT offset	<ol style="list-style-type: none"> 1. In the Day of week field, enter the day of the week. 2. In the GMT offset field, enter the time ahead of GMT in the format <code>GMT+hh:mm</code>, or behind GMT in the format <code>GMT-hh:mm</code>. For example, Eastern Standard Time in the USA is GMT-5:00. 3. Click Finish.
If you selected a time-constrained predicate such as Access occurs on a specified day of the month , Access occurs before a specified day of the month , or Access occurs after a specified day of the month	<ol style="list-style-type: none"> 1. In the Day of the Month field, enter the ordinal number of the day within the current month with values in the range from -31 to 31. Negative values count back from the end of the month, so the last day of the month is specified as -1. 0 indicates the day before the first day of the month. 2. In the GMT offset field, enter the time ahead of GMT in the format <code>GMT+hh:mm</code>, or behind GMT in the format <code>GMT-hh:mm</code>. For example, Eastern Standard Time in the USA is GMT-5:00. 3. Click Finish.

5. If necessary, repeat the steps to add expressions based on different role conditions. In the **Role Conditions** section, you can do the following steps, described in [Table 22-7](#), to modify the expressions.

Table 22-7 Role Conditions Options

To...	Complete These Steps...
Change the ordering of the selected expression.	Click Move Up and Move Down .
Merge or unmerge role conditions and switch the highlighted and or statements between expressions.	Click Combine and Uncombine .
Make a condition negative; for example, NOT Group Operators excludes the Operators group from the role.	Click Negate .
Delete a selected expression.	Click Remove .

6. When all the expressions in the Role Conditions section are correct, click **Save**.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing Roles

Use the **View Role Details** page to view and change details of a specific role.

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Locate the role. See [“Locating Roles” on page 22-10](#).
3. Click the role name. The **View Role Details** page displays the information shown in [Table 22-8](#).

Table 22-8 Role Details

Property	Description
Name	The name of the role.
Role Conditions	The conditions which determine membership in this role.

You can change role details from inside or outside a session.

4. Do one of the following steps, described in [Table 22-9](#).

Table 22-9 Role Options

To...	Complete This Step...
Change the ordering of the selected expression.	Click Move Up and Move Down .
Merge or unmerge role conditions and switch the highlighted and or statements between expressions.	Click Combine and Uncombine .
Make a condition negative; for example, NOT Group Operators excludes the Operators group from the role.	Click Negate .
Delete a selected expression.	Click Remove .

5. Click **Save**.

Oracle Service Bus Console updates the role and the update becomes available immediately to all sessions. If you are in a session when you update the role and then you discard the session, Oracle Service Bus Console does not delete the updates.

Deleting Roles

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Select **Security Configuration > Roles** to display the **Global Roles** page.
3. Select the role you want to delete. You can select multiple roles if necessary.
You can delete roles from inside or outside a session.
4. Click **Delete**. A message prompting you to confirm that you want to delete the role is displayed.
5. To delete the role, click **OK**.

Oracle Service Bus Console deletes the role. If you are in a session when you delete the role and then you discard the session, Oracle Service Bus Console does not un-delete the role.

Locating Access Control Policies

The **Security** page provides a link to the access control policies for a proxy service in the current Oracle Service Bus domain.

This page lists does not list proxy services that you have created in session but have not yet activated. If you want to edit access control policies for a new proxy service, first activate the session in which you created the proxy service.

1. If you want to locate the access control policies for a new proxy service, activate the session in which you created the proxy service.
2. In the **Access Control** column select the name of the proxy service from **Transport Access Control**, or the name of the proxy service or a particular operation from **Message Access Control**.

Editing Transport-Level Access Policies

Use the **View Policy Details** page to edit the transport-level access control policy of a proxy service. The page displays the information shown in [Table 22-10](#).

Table 22-10 Policy Details

Property	Description
Proxy Service Name	Displays the name of the proxy service name for which you selected Transport Access Control on the Security page.
Providers	Displays the authorization providers that are configured for the security realm.
Policy Conditions	Displays the conditions that determine for which users the proxy service will process requests.

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Locate the access policy. See [“Locating Access Control Policies”](#) on page 22-16.
3. On the **Security** page, in the **Transport Access Control** column, click the name of the proxy service. The policy editor is displayed.

You can edit an access control policy from inside a session.

4. In the **Authorization Providers** field, select an authorization provider. Oracle recommends that you select the XACMLAuthorizer.

Note: Oracle Service Bus has deprecated support for the WebLogic Default Authorization provider. Instead, Oracle recommends that you use the WebLogic XACML Authorization provider. See [Supported Standards and Security Providers](#) in *Oracle Service Bus Security Guide*.

5. Add policy conditions. See [“Adding Policy Conditions”](#) on page 22-18.
6. When you have finished entering conditions in the **Policy Conditions** section, click **Save**.

Editing Message-Level Access Policies

Use the **View Policy Details** page to edit the message-level access control policy of a proxy service that is a Web Service and is configured to require message-level security. The page displays the information shown in [Table 22-11](#).

Table 22-11 Policy Details

Property	Description
Proxy Service Name	Displays the name of the proxy service name for which you selected View Policies on the Access Control for Proxy Services page.
Providers	Displays the authorization providers that are configured for the realm.
Operation	Lists the operation in the proxy service that can be secured.
Policy Conditions	Displays the conditions that determine which users can invoke the operations that are selected under Service Operations .

1. Log in to the Oracle Service Bus Console as a user with WebLogic Server Admin privileges. Only users in the Admin role can modify security configuration data. See [Configuring Administrative Security](#) in the *Oracle Service Bus Security Guide*.
2. Locate the access policy. See [“Locating Access Control Policies” on page 22-16](#).
3. On the **Security** page, in the **Message Access Control** column, click the name of the proxy service or the particular operation in that proxy service. The policy editor is displayed.
You can edit an access control policy from inside a session.
4. In the **Authorization Providers** field, select an authorization provider. Oracle recommends that you select the XACMLAuthorizer.
Note: Oracle Service Bus has deprecated support for the WebLogic Default Authorization provider. Instead, Oracle recommends that you use the WebLogic XACML Authorization provider. See [Supported Standards and Security Providers](#) in *Oracle Service Bus Security Guide*.
5. Add policy conditions. See [Adding Policy Conditions](#).
6. When you have finished entering conditions in the **Policy Conditions** section, click **Save**.

Adding Policy Conditions

1. Access the policy editor for an access control policy. See [“Editing Transport-Level Access Policies” on page 22-16](#) or [“Editing Message-Level Access Policies” on page 22-17](#).
2. In the policy editor, under **Policy Conditions**, click **Add Condition**.

The following prompt is displayed:

Choose the predicate you wish to use as your new condition

3. Select a predicate from the list.
4. Click **Next**. Depending on what you chose for your condition predicate, do one of the following steps, shown in [Table 22-12](#).

Table 22-12 Condition Predicate Options

If You Selected...	Complete These Steps...
Role (For transport-level security, this condition applies only if the proxy service uses a protocol that enables a client to supply credentials.)	<ol style="list-style-type: none"> 1. In the Role Argument Name field, enter the role to which you want to grant access. If you have not already created the role that you entered in this field, you can do so after you finish creating access control policies. See Adding Roles. If you do not create this role, then no one will be granted access. 2. Click Add. 3. If necessary, repeat steps 1 and 2 until you have finished adding arguments. You can click Remove to remove the arguments from the list. 4. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.
Group (For transport-level security, this condition applies only if the proxy service uses a protocol that enables a client to supply credentials.)	<ol style="list-style-type: none"> 1. In the Group Argument Name field, enter the group to which you want to grant access. If you have not already created the group that you entered in this field, you can do so after you finish creating access control policies. See Adding Groups. If you do not create this group, then no one will be granted access. 2. Click Add. 3. If necessary, repeat steps 1 and 2 until you have finished adding arguments. You can click Remove to remove the arguments from the list. 4. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.

Table 22-12 Condition Predicate Options (Continued)

If You Selected...	Complete These Steps...
User (For transport-level security, this condition applies only if the proxy service uses a protocol that enables a client to supply credentials.)	<ol style="list-style-type: none"> 1. In the User Argument Name field, enter the user to which you want to grant access. If you have not already created the user that you entered in this field, you can do so after you finish creating access control policies. See Adding Users. If you do not create this user, then no one will be granted access. 2. Click Add. 3. If necessary, repeat steps 1 and 2 until you have finished adding arguments. You can click Remove to remove the arguments from the list. 4. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.
Access occurs on specified days of the week	<ol style="list-style-type: none"> 1. In the Day of week field, enter the day of the week. 2. In the GMT offset field, enter the time ahead of GMT in the format GMT+hh:mm, or behind GMT in the format GMT-hh:mm. For example, Eastern Standard Time in the USA is GMT-5:00. 3. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.

Table 22-12 Condition Predicate Options (Continued)

If You Selected...	Complete These Steps...
Access occurs between specified hours	<ol style="list-style-type: none"> 1. In the Starting Time field, enter the earliest permissible time in the format <code>hh:mm:ss AM PM</code>. For example, enter 12:45:00 AM. 2. In the Ending Time field, enter the latest permissible time in the format <code>hh:mm:ss AM PM</code>. For example, enter 12:45:00 AM. 3. In the GMT offset field, enter the time ahead of GMT in the format <code>GMT+hh:mm</code>, or behind GMT in the format <code>GMT-hh:mm</code>. For example, Eastern Standard Time in the USA is GMT-5:00. 4. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.
Access occurs before or Access occurs after	<ol style="list-style-type: none"> 1. In the Date field, enter a date in the format <code>mm/dd/yy</code>. For example, enter 1/1/04. You can add an optional time in the format <code>hh:mm:ss AM PM</code>. For example, you can enter 1/1/04 12:45:00 AM. 2. In the GMT offset field, enter the time ahead of GMT in the format <code>GMT+hh:mm</code>, or behind GMT in the format <code>GMT-hh:mm</code>. For example, Eastern Standard Time in the USA is GMT-5:00. 3. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.

Table 22-12 Condition Predicate Options (Continued)

If You Selected...	Complete These Steps...
<p>Access occurs on a specified day of the month, Access occurs before a specified day of the month, or Access occurs after a specified day of the month</p>	<ol style="list-style-type: none"> 1. In the The day of the month field, enter the ordinal number of the day within the current month with values in the range from -31 to 31. Negative values count back from the end of the month, so the last day of the month is specified as -1. 0 indicates the day before the first day of the month. 2. In the GMT offset field, enter the time ahead of GMT in the format GMT+hh:mm, or behind GMT in the format GMT-hh:mm. For example, Eastern Standard Time in the USA is GMT-5:00. 3. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.
<p>Context element's value equals a string constant (Applies only to transport-level security. A context element is a parameter/value pair that a container such as a Web container can optionally provide to a security provider. Context elements are not available for message-level access control policies.)</p>	<ol style="list-style-type: none"> 1. In the Context element name field, enter the name of the context element for which to evaluate the value. See Context Properties Are Passed to Security Providers for possible values. 2. In the String Value field, enter the string value that you want to compare. 3. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.

Table 22-12 Condition Predicate Options (Continued)

If You Selected...	Complete These Steps...
<p>Context element's value is greater than a numeric constant, Context element's value equals a numeric constant, or Context element's value is less than a numeric constant</p> <p>(Applies only to transport-level security. A context element is a parameter/value pair that a container such as a Web container can optionally provide to a security provider. Context elements are not available for message-level access control policies.)</p>	<ol style="list-style-type: none"> 1. In the Context element name field, enter the name of the context element for which to evaluate the value. See Context Properties Are Passed to Security Providers for possible values. 2. In the Numeric Value field, enter a numeric value. 3. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.
<p>Context element defined</p> <p>(Applies only to transport-level security. A context element is a parameter/value pair that a container such as a Web container can optionally provide to a security provider. Context elements are not available for message-level access control policies.)</p>	<ol style="list-style-type: none"> 1. In the Context element name field, enter the name of the context element. See Context Properties Are Passed to Security Providers for possible values. 2. Do one of the following: To save the arguments and return to the predicate list, click Finish. To discard the changes and return to the predicate list, click Back. To discard the changes and return to the View Policy Details page, click Cancel.
<p>Deny access to everyone, Allow access to everyone or Server is in development mode</p>	<p>Click Finish.</p> <p>Alternatively, you can click Cancel to discard the changes and return to the View Policy Details page.</p>

5. If necessary, repeat steps 3-5 to add expressions based on different policy conditions. In the **Policy Conditions** section, you can do the following steps, shown in [Table 22-13](#), to modify the expressions.

Table 22-13 Policy Conditions Options

To...	Complete These Steps...
Change the ordering of the selected expression.	Select the check box associated with the condition, then click Move Up and Move Down .
Merge or unmerge policy conditions and switch the highlighted and or statements between expressions.	Select the check box associated with the appropriate conditions, then click Combine and Uncombine .
Make a condition negative; for example, NOT Group Operators excludes the Operators group from the policy.	Select the check box associated with the condition, then click Negate .
Delete a selected expression.	Select the check box associated with the condition, then click Remove .

Related Topics

See [Security Policy Conditions](#) in *Securing WebLogic Resources*.

Security Configuration

Monitoring

When you create a business or proxy service, monitoring is disabled by default for that service. To learn how to enable monitoring for proxy services, see [“Configuring Operational Settings for Proxy Services” on page 23-14](#); for business services, see [“Configuring Operational Settings for Business Services” on page 23-19](#).

To enable or disable monitoring of all services that have individually been enabled or disabled for monitoring, use the **Enable Monitoring** option on the **Operations > Global Settings** page. See [“Enabling Global Settings” on page 24-14](#).

To learn more about monitoring at run time, see [Monitoring](#) in the *Oracle Service Bus Operations Guide*.

Viewing SLA Alerts

Use the **SLA Alerts** page to view a summary of SLA alerts and access detailed alert history information, shown in [Table 23-1](#).

The **SLA Alerts** page includes the following:

- Tabs for displaying **Pipeline Alerts**, **Service Health**, and **Server Health** information.

On the **SLA Alerts** tab header, a numeric indicator shows the number of new alerts that have occurred since you last viewed them or during the last Dashboard refresh period, whichever is more recent. By default, the Dashboard refresh rate is **No Refresh**. To change the Dashboard refresh rate interval, see [“Setting User Preferences” on page 24-20](#).


WARNING: By selecting a dashboard refresh rate interval other than the default (**No Refresh**), the browser refreshes the Dashboard at regular intervals. This prevents your session from timing out, even without you interacting with the console.

Oracle recommends that you use the Dashboard refresh rate feature with caution. You should never leave a console session unattended. While your console session is active others can gain access to it from your machine, without re-authentication.

- A pie chart of the services with SLA alerts over the past 30 minutes, which is the default alert history duration interval. To change the time interval for displaying historical alert data, see [“Setting User Preferences” on page 24-20](#).

The number of SLA alerts on the page match the pie chart which displays the breakdown of alerts by severity level, over the same time interval. You can click the area in the chart corresponding to the alert severity to display more details.

- The top 10 services with SLA alerts are listed in descending order of the number of alerts issued by those services. Each service name is a link to the service monitoring details. See [“Viewing Service Metrics” on page 23-25](#).
- Fields that display alert information depending on your customized settings for the alert table. For example, timestamp, alert name, alert severity, action, and the names of the service and service type associated with the alert. To learn more about these fields, see [Table 23-1](#).

An  **Annotation** icon next to an alert name indicates annotations. Positioning the mouse pointer over the icon previews the annotation text. Clicking on the icon lets you view the entire annotation text.




- A  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).
- A link to the **Extended Alert History** page. See [“Locating Alerts” on page 23-5](#).

Table 23-1 SLA Alert History Information

Property	Description
Timestamp	The date and time that the alert rule last evaluated to true. By default, all the alerts are sorted according to the timestamp.
Alert Name	The name assigned to the alert. The name is a link to the Alert Details page. See “Viewing Alert Details” on page 23-8 . An  Annotation icon next to an alert name indicates annotations. Positioning the mouse pointer over the icon previews the annotation text.
Alert Severity	The user-defined severity of the alert. <ul style="list-style-type: none">• Fatal• Critical• Major• Minor• Warning• Normal
Service	The name of the service associated with the alert. The name is a link to the Service Monitoring Details page (only when the service is being actively monitored). See “Viewing Service Metrics” on page 23-25 .
Service Type	The parent service type: proxy service or business service.
Action	The  View Alert Rule Details icon is a link to the Alert Rule General Configuration page. See “Viewing Alert Rule Configurations” on page 23-49 .

Viewing Pipeline Alerts

Use the **Pipeline Alerts** page to view a summary of pipeline alerts and access detailed alert history information, shown in [Table 23-2](#).

The **Pipeline Alerts** page includes the following:

- Tabs for displaying **SLA Alerts**, **Service Health**, and **Server Health** information.

On the Pipeline Alerts tab header, a numeric indicator shows the number of new alerts that have occurred since you last viewed them or during the last Dashboard refresh period,

whichever is more recent. By default, the Dashboard refresh rate is **No Refresh**. To change the Dashboard refresh rate interval, see [“Setting User Preferences” on page 24-20](#).


WARNING: By selecting a dashboard refresh rate interval other than the default (**No Refresh**), the browser refreshes the Dashboard at regular intervals. This prevents your session from timing out, even without you interacting with the console.

Oracle recommends that you use the Dashboard refresh rate feature with caution. You should never leave a console session unattended. While your console session is active others can gain access to it from your machine, without re-authentication.

- A pie chart of the services with pipeline alerts over the past 30 minutes, which is the default alert history duration interval. To change the time interval for displaying historical alert data, see [“Setting User Preferences” on page 24-20](#).

The number of pipeline alerts on the page match the pie chart which displays the breakdown of alerts by severity level, over the same time interval. You can click the area in the chart corresponding to the alert severity to display more details.

- The top 10 services with pipeline alerts are listed in descending order of the number of alerts issued by those services. Each service name is a link to the service monitoring details. See [“Viewing Service Metrics” on page 23-25](#).
- Fields that display alert information depending on your customized settings for the alert table. For example, timestamp, alert summary, alert severity, action, and the names of the service and service type associated with the alert. To learn more about these fields, see [Table 23-2](#).

An  **Annotation** icon next to an alert summary indicates annotations. Positioning the mouse pointer over the icon previews the annotation text. Clicking on the icon lets you view the entire annotation text.




- A  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).
- A link to the **Extended Alert History** page.


Table 23-2 Pipeline Alert History Information

Property	Description
Timestamp	The date and time that the alert occurred. By default, all the alerts are sorted according to the timestamp.
Alert Summary	A short description of the pipeline alert action or Oracle Service Bus Alert (the default value provided to pipeline alert actions that were designed without alert summary text). The alert summary is a link to the Alert Details page. See “Viewing Alert Details” on page 23-8 . An  Annotation icon next to an alert summary indicates annotations. Positioning the mouse pointer over the icon previews the annotation text.
Alert Severity	The user-defined severity of the alert. <ul style="list-style-type: none"> • Fatal • Critical • Major • Minor • Warning • Normal
Service	The name of the service associated with the alert. The name is a link to the Service Monitoring Details page (only when the service is being actively monitored). See “Viewing Service Metrics” on page 23-25 .
Service Type	Only proxy services can define pipeline alerts, therefore, for pipeline alerts, all parent services are proxy services.
Action	The  Edit Message Flow icon is a link to the Edit Message Flow page of that proxy service.

Locating Alerts

1. Select **Operations > Dashboard**.
2. Select the **SLA Alerts** or **Pipeline Alerts** tab to display SLA or pipeline alerts.
3. Click the **Extended Alert History** link. The **Extended SLA Alert History** and **Extended Pipeline Alert History** pages display detailed alert history information.

4. To restrict the number of items in the list or locate specific alerts:

- Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
- Filter by date range. Do one of the following:
 - Select **All** to ignore the date range and time interval filter criteria and display all alerts.
 - In the **From** and **To** fields, enter a date and time in the format MM/DD/YY HH:MM AM|PM, then click **Search**. The alerts that occurred over the specified date and time range are displayed.
 - In the **For the Last** field, enter the number of days, then specify hours and minutes, then click **Search**. The alerts that occurred over the specified time range are displayed.

- Filter by alert severity. From the **Alert Severity** drop-down list, select to restrict alerts to the specified severity level, then click **Search**.

Select the **or above** check box to restrict your search to the specified severity level or above (listed from the most inclusive to the most restrictive level): Normal, Warning, Minor, Major, Critical, and Fatal.

- Filter by parent **Service**. Click **Browse** to display the **Select Service** page. Select the parent service from the list and click **Submit**. Click **Clear** to remove the parent service filter criteria, or click **Search**.
- For SLA alerts only, filter by **Alert Name (Any String)**. Enter any string, including wildcard characters, then click **Search**. For more details, see [“WebLogic Diagnostics Framework Query Language” on page 23-7](#).
- For pipeline alerts only, filter by **Alert Summary (Any String)**. Enter any string, including wildcard characters, then click **Search**. For more details, see [“WebLogic Diagnostics Framework Query Language” on page 23-7](#). To find pipeline alert actions that were designed without alert summary text, enter Oracle Service Bus Alert.
- Click **View All** to remove the search filters and display all alerts.

Use the **Extended SLA Alert History** and **Extended Pipeline Alert History** pages also to do the following:

- To display the alert data in a pie chart, select **Pie Chart View**.
- To display the same data in a bar chart, select **Bar Chart View**.

- To display the data in tabular format, select **Table View**.
- To display an updated version of the data, click **Refresh**.
- To delete individual alerts, select the corresponding check boxes and click **Delete** at the bottom of the page.
- To delete all alerts or those that were issued within a specified date and time range, click the **Purge Alert History** link at the top of the page. See [“Purging Alerts” on page 23-7](#).

WebLogic Diagnostics Framework Query Language

Alerts are stored using the WebLogic Diagnostics Framework, which provides its own query language, including wildcards. For filtering alerts in extended alert history, use the syntax described in [WLDF Query Language](#).

Purging Alerts

Use this page to permanently delete the specified SLA or pipeline alerts.

Note: This action cannot be undone.

1. Select **Operations > Dashboard**.
2. Select the **SLA Alerts** or **Pipeline Alerts** tab, then click the **Extended Alert History** link.
3. On the upper right-hand side of the **Extended Alert History** page, click **Purge SLA Alert History** or **Purge Pipeline Alert History**.
4. Do one of the following steps, shown in [Table 23-3](#).

Table 23-3 Alert Purging Options

To...	Complete These Steps...
<ul style="list-style-type: none"> • Purge all SLA alerts • Purge all pipeline alerts 	<ol style="list-style-type: none"> 1. Select Purge All Alerts. 2. Click Purge.
<ul style="list-style-type: none"> • Purge SLA alerts within a specified time frame • Purge pipeline alerts within a specified time frame 	<ol style="list-style-type: none"> 1. Select Purge Alerts From... To... 2. In the Purge From field, enter a month, day, year, and time. 3. In the Purge To field, enter a month, day, year, and time. 4. Click Purge.


Viewing Alert Details

This page displays details of specific alerts including the information shown in [Table 23-4](#).

Table 23-4 Alert Details

Property	Description
Alert Name	For SLA alerts only: The name assigned to the alert. The name is a link to the Alert Rule Configuration page. See “Viewing Alert Rule Configurations” on page 23-49 .
Alert Summary	For pipeline alerts only: A short description of the pipeline alert action or Oracle Service Bus Alert (the default value provided to pipeline alert actions that were designed without alert summary text).
Description	A description for the alert rule.
Timestamp	<ul style="list-style-type: none">For pipeline alerts: The date and time that the alert occurred.For SLA alerts: The date and time that the alert rule last evaluated to true.
Severity	The user-defined severity of the alert. <ul style="list-style-type: none">FatalCriticalMajorMinorWarningNormal
Service	The name and path of the service associated with this alert. The field is a link to the Service Monitoring Details page (only when the service is being actively monitored). See “Viewing Service Metrics” on page 23-25 .
Service Type	The parent service type: proxy service or business service. Only proxy services can define pipeline alerts, therefore, for pipeline alerts, all parent services are proxy services.

Table 23-4 Alert Details (Continued)

Property	Description
Server	The name of the server in which this alert was generated. For SLA alerts only: N/A is displayed.
Annotation	A text box in which you can enter notes for this alert. An  Annotation icon is displayed in the Alert History for alerts with annotations.

Viewing Service Monitoring Information



The **Service Health** page displays metrics for services that have monitoring enabled. To learn how to enable monitoring for services, see [“Configuring Operational Settings for Proxy Services” on page 23-14](#) and [“Configuring Operational Settings for Business Services” on page 23-19](#).

By default, the Dashboard refresh rate is **No Refresh**. To change the Dashboard refresh rate interval, see [“Setting User Preferences” on page 24-20](#).

WARNING: By selecting a dashboard refresh rate interval other than the default (**No Refresh**), the browser refreshes the Dashboard at regular intervals. This prevents your session from timing out, even without you interacting with the console.


Oracle recommends that you use the Dashboard refresh rate feature with caution. You should never leave a console session unattended. While your console session is active others can gain access to it from your machine, without re-authentication.

On the **Service Health** tab header, these icons may be present:

- A  **Warning** icon and numeric indicator.
 - Clicking on the icon filters the services displayed using **Has Errors** criteria.
 - The number indicates the number of services with errors since the page was last refreshed.
- An  **Endpoints Offline** icon and numeric indicator.
 - Clicking on the icon filters the services displayed using **Has Offline Endpoint URIs** criteria.
 - The number indicates the number of services with endpoints that have become offline since the page was last refreshed.

The **Service Health** page displays service metrics and monitoring information, shown in [Table 23-5](#).

1. In the **Display Statistics** field, do one of the following:
 - To display monitoring statistics for each service for the period of the current aggregation interval, select **Current Aggregation Interval**. The Current Aggregation Interval view displays a moving statistic view of the service metrics.
 - To display monitoring statistics for the period since you last reset statistics for a service, select **Since Last Reset**. The Since Last Reset view displays a running count of the metrics.
2. Select a **Server** from the drop-down list to display metrics for that server.
If a cluster exists, cluster-wide metrics are displayed by default. Select an individual Managed Server to display metrics for that server.
3. To restrict the number of items in the list or locate specific services:

- Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
- Filter by service name. In the **Name** field, enter the name of the search target or enter wildcard characters (use * and ? as wildcard characters to perform a more general search), then click **Search**.

This search method is preferable if the name of the service is unique across all projects and paths.

- Filter by service path. In the **Path** field, enter the path of the search target, which is the project name and the name of the folder in which services reside. You can use * and ? as wildcard characters to perform a more general search. All the services that reside in that path are displayed.

The format for the **Path** field is as follows:

```
project-name/root-folder/ . . ./parent-folder
```

If a service is directly under the project, the format is as follows: project-name

- Filter by service name and path. This search method is preferable if there is more than one service with the same name that reside in different paths.
- Filter by parent service. From the **Service** drop-down list, select the parent service type: Proxy Services or Business Services, then click **Search**. Select All Services to ignore the parent service filter criteria.

- Filter by services with messages. Select the **Has Messages** option, then click **Search**.
- Filter by services with alerts. Select the **Has Alerts** option, then click **Search**.
- Filter by services with errors. Select the **Has Errors** option, then click **Search**.
- Filter by services with offline URIs. Select the **Has Offline Endpoint URIs** option, then click **Search**.
- Filter by services invoked by a particular proxy service. Enter the name and path of a proxy service in the field provided or click **Browse** to display the **Select Proxy Service** page. Select the proxy service from the list and click **Submit**. Click **Search**. The business services invoked by the proxy service you specified are displayed.

Wildcard characters are not supported in the **Invoked by Proxy** field.

- Click **View All** to remove the search filters and display all services.



Table 23-5 Service Monitoring Information

Property	Description
Name	The name assigned to the service. The name is a link to the Service Monitoring Details page. See “Viewing Service Metrics” on page 23-25 .
Path	The project associated with the service. If the service resides in a project folder, this folder is also listed. The path is displayed in the format: project-name/root-folder/ . . . /parent-folder The path is a link to the corresponding path in the Project Explorer .
Service Type	The parent service type: proxy service or business service.
Aggregation Interval	This field is displayed only when you have selected Current Aggregation Interval in the Display Statistics field. The current aggregation interval set for monitoring this service, in terms of hours and minutes. You set this interval on the Operational Settings page. See “Setting the Aggregation Interval for a Service” on page 23-25 .
Avg. Response Time	The average response time (in msec) that this service has taken to execute messages within the period of the current aggregation interval or for the period since the last reset.
Messages	The number of messages associated with this service for the period of the current aggregation interval or for the period since the last reset.

Table 23-5 Service Monitoring Information


Property	Description
Errors	The number of error messages associated with this service for the period of the current aggregation interval or for the period since the last reset.
Alerts	<p>This field is hidden by default.</p> <p>The number of alerts (SLA and pipeline) associated with this service for the period of the current aggregation interval or for the period since the last reset.</p> <p>For an individual Managed Server in a cluster, for proxy services, it shows the number of pipeline alerts <i>only</i> associated with this service for the period of the current aggregation interval or for the period since the last reset.</p> <p>For business services, for individual Managed Servers, displays N/A.</p>
SLA Alerts	<p>The number of SLA alerts associated with this service for the period of the current aggregation interval or for the period since the last reset.</p> <p>For an individual Managed Server in a cluster, SLA Alerts will be N/A (only cluster-wide SLA alerts are displayed).</p>
Pipeline Alerts	<p>For proxy services only:</p> <p>The number of pipeline alerts associated with this service for the period of the current aggregation interval or for the period since the last reset.</p>


Table 23-5 Service Monitoring Information

Property	Description
Endpoint URI Status	<p>For business services only, the status of endpoint URIs. The status is a link to the Endpoint URIs page. See “Viewing Business Services Endpoint URIs Metrics” on page 23-34.</p> <p>For a single node domain (individual server instances):</p> <ul style="list-style-type: none"> • Online—All the endpoint URIs for the business service are online. • Offline—All the endpoint URIs for the business service are offline. • Partial—At least one of the endpoint URIs for the business service is offline. <p>For a clustered domain:</p> <ul style="list-style-type: none"> • When the Server field is set to Cluster or to one of the Managed Servers, Online status denotes that all of the endpoint URIs are online across the cluster or on the selected Managed Server, respectively. • When the Server field is set to Cluster or to one of the Managed Servers, Offline status denotes that all of the endpoint URIs are offline across the cluster or on the selected Managed Server, respectively. • When the Server field is set to Cluster, Partial status denotes that at least one of the endpoint URIs for the business service is offline on at least one of the servers, or that one of the endpoint URIs is offline on all the servers, but the other endpoint URIs for the same business service are still available on one or all the servers. • When the Server field is set to one of the Managed Servers, Partial status denotes that at least one of the endpoint URIs for the business service is offline on the selected Managed Server.
Action	<p>This field is displayed only when you have selected Since Last Reset in the Display Statistics field.</p> <p>In this column, you can click the  Reset icon for a specific service to reset the statistics for that service. When you confirm you want to do this, the system deletes all monitoring statistics that were collected for the service since you last reset statistics. However, the system does not delete the statistics being collected during the Current Aggregation Interval for the service. Additionally, after you click the  Reset icon, the system immediately starts collecting monitoring statistics for the service again.</p>

Resetting Statistics for Services

You can use the **Service Health** page to reset monitoring statistics for all services in your configuration. You can reset statistics whether or not you are in a session.

1. Select **Operations > Dashboard > Service Health**.
2. In the **Display Statistics** field, select **Since Last Reset**. The Since Last Reset view displays a running count view of the metrics.
3. To reset the monitoring statistics for a specific service, click the  **Reset** icon in the **Action** column for that service.

When you confirm that you want to do this, the system deletes all monitoring statistics that were collected for the service since you last reset statistics. However, the system does not delete the statistics being collected during the **Current Aggregation Interval** for the service. Additionally, after you click the  **Reset** icon, the system immediately starts collecting monitoring statistics for the service again.

4. To reset monitoring statistics for all services, click the **Reset All Statistics** link at the top of the page.

Note: Clicking **Reset All Statistics** resets the statistics for all monitored services regardless of whether they are displayed on the page or not.

When you confirm that you want to reset statistics, the system deletes all monitoring statistics that were collected for all services in your configuration since you last reset statistics. The system does not delete the statistics being collected during the **Current Aggregation Interval** for any of the services. Additionally, after you click **Reset All Statistics**, the system immediately starts collecting monitoring statistics for the services again.

Configuring Operational Settings for Proxy Services

Use the **Operational Settings** page to enable and disable a proxy service and monitoring for specific proxy services. Similarly, you can specify these same service-specific operational settings on the **Operations > Smart Search** page, with the following exceptions: you cannot set an aggregation interval or specify an alerting or logging severity level. For more information, see [“Finding and Updating Operational Settings” on page 24-1](#).

The run-time effects of the service-level settings depend on their corresponding global settings. You must enable both the global and service-level settings for a service to be completely enabled

at run time. Additionally, the **Service State** must also be enabled. See [“Enabling Global Settings” on page 24-14](#).

You can change and save monitoring configuration settings even if the service will be not be enabled at run time. For example, you can change and save the Aggregation Interval even if **Service Monitoring** is disabled. In this manner, you can edit settings and later enable them.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > Proxy Services**.
3. Click the proxy service name.

The **View a Proxy Service** page displays the information shown in [Table 23-6](#).

Table 23-6 Proxy Service Information

Property	Description
Last Modified By	The user who created or edited this service, or imported it into the configuration.
Last Modified On	The date and time that the user created or edited this service, or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this service references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Referenced By	The number of objects that reference this service. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of the service, if one exists.

4. Select the **Operational Settings** tab.

You must be in an active session to configure proxy service operational settings shown in [Table 23-7](#).

Table 23-7 Configuring Proxy Service Operational Settings

To...	Do This...
Disable State	<p>Clear the Enabled check box. When you activate the session, the service stops processing messages.</p> <p>Disabling a service no longer causes the system to delete all monitoring statistics previously collected for the service.</p>
Enable State	<p>Select the Enabled check box. When you activate the session, the service resumes processing messages.</p>
Disable Monitoring	<p>Clear the Enabled check box. When you activate the session, the system stops collecting monitoring statistics for the service, and deletes any statistics collected previously.</p>
Enable Monitoring	<p>Select the Enabled check box next to Monitoring. From the Enable Pipeline Monitoring at drop-down list, select to restrict monitoring to the specified level or above (listed from the most inclusive to the most restrictive level): Action, Pipeline, and Service.</p> <p>When you activate the session, the system starts collecting monitoring statistics for the service.</p>
Set an Aggregation Interval for a service	<p>Select the interval in terms of hours or minutes, then click Update. If your selection for hours exceeds 1, then the default selection for minutes is always zero. However, if your selection for hours is 0 or 1, then you can configure intervals in terms of minutes. See “Setting the Aggregation Interval for a Service” on page 23-25.</p> <p>You can change and save the Aggregation Interval setting whether or not you have enabled monitoring.</p> <p>To enable monitoring at run time, make sure the Enable Monitoring check box is selected.</p>
Disable SLA Alerts	<p>Clear the Enabled check box. The system stops evaluating any alert rules configured for the service; therefore, you no longer receive SLA alerts associated with the service.</p>

Table 23-7 Configuring Proxy Service Operational Settings

To...	Do This...
Enable SLA Alerts	<p>Select the Enabled check box. From the Enable Alerting at drop-down list, select to restrict SLA alerts to the specified level or above (listed from the most inclusive to the most restrictive level): Normal (default), Warning, Minor, Major, Critical, and Fatal.</p> <p>Service SLA alerting depends on both the global and service-level monitoring states—both must be enabled for SLA alerting to be enabled at run time. See “Enabling SLA Alerts Globally” on page 24-16.</p>
Disable Pipeline Alerts	Clear the Enabled check box. When you activate the session, the system stops executing pipeline alert actions; therefore, you no longer receive pipeline alerts associated with the service.
Enable Pipeline Alerts	Select the Enabled check box. From the Enable Alerting at drop-down list, select to restrict pipeline alerts to the specified severity level or above (listed from the most inclusive to the most restrictive level): Normal (default), Warning, Minor, Major, Critical, and Fatal.
Disable the report action of a proxy service	Clear the Enabled check box next to Message Reporting . When you activate the session, the system stops executing report actions; therefore, you no longer receive message reporting associated with the service.
Enable the report action of a proxy service	Select the Enabled check box next to Message Reporting .
Disable logging output for a pipeline log action	Clear the Enabled check box next to Logging . When you activate the session, the system stops executing log actions; therefore, you no longer receive logging output associated with the service.
Enable logging output for a pipeline log action	Select the Enabled check box next to Logging . From the Enable Logging at drop-down list, choose to restrict logging output to the specified level or above (listed from the most inclusive to the most restrictive level): Debug (default), Info, Warning, and Error.
Enable run-time tracing for a proxy service	Select the Enabled check box next to Execution Tracing . After you enable execution tracing, the system logs various details culled from the Message Flow Context and the Message Context. These details include: stage name; pipeline or route node name; and the current Message Context.

Table 23-7 Configuring Proxy Service Operational Settings

To...	Do This...
Disable run-time tracing for a proxy service	Clear the Enabled check box next to Execution Tracing .
Enable message tracing for a proxy service	<p>Select the Enabled check box next to Message Tracing. After you enable message tracing, the system logs messages exchanged between the Oracle Service Bus pipeline and the proxy service (inbound request and response, as well as outbound request and response messages).</p> <p>Note that, when applicable, logged outbound messages can also include the retry number, error code, and error message.</p> <p>From the Detail Level drop-down list, choose to specify the level of detail from among the following:</p> <ul style="list-style-type: none"> • Terse—Display the date, time, service type, service name, and URI • Headers—Display terse information along with the XML representation of the message metadata • Full—Display the headers information along with the raw payload, including attachments if any <p>If you choose Full from the Detail Level drop-down list, specify the maximum size (in kilobytes) for the message payload using the Payload Tracing Limit field. Also, specify the default encoding for logging the payload using the Default Encoding field. This can be useful when logging binary payloads or SOAP messages with binary attachments.</p> <p>The default encoding value can be Base64 or any Java-supported encoding as defined in: http://java.sun.com/javase/6/docs/technotes/guides/intl/encoding.doc.html.</p> <p>Leaving the Default Encoding field empty causes Oracle Service Bus to use the host's default encoding for the payload. The default encoding depends on a combination of the JVM, the underlying operating system (OS), and OS-level locale settings.</p> <p>If the setting specified in the Default Encoding field cannot be used (for example, it is not a valid option for the configuration), then Oracle Service Bus uses Base64 encoding for the payload.</p>
Disable message tracing for a proxy service	Clear the Enabled check box next to Message Tracing .

Configuring Operational Settings for Business Services

Use the **Operational Settings** page to enable and disable a business service and monitoring for specific business services. Similarly, you can specify these same service-specific operational settings on the **Operations > Smart Search** page, with the following exceptions: you cannot set an aggregation interval or specify an alerting severity level. For more information, see [“Finding and Updating Operational Settings” on page 24-1](#).

The run-time effects of the service-level settings depend on their corresponding global settings. You must enable both the global and service-level settings for a service to be completely enabled at run time. Additionally, the **Service State** must also be enabled. See [“Enabling Global Settings” on page 24-14](#).

You can change and save monitoring configuration settings even if the service will be not be enabled at run time. For example, you can change and save the Aggregation Interval even if **Service Monitoring** is disabled. In this manner, you can edit settings and later enable them.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > Business Services**.
3. Click the business service name.

The **View a Business Service** page displays the information shown in [Table 23-8](#).

Table 23-8 Business Service Information

Property	Description
Last Modified By	The user who created or edited this service, or imported it into the configuration.
Last Modified On	The date and time that the user created or edited this service, or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this service references. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .

Table 23-8 Business Service Information (Continued)

Property	Description
Referenced By	The number of objects that reference this service. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20.
Description	A description of the service, if one exists.

4. Select the **Operational Settings** tab.

You must be in an active session to configure business service operational settings shown in [Table 23-9](#).

Table 23-9 Configuring Business Service Operational Settings

To...	Do This...
Disable State	Clear the Enabled check box. When you activate the session, the service stops processing messages. Disabling a service no longer causes the system to delete all monitoring statistics previously collected for the service.
Enable State	Select the Enabled check box. When you activate the session, the service resumes processing messages.

Table 23-9 Configuring Business Service Operational Settings (Continued)

To...	Do This...
Enable business service endpoint URIs to be taken offline Set a retry interval for offline URIs	<p>Select the Enable with Retry Interval check box.</p> <p>When you select this option, the business service removes non-responsive endpoint URIs (takes them offline), at run time, so that only the responsive URIs are used for retry attempts and for processing subsequent requests.</p> <p>If you want to keep non-responsive URIs offline until you take corrective action and then re-enable the URIs, do not provide a retry interval. For example, a zero retry interval indicates that the endpoint remains offline indefinitely. To bring it back online, use the Mark Endpoint Online action on the Endpoint URIs page. See “Viewing Business Services Endpoint URIs Metrics” on page 23-34.</p> <p>If you want to configure the business service to take non-responsive URIs offline and then re-attempt accessing the same URI endpoint for subsequent message processing after a specified time interval, you do so by specifying a retry interval value. Use the hours, minutes, and seconds fields to specify how long to keep the non-responsive URIs out of the active URIs processing loop.</p> <p>The URI is kept offline for the specified time interval and then retried. If the endpoint responds, the URI becomes online again, or else it remains offline and the process repeats itself.</p> <p>You can specify a retry interval only if you have selected the Enable with Retry Interval option.</p>
Disable Monitoring	<p>Clear the Enabled check box. When you activate the session, the system stops collecting monitoring statistics for the service, and deletes any statistics collected previously.</p>
Enable Monitoring	<p>Select the Enabled check box. When you activate the session, the system starts collecting monitoring statistics for the service.</p>
Set an Aggregation Interval for a service	<p>Select the interval in terms of hours or minutes, then click Update. If your selection for hours exceeds 1, then the default selection for minutes is always zero. However, if your selection for hours is 0 or 1, then you can configure intervals in terms of minutes. See “Setting the Aggregation Interval for a Service” on page 23-25.</p> <p>You can change and save the Aggregation Interval setting whether or not you have enabled monitoring.</p> <p>To enable monitoring at run time, make sure the Enable Monitoring check box is selected.</p>

Table 23-9 Configuring Business Service Operational Settings (Continued)

To...	Do This...
Disable SLA Alerts	Clear the Enabled check box. The system stops evaluating any alert rules configured for the service; therefore, you no longer receive SLA alerts associated with the service.
Enable SLA Alerts	<p>Select the Enabled check box. From the Enable Alerting at drop-down list, select to restrict SLA alerts to the specified level or above (listed from the most inclusive to the most restrictive level): Normal (default), Warning, Minor, Major, Critical, and Fatal.</p> <p>Service SLA alerting depends on both the global and service-level monitoring states—both must be enabled for SLA alerting to be enabled at run time. See “Enabling SLA Alerts Globally” on page 24-16.</p>
Restrict the flow of messages sent to the set of endpoints configured in the business service	<p>Select the Enabled check box next to Throttling State. When enabled, messages are processed by priority. You can optionally assign messages a priority using routing options; otherwise, messages are de-queued on a first-in, first-out basis.</p> <p>For more information, see Throttling in Oracle Service Bus in the <i>Oracle Service Bus Operations Guide</i>.</p>
Restrict the number of messages being dispatched to a set of endpoints configured in the business service	<p>If Throttling State is enabled, this field is required.</p> <p>Specify a Maximum Concurrency value; it must be a positive integer value, it cannot be zero.</p> <p>If exceeded, incoming messages are put into a wait (throttling) queue, if one exists. If not, the messages are discarded.</p> <p>If the queue is full, messages in the queue with a lower priority are removed and a run-time error is raised. If an error handler is configured, it will be triggered. The new incoming messages will be enqueued.</p>

Table 23-9 Configuring Business Service Operational Settings (Continued)

To...	Do This...
<p>Specify whether messages sent to business services that have exceeded their message concurrency limit should be held in a wait queue</p> <p>Set the maximum number of messages that are held in the wait queue</p>	<p>If Throttling State is enabled, this field is required.</p> <p>Specify a Throttling Queue value; it must be a positive integer value or keep the default value, zero, meaning there is no throttling queue. When the throttling queue value is zero (no throttling queue) and the number of messages exceed the Maximum Concurrency value, the messages are discarded and an error is raised. If an error handler is configured, it will be triggered.</p> <p>If you disable throttling at run time, all the messages in the throttling queue will be processed.</p> <p>When you delete or rename a business service, all the messages in the throttling queue are discarded.</p>
<p>Specify the maximum length of time that messages will be held in a wait queue</p>	<p>If Throttling State is enabled, this field is optional.</p> <p>Specify a Message Expiration value in milliseconds; it must be a positive integer value. A value of zero means the message will never be expired.</p> <p>This value is set at the queue level; all messages put in the queue have the same Message Expiration value. When exceeded, messages are removed from the queue without being processed.</p>

Table 23-9 Configuring Business Service Operational Settings (Continued)

To...	Do This...
Enable message tracing for a business service	<p>Select the Enabled check box next to Message Tracing. After you enable message tracing, the system logs messages exchanged between the Oracle Service Bus pipeline and the business service (outbound request and response messages).</p> <p>Note that, when applicable, logged outbound messages can also include the retry number, error code, and error message.</p> <p>From the Detail Level drop-down list, choose to specify the level of detail from among the following:</p> <ul style="list-style-type: none"> • Terse—Display the date, time, service type, service name, and URI • Headers—Display terse information along with the XML representation of the message metadata • Full—Display the headers information along with the raw payload, including attachments if any <p>If you choose Full from the Detail Level drop-down list, specify the maximum size (in kilobytes) for the message payload using the Payload Tracing Limit field. Also, specify the default encoding for logging the payload using the Default Encoding field. This can be useful when logging binary payloads or SOAP messages with binary attachments.</p> <p>The default encoding value can be Base64 or any Java-supported encoding as defined in: http://java.sun.com/javase/6/docs/technotes/guides/intl/encoding.doc.html.</p> <p>Leaving the Default Encoding field empty causes Oracle Service Bus to use the host's default encoding for the payload. The default encoding depends on a combination of the JVM, the underlying operating system (OS), and OS-level locale settings.</p> <p>If the setting specified in the Default Encoding field cannot be used (for example, it is not a valid option for the configuration), then Oracle Service Bus uses Base64 encoding for the payload.</p>
Disable message tracing for a business service	Clear the Enabled check box next to Message Tracing .

Setting the Aggregation Interval for a Service

Use the **Operational Settings** page to set the aggregation interval for a specific service. The aggregation interval is the period over which aggregated statistics are computed for display in the console. The default aggregation interval setting is 10 minutes.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > Business Services** or **Proxy Services**.
3. Click the service name.
4. Select the **Operational Settings** tab.
5. In the **Aggregation Interval** field, select the length of the aggregation interval in hours and minutes, then click **Update**.

If your selection for hours exceeds 1, then the default selection for minutes is always zero. However, if your selection for hours is 0 or 1, then you can configure intervals in terms of minutes.
6. Click **Update** to commit the updates in the current session.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Viewing Service Metrics

Use this page to view the monitoring details of specific services, shown in [Table 23-10](#), and the **Service Metrics** shown in [Table 23-11](#).

Table 23-10 Service Monitoring Information

Property	Description
Service Name	The name and path of the service.
Service Type	The parent service type: proxy service or business service.

Table 23-10 Service Monitoring Information (Continued)

Property	Description
Display Statistics	<p>To display monitoring statistics for the service for the period of the current aggregation interval, select Current Aggregation Interval. The Current Aggregation Interval view displays a moving statistic view of the service metrics.</p> <p>To display monitoring statistics for this service for the period since you last reset statistics, select Since Last Reset. The Since Last Reset view displays a running count view of the metrics.</p>
Server	<p>Select a server from the drop-down list to display metrics for that server.</p> <p>If a cluster exists, cluster-wide metrics are displayed by default. Select an individual Managed Server to display metrics for that server.</p> <p>If you display metrics for an individual Managed Server in a cluster, the SLA Alert Count will be N/A (only cluster-wide SLA Alert Counts are displayed).</p>
Aggregation Interval	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the current aggregation interval set for monitoring this service, in terms of hours and minutes. You set this interval on the Operational Settings page. See “Setting the Aggregation Interval for a Service” on page 23-25.</p>
Reset Statistics	<p>If you have selected Since Last Reset in the Display Statistics field, you can reset the monitoring statistics for this service. Click Reset Statistics at the bottom of the page.</p>

Table 23-11 Service Metrics

Property	Description
SLA Alert Count	<ul style="list-style-type: none"> The alert count is based on the Display Statistics view, either for the Current Aggregation Interval or for the period Since Last Reset. The alert severity and timestamp are displayed only in the Current Aggregation Interval view. For the Since Last Reset view, only the count value is displayed. The alert severity for the most severe alert within the current aggregation interval. If there are multiple alerts, the highest alert severity in the current aggregation interval is shown. If there are no alerts in the current aggregation interval, NORMAL is displayed. The timestamp displays the time the server was last polled for alert information and displays the alert status at the time the server was last polled. If there were no alerts when the server was last polled, NORMAL is displayed and the polling time is shown.
Pipeline Alert Count	<p>For proxy services only:</p> <ul style="list-style-type: none"> The pipeline alert count is based on the Display Statistics view, either for the Current Aggregation Interval or for the period Since Last Reset. The alert severity and timestamp are displayed only in the Current Aggregation Interval view. For the Since Last Reset view, only the count value is displayed. The alert severity for the most severe alert within the current aggregation interval. If there are multiple alerts, the highest alert severity in the current aggregation interval is shown. If there are no pipeline alerts in the current aggregation interval, NORMAL is displayed. The timestamp displays the time the server was last polled for pipeline alert information and displays the alert status at the time the server was last polled. If there were no alerts when the server was last polled, NORMAL is displayed and the polling time is shown.

Table 23-11 Service Metrics (Continued)

Property	Description
Min Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the minimum response time this service has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the minimum response time this service has taken to execute messages within the period since you last reset statistics.</p>
Max Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the maximum response time this service has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the maximum response time this service has taken to execute messages within the period since you last reset statistics.</p>
Overall Avg. Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the overall average time (in milliseconds) this service has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the overall average time this service has taken to execute messages within the period since you last reset statistics.</p>
Message Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the total number of messages that this service has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the total number of messages that this service has executed within the period since you last reset statistics.</p>
Error Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of error messages that this service has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of messages with errors that this service has executed within the period since you last reset statistics.</p>

Table 23-11 Service Metrics (Continued)

Property	Description
Failover Count	<p>For business services only:</p> <p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of failovers that this service has attempted within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of failovers that this service has attempted within the period since you last reset statistics.</p>
Success Ratio	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the success ratio of this service within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the success ratio of this service within the period since you last reset statistics.</p> <p>For example, if the service has executed 9 out of 10 messages successfully, then the success ratio is 90%.</p>
Failure Ratio	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the failure ratio of this service within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the failure ratio of this service within the period since you last reset statistics.</p> <p>For example, if the service has failed to execute 1 out of 10 messages, then the failure ratio is 10%.</p>
WS Security Errors	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of messages with WS security errors that this service has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of messages with WS security errors that this service has executed within the period since you last reset statistics.</p>

Table 23-11 Service Metrics (Continued)

Property	Description
Validation Errors	<p>For business services: N/A is displayed.</p> <p>For proxy services:</p> <p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of messages with validation errors that this service has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of messages with validation errors that this service has executed within the period since you last reset statistics.</p>
Min Throttling Time	<p>For business services only:</p> <p>If you have selected Current Aggregation Interval in the Display Statistics field, the least amount of time that messages have spent in a throttling queue within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the least amount of time that messages have spent in a throttling queue within the period since you last reset statistics.</p>
Max Throttling Time	<p>For business services only:</p> <p>If you have selected Current Aggregation Interval in the Display Statistics field, the maximum amount of time that messages have spent in a throttling queue within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the maximum amount of time that messages have spent in a throttling queue within the period since you last reset statistics.</p>
Average Throttling Time	<p>For business services only:</p> <p>If you have selected Current Aggregation Interval in the Display Statistics field, the average amount of time that messages have spent in a throttling queue within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the average amount of time that messages have spent in a throttling queue within the period since you last reset statistics.</p>

Viewing Operations Metrics for WSDL-Based Services

Use this page to view the service monitoring information, shown in [Table 23-10](#), and the **Operations** metrics for WSDL-based services, shown in [Table 23-12](#).

Table 23-12 Operations Metrics

Property	Description
Operation Name	The name of the operation associated with this service.
Message Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the total number of messages that this operation has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the total number of messages that this operation has executed within the period since you last reset statistics.</p>
Error Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of messages with errors that this operation has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of messages with errors that this operation has executed within the period since you last reset statistics.</p>
Min Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the minimum response time this operation has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the minimum response time this operation has taken to execute messages within the period since you last reset statistics.</p>

Table 23-12 Operations Metrics (Continued)

Property	Description
Max Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the maximum response time this operation has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the maximum response time this operation has taken to execute messages within the period since you last reset statistics.</p>
Avg. Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the overall average time this operation has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the overall average time this operation has taken to execute messages within the period since you last reset statistics.</p>

Viewing Pipeline Metrics

Use this page to view the service monitoring information, shown in [Table 23-10](#), and the **Pipeline** metrics for proxy services that have pipelines, shown in [Table 23-13](#).

Table 23-13 Pipeline Metrics

Property	Description
Component Name	The name of the component.
Message Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the total number of messages that this component has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the total number of messages that this component has executed within the period since you last reset statistics.</p>

Table 23-13 Pipeline Metrics (Continued)

Property	Description
Error Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of messages with errors that this component has executed within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of messages with errors that this component has executed within the period since you last reset statistics.</p>
Min Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the minimum response time this component has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the minimum response time this component has taken to execute messages within the period since you last reset statistics.</p>
Max Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the maximum response time this component has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the maximum response time this component has taken to execute messages within the period since you last reset statistics.</p>
Avg. Response Time (msecs)	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the overall average time this component has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the overall average time this component has taken to execute messages within the period since you last reset statistics.</p>

Viewing Action Metrics

Use this page to view the service monitoring information, shown in [Table 23-10](#), and the **Action** metrics for proxy services that have pipelines, shown in [Table 23-14](#).

Table 23-14 Action Metrics

Property	Description
Node	A hierarchical display of the nested actions.
Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of invocations within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of invocations within the period since you last reset statistics.</p> <p>Note that this is different than the number of messages since an action can be invoked many times per message.</p>
Avg. Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the average execution time per invocation within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the average execution time per invocation within the period since you last reset statistics.</p>
Total Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the total execution time within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the total execution time within the period since you last reset statistics.</p>


Viewing Business Services Endpoint URIs Metrics

Use this page to view the service monitoring information, shown in [Table 23-10](#), and the **Endpoint URIs** metrics for business services, shown in [Table 23-15](#). For more information, see [Managing Endpoint URI for Business Services](#) in *Oracle Service Bus Operations Guide*.

Table 23-15 Endpoint URIs Metrics


Property	Description
Endpoint URI	The endpoint URL associated with this business service.
Message Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the total number of messages executed by this endpoint URI within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the total number of messages executed by this endpoint URI within the period since you last reset statistics.</p>
Error Count	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the number of messages with errors executed by this endpoint URI within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the number of messages with errors executed by this endpoint URI within the period since you last reset statistics.</p>
Min Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the minimum response time this endpoint URI has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the minimum response time this endpoint URI has taken to execute messages within the period since you last reset statistics.</p>
Max Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the maximum response time this endpoint URI has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the maximum response time this endpoint URI has taken to execute messages within the period since you last reset statistics.</p>

Table 23-15 Endpoint URIs Metrics (Continued)

Property	Description
Avg. Response Time	<p>If you have selected Current Aggregation Interval in the Display Statistics field, the overall average time this endpoint URI has taken to execute messages within the period of the current aggregation interval.</p> <p>If you have selected Since Last Reset in the Display Statistics field, the overall average time this endpoint URI has taken to execute messages within the period since you last reset statistics.</p>
Status	<p>The status of the business service endpoint URI.</p> <p>For single server domains or for an individual Managed Server in a cluster: Online or Offline.</p> <p>For cluster-level statistics: Online, Offline, or Partial, when that particular URI is offline on at least one of the Managed Servers in the cluster.</p>
Action	<p>Click the  Mark Endpoint Online icon to mark an offline URI, Online. This action is enabled only if the URI has an Offline or Partial status.</p> <p>To enable this action, a business service must be enabled for taking URIs offline and its service and global-level monitoring operational settings must be enabled. See “Configuring Operational Settings for Business Services” on page 23-19.</p> <p>Note: If successful, the action is immediate. However, reflecting that its endpoint URI status is now online takes one monitoring aggregation cycle, which might take as long as 1 minute and a half.</p>

Viewing Server Information



The **Server Health** page includes the following:

- On the **Server Health** tab header, a  **Shutdown** icon and numeric indicator which shows the number of servers that are shutdown, may be present:
 - Clicking on the icon filters the servers displayed using the **Shutdown Health** criteria and **SHUTDOWN State** criteria.
 - The number indicates the number of shutdown servers.

- A pie chart that depicts the health of the servers in the domain. You can click the area in the chart that corresponds to the server to display more details.
- The **Log Summary**. To display the log, click the numeric link that displays the number of messages for a given severity. For example, Alert:1, click on the number 1. See [“Viewing Details of Domain Log Files” on page 23-41](#).
- Fields that display server information, depending on your customized settings for the **Server Summary** table. For example, server name, health, cluster name, machine name, the state of the server, and the length of time the server has been running. To learn more about these fields, see [Table 23-16](#).
- By default, the Dashboard refresh rate is **No Refresh**. To change the Dashboard refresh rate interval, see [“Setting User Preferences” on page 24-20](#).

WARNING: By selecting a dashboard refresh rate interval other than the default (**No Refresh**), the browser refreshes the Dashboard at regular intervals. This prevents your session from timing out, even without you interacting with the console.

Oracle recommends that you use the Dashboard refresh rate feature with caution. You should never leave a console session unattended. While your console session is active others can gain access to it from your machine, without re-authentication.

- A  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).
- To restrict the number of items in the list or locate specific servers:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - Filter by health status. From the **Health** drop-down list, select to restrict servers to the specified health status level, then click **Search**.
 Select the **or above** check box to restrict your search to the specified server health status level or above (listed from the most inclusive to the most restrictive level): OK, Warning, Overloaded, Critical, and Fatal.
 - Filter by server. From the **Server** drop-down list, select All or the name of the server, then click **Search**.
 - Filter by cluster name. From the **Cluster Name** drop-down list, select All or the name of the cluster associated with the server, then click **Search**.
 - Filter by machine name. From the **Machine Name** drop-down list, select All or the name of the machine associated with the server, then click **Search**.

- Filter by state. From the **State** drop-down list, select All or the state of the server: RUNNING, FAILED, or SHUTDOWN, then click **Search**.
- Click **View All** to remove the search filters and display all servers.

The **Server Health** page displays the following information for each server, shown in [Table 23-16](#), depending on the filter settings you have specified.

Table 23-16 Server Summary Details

Property	Description
Server	The name of the server. The name is a link to the View Server Details page. See “Viewing Server Details” on page 23-39 .
Health	<p>The health status of the server:</p> <ul style="list-style-type: none"> • OK—the server is functioning without any problems. • OK/Not Processing—the server is in the ADMIN state, available only for administration operations. All run-time Oracle Service Bus messages will fail. • Warning—the server might have problems in the future. Check the server logs and the corresponding RuntimeMBean for more details. • Overloaded—the server has more work assigned to it than the configured threshold; it might refuse more work. • Critical—server failure pending; something must be done immediately to prevent failure. Check the server logs and the corresponding RuntimeMBean for more details. • Shutdown—the server has failed and must be restarted. • Critical—server failure pending; something must be done immediately to prevent failure. Check the server logs and the corresponding RuntimeMBean for more details.
Cluster Name	The name of the cluster associated with this server.
Machine Name	The name of the machine associated with this server.

Table 23-16 Server Summary Details (Continued)

Property	Description
State	<p>The state of the server:</p> <ul style="list-style-type: none"> • RUNNING • ADMIN • FAILED • SHUTDOWN
Uptime	The length of time this server has been running.

Viewing Server Details

The objects displayed on this page are WebLogic Server entities. To learn more about these entities, see the [WebLogic Server Administration Console Online Help](#) in one of the following ways:

- The [WebLogic Server Administration Console Online Help](#) is available at the following URL:
http://download.oracle.com/docs/cd/E12840_01/wls/docs103/ConsoleHelp/core/index.html
- Access the online help system from the Oracle Service Bus Console when the server is running. Click **WLS Console** in the top banner, then click **Help** in the top banner of the WebLogic Server Administration Console.

Viewing Domain Log Files

This page displays a summary of domain log file entries, including the information shown in [Table 23-17](#).

- To customize the display of domain log file information, see “[Customizing Your View of Domain Log File Entries](#)” on page 23-40.
- To display details of a specific log file, select the radio button for the appropriate entry, then click **View**. See “[Viewing Details of Domain Log Files](#)” on page 23-41.

Table 23-17 Domain Log Summary Information

Property	Description
Date	The date the entry was logged.
Subsystem	The subsystem associated with the entry.
Severity	The severity of the message.
Message ID	The unique identification for the message.
Message	The message description.

Customizing Your View of Domain Log File Entries

1. Click **Customize this table**. Additional fields are displayed.

You can click the **Customize this table** link at any time to close this table and retain the original settings.

2. In the **Filter** fields, do the following:
 - a. In the **Time** field, select the time interval for which you want to view log entries.
 - b. In the **Start Time** field, enter a start time in the format MM/DD/YYYY HH:MM:SS. For example, enter 10/25/06 08:39:48. You use the **Start Time** and **End Time** fields to specify a window of time for which you want to view log entries.
 - c. In the **End Time** field, enter an end time in the format MM/DD/YYYY HH:MM:SS. For example, enter 10/25/06 13:20:51. You use the **Start Time** and **End Time** fields to specify a window of time for which you want to view log entries.
 - d. In the **Criteria** text box, specify a filtering criteria (a text string). The filtering criteria is specified as a string in the WLDF Query Language. The query language supports Boolean operators: AND, OR, and NOT, and relational operators. For more information on query syntax, see [WLDF Query Language](http://download.oracle.com/docs/cd/E12840_01/wls/docs103/wldf_configuring/appendix_query.html) in *Configuring and Using the WebLogic Diagnostics Framework* at http://download.oracle.com/docs/cd/E12840_01/wls/docs103/wldf_configuring/appendix_query.html.
3. In the **Columns** field, select the columns you want to display:
 - a. Select a column name from the **Available** field.

- b. Click the arrow to move this column name to the **Chosen** field.
- c. Repeat until you have listed all the column names you want to display in the **Chosen** field.
In the **Chosen** field, you can use the Up and Down arrows to reorder the column names as required.
4. In the **Number of rows displayed per page** field, select the number of log entries you want to display on a single page.
5. In the **Maximum Results Returned** field, select the maximum number of log entries you want to display in total or select **Show All** to display all of them.
6. Do one of the following:
 - To save the new settings, click **Apply**.
 - To discard your changes and retain the original settings, click **Reset**.

Viewing Details of Domain Log Files

Use this page to view details of domain log file entries, shown in [Table 23-18](#).

Table 23-18 Domain Log Details

Property	Description
Message	A description of the event or condition.
Date	Displays the time and date when the message originated, in a format that is specific to the locale. The Java Virtual Machine (JVM) that runs each WebLogic Server instance refers to the host computer operating system for information about the local time zone and format.
Subsystem	Indicates the subsystem of WebLogic Server that was the source of the message; for example, Enterprise Java Bean (EJB) container or Java Messaging Service (JMS).
Message ID	A unique six-digit identifier. All message IDs that WebLogic Server system messages generate start with BEA- and fall within a numerical range of 0-499999.



Table 23-18 Domain Log Details (Continued)

Property	Description
Severity	<p>Indicates the degree of impact or seriousness of the event reported by the message:</p> <ul style="list-style-type: none"> Alert—A particular service is in an unusable state while other parts of the system continue to function. Automatic recovery is not possible; the immediate attention of the administrator is needed to resolve the problem. Critical—A system or service error has occurred. The system can recover but there might be a momentary loss or permanent degradation of service. Emergency—The server is in an unusable state. This severity indicates a severe system failure or panic. Error—A user error has occurred. The system or application can handle the error with no interruption and limited degradation of service. Info—Used for reporting normal operations; a low-level informational message. Notice—An informational message with a higher level of importance. Warning—A suspicious operation or configuration has occurred but it might not affect normal operation.
Machine	The DNS name of the computer that hosts the server instance.
Server	The name of the WebLogic Server instance on which the message was generated.
Thread	The ID that the JVM assigns to the thread in which the message originated.
User ID	The user ID under which the associated event was executed.
Transaction ID	Present only for messages logged within the context of a transaction.
Context ID	Context information to correlate messages coming from a specific request or application.
Detail	A description of the event or condition.
Cause	The cause of the message.
Action	The action that should be taken.

Viewing Alert Rules

Use this page to view the alert rules information shown in [Table 23-19](#).

Table 23-19 Alert Rules Information

Property	Description
Name	The name assigned to this alert rule. The name is a link to the Alert Rule General Configuration page. See “Viewing Alert Rule Configurations” on page 23-49 .
SLA State	The status of the alert rule: Enabled or Disabled.
Description	This field is hidden by default. A description of the alert rule.
Severity	The severity of the alert that will be triggered by this rule: Normal, Warning, Minor, Major, Critical, or Fatal.
Aggr. Interval	The length of the aggregation interval in terms of hours and minutes.
Expiration Date	The date when this alert rule is no longer in effect.
Stop Processing	Displays Yes or No.
Frequency	The frequency of this alert: <ul style="list-style-type: none"> • Every Time • Notify Once
Options	This column includes the following functionality: <ul style="list-style-type: none"> • Click the arrows to reorder the alert rules. You can move individual alert rules up or down the list. You can do this only when this more than one alert rule configured for this service. • Click the  Rename icon to rename an alert rule. • Click the  Delete icon to delete a specific alert rule. See “Deleting Alert Rules” on page 23-51.

Locating Alert Rules

1. Select **Resource Browser** > **Business Services** or **Proxy Services**.

2. Click the service name.
3. Select the **SLA Alert Rules** tab.
4. To locate a specific alert rule for this service, scroll through the pages. Use the page controls above or below the table. Go to a page by selecting the page number or by using the arrow buttons to go to the next, previous, first, or last page.

You can use this page also to do the following:

- To configure monitoring for this service, select the **Operational Settings** tab. See [“Configuring Operational Settings for Proxy Services” on page 23-14](#) and [“Configuring Operational Settings for Business Services” on page 23-19](#).
- To add a new alert rule, click **Add New**. See [“Creating and Editing Alert Rules” on page 23-44](#).

Creating and Editing Alert Rules

The tasks in creating and editing alert rules include:

- [“Configuring General Information for Alert Rules” on page 23-44](#)
- [“Defining Alert Rule Conditions” on page 23-47](#)
- [“Reviewing the Alert Rule Configuration” on page 23-49](#)

Note: When a service is created from another service, alert rules are maintained in the following way:

- When a proxy service is created from a business service or a business service is created from a proxy service, the alert rules, if any, are removed.
- When a proxy service is created from another proxy service or a business service is created from another business service, the alert rules, if any, are retained.

Configuring General Information for Alert Rules

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Resource Browser > Proxy Services** or **Business Services**.
3. Click the service name.
4. Select the **SLA Alert Rules** tab and click **Add New**.

5. In the **Rule Name** field, enter a name for the alert rule. This is a required field.
6. In the **Alert Summary** field, enter a short description of the alert rule. This text is also used as the subject line for an e-mail message if this alert rule is configured with an e-mail alert notification, and can contain no more than 80 characters. If you do not provide an alert summary, the default text, Oracle Service Bus Alert, will be used instead.
7. In the **Rule Description** field, enter a description for the alert rule.
8. In the **Alert Destination** field, enter the name of the alert destination resource or click **Browse** to display the **Select Alert Destination** page. Select an alert destination from the list and click **Submit**.

By default, the alert will always go to the console. To configure and select other alert destination resources, see [“Adding Alert Destinations” on page 5-2](#) and [“Locating Alert Destinations” on page 5-1](#).

9. In the **Start Time** field, enter a start time in the format HH:MM. For example, enter 09:00 AM. You use the **Start Time** and **End Time** fields to specify a window of time during which the rule is active on each day prior to the expiration date. For example, between 9am and 5pm every day.
10. In the **End Time** field, enter an end time in the format HH:MM. For example, enter 05:00 PM. You use the **Start Time** and **End Time** fields to specify a window of time during which the rule is active on each day prior to the expiration date. For example, between 9am and 5pm every day.

The alert rule is active daily during the start time you specified until the end time you specified, until the rule expires.

11. In the **Rule Expiration Date** field, enter an expiration date in the format MM/DD/YYYY. For example, enter 12/31/2010. The rule expires at 11:59 pm on the specified date. If you do not specify a date, the rule never expires.
12. In the **Rule Enabled** field, keep **Yes** as the default to ensure that this rule is enabled, or select **No** to disable this rule.
13. In the **Alert Severity** field, select one of the following:
 - Normal
 - Warning
 - Minor
 - Major

- Critical
- Fatal

14. In the **Alert Frequency** field, select one of the following settings, shown in [Table 23-20](#).

Table 23-20 Alert Frequency Setting

Property	Description
Every Time	<p>If you select this option, the actions included in the alert rule are executed every time the alert rule evaluates to <code>true</code>. For example, if you set the condition that the average response time is greater than 300 milliseconds, you receive an alert every time this condition evaluates to <code>true</code>.</p> <p>The number of times an alert rule is evaluated depends on the aggregation interval and the sample interval associated with that rule. If the aggregation interval is set to 5 minutes, the sample interval is 1 minute. Rules are evaluated each time 5 samples of data are available. Therefore, the rule is evaluated for the first time approximately 5 minutes after it is created and every minute thereafter.</p>
Notify Once	<p>If you select this option, the actions included in the rule are executed the first time the rule evaluates to <code>true</code>, and no more alerts are generated until the condition resets itself and evaluates to <code>true</code> again. For example, if you set the condition that the average response time is less than 300 milliseconds, you receive an alert the first time this condition evaluates to <code>true</code>, but you do not receive any more alerts until the condition evaluates to <code>false</code> and then to <code>true</code> again. The alert timestamp gets updated and is displayed on the Dashboard.</p>

15. Select **Yes** for the **Stop Processing More Rules** option if you want to abort executing further rules after one of the rules associated with a service evaluates to `true`. Use this option to stop evaluating subsequent rules when there are multiple rules associated with a particular service. Keep **No** as the default to continue processing rules.

This option behaves like the **Stop Processing More Rules** option in the Rules Wizard in Microsoft Outlook.

After you finish

Click **Next** to display the **New Alert Rule - Conditions Configuration** page. Continue in [“Defining Alert Rule Conditions”](#) on page 23-47.

Defining Alert Rule Conditions

Use this page to define conditions for the alert rule. You must specify at least one condition. If you specify multiple conditions, you must use the **And/Or** operators to combine them.

1. In the **Select Aggregation Interval for the Condition** field, select the number of hours and minutes to set the aggregation interval for this condition. The aggregation interval determines the frequency at which the condition is tested. The condition is tested each time the monitoring subsystem aggregates enough samples of data to constitute 1 aggregation interval.

For example, if you select an aggregation interval of 1 hour, the condition is tested each time an hour's worth of data is available. The first time the condition is tested is at the end of the first hour. After that, the condition is tested every 10 minutes because the sampling interval for an aggregation interval of 1 hour is set to 10 minutes.

2. You start by defining a simple expression. Two or more simple expressions can be combined to form a complex expression. To define a complex simple expression, do the following:

- a. In the first drop-down field, select **Count**, **Minimum**, **Maximum**, **Average**, or **Status**.
- b. In the next drop-down field, select an operand.

Depending on whether you select **Count**, **Minimum**, **Maximum**, **Average**, or **Status** in the first drop-down field, the list of the operands varies. For example, if you select **Minimum**, **Maximum**, or **Average**, the Response Time operand is available. Use this operand to set the response time in milliseconds (msec). The operands available also depends on the configuration of the service itself. The number of operands varies according to whether a service has pipelines, route nodes, operations, and so on.

For information on how to generate alerts based on endpoint URI status, see [Managing Endpoint URI for Business Services](#) in *Oracle Service Bus Operations Guide*.

When you select **Count**, this field displays the operands shown in [Table 23-21](#).

Table 23-21 Count Operand Details

Property	Description
Error Count	The error count gets incremented when message processing returns a failure.
Failure Ratio (%)	The ratio of errors encountered to the total number of messages successfully processed over the specified aggregation interval.
Message Count	The total number of messages processed.

Table 23-21 Count Operand Details (Continued)

Property	Description
Success Ratio (%)	The ratio of messages successfully processed to the total number of messages encountered over the specified aggregation interval.
Failover count	For business services only: The failover count.
<Request Pipeline>. Error Count	For proxy services only: The number of erroneous messages processed by the request pipeline.
<Request Pipeline>. Message Count	For proxy services only: The number of messages processed by the request pipeline.
Validation Error Count	For proxy services only that have a validate action in the pipeline: The number of validation errors.
WSS Error Count	Available depending on the transport for the service (such as with HTTP): The number of Web Service Security (WSS) erroneous messages processed. This counter is only available for WSDL-based services and is updated when a WSS error is encountered.

- c. In the next field, select the desired comparison operator: =, !=, > or <.
 - d. In the next field, enter the value to compare against.
 - e. Click **Add**.
3. To define a complex expression:
 - a. Repeat steps a - e in step 2 to define a simple expression.
 - b. Repeat steps a - e again to define another simple expression.
 - c. Select the check box for each of the two expressions.
 - d. Click **And** or **Or** to combine the expressions into a complex expression.

The **Split** option is available after you combine multiple expressions. This option is used to split complex expressions back into separate simple expressions.


After you finish

Click **Prev** to return to the **General Configuration** page. Or, click **Last** to display the **New Alert Rule - [service name]** page. Continue in [“Reviewing the Alert Rule Configuration” on page 23-49](#).

Reviewing the Alert Rule Configuration

Use this page to review the configuration data that you have entered for this alert rule. If necessary, you can click **Edit** to make changes to the configuration before you save the alert rule.

Do any of the following:

- To make a change to one of the configuration pages, click the  **Edit** icon for the appropriate page.
- To return to the previous page, click **Prev**.
- To create the alert, click **Save**. The alert rule is created and saved in the current session.
- To disregard changes, click **Cancel**.
- To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Viewing Alert Rule Configurations

Use this page to view alert rule configuration details, shown in [Table 23-22](#).

Table 23-22 Alert Rule - General Configuration

Property	Description
Rule Name	The name of the alert rule.
Rule Description	A description of the alert rule.
Alert Summary	A short description of the alert rule. This text is also used as the subject line for an e-mail message if this alert rule is configured with an e-mail alert notification.
Alert Destination	The path and name of the alert destination resource that contains the destination address for alert notifications. This field is a link to the View Alert Destination - General Configuration page. See “Editing Alert Destinations” on page 5-5 .
Start Time (HH:MM)	The start time for this alert rule.
End Time (HH:MM)	The end time for this alert rule.

Table 23-22 Alert Rule - General Configuration (Continued)

Property	Description
Rule Expiration Date (MM/DD/YYYY)	The date when this alert rule no longer applies.
Rule Enabled	Whether or not this alert rule is enabled.
Alert Severity	The severity of the alert raised as a result of this alert rule: <ul style="list-style-type: none">• Normal• Warning• Minor• Major• Critical• Fatal
Alert Frequency	The frequency of the alert: <ul style="list-style-type: none">• Every Time• Notify Once
Stop Processing More Rules	Whether or not the alert stops processing more rules.


The page displays the **Conditions** information shown in [Table 23-23](#).

Table 23-23 Alert Rule Conditions


Property	Description
Condition Expression	The aggregation interval for this condition, in terms of hours and minutes. A list of one or more conditions that govern this alert rule.

Editing Alert Rules

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the alert rule. See [“Locating Alert Rules” on page 23-43](#).

3. Click the alert rule name.
4. To make a change to the fields on the configuration pages, click the  **Edit** icon for the appropriate page or the **Edit** button at the bottom of the page. See [“Creating and Editing Alert Rules” on page 23-44](#) for descriptions of the pages and fields.
5. Do any of the following:
 - To go to the next page, click **Next**.
 - To return to the previous page, click **Prev**.
 - To go to the summary page, click **Last**.
 - To commit the updates in the current session, click **Save**.
 - To disregard changes and return to the **SLA Alert Rules** page, click **Cancel**.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Alert Rules

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the alert rule. See [“Locating Alert Rules” on page 23-43](#).
3. Click the  **Delete** icon in the **Options** field of the alert rule you want to delete. The alert rule is deleted in the current session.
4. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Monitoring

Configuration

You use the **Configuration** module to locate and manage proxy services, business services, alert destinations, SLA alert rules, and the run-time tracing for proxy services.

You can specify operational settings for all services, at the service and global level, and use the global settings to turn on and off monitoring, SLA alerts, and, for proxy services only, pipeline message reporting and pipeline message logging.

Finding and Updating Operational Settings

Use the **Smart Search** page to easily locate proxy services, business services, alert destinations, and SLA alert rules. Additionally, you can use the **Smart Search** page to specify service-specific operational settings, with the following exceptions: you cannot set an aggregation interval or specify an alerting or logging severity level. For more information, see [“Configuring Operational Settings for Proxy Services” on page 23-14](#) and [“Configuring Operational Settings for Business Services” on page 23-19](#).


The run-time effects of the service-level settings depend on their corresponding global settings. You must enable both the global and the service-level settings for a service to be completely enabled at run time. Additionally, the service **State** must also be enabled. See [“Enabling Global Settings” on page 24-14](#).

You can enable or disable operational settings *only* from within a session.

Finding All Services (Proxy and Business Services)

1. Select **Operations > Smart Search**.

2. From the **Type** drop-down list, select **All Services**, then click **Search**. The **Summary of All Services** page displays the information shown in [Table 24-1](#).
3. To restrict the number of items in the list or locate specific services:

- Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
- Filter by service name. In the **Name** field, enter the name of the search target or enter wildcard characters (use * and ? as wildcard characters to perform a more general search), then click **Search**.

This search method is preferable if the name of the service is unique across all projects and paths.

- Filter by service path. In the **Path** field, enter the path of the search target, which is the project name and the name of the folder in which services reside. You can use * and ? as wildcard characters to perform a more general search. All the services that reside in that path are displayed.


The format for the **Path** field is as follows:

project-name/root-folder/ . . ./parent-folder

If a service is directly under the project, the format is as follows: project-name

- Filter by service name and path. This search method is preferable if there is more than one service with the same name that reside in different paths.
- Filter by service state. From the **State** drop-down list, select the state of the service: Enabled or Disabled, then click **Search**. Select All to ignore the service state filter criteria.
- Filter by service monitoring. From the **Monitoring** drop-down list, select the monitoring status of the service: Enabled or Disabled, then click **Search**. Select All to ignore the service monitoring filter criteria.
- Filter by service's SLA Alerts setting. From the **SLA Alerts** drop-down list, select the SLA alerts setting of the service: Enabled or Disabled, then click **Search**. Select All to ignore the service SLA alerts filter criteria.

Table 24-1 Services Summary Information


Property	Description
Name	The name assigned to the service. The name is a link to the Operational Settings page. See “Configuring Operational Settings for Proxy Services” on page 23-14 or “Configuring Operational Settings for Business Services” on page 23-19.
Path	The project associated with the service. If the service resides in a project folder, this folder is also listed. The path is displayed in the format: project-name/root-folder/ . . . /parent-folder The path is a link to the corresponding path in the Project Explorer .
Type	The parent service type: proxy service or business service.
State	The state of the service: Enabled or Disabled.
Monitoring	The monitoring status of the service: Enabled or Disabled.
SLA Alerts	The SLA alerts status: Enabled or Disabled, and the level enabled at and above: Normal (N), Warning (W), Minor (Mn), Major (Mj), Critical (C), or Fatal (F).
Pipeline Alerts	For proxy services only: The pipeline alerts status: Enabled or Disabled, and the level enabled at and above: Normal (N), Warning (W), Minor (Mn), Major (Mj), Critical (C), or Fatal (F).
Reports	For proxy services only: The message reporting status of the service: Enabled or Disabled.
Logs	For proxy services and Split-Joins only: The logging status: Enabled or Disabled, and the level enabled at and above: Debug (D), Info (I), Warning (W), or Error (E).
Tracing	For proxy services and Split-Joins only: The run-time tracing status of the proxy service: Enabled or Disabled.
Actions	For proxy services: The  Edit Message Flow icon is a link to the pipeline for that proxy service.

You can use this page also to do the following:


- To remove the search filter and display all services, click **View All**.
- To discard your changes and refresh the page with the currently stored settings using the same search criteria, click **Reset**.
- From within a session, to enable or disable any service-level settings, select or clear the check box next to it and click **Update**.

Note: The run time effects of the service-level settings depend on their corresponding global settings. You must enable both the global and the service-level settings for a service to be completely enabled at run time. Additionally, **SLA Alerts** depends on both the global and service-level **Monitoring** states—both must be enabled for SLA alerts to be enabled at run time. See [“Enabling Global Settings” on page 24-14](#).

In addition, the service **State** must also be enabled.

- To customize your view of the operational settings information, click the  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).

Finding Proxy Services


1. Select **Operations > Smart Search**.
2. From the **Type** drop-down list, select **Proxy Services**, then click **Search**. The **Summary of Proxy Services** page displays the information shown in [Table 24-2](#).
3. To restrict the number of items in the list or locate specific proxy services:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - Filter by proxy service name and path. In the **Name** and **Path** fields, enter the name and path of the search target, then click **Search**. The path is the project name and the name of the folder in which the proxy service resides. You can use * and ? as wildcard characters to perform a more general search.
 - Filter by service state. From the **State** drop-down list, select the proxy service state: Enabled or Disabled, then click **Search**. Select All to ignore the service state filter criteria.
 - Filter by service monitoring. From the **Monitoring** drop-down list, select the monitoring status of the proxy service: Enabled or Disabled, then click **Search**. Select All to ignore the service monitoring filter criteria.

- Filter by service’s SLA Alerts setting. From the **SLA Alerts** drop-down list, select the SLA alerts setting of the proxy service: Enabled or Disabled, then click **Search**. Select All to ignore the service SLA alerts filter criteria.
- Filter by service’s pipeline alerts setting. From the **Pipeline Alerts** drop-down list, select the pipeline alerts setting of the proxy service: Enabled or Disabled, then click **Search**. Select All to ignore the service pipeline alerts filter criteria.
- Filter by services with message reports. From the **Message Reports** drop-down list, select the message reports status of the proxy service: Enabled or Disabled, then click **Search**. Select All to ignore the service message reports filter criteria.
- Filter by services with logging. From the **Logs** drop-down list, select the logging status of the proxy service: Enabled or Disabled, then click **Search**. Select All to ignore the service logging filter criteria.
- Filter by services with run-time tracing. From the **Tracing** drop-down list, select the run-time tracing status of the proxy service: Enabled or Disabled, then click **Search**. Select All to ignore the service tracing filter criteria.

Table 24-2 Proxy Services Summary Information

Property	Description
Name	The name assigned to the proxy service. The name is a link to the Operational Settings page. See “Configuring Operational Settings for Proxy Services” on page 23-14.
Path	The project associated with the proxy service. If the service resides in a project folder, this folder is also listed. The path is displayed in the format: project-name/root-folder/ . . ./parent-folder The path is a link to the corresponding path in the Project Explorer .
Type	The parent service type: proxy service.
State	The state of the proxy service: Enabled or Disabled.
Monitoring	The monitoring status of the proxy service: Enabled or Disabled.
SLA Alerts	The SLA alerts status: Enabled or Disabled, and the level enabled at and above: Normal (N), Warning (W), Minor (Mn), Major (Mj), Critical (C), or Fatal (F).

Table 24-2 Proxy Services Summary Information (Continued)


Property	Description
Pipeline Alerts	The pipeline alerts status: Enabled or Disabled, and the level enabled at and above: Normal (N), Warning (W), Minor (Mn), Major (Mj), Critical (C), or Fatal (F).
Reports	The message reports status of the service: Enabled or Disabled.
Logs	The logging status: Enabled or Disabled, and the level enabled at and above: Debug (D), Info (I), Warning (W), or Error (E).
Tracing	The run-time tracing status of the proxy service: Enabled or Disabled.
Actions	The  Edit Message Flow icon is a link to the pipeline for that proxy service.

You can use this page also to do the following:

- To remove the search filters and display all proxy services, click **View All**.
- To discard your changes and refresh the page with the currently stored settings using the same search criteria, click **Reset**.
- From within a session, to enable or disable any service-level settings, select or clear the check box next to it and click **Update**.

Note: The run time effects of the service-level settings depend on their corresponding global settings. You must enable both the global and the service-level settings for a service to be completely enabled at run time. Additionally, **SLA Alerts** depends on both the global and service-level **Monitoring** states—both must be enabled for SLA alerts to be enabled at run time. See [“Enabling Global Settings” on page 24-14](#).

In addition, the service **State** must also be enabled.

- To customize your view of the operational settings information, click the  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).

Finding Business Services

1. Select **Operations > Smart Search**.


2. From the **Type** drop-down list, select **Business Services**, then click **Search**. The **Summary of Business Services** page displays the information shown in [Table 24-3](#).
3. To restrict the number of items in the list or locate specific business services:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - Filter by business service name and path. In the **Name** and **Path** fields, enter the name and path of the search target, then click **Search**. The path is the project name and the name of the folder in which the business service resides. You can use * and ? as wildcard characters to perform a more general search.
 - Filter by service state. From the **State** drop-down list, select the business service state: Enabled or Disabled, then click **Search**. Select All to ignore the service state filter criteria.
 - Filter by service monitoring. From the **Monitoring** drop-down list, select the monitoring status of the business service: Enabled or Disabled, then click **Search**. Select All to ignore the service monitoring filter criteria.
 - Filter by business service's SLA alerts setting. From the **SLA Alerts** drop-down list, select the SLA alerts setting of the business service: Enabled or Disabled, then click **Search**. Select All to ignore the service SLA alerts filter criteria.

Table 24-3 Business Services Summary Information

Property	Description
Name	The name assigned to the business service. The name is a link to the Operational Settings page. See “Configuring Operational Settings for Business Services” on page 23-19 .
Path	The project associated with the business service. If the service resides in a project folder, this folder is also listed. The path is displayed in the format: <code>project-name/root-folder/ . . ./parent-folder</code> The path is a link to the corresponding path in the Project Explorer .
Type	The parent service type: business service.
State	The state of the business service: Enabled or Disabled.

Table 24-3 Business Services Summary Information (Continued)


Property	Description
Monitoring	The monitoring status of the business service: Enabled or Disabled.
SLA Alerts	The SLA alerts status: Enabled or Disabled, and the level enabled at and above: Normal (N), Warning (W), Minor (Mn), Major (Mj), Critical (C), or Fatal (F).

You can use this page also to do the following:


- To remove the search filter and display all business services, click **View All**.
- To discard your changes and refresh the page with the currently stored settings using the same search criteria, click **Reset**.
- From within a session, to enable or disable any service-level settings, select or clear the check box next to it and click **Update**.

Note: The run time effects of the service-level settings depend on their corresponding global settings. You must enable both the global and the service-level settings for a service to be completely enabled at run time. Additionally, **SLA Alerts** depends on both the global and service-level **Monitoring** states—both must be enabled for SLA alerts to be enabled at run time. See [“Enabling Global Settings” on page 24-14](#).

In addition, the service **State** must also be enabled.

- To customize your view of the operational settings information, click the  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).

Finding Split-Joins

1. Select **Operations > Smart Search**.
2. From the **Type** drop-down list, select **Split-Joins**, then click **Search**. The **Summary of Split-Joins** page displays the information shown in [Table 24-4](#).
3. To restrict the number of items in the list or locate specific business services:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.

- Filter by Split-Join name and path. In the **Name** and **Path** fields, enter the name and path of the search target, then click **Search**. The path is the project name and the name of the folder in which the Split-Join resides. You can use * and ? as wildcard characters to perform a more general search.
- Filter by Split-Joins with logging. From the **Logs** drop-down list, select the logging status of the Split-Join: Enabled or Disabled, then click **Search**. Select All to ignore the logging filter criteria.
- Filter by execution tracing. From the **Execution Tracing** drop-down list, select the execution tracing status of the Split-Join: Enabled or Disabled, then click **Search**. Select All to ignore the service logging filter criteria.


Table 24-4 Split-Join Summary Information

Property	Description
Name	The name assigned to the Split-Join. The name is a link to the Operational Settings page. See “Editing Split-Joins” on page 9-3 .
Path	The project associated with the Split-Join. If the Split-Join resides in a project folder, this folder is also listed. The path is displayed in the format: project-name/root-folder/ . . . /parent-folder The path is a link to the corresponding path in the Project Explorer .
Type	The parent service type: Split-Join.
Logs	The logging status: Enabled or Disabled, and the level enabled at and above: Debug (D), Info (I), Warning (W), or Error (E).
Execution Tracing	The run-time tracing status of the Split-Join: Enabled or Disabled.

You can use this page also to do the following:

- To remove the search filter and display all Split-Joins, click **View All**.
- To discard your changes and refresh the page with the currently stored settings using the same search criteria, click **Reset**.
- From within a session, to enable or disable any service-level settings, select or clear the check box next to it and click **Update**.

Note: The run-time effects of the Split-Join-level settings depend on their corresponding global settings. You must enable both the global and the service-level settings for a service to be completely enabled at run time.

- To customize your view of the operational settings information, click the  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).

Finding Alert Destinations





1. Select **Operations > Smart Search**.
2. From the **Type** drop-down list, select **Alert Destinations**, then click **Search**. The **Summary of Alert Destinations** page displays the information shown in [Table 24-5](#).
3. To restrict the number of items in the list or locate specific alert destinations:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - Filter by alert destination name and path. In the **Name** and **Path** fields, enter the name and path of the search target, then click **Search**. The path is the project name and the name of the folder in which the alert destination resides. You can use * and ? as wildcard characters to perform a more general search.
 - Filter by alert destination target. In the **Target** multi-select box, select one or more alert destination targets: SNMP Trap, Reports, e-mail, or JMS, then click **Search**. Only alert destinations with at least one of the selected targets will be displayed. Select no alert destination targets to ignore the alert destination filter criteria.
 - Filter by search pattern. In the **Search Pattern (Any String)** text box, specify any string, then click **Search**. The system uses the string to search all the **Description** fields of the alert destinations, as well as the specific detailed fields of the e-mail and JMS destinations. If the string appears in any of the alert destination fields, the alert destinations matching the search criteria are displayed.


Table 24-5 Alert Destinations Summary Information

Property	Description
Name	The name of the alert destination resource. This field is a link to the View Alert Destination - Configuration page. See “Locating Alert Destinations” on page 5-1 .
Path	The project associated with the alert destination. If the alert destination resides in a project folder, this folder is also listed. The path is displayed in the format: <code>project-name/root-folder/ . . ./parent-folder</code> The path is a link to the corresponding path in the Project Explorer .
Options	Click the  Delete icon to delete a specific alert destination. A  Deletion Warning icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource. See “Deleting Alert Destinations” on page 5-6 .

You can use this page also to do the following:

- To remove the search filter and display all alert destinations, click **View All**.
- To delete a specific alert destination if not referenced by other resources, select the check box next to it and click **Delete**.
- To customize your view of the operational settings information, click the  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).

Finding SLA Alert Rules

1. Select **Operations > Smart Search**.
2. From the **Type** drop-down list, select **SLA Alerts**, then click **Search**. The **Summary of SLA Alert Rules** page displays the information shown in [Table 24-6](#).
3. To restrict the number of items in the list or locate specific SLA alert rules:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.

- Filter by alert rule name. In the **Name** field, enter the name of the search target or enter wildcard characters (use * and ? as wildcard characters to perform a more general search), then click **Search**.

This search method is preferable if the name of the alert rule is unique across all projects and paths.

- Filter by parent service path. In the **Path** field, enter the path of the parent service, which is the project name and the name of the folder in which parent service resides. You can use * and ? as wildcard characters to perform a more general search. All alert rules whose parent services reside in that path are displayed.

The format for the **Path** field is as follows:

project-name/root-folder/ . . . /parent-folder

If a service is directly under the project, the format is as follows: project-name

- Filter by parent service. In the **Parent Service** field, click **Browse** to display the **Select Service** page. Select the parent service from the list and click **Submit**. Click **Clear** to remove the parent service filter criteria, or click **Search**.

Note: Your selection in the **Parent Service** field restricts your choices in the **Service Type** field.

- Filter by parent service type. From the **Service Type** drop-down list, select Proxy Services or Business Services, then click **Search**. Select All Services to ignore filtering by parent service type criteria.

Note: Your selection in the **Service Type** field restricts your choices in the **Parent Service** field.

- Filter by rule state. From the **Rule State** drop-down list, select the state of the alert rule: Enabled or Disabled, then click **Search**. Select All to ignore the rule state filter criteria.
- Filter by severity. From the **Severity** drop-down list, select to restrict SLA alerts rules to the specified level, then click **Search**.


Select the **or above** check box to restrict your search to the specified severity level or above (listed from the most inclusive to the most restrictive level): Normal, Warning, Minor, Critical, and Fatal.

Table 24-6 SLA Alert Rules Summary Information

Property	Description
Name	The name assigned to this alert rule. The name is a link to the Alert Rule Configuration page. See “Viewing Alert Rule Configurations” on page 23-49.
SLA State	The status of the alert rule: Enabled or Disabled.
Description	Note: This field is hidden by default. A description of the alert rule.
Service Name	The name of the parent service. The name is a link to the SLA Alert Rules page. See “Viewing Alert Rules” on page 23-43.
Path	The project associated with the parent service of the alert rule. If the parent service of the alert rule resides in a project folder, this folder is also listed. The path is displayed in the format: <code>project-name/root-folder/ . . . /parent-folder</code> The path is a link to the corresponding path in the Project Explorer .
Severity	The severity of the alert that is triggered by this rule: Normal, Warning, Minor, Major, Critical, or Fatal.
Aggr. Interval	The length of the aggregation interval in terms of hours and minutes.
Expiration Date	The date when this alert rule is no longer in effect.
Stop Processing	Note: This field is hidden by default. Displays Yes or No.
Frequency	The frequency of this alert: <ul style="list-style-type: none"> • Every Time • Notify Once

You can use this page also to do the following:

- To remove the search filter and display all SLA Alert Rules, click **View All**.
- To discard your changes and refresh the page with the currently stored settings using the same search criteria, click **Reset**.

- From within a session, to enable or disable an SLA Alert Rule, select or clear the check box next to it and click **Update**.
- To customize your view of the operational settings information, click the  **Table Customizer** icon. See [“Customizing Table Views” on page 1-2](#).

Enabling Global Settings

You can enable or disable all global settings *only* from within a session. [Table 24-7](#) lists global settings tasks and help topics.

Table 24-7 Global Settings Tasks and Help Topics

To...	See...
Turn monitoring for all services on and off at the domain level	<ul style="list-style-type: none">• “Enabling Global Monitoring of Services” on page 24-14• “Disabling Global Monitoring of Services” on page 24-15
Turn SLA alerts for all services on and off at the domain level	<ul style="list-style-type: none">• “Enabling SLA Alerts Globally” on page 24-16• “Disabling SLA Alerts Globally” on page 24-16
For proxy services only: Turn pipeline alerts for all proxy services on and off at the domain level	<ul style="list-style-type: none">• “Enabling Pipeline Alerts Globally” on page 24-17• “Disabling Pipeline Alerts Globally” on page 24-17
For proxy services only: Turn message reporting for all proxy services on and off at the domain level	<ul style="list-style-type: none">• “Enabling Message Reporting Globally” on page 24-18• “Disabling Message Reporting Globally” on page 24-18
For proxy services only: Turn logging output for all proxy services on and off at the domain level	<ul style="list-style-type: none">• “Enabling Logging Globally” on page 24-19• “Disabling Logging Globally” on page 24-19

Enabling Global Monitoring of Services

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.

3. Select the **Enable Monitoring** check box for the system to start collecting monitoring statistics for all services whose monitoring is enabled at the service level.
4. Click **Update** to save all of the settings on this page.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Disabling Global Monitoring of Services

Note: If you disable monitoring for all services, all statistics collected so far for those services are deleted as well. These statistics cannot be restored using the session **Undo** function. You can use **Undo** to enable monitoring again for the services, but the deletion of the statistics is irreversible.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Clear the **Enable Monitoring** check box for the system to stop collecting monitoring statistics for all services in your configuration.

Note: This option overrides the **Enable Service Monitoring** option that you can select for specific business and proxy services. See [“Configuring Operational Settings for Business Services” on page 23-19](#) and [“Configuring Operational Settings for Proxy Services” on page 23-14](#).

Note: This option also overrides the **Enable SLA Alerts** option. If you disable monitoring at the global level, SLA alerts will also be disabled at run time as well, even though the corresponding **Enable SLA Alerts** check box may be selected. See [“Enabling SLA Alerts Globally” on page 24-16](#).

4. Click **Update**. The monitoring configuration is saved in the current session.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Enabling SLA Alerts Globally

Although you can configure **SLA Alerts** independently from **Monitoring**, there is an interaction between the two settings at run time. If global monitoring is enabled, SLA alerts can be enabled or disabled. However, if global monitoring is disabled then SLA alerts will be effectively disabled because SLA alert rule conditions depend on monitoring statistics being evaluated.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Select the **Enable SLA Alerts** check box for the system to start evaluating alert rules for all services in your configuration.
4. Click **Update** to save all of the settings on this page.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Disabling SLA Alerts Globally

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Clear the **Enable SLA Alerts** check box for the system to stop evaluating alert rules for all services in your configuration.
Note: This option overrides any **SLA Alerts** settings that you can select for specific business and proxy services. See [“Configuring Operational Settings for Business Services” on page 23-19](#) and [“Configuring Operational Settings for Proxy Services” on page 23-14](#).
4. Click **Update**. The SLA alerts configuration is saved in the current session.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.

6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Enabling Pipeline Alerts Globally

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Select the **Enable Pipeline Alerts** check box for the system to start executing any pipeline alert actions for proxy services.

Pipeline Alerts has no dependency on global **Monitoring**.

4. Click **Update** to save all of the settings on this page.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Disabling Pipeline Alerts Globally

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Clear the **Enable Pipeline Alerts** check box for the system to stop executing any pipeline alert actions for proxy services.

Note: This option overrides any **Pipeline Alerts** settings that you can select for specific proxy services. See [“Configuring Operational Settings for Proxy Services” on page 23-14](#).

4. Click **Update**. The pipeline alerts configuration is saved in the current session.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Enabling Message Reporting Globally

This option controls pipeline Report actions on the message context only. It does not effect SLA alerts or pipeline alerts targeted to the reporting framework.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Select the **Enable Reporting** check box to start any pipeline Report actions for all proxy services.
4. Click **Update** to save all of the settings on this page.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Disabling Message Reporting Globally

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Clear the **Enable Reporting** check box to stop any pipeline Report actions for all proxy services.

Note: This option overrides any **Message Reporting** settings that you can select for specific proxy services. See [“Configuring Operational Settings for Proxy Services” on page 23-14](#).

4. Click **Update**. The message reporting configuration is saved in the current session.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Enabling Logging Globally

If you select **Enable Logging**, pipeline Log action messages are sent to the WebLogic Server logging service. To be able to view them, you must configure WebLogic Server to forward these messages to the domain log.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Select the **Enable Logging** check box to start any pipeline Log actions for all proxy services.
4. Click **Update** to save all of the settings on this page.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Disabling Logging Globally

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **Operations > Global Settings**.
3. Clear the **Enable Logging** check box to stop any pipeline Log actions for all proxy services.
Note: This option overrides any **Logging** settings that you can select for specific proxy services. See [“Configuring Operational Settings for Proxy Services” on page 23-14](#).
4. Click **Update**. The logging configuration is saved in the current session.
5. Alternatively, click **Reset** at any time during the session to discard your changes and refresh the page with the currently stored settings.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Setting User Preferences

Use this page to customize and persist your console display options and settings. You can update (change) your **User Preferences** without activating a change session.

[Table 24-8](#) describes the options and controls on the page.

Table 24-8 User Preferences - Options and Controls

To...	Do This...
Change your Home Page , the page that opens when you launch the console	<p>From the first drop-down list, select any main menu choice: Operations, Resource Browser, Project Explorer, Security Configuration, or System Administration.</p> <p>From the second drop-down list, select any one of the sub-menu choices. (The contents of the sub-menus dynamically change based on your first menu selection.)</p>
Display Search Filters	<p>Select Yes or No.</p> <p>By default, search filters are not displayed (closed). By selecting Yes, search filters are always displayed (open).</p>
Display Stage Annotations	<p>Select Yes or No.</p> <p>By default, pipeline stage annotations are not displayed (closed). By selecting Yes, stage annotations are always displayed (open).</p>
Display Resource Metadata	<p>Select Yes or No.</p> <p>By default, resource metadata sections are displayed (open). By selecting No, resource metadata sections are not displayed (closed).</p>

Table 24-8 User Preferences - Options and Controls (Continued)

To...	Do This...
Change how often the console updates the display of data on the Dashboard	<p data-bbox="542 390 1237 447">From the Dashboard Refresh Rate drop-down list, select No Refresh, 1, 2, 3, 5, 10, 20, 30 or 60 minutes as the refresh rate for the Dashboard.</p> <p data-bbox="542 460 1237 543">The default rate is No Refresh, but you can select another predefined time. For example, if you select 5 minutes, the Dashboard is updated with data every 5 minutes.</p> <p data-bbox="542 574 1237 734">WARNING: By selecting a dashboard refresh rate interval other than the default (No Refresh), the browser refreshes the Dashboard at regular intervals. This prevents your session from timing out, even without you interacting with the console.</p> <p data-bbox="705 751 1237 907">Oracle recommends that you use the Dashboard refresh rate feature with caution. You should never leave a console session unattended. While your console session is active others can gain access to it from your machine, without re-authentication.</p>
Change the time interval for displaying historical data for alerts on the Dashboard	<p data-bbox="542 939 1237 1078">From the Alert History Duration drop-down list, select 30 minutes, 1, 2, 3, or 6 hours as the time interval for displaying historical alert data. The default is 30 minutes (displays alerts received within the last 30 minutes) but you can select another predefined duration. For example, if you select 1 hour, the Dashboard displays the alerts received within the last hour.</p>

Configuration

Reporting

Before you can use the **Reporting** module, you must first create a proxy service and then add a report action to the message flow of that proxy service. See [“Adding and Editing Actions in Message Flows” on page 19-1](#) and [“Adding Report Actions” on page 19-35](#). See also [Reporting](#) in the *Oracle Service Bus Operations Guide*.

Viewing Reporting Messages

Use the **Message Report Summary** page to view reporting messages information shown in [Table 25-2](#). The page displays up to 100 messages.


1. To restrict the number of items in the list or locate specific messages:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - To set the filter parameters, do one or more of the following steps shown in [Table 25-1](#).

Table 25-1 Message Filter Parameters

To...	Complete These Steps...
Filter by time parameters	<p>Set a time period:</p> <ol style="list-style-type: none"> 1. Select the Messages From... To... radio button. 2. In the Messages From field, enter a date and time in the format MM/DD/YY HH:MM:SS AM PM. For example, you can enter 10/10/07 12:45:00 AM. 3. In the Messages To field, enter a date and time in the format MM/DD/YY HH:MM:SS AM PM. <p>Alternatively, you can select parameters for the most recent messages:</p> <ol style="list-style-type: none"> 1. Select the For the Last radio button. 2. In the For the Last field, enter the number of days, then specify hours and minutes. <p>Note: By default, message reports for the last 30 minutes are displayed.</p>
Filter by service name	In the Inbound Service Name field, enter the service name.
Filter by error code	In the Error Code field, enter an error code.
Filter by report index	In the Report Index field, enter the report indexes. These are the key value pairs you defined when you configured the report action for this proxy service. This is a string search.

- You can use wildcard characters in service name, error code, and report index field searches.
 - Entering only asterisk (*) returns all messages. For example, if you enter * in the error code field, messages with and without error codes are displayed.
 - In the Error Code field *only*, strict search limitations apply. For example, to find messages with the error code BEA12345, you can enter *, BE*, or BEA12345.
- 2. Click **Search**. The page displays the messages that fall within the filter parameters you set. The maximum number of messages that can be displayed when filtering messages is 1000.
- 3. Click **View All** to remove the search filters and display all messages.
- 4. To locate a message, you can also do the following:

- Resort the list of messages. Click on an underlined column name. Ascending and descending arrows indicate the sort order. Click the column name to change the sort order.
- Scroll through the pages. Use the page controls above or below the table. Go to a page by selecting the page number or by using the arrow buttons to go to the next, previous, first, or last page.

Table 25-2 Message (Reporting) Summary Details

Property	Description
Report Index	<p>A link to the View Message Details page. See “Viewing Message Details” on page 25-3.</p> <p>Report indexes are key value pairs that you use to extract key identifiers from a message context variable. Keys are a convenient way to filter messages. You use the report action to add key value pairs. See “Adding and Editing Actions in Message Flows” on page 19-1.</p>
DB TimeStamp	The date and time that the message was added in the database.
Inbound Service	The inbound service associated with the message. The service is a link to the View a Proxy Service - Configuration Details page. See “Editing Proxy Service Configurations” on page 17-47 .
Error Code	<p>The error code associated with this message, if there is one.</p> <p>You specify error codes when you configure the raise error action. See Handling Errors in the <i>Oracle Service Bus User Guide</i> and “Adding Proxy Service Error Handlers” on page 21-1.</p>

Related Topics

See also [How to Enable Reporting](#) in the *Oracle Service Bus Operations Guide*.

Viewing Message Details

Use this page to view details of a specific message.

1. Locate the message. See [“Viewing Reporting Messages” on page 25-1](#).
2. Click the report index. The **View Message Details** page displays the **General Configuration** information shown in [Table 25-3](#).

Table 25-3 Message Configuration Parameters

Property	Description
Message ID	The unique identification for this message.
Database Timestamp	The date and time that the message was registered in the database.
Time at point of Logging	The date and time that the message was logged.
Server name	The name of the server in which this message was generated.
State	State of the pipeline in which this message was generated: REQUEST—indicates that the reporting action is executed in a request pipeline. RESPONSE—indicates that the reporting action is executed in a response pipeline. ERROR—the action is running in the service-level error handler.
Node Name	The node name of the pipeline in which this message was generated.
Pipeline Name	The name of the pipeline in which this message was generated.
Stage Name	The name of the stage in which this message was generated.

The page displays the **Inbound Service** information shown in [Table 25-4](#).

Table 25-4 Inbound Service Details

Property	Description
Name	The inbound proxy service associated with this message. This is a link to the View a Proxy Service - Configuration Details page. See “Editing Proxy Service Configurations” on page 17-47.
URI	The URI associated with the proxy service.
Operation	The inbound operation associated with this message.

The page displays the **Outbound Service** information shown in [Table 25-5](#).

Table 25-5 Outbound Service Details

Property	Description
Name	The outbound business service associated with this message. This is a link to the View a Business Service - Configuration Details page. See “Editing Business Service Configurations” on page 16-46.
URI	The URI to the outbound business service end point.
Operation	Name of the operation invoked on the outbound service.

The page displays the **Report Index** information shown in [Table 25-6](#).

Table 25-6 Report Index Details

Property	Description
Report Index Text	Report indexes are key value pairs that you use to extract key identifiers from a message context variable. Keys are a convenient way to filter messages. You use the report action to add key value pairs. See “Adding and Editing Actions in Message Flows” on page 19-1.

The page displays the **Fault** information shown in [Table 25-7](#).

Table 25-7 Fault information Details

Property	Description
Error Code	The error code associated with the message, if there is one. You specify error codes when you configure the raise error action. See “Handling Errors” in the <i>Oracle Service Bus User Guide</i> and “Adding Proxy Service Error Handlers” on page 21-1.
Reason	The reason for the error code.
Detail	The fault details associated with the error code. These details, if present, are typically a stack trace of where a particular fault occurred, and may be truncated due to a size limitation in the database. The limit is 2048 characters.

The page displays the **Report Body** information shown in [Table 25-8](#).

Table 25-8 Report Body Details

Property	Description
Report Body Text	This link opens another browser that displays the details of the report body. You use an expression in the report action to capture the report body text. See the procedure for the report action in “Adding and Editing Actions in Message Flows” on page 19-1 .

3. Click **OK** when you have finished viewing the details of a specific message.

Purging Messages

Use this page to purge selected messages from the reporting datastore.

Message purging occurs in the background so the **Message Report Summary** page is not locked up while the purge occurs. Therefore, you can do a purge that takes a while to finish; the length of time depends on how many messages need to be purged. However, if you filter reporting messages, the purging process is slowed down; the **Message Report Summary** page may display incorrect data as some of the data hasn't been purged yet.

The Purge Messages feature may be useful during design and test phases of your project. However, in a production environment, Oracle recommends that the management of the data in your database (including purging) is handled by the Database Administrator using database management tools.

1. Select **Operations > Purge Messages**.
2. Do one of the following steps, shown in [Table 25-9](#).

Table 25-9 Message Purging Options

To...	Complete These Steps...
Purge all messages	<ol style="list-style-type: none">1. Select the Purge All Messages radio button.2. Click Purge.
Purge messages within a specified time frame	<ol style="list-style-type: none">1. Select the Purge Messages From... To... radio button.2. In the Purge Messages From field, enter a month, day, year, and time in the format MM/DD/YY HH:MM:SS. For example, you can enter 10/10/07 12:45:00 AM.3. In the Purge Messages To field, enter a month, day, year, and time in the format MM/DD/YY HH:MM:SS.4. Click Purge.

Related Topics

To learn more about purging messages, see [Reporting](#) in the *Oracle Service Bus Operations Guide*.

Reporting

Import/Export

This section includes the following topics:

[“Importing Resources” on page 26-1](#)

[“Exporting Resources” on page 26-7](#)

Importing Resources

Use the **Import Resources** page to import a full project JAR file or a resource JAR file that has been previously exported from another Oracle Service Bus domain. You can choose to import only a subset of the exported data. If the resource already exists in the importing system, it will be updated. Otherwise, it will be created. Resources are only scheduled for deletion when the JAR being imported is a full project JAR and there are resources located in the same project in the importing system that are not present in the imported JAR file. It will not delete resources which are located in other projects.

You can import resources at the resource level even though they were exported at the project level. For example, even if system resources were exported in a full project JAR file, you can deselect them when importing.

You cannot export users, groups, roles, or certificates when you export a configuration. Therefore, you must create these objects again when you import an exported configuration.


1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > Import Resources**.

3. Select an exported project or resource JAR file.
 - a. In the **File Name** field, click **Browse** to locate the directory where the JAR file is stored.
 - b. Select the JAR file, then click **Open**.
4. Click **Next**. Continue in [“Selecting Projects and Resources to Import” on page 26-2](#).

Selecting Projects and Resources to Import

1. If you are importing a resource JAR file and want to ensure that all its associated resources are imported, select **Include Dependencies**.

Note: **Include Dependencies** cannot be selected if you are importing a full project JAR file or a pre-version 2.6 configuration file.

2. Click the  **Open** icon to display **Advanced Settings** for preserving values in the importing system.
3. When you are re-importing a resource but desire to protect any customization made to the existing resource, select **Preserve Environment Variables**.

Note: Customizing any references within an existing resource cannot be preserved. See [“Creating Customization Files” on page 29-6](#).

4. When you are importing the Global Operational Settings resource or other resources like business or proxy services that contain associated service-level operational settings, and desire to preserve the operational values in the importing system, select **Preserve Operational Values**.
5. To prevent overwriting of existing security-related configuration in resources which are being updated, select among the following options:
 - a. **Preserve Security and Policy Configuration**—preserves the security configuration (excluding access control policies) and the references to the WS-Policies bound directly to the service (instead of bound to the WSDL).

For more information, see [Oracle Service Bus Security Guide](#).

- b. **Preserve Credentials**—preserves PKI credentials in service key providers, user name and passwords in service accounts, and user name and password credentials in SMTP Servers, Proxy Servers, JNDI Providers, and UDDI Registries.
 - c. **Preserve Access Control Policies**—preserves access control policies.

The resource summary information is shown in [Table 26-1](#).

Table 26-1 Resource Information

Property	Description
Name	<p>The name of the project.</p> <p>Global resources, such as UDDI Registry information, SMTP Servers, Proxy Servers, JNDI Providers, and Global Operational Settings appear under the System project in their respective folders.</p>
Type	<p>The resource type, which is Project.</p> <p>Expand the Project folder to display and deselect resources.</p>
Operations	<p>Displays --- or !Deletions!</p> <p>Expand the Project folder to display the operations (create, update, delete) that will be performed on the resources.</p> <p>To prevent resources from being deleted, deselect them. Resources are only scheduled for deletion when the JAR being imported is a full project JAR and there are project resources in the importing system that are not present in the imported JAR file.</p>
References	<p>Expand the Project folder to display the number of objects that each resource references.</p>

6. Select the objects on which you want to operate (create, update, or delete).
 - a. To display each object contained in the JAR file, expand the folder for the file. The check box associated with each object is selected.

The following resource file details, displayed for each object, are shown in [Table 26-2](#).

Table 26-2 Resource File Details


Property	Description
Name	The name and path of the resource. The path is the project name and the name of the folder in which the resource resides.
Type	<p>Any of the following resource types:</p> <ul style="list-style-type: none"> • Business service • MFL File • Proxy service • Service Key Provider • XML schema • Service Account • WS-Policy • WSDL • XQuery Transformation • XSL Transformation • JAR • Alert Destination • JNDI Provider • SMTP Server • Proxy Server • Operational Settings • Registry • MQ Connection (if available) • Split-Join <p>Note: If a resource has sensitive security data, an  Encryption icon is displayed.</p> <p>Caution: If you select a service account or service key provider, you might overwrite existing security data <i>unless</i> you specify to preserve security settings during import. See “Importing Service Accounts or Service Key Providers” on page 26-6.</p>

Table 26-2 Resource File Details (Continued)

Property	Description
Operations	Create, update, or delete. Resources are only scheduled for deletion when the JAR being imported is a full project JAR and there are project resources in the importing system that are not present in the imported JAR file.
References	The number of objects that this resource references.

- b. Clear the check boxes next to the resources that you do not want to import.

7. Click **Import**.

After you finish

If applicable, continue in [“Specifying the Importing Security Settings” on page 26-5](#). Or, continue in [“Reviewing the Import Summary” on page 26-6](#).

Specifying the Importing Security Settings

If the JAR file contains resources with user name and password data that were encrypted when it was exported, the **Import Resources - Security Settings** page is displayed.

1. Enter the password that was used to encrypt the data (see [“Exporting Resources” on page 26-7](#)).

If you do not know the password that was used to encrypt the resource data, click the **Prev** button and clear the check box that is next to the resource. You can import all other non-encrypted resources without knowing the password.

2. Click **Finish Import**.

The **Processing Configuration Data** pop-up window is displayed. You should wait until this window closes before you do anything else on the console. The window closes automatically when the system finishes importing the objects. The **Import Resources** page is displayed, which includes a message that you have successfully deployed the data.

After you finish

Continue in [“Reviewing the Import Summary” on page 26-6](#).

Importing Service Accounts or Service Key Providers

Note: In earlier Oracle Service Bus versions, service key providers were called proxy service providers.

If the JAR file was created by AquaLogic Service Bus 3.0 or later and contains service accounts or service key providers, you can import these resources along with the user names, passwords, local-user to remote-user mappings, and alias to key-pair bindings that they contain.

For each service key provider, Oracle Service Bus imports the alias to key-pair binding into the PKI credential mapping provider. If this data was encrypted during export, you must supply the password that was used to encrypt the data. If you do not know the password, you can import all other non-encrypted resources.

If you import a service account or service key provider and a corresponding resource of the same name already exists in your domain, the imported resource will overwrite the one already in your domain, even if the one already in your domain has been modified during the current session, *unless* you specify to preserve security settings during import. See [step 5](#) in “[Selecting Projects and Resources to Import](#)” on [page 26-2](#).

Reviewing the Import Summary

The import summary information is shown in [Table 26-3](#).

Table 26-3 Import Summary Information

Property	Description
Status	Whether or not the resource was imported successfully. A WSDL may be temporarily marked as invalid until all of its dependencies are imported. When the import action is completed, however, the configuration service re-validates the files marked invalid.
Name	The name of the resource.
Path	The path of the resource. The path is the project name and the name of the folder in which the resource resides.

Table 26-3 Import Summary Information (Continued)

Property	Description
Type	Any of the following resource types: <ul style="list-style-type: none"> • Business service • MFL File • Proxy service • Service Key Provider • XML schema • Service Account • WS-Policy • WSDL • XQuery Transformation • XSL Transformation • JAR • Alert Destination • JNDI Provider • SMTP Server • Proxy Server • Operational Settings • Registry • MQ Connection (if available) • Split-Join
Diagnostic Message	Displays error or informational messages if they exist for this resource.

1. Click **Import Another**.

You can import another JAR file, or you can click **View Changes** under **Change Center** to view the import details. See [“Viewing Configuration Changes” on page 2-4](#).

2. When you have finished, click **Activate** under **Change Center**.

Exporting Resources

Use the **Export Resources** page to **Export Projects** or **Export Resources**. If you choose to export a full project, one or more projects can be selected for export. You can still expand the

projects to see folders and resources but selection is only at the project level. Also, **Include Dependencies** cannot be selected.

You can export projects and resources whether you are working within a session or outside of a session. If you export within a session, the resources are session resources and the configuration may be incomplete or have conflicts. If you export outside of a session, the resources are activated core resources.

Oracle Service Bus cannot export the users, groups, or roles that you create in the Security Configuration module of the Oracle Service Bus Console. Neither can it export credential maps or other security-provider data that you create in the WebLogic Server Administration Console. Instead, use the WebLogic Server Administration Console to export this data. See [Migrating Security Data](#) in *Securing WebLogic Server*.

1. Select **System Administration > Export Resources**.

The **Export Resources** page displays the list of objects in your configuration. The name, type, last modified time, and references for each object are displayed.

For services, the last modified timestamp reflects the modifications made to the service definition, as well as to the service transport or pipeline configuration. It does not, however, reflect the changes made to the alerts defined for that service.

2. Select whether to **Export Projects** or **Export Resources**.

Note: Exporting projects might cause resource deletion when you import the full project JAR file. For more information, see [“Importing Resources” on page 26-1](#).

3. Select the projects or resources you want to export. If you selected **Export Projects**, you cannot deselect the check boxes for individual resources.
 - a. Expand the project folders. The name, type, last modified time, and references for each resource contained in the project are displayed.
 - b. Select the check boxes associated with the projects or resources you want to export.
 - c. Clear the check boxes associated with the projects or resources that you do not want to export.
4. If you selected **Export Resources**, select or clear the **Include Dependencies** check box. Use this option to export any other resources that this resource references.
5. Click **Export** to create a JAR file and export it.

After you finish

If applicable, continue in [“Specifying the Exporting Security Settings” on page 26-9](#).

Specifying the Exporting Security Settings

If your export includes a service account or a service key provider, the **Export Resources - Security Settings** page is displayed.

For each service account, Oracle Service Bus exports the user name and password or the local-user to remote-user map (depending on which data was stored in the service account). For each service key provider, Oracle Service Bus exports the alias to key-pair binding from the PKI credential mapping provider; it does not export private keys, certificates, or other data from the key stores. Key store data must be exported using tools that the key store vendor provides.

If you want Oracle Service Bus to encrypt the user name and password data that is in the service account, service key provider, UDDI Registry, JNDI Provider, or SMTP provider resources before exporting it to the JAR file, do the following:

1. Select the **Protect Sensitive Data** check box.
2. Enter and confirm a password.

When you or someone else attempts to import this JAR, Oracle Service Bus will not import the resources with encrypted user name and password data unless you specify this password. You can import all of the other non-encrypted resources in the JAR without specifying the password.

3. Click **Finish Export** button.
4. When you click Export or Finish Export, the **Processing Configuration Data** pop-up window is displayed. Wait until this window closes before you do anything else on the console. The window is closed automatically when the **File Download** dialog box is displayed.
5. In the **File Download** dialog box, click **Open** to open the exported JAR file or click **Save** to save the JAR file to your desktop.

Import/Export

UDDI

Universal Description, Discovery and Integration (UDDI) registries are used in an enterprise to share Web Services. UDDI provides a framework in which to classify your business, its services, and the technical details about the services you want to expose.

Publishing a service to a registry requires knowledge of the service type and the data structure representing that service in the registry. A registry entry has certain properties associated with it and these property types are defined when the registry is created. You can publish your service to a registry and make it available for other organizations to discover and use. Proxy services developed in Oracle Service Bus can be published to a UDDI registry. Oracle Service Bus can interact with any UDDI version 3.0-compliant registry.

See also [UDDI](#) in the *Oracle Service Bus User Guide*.

Viewing Configured UDDI Registries

Use this page to designate a default UDDI registry (see [“Setting Up a Default UDDI Configuration” on page 27-5](#)) and to view UDDI registries. Additionally, you can search for registries that you have previously configured.

1. In the UDDI Registries panel, enter the name of the registry you want to find in the **Name** field, or enter wildcard characters; use * for multiple characters and ? for single characters. The search returns all the records that satisfy the name criteria.
2. Click **Search**.
3. Click **View All** to remove the search filters and view all the registries that are configured to work with Oracle Service Bus.

[Table 27-1](#) displays UDDI registry configuration settings.

Table 27-1 UDDI Registry Configuration Settings

Property	Description
Registry Name	The name of the registry. The name assigned to a registry when it is first created. You cannot edit the name of a registry after the entry is saved.
Inquiry URL	The URL of the Inquiry API endpoint used for locating and importing services.
Publish URL	The URL of the Publish API endpoint used for publishing services.
Security URL	The URL of the Security API endpoint used for getting an authentication token so that you can publish to the registry.
Subscription URL	The URL of the Subscription API endpoint used for subscribing to registry changes, creating a registry subscription, and listening for changes to imported services.
User Name	The user name which is required for user authentication.
Password (Confirm Password)	The password which is required for user authentication.
Load tModels into registry	Loads the tModels into the selected registry. This option only has to be selected once per registry.
Enable Auto-Import	Auto-synchronizes services with the UDDI registry.

Configuring UDDI Registries

This section includes the following tasks:

- [“Adding UDDI Registries” on page 27-2](#)
- [“Editing UDDI Registries” on page 27-4](#)

Adding UDDI Registries

Use this page to add and configure UDDI registries. After registries are configured, you can then publish Oracle Service Bus proxy services to them or import business services from them to be used in an Oracle Service Bus proxy service.

You must be in an active session to add a registry.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > UDDI Registries**.
3. In the UDDI Registries panel, click **Add Registry**.
4. To configure the registry, complete the following steps. Asterisks denote required fields. See [Table 27-1](#) for descriptions of the properties that must be set when adding a registry.
 - a. In the **Name** field, enter a name for the registry.
 - b. In the **Inquiry URL** field, enter an inquiry URL in the format:
`http://host:port/APPLICATION_SERVER_CONTEXT/uddi/inquiry`
 - c. In the **Publish URL** field, enter a publish URL in the format
`http://host:port/APPLICATION_SERVER_CONTEXT/uddi/publishing`
 - d. In the **Security URL** field, enter a security URL in the format
`http://host:port/APPLICATION_SERVER_CONTEXT/uddi/security`
 - e. In the **Subscription URL** field, enter a subscription URL in the format
`http://host:port/APPLICATION_SERVER_CONTEXT/uddi/subscription`
 By default, the value for `APPLICATION_SERVER_CONTEXT` in the installer is `registry`.
 - f. In the **Username** field, enter the user name to log into the registry console.
 - g. In the **Password** /(Confirm Password) field enter the password to log into the registry console.
 - h. Select the **Load tModel into registry** check box to publish the Oracle Service Bus tModels to this registry.
 This field is only required when publishing proxy services to this registry.
 - i. Select the **Enable Auto Import** check box to auto-synchronize imported services with the UDDI registry. Any service that is imported with this option selected will be kept in synchrony with the UDDI registry.

Note: Auto-synchronization is a background process; you cannot reverse it using the session **Undo** function. Undoing an auto-synchronization change is not permanent as the service will be re-synchronized in the next synchronization cycle. If you want an imported service to stay out of synchrony with the UDDI

registry, you have to detach the service to avoid further updates from the registry. See [“Detaching Services” on page 27-8](#).

- 5. Click **Validate** to validate the URLs you have provided.
- 6. Click **Save** to configure the registry with the settings provided and save it in the current session.
- 7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing UDDI Registries

- 1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
- 2. Select **System Administration > UDDI Registries**.
- 3. In the UDDI Registries panel, from the list of available registries, click the name of the registry you want to edit.

You can also search for a specific registry using the **Search** option. See [“Viewing Configured UDDI Registries” on page 27-1](#).

The **UDDI Registry Configuration** page displays the configuration properties that define the registry and the following registry-specific information, shown in [Table 27-2](#).

Table 27-2 UDDI Registry Information

Property	Description
Last Modified By	The user who made the last configuration change to this UDDI registry resource.
Last Modified On	The date and time that the last configuration change was made. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this UDDI registry references. If such references exist, click the numeric link to view a list of the references. See “Viewing References to Resources” on page 3-20 .

Table 27-2 UDDI Registry Information (Continued)

Property	Description
Referenced By	The number of objects that reference this UDDI registry. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of the registry.

4. At the bottom of the page, click **Edit**.
5. On the **UDDI Configuration-Edit Registry** page, edit the registry configuration parameters. These properties are described in [Table 27-1](#). You cannot edit the name of the registry.
6. Click **Save** to commit the updates in the current session.
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Setting Up a Default UDDI Configuration

You can designate one of the configured registries as the default UDDI registry for the domain. See [“Configuring UDDI Registries” on page 27-2](#).

To use the auto-publish functionality, you must first set a default registry. See [“Using Auto-Publish” on page 27-10](#).

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > UDDI Registries**.
3. In the UDDI Default Configuration panel, click **Select Default**.
4. From the **Default Registry Name** list, select the name of the registry you want to set as the default registry.
5. To set a default business entity, choose an entity from the **Business Entity** list.
6. Click **Make Default**.
7. To change the default registry, click **Clear Selection** and repeat the above steps.

Importing Business Services From a UDDI Registry

You can import the following business service types from a UDDI registry into Oracle Service Bus:

- WSDL services over HTTP transport.
- Oracle Service Bus proxy services that are published to a UDDI registry. This feature is primarily used in multi-domain Oracle Service Bus deployments where proxy services from one domain need to discover and route to proxy services in another domain.

If you only have one registry configured, Oracle Service Bus automatically connects to that registry and retrieves all the business entities and populates the search form. If you have more than one registry configured, the import wizard prompts you to first select the registry from which you want to import services.

On import, the inquiry URL is used to locate a specific service as a registry has several different types of services.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > Import From UDDI**.
3. From the **Import Registry Name** drop-down list, select the name of the registry from which you want to import the service, then click **Next**.

When a single registry is configured in Oracle Service Bus, the initial registry selection page is not displayed as this is the default registry. The registry selection page is only displayed when two or more registries are defined.

Use the **Import From UDDI** page to search for specific business services and import them. You can search for a service by business entity, by pattern, or by using a combination of both.

4. Select the business entity name (for example, document Services) from the **Entity Name** drop-down list to search by business entity.
5. In the **Service Name** field, enter the pattern (for example, a%) for which you want to search. A list of business services matching the entered search criteria is displayed.
6. Select the service(s) that you want to import, then click **Next**.

If you are unable to find a desired service, it may be because you do not belong to the security group with permissions to view its records.

7. Select the binding templates from which you want to create business services, then click **Next**.
If a selected service has multiple binding templates, then each of these binding templates results in a business service. In this case you will be prompted to further narrow your selection among the binding templates you want to import.
8. On the **Import UDDI: Select Import Location** page select a project from the **Project** drop-down list, select a folder where you want to import your services and associated resources, then click **Next**.
9. The **Import UDDI: Review and Import Services** page displays a list of all of the resources (business services, MFLs, schemas, WSDLs, and so on) that will be created in the system. A warning message is displayed for any resource that cannot be imported.
By default, all the items in the list are marked for import.
 - a. Clear the check box next to a specific resource if you already have the resource in your system and want to manually resolve the dependencies.
 - b. You can resolve dependencies from the **View Conflicts** page in the **Change Center** after the import process is complete. For more information on viewing and resolving conflicts, see [“Viewing and Resolving Conflicts” on page 2-11](#).
10. Click **Import** to start the import process.
A pop-up window is displayed indicating the progress of the import. When the import is complete, the **Import Summary** page displays the result of the import. A success message is displayed at the top of the page if the import was successful. If one or more resources could not be imported, an error message is displayed.
 - Go to the **Status** column for the resource to view the cause of the error.
 - To view and resolve additional conflicts, click **View Conflicts**.
11. To import more services, click **Import Another**.
12. To make changes to your selections, click **Back**.

Using Auto-Import Status

You can use the **Auto-Import Status** page to synchronize changes to a service with those present in the registry. Upon any changes to a service in the registry, Oracle Service Bus provides notification of the change on the **Auto-Import Status** page which lists all out-of-sync services. You can then synchronize the service in the Oracle Service Bus Console with the corresponding service in the UDDI registry.

When configuring a registry, you can select the **Enable Auto-Import** option which auto-synchronizes imported services with the UDDI registry. Any service that is imported with this option selected will be kept in synchrony with the UDDI registry automatically. See [“Configuring UDDI Registries” on page 27-2](#).

If there is any failure during auto-synchronization, it will be reported on the **Auto-Import Status** page where you can update it manually.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > Auto-Import Status**.
3. On the **Auto-Import Status** page, select the type of service you want to display from the **View** drop-down list.
4. Select the check boxes next to the proxy services you want to synchronize with the corresponding services in the registry.
5. Click **Synchronize**.
6. On the next page, click **Finish**.

Detaching Services

When you do not want the service in the Oracle Service Bus Console synchronized with the corresponding service in the registry, you can avoid synchronization by detaching it from the registry in one of the following ways:

- [“Detaching a Service by Editing its Configuration” on page 27-8](#)
- [“Detaching a Service From the Auto-Import Status Page” on page 27-9](#)

Detaching a Service by Editing its Configuration

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select the **Project Explorer**.
3. Expand the project folder and select the business service you want to detach from the corresponding service in the registry.
4. At the bottom of the **View a Business Service** page, click **Edit**.

5. Enable the **Detach from Registry** option. The business service will be detached from the corresponding service in the UDDI registry.

Detaching a Service From the Auto-Import Status Page

You can use this Detach option only when you get notification about the change on the **Auto-Import Status** page.

1. On the **System Administration > Auto-Import Status** page, select the check boxes next to the business services you want to detach from the corresponding services in the UDDI registry.

Services are shown on this page only when there is a change in the original service present in the registry. Not every service is available on this page.

2. Click **Detach**.

Publishing Proxy Services to a UDDI Registry

You can publish your service to a registry and make it available for other organizations to *discover* and use. All proxy services developed in Oracle Service Bus can be published to a UDDI registry. You can select the business entity under which you want to publish your service and you can publish a number of services at a time.

Before you can publish to a registry, you must have an account with that registry. Oracle Service Bus supports interoperability with version 3.0-compliant UDDI registries. The configuration described in this section assumes you are using Oracle Service Registry.

For information about setting up a user account in Oracle Service Registry, see the *Oracle Service Registry User's Guide* on the [Oracle Service Registry](#) product documentation site.

Unpublishing a service from a registry is done from the Oracle Service Registry installation.

1. Select **System Administration > Publish to UDDI**.

You can only publish when you are not in a session. Exit your session to access the registries list. All the registries to which you have access are displayed in the drop-down list of selected registries.

2. From **Publish Registry Name**, select the name of the registry to which you want to publish, then click **Next**.

When a single registry is configured in Oracle Service Bus, the initial registry selection page is not displayed as this is the default registry. The registry selection page is only displayed when two or more registries are defined.

The **Publish to UDDI: Select individual Services and Publish** page is displayed, showing a list of Oracle Service Bus proxy services and their locations in the project folder. Starting with the topmost project level folder, the details for name, type, and description are shown for all services.

3. Select the service(s) that you want to publish.
 - a. Expand the **Project** folder to see the proxy services defined. By default the folder and its contents are marked for publishing.
 - b. You can select individual items to publish.
4. From the **Publish Services to Business Entity** drop-down list, select the business entity to which you want to add the service in the registry. This is the business entity under which the service will be classified in the registry.
5. Click **Publish** to publish the services.
A confirmation message is displayed indicating that the service was published successfully.
6. Click **Publish Another** to return to the **Publish to UDDI: select registry** page.

Using Auto-Publish

You can use auto-publish to automatically publish proxy services to a registry. To do so, you must enable the **Publish to Registry** option on the **Create/Edit a Proxy Service-General Configuration** page. See [“General Configuration page” on page 17-3](#). Note that the **Publish to Registry** option only displays when a default registry exists. See [“Setting Up a Default UDDI Configuration” on page 27-5](#).

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select the **Project Explorer**.
3. Expand the project folder and select the proxy service you want to edit.
4. At the bottom of the **View a Proxy Service** page, click **Edit**.
5. Select **Publish to Registry**, and click **Save** to commit the updates in the current session.
6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

The service is configured to be published to the default registry.

Notes:

- When you have successfully published a service to a registry, the option to select the service for auto-publishing to a registry is no longer available.
- If the service is not successfully published it can be re-published. To re-publish a service, select the service on the **Auto-Publish Status** page and click **Publish**.
- If the **Publish to Registry** option is enabled, the proxy services are published as soon as they are created or edited, and the session is activated. You can use the **Publish to Registry** option with all proxy services, except those using Local Transport.

UDDI


Global Resources

You use the **Global Resources** module to add and configure JNDI Providers, SMTP Servers, and Proxy Servers, and make them available in Oracle Service Bus as system resources.

Viewing JNDI Providers

Use this page to view a list of JNDI Providers and the information shown in [Table 28-1](#).





Additionally, you can search for JNDI Providers that you have previously configured.

1. To restrict the number of items in the list or locate specific JNDI Providers:
 - Click the  **Open** icon to display additional search filters. If you specify multiple search criteria, only results that match *all* the criteria will be returned.
 - Enter the name of the JNDI Provider you want to find in the **Name** field, and click **Search** to search for a specific entry.

You can enter wildcard characters (? for a single character; * for multiple characters) to perform a more general search.
 - Enter the **Provider URL** of the JNDI Provider you want to find, and click **Search**.
2. Click **View All** to remove the search filters and display all the JNDI Provider resources that are configured to work with Oracle Service Bus.

[Table 28-1](#) displays UDDI registry configuration settings.

Table 28-1 JNDI Provider Information

Property	Description
Name	The unique name assigned to this JNDI Provider. The name is a link to the View JNDI Provider - Configuration page. See “Editing JNDI Providers” on page 28-3 .
Provider URL	The URL of the JNDI Provider. See “Adding JNDI Providers” on page 28-2 .
JNDI Cache	Enabled or Disabled. When enabled, the JNDI context and JNDI objects are cached locally which improves performance when doing an object lookup. Oracle recommends that you keep the JNDI cache enabled.
Actions	<ul style="list-style-type: none">Click the  Reset icon to reset the JNDI context to discard the JNDI connection and locally cached objects.Click the  Launch Test Console icon to test whether the JNDI Provider can successfully establish a connection and obtain a JNDI context.
Options	<ul style="list-style-type: none">Click the  Rename icon to rename the JNDI Provider.Click the  Delete icon to delete a specific JNDI Provider. See “Deleting JNDI Providers” on page 28-5

Adding JNDI Providers

You add and configure a JNDI Provider resource and make it available in Oracle Service Bus as a system resource. You must be in an active session.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > JNDI Providers**.
3. Click **Add**.
4. In the **Name** field, enter a name for the JNDI Provider resource. This is a required field.
5. In the **Description** field, enter a short description for the JNDI Provider.
6. Keep the **JNDI Cache** option Enabled (default) or select Disabled.

When enabled, the JNDI context and JNDI objects are cached locally which improves performance when doing an object lookup. Oracle recommends that you keep the JNDI cache enabled.

7. In the **Provider** URL field, enter the URL for the JNDI Provider in the format:

`protocol://host:port`

You can use any protocol, for example, `http`, `https`, `t3`, `t3s`, `iiop`, `iiops`.

This is a required field.

8. In the case of clusters, the JNDI Provider URL should be configured with a comma-separated list of Managed Servers, in the format:

`protocol://<hostname>:<ms1port>, <hostname>:<ms2port>`

9. If access to the target JNDI Provider requires a user name and password, enter a user name in the **User Name** field, and the associated password in the **Password** and **Confirm Password** fields.

These fields are optional, and required only if the JNDI tree is secured.

10. Click **Save** to create and save the JNDI Provider resource in the current session.

11. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing JNDI Providers

Use this page to view the details of a JNDI Provider and edit the configuration, if required. Additionally, you can reset the JNDI Provider cache and to test the connection to the JNDI Provider.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the JNDI Provider. See [“Viewing JNDI Providers” on page 28-1](#).
3. Click the JNDI Provider name.

The **View JNDI Provider - Configuration** page displays the JNDI Provider information shown in [Table 28-2](#).

Table 28-2 JNDI Provider Information

Property	Description
Last Modified By	The user who created or modified this JNDI Provider resource, or imported it into the configuration.
Last Modified On	The date and time that the user created or modified this JNDI Provider resource, or imported it into the configuration. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this JNDI Provider references. If such references exist, click the numeric link to view a list of the references. See “Viewing References to Resources” on page 3-20 .
Referenced By	The number of objects that reference this JNDI Provider. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	A description of this JNDI Provider.
JNDI Cache	Enabled or Disabled. When enabled, the JNDI context and JNDI objects are cached locally which improves performance when doing an object lookup. Oracle recommends that you keep the JNDI cache enabled.
Provider URL	The URL for the JNDI Provider.
User Name	The user name used to access a secure JNDI Provider.

- Click **Edit** to display the **Edit JNDI Provider - [provider-name]** page.

The **Name** field is not editable.



- In the **Description** field, you can edit the short description of the JNDI Provider.
- In the **Provider URL** field, you can edit the URL of the JNDI Provider.
- You can edit the **User Name** and **Password** fields.

If the JNDI Provider was configured with a user name and password, then the **User Name** will not be editable. You can edit the **New Password** and **Confirm Password** fields. If the JNDI was *not* configured with a user name and password, then the **User Name** field will be editable, and you can enter a new user name.

- Click **Save** to commit the updates in the current session.

9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting JNDI Providers

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > JNDI Providers**.
3. In the **Summary of JNDI Providers** page, select a JNDI Provider. You can also search for a specific JNDI Provider using the **Search** option. See [“Viewing JNDI Providers” on page 28-1](#).
4. Click the  **Delete** icon in the **Options** field of the JNDI Provider you want to delete. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Viewing SMTP Servers

Use this page to designate a default SMTP Server (see [“Configuring a Default SMTP Server” on page 28-7](#)) and to view a list of SMTP Servers.



SMTP Server resources are used while configuring alert destination resources and E-mail transport-based business services. See [“Adding Alert Destinations” on page 5-2](#) and [“Create/Edit a Business Service - E-Mail Transport Configuration Page” on page 16-17](#).

Table 28-3 displays SMTP Server information.

Table 28-3 SMTP Server Information

Property	Description
Name	The unique name assigned to this SMTP Server resource. The name is a link to the View SMTP Server - Configuration page. See “Editing SMTP Servers” on page 28-7 .

Table 28-3 SMTP Server Information (Continued)

Property	Description
Server URL	The URL that points to the SMTP Server. See “Adding SMTP Servers” on page 28-6 .
Options	<ul style="list-style-type: none"> Click the  Rename icon to rename this SMTP Server resource. Click the  Delete icon to delete a specific SMTP Server. See “Deleting SMTP Servers” on page 28-9.

Locating SMTP Servers

1. Select **System Administration > SMTP Servers**.
2. To locate specific SMTP Servers:
 - Resort the list. Click on an underlined column name. Ascending and descending arrows indicate the sort order. Click the column name to change the sort order.
 - Scroll through the pages. Use the page controls above or below the table. Go to a page by selecting the page number or by using the arrow buttons to go to the next, previous, first, or last page.

Adding SMTP Servers

Use the **Summary of SMTP Servers** page to add and configure SMTP Server resources and make them available in Oracle Service Bus as a system resource. You must be in an active session to configure or reconfigure SMTP Server resources.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > SMTP Servers**.
3. Click **Add**.
4. In the **Name** field, enter a name for the SMTP Server resource. This is a required field.
5. In the **Description** field, enter a short description for the SMTP Server resource.
6. In the **Server URL** field, enter the URL that points to the SMTP Server. This is a required field.

7. In the **Port Number** field, enter a port number for the SMTP Server (the default port is 25). This is a required field.
8. If access to the target SMTP Server requires a user name and password, enter a user name in the **User Name** field, and the associated password in the **Password** and **Confirm Password** fields.

These fields are optional, and required only if the SMTP Server is secured.
9. Click **Save** to create and save the SMTP Server resource in the current session.
10. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Configuring a Default SMTP Server

You can designate one of the configured SMTP Servers as the default server for the domain. See [“Adding SMTP Servers” on page 28-6](#).

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > SMTP Servers**.
3. In the Default SMTP Server panel, click **Select Default**.
4. From the **Default SMTP Server** drop-down list, select an SMTP Server.
5. Click **Make Default**.

The **Summary of SMTP Servers** page is displayed with the selected SMTP Server shown as the default SMTP Server for the domain.

6. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing SMTP Servers

Use this page to view the details of an SMTP Server and edit the configuration, if required.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the SMTP Server. See [“Locating SMTP Servers” on page 28-6](#).

3. Click the SMTP Server name.

The **View SNMP Servers - Configuration** page displays the information shown in [Table 28-4](#).



Table 28-4 SMTP Server Information

Property	Description
Last Modified By	The user who created or modified this SMTP Server resource.
Last Modified On	The date and time that the user created or modified this SMTP Server resource. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this SMTP Server references. If such references exist, click the numeric link to view a list of the references. See “Viewing References to Resources” on page 3-20 .
Referenced By	The number of objects that reference this SMTP Server. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .
Description	The description of this SMTP Server, if provided.
Server URL	The URL that points to the location of the SMTP Server.
Port Number	The port number for this SMTP Server. This is port 25 by default.
User Name	The user name used to access a secure SMTP Server.

4. Click **Edit** to display the **Edit SMTP Server - [server-name]** page.
The **Name** field is not editable.
5. In the **Description** field, you can edit the short description of the SMTP Server.
6. In the **Server URL** field, you can edit the URL of the SMTP Server.
7. In the **Port Number** field, you can edit the port number.
8. You can edit the **User Name** and **Password** fields.
9. Click **Save** to commit the updates in the current session.

10. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting SMTP Servers

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > SMTP Servers**.
3. On the **Summary of SMTP Servers** page, select an SMTP Server. See [“Locating SMTP Servers” on page 28-6](#).
4. Click the  **Delete** icon in the **Options** field of the SMTP Server resource you want to delete.
The SMTP Server resource is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.



Viewing Proxy Servers

Use this page to view a list of Proxy Servers and the information shown in [Table 28-5](#).

Proxy Server resources are used while configuring the HTTP transport for business services. For more information, see [“HTTP Transport Configuration Page” on page 16-20](#).

[Table 28-5](#) displays Proxy Server information.

Table 28-5 Proxy Server Information

Property	Description
Name	The unique name assigned to this Proxy Server resource. The name is a link to the View Proxy Server - Configuration page. See “Editing Proxy Servers” on page 28-11 .
Options	<ul style="list-style-type: none"> • Click the  Rename icon to rename this Proxy Server resource. • Click the  Delete icon to delete a specific Proxy Server. See “Deleting Proxy Servers” on page 28-13.

Locating Proxy Servers

1. Select **System Administration > Proxy Servers**.
2. To locate specific Proxy Servers:
 - Resort the list. Click on an underlined column name. Ascending and descending arrows indicate the sort order. Click the column name to change the sort order.
 - Scroll through the pages. Use the page controls above or below the table. Go to a page by selecting the page number or by using the arrow buttons to go to the next, previous, first, or last page.

Adding Proxy Servers

Use the **Summary of Proxy Servers** page to add and configure Proxy Server resources and make them available in Oracle Service Bus as a system resource. You must be in an active session to configure or reconfigure Proxy Server resources.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > Proxy Servers**.
3. Click **Add**.
4. In the **Name** field, enter a name for the Proxy Server resource. This is a required field.
5. In the **Description** field, enter a short description for the Proxy Server resource.
6. In the **Host-Port Parameters** section, enter the following information:
 - a. In the **Server Host** field, enter the host name or IP address of the Proxy Server. This is a required field.

The Server Host name for the Oracle Service Bus proxy server must be identical to the server host name of the actual proxy server.
 - b. In the **Clear Text Port** field, enter the Proxy Server clear-text port number.
 - c. In the **SSL Port** field, enter the Proxy Server SSL port number. You must enter either a clear text or SSL port number.
 - d. Click **Add**.

You can configure multiple Proxy Servers for each Proxy Server resource. This enables Oracle Service Bus to perform load balancing and offer fault tolerance features for the Proxy Server resource.

7. If the Proxy Server performs proxy authentication, enter a user name in the **User Name** field, and the associated password in the **Password** and **Confirm Password** fields.

These fields are optional, and required only if the Proxy Server is secured.

8. Click **Save** to create and save the Proxy Server resource in the current session.
9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Editing Proxy Servers

Use this page to view the details of a Proxy Server and edit the configuration, if required.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Locate the Proxy Server. See [“Locating Proxy Servers” on page 28-10](#).
3. Click the Proxy Server name.

The **View Proxy Servers - Configuration** page displays the information shown in [Table 28-6](#).

Table 28-6 Proxy Server Information

Property	Description
Last Modified By	The user who created or modified this Proxy Server resource.
Last Modified On	The date and time that the user created or modified this Proxy Server resource. Click the date and time link to view the change history of this resource. See “View Change History page” on page 3-21 .
References	The number of objects that this Proxy Server references. If such references exist, click the numeric link to view a list of the references. See “Viewing References to Resources” on page 3-20 .
Referenced By	The number of objects that reference this Proxy Server. If such references exist, click the numeric link to view a list of the objects. See “Viewing References to Resources” on page 3-20 .

Table 28-6 Proxy Server Information (Continued)



Property	Description
Description	The description of this Proxy Server, if provided.
Host-Port Parameters	<p>Details about each Proxy Server in the Proxy Server resource, including the following information:</p> <ul style="list-style-type: none">• Server Host: The host name or IP address of the Proxy Server. <p>The Server Host name for the Oracle Service Bus proxy server must be identical to the server host name of the actual proxy server.</p> <ul style="list-style-type: none">• Clear Text Port: The Proxy Server clear-text port number.• SSL Port: The Proxy Server SSL port number.
User Name	The user name used for proxy authentication.

4. Click **Edit** to display the **Edit Proxy Server - [server-name]** page.
The **Name** field is not editable.
5. In the **Description** field, you can edit the short description of the Proxy Server.
6. In the **Host-Port Parameters** section, you can add a new Proxy Server by entering the following information:
 - a. In the **Server Host** field, enter the host name or IP address of the Proxy Server. This is a required field.



The Server Host name for the Oracle Service Bus proxy server must be identical to the server host name of the actual proxy server.
 - b. In the **Clear Text Port** field, enter the Proxy Server clear-text port number.
 - c. In the **SSL Port** field, enter the Proxy Server SSL port number. You must enter either a clear text or SSL port number.
 - d. Click **Add**.

You can configure multiple Proxy Servers for each Proxy Server resource. This enables Oracle Service Bus to perform load balancing and offer fault tolerance features for the Proxy Server resource.

You can also edit or delete an existing Proxy Server configuration by doing the following:

- Click the  **Edit** icon in the **Options** field of the Proxy Server you want to edit. Edit the **Server Host** field, the **Clear Text Port** field, and the **SSL Port** field, and click **Update**.
 - Click the  **Delete** icon in the **Options** field of the Proxy Server you want to delete.
7. You can edit the **User Name** and **Password** fields, used for proxy authentication.
 8. Click **Save** to commit the updates in the current session.
 9. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Deleting Proxy Servers

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > Proxy Servers**.
3. On the **Summary of Proxy Servers** page, select a Proxy Server. See [“Locating SMTP Servers” on page 28-6](#).
4. Click the  **Delete** icon in the **Options** field of the Proxy Server resource you want to delete.
The Proxy Server resource is deleted in the current session. A  **Deletion Warning** icon is displayed when other resources reference this resource. You can delete the resource with a warning confirmation. This might result in conflicts due to unresolved references to the deleted resource.
5. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Customization

This section includes the following topics:

[“Finding and Replacing Environment Values” on page 29-1](#)

[“Creating Customization Files” on page 29-6](#)

[“Executing Customization Files” on page 29-7](#)

Finding and Replacing Environment Values

Use the **Find and Replace** page to search for environment values that differ between domains. Environment values are certain predefined fields in the configuration data whose values are very likely to change when you move your configuration from one domain to another (for example, from test to production). Environment values represent entities such as URLs, URIs, file and directory names, server names, e-mails, and such. Also, environment values can be found in alert destinations, proxy services, business services, SMTP Server and JNDI Provider resources, and UDDI Registry entries.

This page behaves differently based on whether or not you are in a session. If you are in a session, you can find and replace environment values. However, if you are outside a session, you can find environment values only; **Replace All** is disabled.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > Find & Replace**.
3. In the **Find Value** field, enter the environment value that you want to locate.

4. To display a list of environment values in your configuration that contain the value you entered, click **Find**.
A list of relevant values is displayed, which includes the **Owner**, **Type**, and the **Environment Value** columns.
5. To locate only items changed in your current session, select the **Only Items Changed In Current Session** check box.
6. Select the variable type for which to search, from the **Find in Variable Type** drop-down list, described in [Table 29-1](#).

Table 29-1 Variable Types

Variable Type	Found In	Description
All Types		
Alert SNMP Trap	Alert Destination	SNMP trap (enable or disable) for an alert destination.
Alert To Reporting Data	Alert Destination	Alert to reporting data (enable or disable) for an alert destination.
Email Archive Directory	E-mail proxy	Archive directory for an e-mail proxy service.
Email Destination URI	Alert Destination	URI in an e-mail alert destination.
Email Download Directory	E-mail proxy	Download directory for an e-mail proxy service.
Email Error Directory	E-mail proxy	Error directory for an e-mail proxy service.
FTP Archive Directory	FTP proxy	Archive directory for an FTP proxy service.
FTP Download Directory	FTP proxy	Download directory for an FTP proxy service.
FTP Error Directory	FTP proxy	Error directory for an FTP proxy service.
File Archive Directory	File proxy	Archive directory for a file proxy service.
File Error Directory	File proxy	Error directory for a file proxy service.
File Stage Directory	File proxy	Stage directory for a file proxy service.
IMAP Move Folder	E-mail proxy	IMAP Move directory for an e-mail proxy service.

Table 29-1 Variable Types (Continued)

Variable Type	Found In	Description
JCA Always Use WSDL Flag	JCA proxy and business service	Determines whether or not connection factory properties, activation spec properties (proxy services), and interaction spec properties (business services) are always used from the WSDL.
JCA Connection Mode	JCA proxy and business service	Determines how a service connects to an associated JCA adapter: managed or non-managed mode.
JCA Overwrite Connection Authentication Flag	JCA proxy and business service	Determines whether or not the authentication credentials in the JCA adapter connection factory are overridden in a development/test environment (non-managed connection mode).
JMS Alert Destination URI	Alert Destination	URI in a JMS alert destination.
JMS Managed Server	JMS business service	Managed Server entry in the table of Managed Server vs destination of a JMS business service with a response correlation pattern as Message ID pattern.
JMS Queue Connection Factory	JMS proxy and business service	A response queue connection factory of a JMS proxy or business service with the response correlation pattern as Message ID.
JMS Response Destination	JMS business service	Destination entry in the table of Managed Server vs destination of a JMS business service with a response correlation pattern as Message ID pattern.
JMS Response URI	JMS proxy and business service	The URI of the response queue for JMS proxy or business services using response correlation pattern of JMS Correlation ID.
JNDI Provider URL	JNDI Provider	JNDI Provider URLs.
MQ Connection Pool Size	MQ Connection Resource	The size of the MQ connection pool.
MQ Connection Timeout	MQ Connection Resource	The time interval after which unused connections are destroyed.
MQ Dead Letter URI	MQ proxy	The URI of the dead letter queue to which request messages are redirected after a pipeline retries a message a specified number of times.

Table 29-1 Variable Types (Continued)

Variable Type	Found In	Description
MQ Host Name	MQ Connection Resource	The host name of the MQ queue manager.
MQ Port Number	MQ Connection Resource	The port number of the MQ queue manager listener.
MQ Queue Manager Channel Name	MQ Connection Resource	The queue manager server connection channel name.
MQ Queue Manager Name	MQ Connection Resource	The name of the MQ queue manager.
MQ Response URI	MQ proxy and business service	Proxy or business service URI.
MQ Unrecognized Response URI	MQ business service	The URI of the queue to which unrecognized response messages are sent.
MQ Version	MQ Connection Resource	The version of WebSphere MQ being used.
Managed Server for Polling	E-mail, File, FTP, or SFTP proxy service in a clustered domain	Managed Server for polling in a clustered domain.
Proxy Server Host	Proxy Server Resource	The host name of the proxy server.
Proxy Server Port	Proxy Server Resource	The port number of the proxy server.
Proxy Server SSL Port	Proxy Server Resource	The SSL port of the proxy server.
SFTP Archive Directory	SFTP proxy	Archive directory for a SFTP proxy service. If direct-streaming is on, the archive directory is present on the remote SFTP server; otherwise, it is present locally.
SFTP Download Directory	SFTP proxy	Download directory for a SFTP proxy service.
SFTP Error Directory	SFTP proxy	Error directory for a SFTP proxy service. If direct-streaming is on, the error directory is present on the remote SFTP server; otherwise, it is present locally.

Table 29-1 Variable Types (Continued)

Variable Type	Found In	Description
SMTP Server URL	SMTP Server	SMTP Server URLs.
Secure Connections to JMS Server	JMS proxy or business service	If true, Oracle Service Bus connects to the JMS server and JNDI tree using SSL (t3s); otherwise, connections occur over a clear text (t3) channel.
Service Retry Count	Business service	The number of times endpoint URIs are retried; in other words, the number of failover attempts.
Service Retry Iteration Interval	Business service	The length of time that a business service waits before iterating over the entire set of URIs again.
Service URI	Proxy or business service	Proxy or business service URI.
Service URI Weight	Business service	The individual weights assigned to business service URIs.
Split-Join Work Manager	Split-Join	Work Manager name for a split-join resource.
Tuxedo Access Point Map	Proxy or business service	Name and address of the local access point(s) per Managed Server; there is one location per URI.
Tuxedo Access Point Name	Business service	Name of the remote WTC access point associated with the URI.
Tuxedo Network Address	Business service	Network address of the remote WTC access point associated with the URI.
UDDI Auto Import	UDDI Registry	Auto-synchronize property of an imported business service from a UDDI Registry. This property is per registry.
UDDI Auto Publish	Proxy service	Auto-publish property of a proxy service to a UDDI Registry.
UDDI Inquiry URL	UDDI Registry	Inquiry URL for a UDDI Registry.
UDDI Publish URL	UDDI Registry	Publish URL for a UDDI Registry.
UDDI Security URL	UDDI Registry	Security URL for a UDDI Registry.
UDDI Subscription URL	UDDI Registry	Subscription URL for a UDDI Registry.

Table 29-1 Variable Types (Continued)

Variable Type	Found In	Description
WS Error Queue URI	WS business service	The URI of the JMS queue for storing error messages.
Work Manager	Proxy or business services using DSP, HTTP, JMS, MQ, JPD, SB, Tuxedo, or WS transports	Work Manager name in all proxy and business services.

- To locate environment values located in a particular project, select the project name from the **Located in Project** drop-down list.
- In the **Replace with** field, enter the new environment value.
- To replace the original environment value with the new value, click **Replace All**.

All occurrences of the environment value you entered in the **Find Value** field are replaced with the environment value you entered in the **Replace with** field in the current session.

Note: Certain environment values are complex XML objects that cannot be found and replaced using the console. However, you can still set these environment values directly by using the [ALSBConfigurationMBean](#) from a script. For detailed information about [ALSBConfigurationMBean](#), see the [Javadoc for Oracle Service Bus Classes](#). In addition to setting them through the API, you can set complex type environment values using customization files. See “[Executing Customization Files](#)” on page 29-7.

- To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Related Topics

For detailed information about [EnvValueType](#)s, see the [Javadoc for Oracle Service Bus Classes](#). The Java types and location values of these environment values are specified in the javadoc.

Creating Customization Files

The **Create Customization File** page provides a convenient way to generate a customization file for a set of resources or projects that you select. You can then use this file as a starting point for making your desired modifications by specifying the actual values for an environment.

You can use customization files to make changes to environment values as well as to change references within resources. Customization files can include customizations for all the environment values found in the resources you selected, including complex environment values types defined inside the `EnvValueTypes` class. In addition, it includes a reference customization type for changing resource references inside resources with dependencies.

The customization schema (`Customization.xsd`) which describes the customization types is available at the following location in your Oracle Service Bus installation:

`BEA_HOME\modules\com.bea.common.configfwk_[version].jar`, where *BEA_HOME* represents the directory in which you installed Oracle Service Bus.

1. Select **System Administration > Create Customization File**.

The **Create Customization File** page displays the list of objects in your configuration. The name and type of each object is displayed.

2. Select the projects or resources you want to include in the customization file.

- a. Expand the project folders. The name and type for each resource contained in the project is displayed.
- b. Select the check boxes associated with the projects or resources you want to include in the customization file.
- a. Clear the check boxes associated with the projects or resources that you do not want to include in the customization file.

3. Click **Create File** to create a customization XML file.

4. In the **File Download** dialog box, click **Open** to open the customization file or click **Save** to save the XML file to your desktop.

Executing Customization Files

Use this page to execute a customization XML file that has been previously saved on your system. Customization files provide a convenient way to modify your environment during deployment, from development to staging, from staging to production, or during design time.

You must be in a session to execute a customization file.

1. If you have not already done so, click **Create** to create a new session or click **Edit** to enter an existing session. See [“Using the Change Center” on page 2-2](#).
2. Select **System Administration > Execute Customization File**.

3. Select a customization file to execute.
 - a. In the **File Name** field, click **Browse** to locate the directory where the customization file is stored.
 - b. Select the XML file, then click **Open**.
4. Click **Next**. The following customization details are displayed, shown in [Table 29-2](#).

Table 29-2 Customization Details

Property	Description
Operation	<ul style="list-style-type: none"> Find & Replace—modify environment values by doing string substitutions. Map References—maps existing references found in resources to other references. Set Environment Values—modify environment values for resources.
Apply To	<p>Name of the service, project, folder, or resource to be customized.</p> <p>The name is a link to the Configuration Details page of the service or resource, or to the project or folder in the Project Explorer.</p>
Description	A description of each customization.

5. To customize only resources, services, projects, or folders changed in the current session, select the **Only Items Changed In Current Session** check box.

If you limit customizations to only resources modified in the current session, the **Apply To** column gets updated with the resources modified in current session. If you limit customizations of a project or folder, then the resources modified in current session *within* that project or folder are displayed in **Apply To** column.
6. Click **Execute** to commit the updates in the current session.

To view customization details, within the session, select **View Changes** under **Change Center**, and click the **Customization** task. See [“Viewing Configuration Changes” on page 2-4](#).
7. To end the session and deploy the configuration to the run time, click **Activate** under **Change Center**.

Test Console

The Oracle Service Bus Test Console is a browser-based test environment used to validate and test the design of your system. You can configure the object of your test (proxy service, business service, or resource), execute the test, and view the results in the test console. In some instances, you can trace through the code and examine the state of the message at specific trace points. To learn more about the test console, see [Using the Test Console](#) in *Oracle Service Bus User Guide*.

Only users in the `IntegrationAdmin` and `IntegrationDeployer` roles can use the test console. For more information about roles, see [Roles in Oracle Service Bus](#) in the *Oracle Service Bus Operations Guide*.

Testing Services

This section includes the following topics:

- [“Testing Proxy Services”](#) on page 30-2
- [“Configuring Proxy Services Test Data”](#) on page 30-3
- [“Viewing Proxy Services Test Results”](#) on page 30-9
- [“Tracing Proxy Services”](#) on page 30-9
- [“Testing Business Services”](#) on page 30-10
- [“Configuring Business Services Test Data”](#) on page 30-11

Testing Proxy Services

You can test the following types of proxy services: any XML, any SOAP, Messaging, XML, and SOAP. You can test SOAP proxy services with Web Service Security (WSS) policies. See Web Service Security in [“Configuring Proxy Services Test Data” on page 30-3](#).

Note: When the test console invokes a proxy with HTTP custom token authentication, the authentication check is not done.

WARNING: Testing proxy services with the direct call option enabled bypasses some important security steps, including access control. Oracle recommends that you not use the test service in production systems.

1. Click **Activate** under **Change Center** to enable the test feature in the console.

You can test proxy services from the Resource Browser or Project Explorer.

2. Select **Resource Browser > Proxy Services** to display the **Summary of Proxy Services** page.

3. Under **Actions**, click the  **Launch Test Console** icon associated with the proxy service you want to test.

The test console opens the **Proxy Service Testing** page. For example, using the examples provided with the product (see [Oracle Service Bus Examples](#)), click the icon associated with the `LoanGateway1` proxy service.

Note: In a clustered domain, you cannot use the test console to test any configured business service or proxy service which routes to a business service.

4. For SOAP and XML services, select the WSDL operation you want to test.
5. Configure the test data for the proxy service. This must be the data that the proxy service expects from the client.

By default, both test configuration options, **Direct Call** and **Include Tracing**, are enabled. You can clear the **Direct Call** option, which also clears the **Include Tracing** option. By doing so, testing is performed using the indirect call method where the message is sent through the transport layer.

You can use the **Direct Call** option (leave **Direct Call** selected) and disable tracing; simply clear the **Include Tracing** check box.

6. Click **Execute**. The **Proxy Service Testing** page displays the results. For information about interpreting the test results, see [“Viewing Proxy Services Test Results” on page 30-9](#).

7. To run the test again, click **Back**. Repeat steps 5–8.

Configuring Proxy Services Test Data

[Table 30-1](#) lists the configuration options for testing proxy services. The fields for accepting input to the request document are based on the service type.

Table 30-1 Proxy Services Configuration Options

Section	Options/Fields	Description
Name	The name of the proxy service being tested.	
Available Operations	Operations associated with the proxy service.	
Test Console Actions	Execute	Run the test.
	Reset	Reset the input values.
	Close	Close the test console and do not run the test.
Test Configuration	Set the testing configuration options.	
	Direct Call	<p>Send a message to the proxy service without using the Oracle Service Bus transport layer. The input data to the test console must be that which is sent from the client to the proxy service.</p> <p>The opposite of the direct call is an indirect call. It can be invoked by clearing the Direct Call option. It is performed by default for business services. The indirect call sends messages through the transport layer. In this case, the input data to the test console must be that which is being sent from a proxy service to the invoked service.</p>
	Include Tracing	Tracing shows the state of the message as it passes through the system.

Table 30-1 Proxy Services Configuration Options (Continued)

Section	Options/Fields	Description
Request Document	The input fields generate the request message that is sent to the proxy service. Click Execute to run the test with the values you entered. The test console displays the request message and the service's response message and metadata.	
	Input in the Request Document section is service-type specific. The service types and a description of the input required by each are listed in the following sections.	
	any XML	The service requests input in the form of a payload. The payload is the content of the message being sent. The content is expected to be an XML document. You can browse to a file or enter the message content in the text box.

Table 30-1 Proxy Services Configuration Options (Continued)

Section	Options/Fields	Description
Request Document continued	any SOAP	The service requests input in the form of a payload. The payload is the content of the message being sent. The content is expected to be the SOAP envelope. You can browse to a file or enter the message content in the text box.
	Messaging	<p>Messaging services define four possible input types: <code>none</code>, <code>XML</code>, <code>Binary</code> or <code>Text</code>. The service requests a single input—either file-based or text-based, except for the type <code>none</code> that does not require any input.</p> <p>Oracle recommends entering binary input from a file. Data entered in the text area is converted to binary input using the system encoding.</p> <p>Data entered from files for text services must be converted to text. The encoding input field is used to specify the encoding to apply during the conversion. The system encoding is used if this field is not configured. By default, the encoding field is initialized with the encoding value configured on the proxy service endpoint.</p>
	XML	<p>The service requests input in the form of a payload. The payload is the content of the message being sent. The content is expected to be an XML document. You can browse to a file or enter the message content in the text box.</p> <p>If your proxy service is a WSDL-based service with multiple operations defined, the test console generates and provides a sample document to use when testing the service. You can use this sample data directly, edit it and then run the test, or provide your own test data.</p> <p>All operations are listed at the top of the page.</p>

Table 30-1 Proxy Services Configuration Options (Continued)

Section	Options/Fields	Description
Request Document continued	SOAP Document	<p>For a SOAP document, the SOAP envelope is usually composed of zero or more headers and one body payload. The Form and XML tabs provide alternative ways to specify the content.</p> <p>The Form tab contains a SOAP Header field and a SOAP Body field. The content of the SOAP Header field is expected to be a SOAP Header tag (this allows for the definition of more than one header). The SOAP Body field contains the data that is actually sent as part of the message. The content is expected to be an XML document. Both the header and the body are used to generate the SOAP envelope.</p>
Request Document continued	SOAP RPC	<p>For SOAP RPC, the SOAP envelope is composed of zero or more headers, and zero or more arguments.</p> <p>The Form and XML tabs provide alternative ways to specify the content.</p> <p>The Form tab contains a single input for SOAP headers, and one input field for each argument (the name of the input field corresponds to the name of the argument). The content of the SOAP Header field is expected to be a SOAP Header tag (this allows for the definition of more than one header).</p> <p>The WSDL is used to detect the type of each argument. A single-line input field is used for primitive types; a multi-line input field is used for XML types. A sample document is automatically generated to facilitate testing.</p> <p>The headers and arguments are used by the test console to generate the SOAP envelope.</p> <p>The XML tab contains a single input field. The content of this field is expected to be the SOAP envelope being sent. The payload (XML input) can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test.</p>

Table 30-1 Proxy Services Configuration Options (Continued)

Section	Options/Fields	Description
Web Service Security	This section is available only for SOAP services when the selected operation has a Web Service Security (WSS) policy.	
	Service Provider	The test service gets all client-side PKI (key-pair) credentials for Web Service security operations (digital signature and encryption) from this service provider. This field is optional. Certain scenarios require a service provider, depending on the request/response policy for the operation. For more information, see “Testing Services with Web Service Security” in Using the Test Console in the <i>Oracle Service Bus User Guide</i> .
	Username	<p>The user name in Web Service security username tokens generated from the test service. This field is optional. This user name is only needed in some scenarios where the operation's request policy specifies an identity assertion.</p> <p>Do not confuse this field with the transport security context username field.</p> <p>This must be a valid user name and password in the local security realm. An invalid user name or invalid password causes a client-side error on the test service.</p>
	Password	The password in Web Service security user name tokens generated from the test service.
Transport	The Transport section is collapsed by default. The fields and values depend on the test configuration.	

Table 30-1 Proxy Services Configuration Options (Continued)

Section	Options/Fields	Description
Authentication	Username	<p>The user name for setting the security context used by the test service when invoking the proxy service.</p> <p>If the proxy service routes the message to a business service that expects a SAML token, this is the identity that will be represented by the token. For more information, see Using SAML for Authentication in the <i>Oracle Service Bus Security Guide</i>.</p> <p>Do not confuse this field with the Web Service Security (WSS) username field. This must be a valid user name and password in the local security realm. An invalid user name or invalid password will cause a client-side error on the test service.</p> <p>Note: When the test console invokes a proxy with HTTP custom token authentication, the authentication check is not done.</p>
	Password	The associated password. For more information, see Username .
Invocation Mode	Request/Response	This option is only displayed when testing any SOAP or any XML proxy service. Clear the Request/Response check box for one-way service invocations.
Message Metadata	See Table 30-10	
Transport Headers	See Table 30-10	

Note: The *secured* SOAP message is displayed printed with extra white spaces. Because white spaces can affect the semantics of the document, this SOAP message cannot always be used as the literal data. For example, digital signatures are whitespace sensitive and can become invalid.

Viewing Proxy Services Test Results

[Table 30-2](#) describes proxy service testing results. Tracing is only enabled if you have selected both the **Direct Call** and the **Include Tracing** options.


Table 30-2 Testing Results for Proxy Services

Section	Description
Proxy Service Name	The name of the proxy service that is being tested.
Test Console Actions	Back displays the previous browser page. Close closes the test console.
Request Document	The request message sent to the proxy service by the test console. This section is initially collapsed if the test console did not modify the request message. This section is initially expanded for SOAP services configured using the Form tab, or if WS-Security has been applied. If WS-Security has been applied, this section will contain two SOAP messages—the first message is the <i>clear text</i> message; the second is the <i>secured</i> SOAP message.
Response Document	The message response. For a SOAP service with a WS-Security response, this section contains two SOAP messages. The first SOAP message is the <i>secured</i> message as received by the client. The second SOAP message is the corresponding <i>clear text</i> message.
Response Metadata	The metadata returned with the message response.
Tracing Proxy Services	Tracing shows the state of the message as it passes through the system. When the Direct Call option is not selected, tracing is not performed. For more information on tracing, see “Tracing Proxy Services” on page 30-9 .

Tracing Proxy Services

Tracing is enabled when you test proxy services using a direct call. The **Include Tracing** check box is selected by default with the **Direct Call** option. If you do not want tracing, clear the **Include Tracing** check box. When you enable tracing, the test results include the details of the trace. Use tracing to track problems in the system and to isolate them for correction. The trace information shows the path taken through the request and response paths in the code.

1. Click **Activate** under **Change Center** to enable the test feature in the console.

2. Select **Resource Browser > Proxy Services** to display the **Summary of Proxy Services** page.
3. Under **Actions**, click the  **Launch Test Console** icon associated with the service you want to test. The test console opens the **Proxy Service Testing** page.
4. Configure the test data for the proxy service. You must have the **Direct Call** and **Include Tracing** options selected to enable tracing. See [“Configuring Proxy Services Test Data” on page 30-3](#).
5. Click **Execute**. The **Proxy Service Testing** page displays the test results for the service and the tracing information.
6. Scroll down to the **Invocation Trace** section.

This section displays a graphical representation the message flow. You can trace the message through the service and view the state of the message at pre-selected points in the trace. The trace points are automatically set.


7. Click the + plus sign to expand the message flow to view more detail.

While viewing the trace you can also view the message flow in the Oracle Service Bus Console. This helps you relate the trace to the stages and actions in the message flow. You can modify the message flow and run the trace again to view the output.

Testing Business Services

You can test the following types of business services: any XML, any SOAP, Messaging, XML, and SOAP. You can test SOAP business services with Web Service Security policies. For more information, see “Testing Services with Web Service Security” in [Using the Test Console](#) in the *Oracle Service Bus User Guide*.

Note: In a clustered domain, you cannot use the test console to test any configured business service or proxy service which routes to a business service.

1. Click **Activate** under **Change Center** to enable the test feature in the console.
2. Select **Resource Browser > Business Services** to display the **Summary of Business Services** page.
3. Under **Actions**, click the  **Launch Test Console** icon associated with the service you want to test. The test console opens the **Business Service Testing** page. For example, using the tutorials provided with the product, click the icon associated with loanSaleProcessor.

4. For SOAP and XML services, select the WSDL operation you want to test.
5. Configure the test data for the business service (the input data should be the message being sent by the proxy service to the business service). The **Direct Call** and **Include Tracing** options that are available when testing proxy services are not available for business services. By default, business services are tested using the **Direct Call** option, meaning that the messages pass through the transport layer.
6. Click **Execute**.

The **Business Service Testing** page displays the results. For more information, see [“Viewing Business Services Test Results” on page 30-16](#).

Configuring Business Services Test Data

[Table 30-3](#) lists the configuration options for testing business services. The fields for accepting input to the request document are based on the service type.

Table 30-3 Business Services Configuration Options

Section	Options/Fields	Description
Name	The name of the business service being tested.	
Available Operations	Operations associated with the business service.	
Test Console Actions	Execute	Run the test.
	Reset	Reset the input values.
	Close	Close the window and do not run the test.

Table 30-3 Business Services Configuration Options (Continued)

Section	Options/Fields	Description
Request Document		The input fields generate the request message that is sent to the business service. Click Execute to run the test with the values you entered. The test console displays the request message and the service's response message. Input in the Request Document section is service-type specific. The service types and a description of the input required by each are listed in the following sections.
	any XML	The service requests input in the form of a payload. The payload is the content of the message being sent. The content is expected to be an XML document. You can browse to a file or enter the message content in the text box.
	any SOAP	The service requests input in the form of a payload. The payload is the content of the message being sent. The content is expected to be the SOAP envelope. You can browse to a file or enter the message content in the text box.
Request Document continued	Messaging	<p>Messaging services define 4 possible input types: none, XML, Binary or Text. The service requests a single input either file-based or text-based, except for the type none that does no require any input.</p> <p>Oracle recommends entering binary input from a file. Data entered in the text area are converted to binary using the system encoding.</p> <p>Data entered from files for text services must be converted to text. The encoding input field is used to specify the encoding to apply during the conversion. The system encoding is used if this field is not configured. By default, the encoding field is initialized with the encoding value configured on the proxy service endpoint.</p>

Table 30-3 Business Services Configuration Options (Continued)

Section	Options/Fields	Description
Request Document continued	XML	<p>The service requests input in the form of a payload. The payload is the content of the message being sent. The content is expected to be an XML document. You can browse to a file or enter the message content in the text box.</p> <p>This is a WSDL-based service with multiple operations defined. Oracle provides a sample document to use in testing this service. All operations are listed at the top of the page with an arrow highlighting the selected operation.</p>
	SOAP Document	<p>For a SOAP document, the SOAP envelope is usually composed of zero or more headers and one body payload.</p> <p>The Form and XML tabs provide alternative ways to specify the content.</p> <p>The Form tab contains a SOAP Header field and a SOAP Body field. The content of the SOAP Header field is expected to be a SOAP Header tag (this allows for the definition of more than one header). The SOAP Body field contains the data that is actually sent as part of the message. The content is expected to be an XML document. Both the header and the body are used to generate the SOAP envelope.</p> <p>The XML tab contains a single input field. The content of this field is expected to be the SOAP envelope being sent.</p>

Table 30-3 Business Services Configuration Options (Continued)

Section	Options/Fields	Description
Request Document continued	SOAP RPC	<p>For SOAP RPC, the SOAP envelope is composed of zero or more headers, and zero or more arguments.</p> <p>The Form and XML tabs provide alternative ways to specify the content.</p> <p>The Form tab contains a single input for SOAP headers, and one input field for each argument (the name of the input field corresponds to the name of the argument). The content of the SOAP Header field is expected to be a SOAP Header tag (this allows for the definition of more than one header).</p> <p>The WSDL is used to detect the type of each argument. A single-line input field is used for primitive types; a multi-line input field is used for XML types. A sample document is automatically generated to facilitate testing.</p> <p>The headers and arguments are used by the test console to generate the SOAP envelope.</p> <p>The XML tab contains a single input field. The content of this field is expected to be the SOAP envelope being sent. The payload (XML input) can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test.</p>

Table 30-3 Business Services Configuration Options (Continued)

Section	Options/Fields	Description
Web Service Security	This section is available only for SOAP services when the selected operation has a Web Service Security policy.	
	Service Provider	The test service gets all client-side PKI (key-pair) credentials for Web Service security operations (digital signature and encryption) from this service provider. This field is optional. Certain scenarios require a service provider, depending on the request/response policy for the operation. For more information, see “Testing Services with Web Service Security” in Using the Test Console in the <i>Oracle Service Bus User Guide</i> .
Web Service Security continued	Username	<p>The user name in Web Service security username tokens generated from the test service. This field is optional. This user name is only needed in some scenarios where the operation's request policy specifies an identity assertion.</p> <p>Do not confuse this field with the transport security context username field. This must be a valid user name and password in the local security realm. An invalid user name or invalid password will cause a client-side error on the test service.</p> <p>In some scenarios, this user name and password may also be used when the test service generates a SAML assertion.</p>
	Password	The password in Web Service security username tokens generated from the test service.
Transport	The Transport section is collapsed by default. The fields and values depend on the test configuration.	

Table 30-3 Business Services Configuration Options (Continued)

Section	Options/Fields	Description
Authentication	Username	The user name for setting the security context used by the test service when invoking the business service. If the business service expects a SAML token, this identity may be propagated in the SAML token. See Using SAML for Authentication in the <i>Oracle Service Bus Security Guide</i> . This must be a valid user name and password in the local security realm. An invalid user name or invalid password will cause a client-side error on the test service.
	Password	The associated password. For more information, see Username .
	Service Provider	This field is used when testing an HTTPS business service with CLIENT-CERT authentication. See HTTP(S) in <i>Oracle Service Bus User Guide</i> . The service provider must have an associated SSL client credential. The test service will use that credential during the SSL handshake
Invocation Mode	Request\Response	This option is only displayed when testing an any SOAP or any XML business service. Clear the Request/Response check box for one-way service invocations.
Message Metadata	See Table 30-10 .	
Transport Headers	See Table 30-10 .	

Viewing Business Services Test Results

[Table 30-4](#) describes business service testing results.

Table 30-4 Testing Results for Business Services

Section	Description
Business Service Name	The name of the business service.
Test Console Actions	Click Back to display the previous browser page. Click Close to close the test console window.
Request Document	The request message sent to the business service by the test console. This section is initially collapsed if the test console did not modify the request message. This section is initially expanded for SOAP services configured using the Form tab, or if WS-Security has been applied. If WS-Security has been applied, this section will contain two SOAP messages. The first message is the <i>clear text</i> message. The second is the <i>secured</i> SOAP message.
Response Document	The message response. For a SOAP service with a WS-Security response, this section will contain two SOAP messages. The first SOAP message is the <i>secured</i> message as received by the client. The second SOAP message is the corresponding <i>clear text</i> message.
Response Metadata	The metadata returned with the message response.

Note: The *secured* SOAP message is displayed pretty printed, for example, with extra white spaces. This SOAP message cannot always be used as the literal data as white spaces can affect the semantics of the document. For example, digital signatures are whitespace sensitive and can become invalid.

Testing Transformations

You can test transformations after activating a session or during a session to ensure that the resources operate with the expected behavior. You must activate the session to test the run time, otherwise the testing is done at design time using your local changes.

You can test the following transformations:

- [“Testing MFL Transformations” on page 30-18](#)
- [“Testing XSLT Transformations” on page 30-19](#)

- [“Testing XQuery Transformations” on page 30-20](#)

Testing MFL Transformations

A Message Format Language (MFL) document is a specialized XML document used to describe the layout of binary data. MFL resources support two transformations. Each transformation only accepts one input and provides a single output: XML to binary, or binary to XML.


[Table 30-5](#) describes MFL configuration options.

Table 30-5 Configuring MFL Options

Section	Description	
Name	The name of the resource being tested.	
Supported transformations	To select a specific transformation, select the transformation name.	
Test Console Actions	Execute	Apply the transformation.
	Reset	Reset the input field (for XML to binary, the sample XML document is reset).
	Close	Cancel the current operation.
MFL Transformation Configuration	XML Input	Required for XML to binary transformations: The XML schema for the MFL document can be inferred. A sample XML document is automatically entered in the text field. The XML input can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test.
	Binary Input	Required for binary to XML transformations: The binary input can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test.

You can test the design time or the run time.

1. Click **Activate** if you want to test the run time. Do not activate the session to test the design time.

2. Select **Resource Browser** > **MFLs** to display the **Summary of MFL Files** page.
3. Under **Actions**, click the  **Launch Test Console** icon associated with the resource you want to test. The test console opens the **Resource Testing** page.
4. Select the transformation you want to test.
5. Configure the test data for the MFL resource. For more information, see [Table 30-5](#).
6. Click **Execute**. The **Resource Testing** page displays the results.
7. To retest, click **Back**. You can close the test console, modify, and retest the resource.

Testing XSLT Transformations

eXtensible Stylesheet Language Transformations (XSLT) describe XML-to-XML mappings in Oracle Service Bus. To test an XSLT resource you must supply the input XML document and the test console returns the output XML document. XSLT transformations may have additional named parameters. All parameters required by the transformation are displayed on the configuration page. Default values are available but you can override them.

[Table 30-6](#) describes XSLT configuration options.


Table 30-6 Configuring XSLT Options

Section	Description	
Name	The name of the resource being tested.	
Test Console Actions	Execute	Apply the transformation.
	Reset	Reset the input field(s).
	Close	Cancel the current operation.

Table 30-6 Configuring XSLT Options (Continued)

Section	Description	
Input and Parameters	The input document and parameters for testing the XSLT resource.	
	XML Input	The XML input can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test. XML input is required.
	<param_name> ([] as XML)	param_name is a named XSLT parameter. There are two types of input: XML and primitive (String, integer, float, and so on). The default input type is String. Select the check box associated with the parameter name to identify a parameter of type XML.

You can test the design time or the run time.

1. Click **Activate** if you want to test the run time. Do not activate the session to test the design time.
2. Select **Project Explorer > XSLTs** to display the **Summary of XSLTs** page.
3. Under **Actions**, click the  **Launch Test Console** icon associated with the resource you want to test. The test console opens the **Resource Testing** page.
4. Configure the test data for the resource in the **Input and Parameters** section of the page. For more information, see [Table 30-6](#).
5. Click **Execute**. The **Resource Testing** page displays the results.
6. To retest, click **Back**. You can close the test console, modify, and retest the resource.

Testing XQuery Transformations

XQuery maps can describe XML-to-XML, XML to non-XML, and non-XML to XML mappings. An XQuery transformation can take multiple inputs and returns one output. Each input corresponds to an XQuery external variable declared in the XQuery resource. The value of an XQuery input variable can be a primitive value (String, integer, date, and so on), an XML document, or a sequence of these types. The output value can be a primitive value (String, integer, date, and so on), an XML document, or a sequence of these types.

Note: The test console does not support sequences on input.


Table 30-7 describes XQuery configuration options.

Table 30-7 Configuring XQuery Options

Section	Description	
Name	The name of the resource being tested.	
Test Console Actions	Execute	Execute the transformation.
	Reset	Reset the input field(s).
	Close	Close the test console.
Variables	This section contains one input field for each of the XQuery external variables.	
	<code><param_name> ([] as XML)</code>	<p><code>param_name</code> is a XQuery variable name in the XQuery resource.</p> <p>In the test console, a single-line edit box is displayed if the type is a simple type. A multi-line edit box is displayed if the data is XML.</p> <p>A combination input (<code><param_name> ([] as XML)</code>) is used when the variable is not typed. You must declare the variable type. Select the check box to identify a parameter of type XML.</p> <p>An XML input can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test.</p> <p>Input in the test console is rendered based on the type to make it easier to understand the type of data you must enter. When untyped, the default type is XML.</p>

You can test the design time or the run time.

1. Click **Activate** if you want to test the run time. Do not activate the session to test the design time.
2. Select **Project Explorer > XQueries** to display the **Summary of XQueries** page.

3. Under **Actions**, click the  **Launch Test Console** icon associated with the resource you want to test. The test console opens the **Resource Testing** page.
4. Configure the test data for the resource in the **Variables** section of the page. For more information, see [Table 30-7](#).
5. Click **Execute**. The **Resource Testing** page displays the results.
6. To retest, click **Back**. You can close the test console, modify, and retest the resource.

Performing XQuery Testing

You can edit and test an action in the message flow using the following Editors: XQuery Expression Editor, XQuery Condition Editor, and XPath Expression Editor. Testing takes the same form for both the XQuery Expression and Condition Editors. However, the scenario is different for the XPath Expression Editor because it takes only one input.

Note: You must disable the pop-up blockers in your browser for XQuery testing to work. If you have toolbars in the IE browser, you may need to disable the pop-up blockers from under the **Options** menu as well as for all toolbars that are configured to block them.

This section includes the following topics:

- [“Using the XQuery Expression and XQuery Condition Editors” on page 30-22](#)
- [“Using the XPath Expression Editor” on page 30-24](#)

Using the XQuery Expression and XQuery Condition Editors

You use XQuery expressions to create the data content for the message context variables (or part of a message context variable) during the execution of the message flow. You can use the test console directly in the XQuery Expression Editor to test the definition of the expression.

Similarly, you use XQuery conditions to evaluate Boolean conditions in the message flow. You can use the test console directly in the XQuery Condition Editor to test the definition of the condition.

An XQuery can take multiple inputs and returns one output. Each input corresponds to an XQuery unbound variable defined in the XQuery. The value of an XQuery input can be a primitive value (String, integer, date, and so on), an XML document, or a sequence of these types. The output value can be a primitive value (String, integer, date, and so on), an XML document, or a sequence of these types.

Note: The test console does not support sequences on input.

[Table 30-8](#) describes XQuery configuration options.

Table 30-8 Configuring XQuery Testing

Section	Description	
Name	The type of expression being tested.	
Test Console Actions	Execute	Apply the transformation.
	Reset	Reset the input field(s).
	Close	Cancel the current operation.
Variables	This section contains one input field for each of the XQuery unbound variables.	
	<param_name> ([] as XML)	<p>param_name is the name of the corresponding XQuery unbound variable.</p> <p>In the test console, a single-line edit box is displayed if the type is a simple type. A multi-line edit box is displayed if the data is XML. A combination input (<param_name> ([] as XML)) is used when the variable is not typed. You must declare the variable type. Select the check box to identify a parameter of type XML.</p> <p>An XML input can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test.</p> <p>Input in the test console is rendered based on the type to make it easier to understand the type of data you must enter. The default type is XML.</p>

1. Access the test console when editing an action in the message flow of a pipeline.
 - To access the XQuery Expression Editor, see [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).
 - To access the XQuery Condition Editor, see [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

The **XQuery Testing Expression** page is displayed. All input variables requested are displayed on the page.

2. Configure the test data for the XQuery in the **Variables** section of the page. For more information, see [Table 30-8](#).
3. Click **Execute**. The testing page displays the results.
4. Once you have completed a test, you can click **Back** to execute a new test. To execute a new test after making changes to the XQuery, you must close and reopen the test console for the changes to take effect.

Using the XPath Expression Editor

You use XPath expressions to select a subset of an XML message context variable. You can use the test console in the XPath Expression Editor to test the definition of the XPath expression. An XPath expression takes a single XML document as input and generates a sequence of XML documents, primitives types, or both as output.

[Table 30-9](#) describes XPath expression configuration options.

Table 30-9 Configuring XPath Options

Section	Description	
Name	The type of expression being tested.	
Test Console Actions	Execute	Apply the transformation.
	Reset	Reset the input field.
	Close	Cancel the current operation.
Variables	This section contains a single input field corresponding to the XML document against which this XPath expression is being tested.	
	The XML input can be file-based or text-based. Referencing a file for input takes precedence over textual input. Browse and select the file you want to use in your test.	

1. Access the test console when editing an action in the message flow of a pipeline. To access the XPath Expression Editor, see [“Creating and Editing Inline XQuery and XPath Expressions” on page 20-1](#).

2. Configure the test data for the XPath expression in the **Variables** section of the page. For more information, see [Table 30-9](#).
3. Click **Execute**. The testing page displays the results.
4. Once you have completed a test, you can use the **Back** button to execute a new test. To execute a new test after making changes to the XPath expression, you must close and reopen the test console for the changes to take effect.

Understanding How the Run Time Uses the Transport Settings in the Test Console

“Configuring Proxy Services Test Data” on page 30-3 and “Configuring Business Services Test Data” on page 30-11 describe how you configure the values of the transport headers, transport metadata, and transport-related security data for outbound requests when you test proxy services or business services in the test console. However, some specifications you can make in the test console are not honored at run time. That is, the values of certain headers or metadata are overwritten, or ignored by the Oracle Service Bus at run time when the test is executed. The headers and metadata for which there are limitations are described in [Table 30-10](#).

Table 30-10 Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service

Transport	Service Type	Description of Limitation	Transport Headers Affected
HTTP(S) ¹	Proxy Services	All transport headers and other fields you set are preserved at run time. This is true whether or not the Direct Call option is set.	All
	Business Services	The Oracle Service Bus run time overrides any values you set for these parameters.	<ul style="list-style-type: none"> • Content-Length • Content-Type • relative-URI • client-host • client-address

Table 30-10 Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service (Continued)

Transport	Service Type	Description of Limitation	Transport Headers Affected
JMS	Proxy Services	When the Direct Call option is used, all transport headers and other fields you set are preserved at run time.	All
		When the Direct Call option is not used, the same limitations apply as those for a transport header action configuration.	See the limitations for JMS transport headers described in Table 3-7 Limitations to Transport Header Values You Specify in Transport Header Actions in <i>Oracle Service Bus User Guide</i> .
	Business Services	The same limitations apply as those for a transport header action configuration.	See the limitations for JMS transport headers described in Table 3-7 Limitations to Transport Header Values You Specify in Transport Header Actions in <i>Oracle Service Bus User Guide</i> .
E-Mail	Proxy Services	No limitations. Any transport headers and other fields you set are honored at run time. This is true whether or not Direct Call is specified.	
	Business Services	The Oracle Service Bus run time overrides any values you set for these parameters	Content-Type
File	Proxy Services	No limitations. Any transport headers and other fields you set are honored at run time. ²	
	Business Services		

Table 30-10 Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service (Continued)

Transport	Service Type	Description of Limitation	Transport Headers Affected
FTP	Proxy Services	No limitations. Any transport headers and other fields you set are honored at run time.	
	Business Services		

1. When you test proxy services, the test console never sends a HTTP request over the network, therefore transport-level access control is not applied.
2. For example, FileName (Transport metadata)—the value you assign is appended to the output file name. For example, 1698922710078805308-b3fc544.1073968e0ab.-7e8e-{\$FileName}.

Test Console

Error Codes

This section describes the Oracle Service Bus errors that can occur when a proxy service is being executed. The error codes associated with these errors surface inside the element of the `fault` context variable. You can access the value using the following XQuery statement:

```
$fault/ctx:errorCode/text()
```

Errors are accompanied by details specific to the error inside the `fault` element.

[Table A-1](#) lists Oracle Service Bus error codes.

Table A-1 Oracle Service Bus Error Codes

Subsystem	Error Code	Error Message
Transport Run Time Error (BEA-380000 to BEA-380099)	BEA-380000	General Transport error XML Details: An Error Response Was Received (when occurring in publish action)
Message Flow runtime error codes (382000....382499)	BEA-382000	General runtime error
	BEA-382030	General parse failure from binding layer (e.g. message to XML service is not XML)
	BEA-382031	WS-I compliance failure

Table A-1 Oracle Service Bus Error Codes (Continued)

Subsystem	Error Code	Error Message
	BEA-382032	Message must be a soap:Envelope XML Details: A Non-SOAP or Invalid Envelope Was Received
	BEA-382033	A soap:Envelope must contain a soap:Body
	BEA-382040	Failed to assign value to context variable "{0}". Value must be an instance of {1}
	BEA-382041	Failed to assign value to context variable "{0}". Variable is read-only.
	BEA-382042	Failed to assign value to context variable "{0}". {1}
	BEA-382043	Failed to update the value of context variable "{0}": {1}
	BEA-382045	Failed to initialize the value of context variable "{0}": {1}
	BEA-382046	Failed to marshall the value of context variable "{0}" to XML: {1}
	BEA-382100	General binding error while processing inbound request
	BEA-382101	General binding error while preparing inbound response
	BEA-382102	General binding error while preparing outbound request
	BEA-382103	General binding error while processing outbound response
	BEA-382104	Failed to prepare request metadata for service {0}
	BEA-382105	Failed to prepare response metadata for service {0}
	BEA-382150	Failed to dispatch request to service {0}
	BEA-382151	Cannot dispatch to unknown service: {0}
Action error codes (382500...382999)	BEA-382500	ALSBConfigurationMBean service callout action received SOAP Fault response. XML details: A SOAP Fault Response was Received

Table A-1 Oracle Service Bus Error Codes (Continued)

Subsystem	Error Code	Error Message
	BEA-382501	Oracle Service Bus service callout action received an unrecognized response. XML details: An Unrecognized Response was Received
	BEA-382502	Oracle Service Bus service callout has received an error response from the server XML details: An Unknown Error Response Was Received
	BEA-382505	Oracle Service Bus Validate action validation failed. XML details: Validation Failed
	BEA-382510	Oracle Service Bus Assign action failed updating variable "{0}": {1}
	BEA-382511	Oracle Service Bus Delete action failed updating variable "{0}": {1}
	BEA-382512	Oracle Service Bus Insert action failed updating variable "{0}": {1}
	BEA-382513	Oracle Service Bus Replace action failed updating variable "{0}": {1}
	BEA-382514	Oracle Service Bus Rename action failed updating variable "{0}": {1}
	BEA-382515	Callout to java method "{0}" resulted in exception: {1}
	BEA-382516	Failed to evaluate expression for callout to java method "{0}". Argument index: {1}, exception: {2}
	BEA-382517	Failed to assign the result of Java callout to variable. Method: {0}, variable: {1}, exception: {2}
	BEA-382518	Security exception while calling to java method "{0}". Service account: {1}. {2}
	BEA-382600	Oracle Service Bus publish action received an error response: {0}

Table A-1 Oracle Service Bus Error Codes (Continued)

Subsystem	Error Code	Error Message
Security error codes (386000...386999)	BEA-386000	General security error. Possible reasons include the following: <ul style="list-style-type: none"> • Custom token or custom user name/password authentication is configured but authentication already took place via WS-Security.
	BEA-386100	Authentication failed. Possible reasons include the following: <ul style="list-style-type: none"> • The XPath is configured to act on the body or header but there is no such message part (the binding layer returns null). • The XPath engine throws an exception when evaluating the XPath expression. • The result of the user name XPath or password XPath is a node that is not of type TEXT or ATTR. • The XPath returns more than one node. • A user name/password was retrieved but authentication failed. • A custom token was retrieved but identity assertion failed (the CSS identity assertion service throws LoginException or any other exception).
	BEA-386101	Missing authentication token. Possible reasons include the following: <ul style="list-style-type: none"> • The user name XPath or password XPath returns an empty result or empty string. • The custom token XPath returns an empty result, null attribute value, or null text-value.
	BEA-386102	Message-level authorization denied. Possible reasons include the following: <ul style="list-style-type: none"> • The message level access control policy denies access to the proxy service.

Table A-1 Oracle Service Bus Error Codes (Continued)

Subsystem	Error Code	Error Message
UDDI error codes (394500...394999)	BEA-386103	The proxy service operation selection algorithm cannot determine the operation name from the request or returns an invalid operation (one which is not in the WSDL or null). Possible reasons include the following: <ul style="list-style-type: none">• An error occurs while computing the operation.• The operation selection algorithm returns null.• The operation selection algorithm returns an operation that is not of the of the operations declared by the WSDL.
	BEA-386200	General web service security error
	BEA-386201	A web service security fault occurred[<error-code from WSS fault>][<fault-string from WSS-fault>] XML details: A WS-Security Fault Occurred
	BEA-386400	General outbound web service security error
	BEA-386401	Failed to convert outbound message to SOAP
	BEA-386402	Cannot determine the outbound operation
	BEA-386420	A web service security error occurred while producing security header
	BEA-386440	A web service security error occurred while processing the security header
	BEA-386460	Web Service Security policy validation error
	BEA-394500	An error was encountered while importing a resource
	BEA-394501	An error was encountered while querying the UDDI registry for business entities
	BEA-394502	An error was encountered while initializing the UDDI service
	BEA-394503	An error was encountered while initializing the inquiry port
	BEA-394504	An error was encountered while publishing this service
	BEA-394505	Failed to connect to the UDDI registry

Table A-1 Oracle Service Bus Error Codes (Continued)

Subsystem	Error Code	Error Message
	BEA-394506	An error was encountered while querying the UDDI registry for business services
	BEA-394507	The registry name contains characters that are not allowed
	BEA-394508	The publish URL was missing the UDDI registry configuration
	BEA-394509	The Service Account configured is not valid
	BEA-394510	A resource could not imported while importing a service
	BEA-394511	A validation exception occurred while creating a service definition while importing a service
	BEA-394512	A generic error was encountered while importing a resource
	BEA-394513	An internal error was encountered while importing a resource
	BEA-394514	Failed to create an FTP endpoint configuration when importing a service
	BEA-394515	Failed to create an E-mail endpoint configuration when importing a service
	BEA-394516	A possible syntax error was encountered in the access point URL when importing a service
	BEA-394517	An error was encountered when parsing the InstanceParms while importing a service
	BEA-394518	Failed to create an file endpoint configuration when importing a service

Error Details Schemas

Below are schema definitions for XML snippets that accompany the error codes listed in [Table A-1](#). These XML snippets appear inside the fault context variable under the `<ctx:details>` element. These schemas do not all come from a single namespace. Also, while a given error code typically implies a particular XML snippet, some XML snippets are used by several error codes.


```

<xs:schema
targetNamespace="http://www.oracle.com/wli/sb/stages/transform/config"
  xmlns:tns="http://www.oracle.com/wli/sb/stages/transform/config"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:ref="http://www.oracle.com/wli/sb/reference"
  xmlns:sdk="http://www.oracle.com/wli/sb/stages/config"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">

```

A SOAP Fault Response was Received

```

<xs:element name="ReceivedFaultDetail" type="tns:ReceivedFaultDetail"/>
<xs:complexType name="ReceivedFaultDetail">
  <xs:sequence>
    <xs:element name="faultcode" type="xs:QName"/>
    <xs:element name="faultstring" type="xs:string"/>
    <xs:element name="detail" minOccurs="0">
      <xs:complexType mixed="true">
        <xs:sequence>
          <xs:any namespace="##any" minOccurs="0" maxOccurs="unbounded"
processContents="lax"/>
        </xs:sequence>
        <xs:anyAttribute namespace="##any" processContents="lax"/>
      </xs:complexType>
    </xs:element>

    <!-- HTTP-specific status/response code -->
    <xs:element name="http-response-code" type="xs:int" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>

```

An Unrecognized Response was Received

```

<xs:element name="UnrecognizedResponseDetail"
type="tns:UnrecognizedResponseDetail"/>
<xs:complexType name="UnrecognizedResponseDetail">
  <xs:sequence>
    <xs:element name="detail" minOccurs="0" type="xs:string"/>

    <!-- HTTP-specific status/response code -->
    <xs:element name="http-response-code" type="xs:int" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>

```

An Unknown Error Response Was Received

```

<xs:element name="ErrorResponseDetail" type="tns:ErrorResponseDetail"/>
<xs:complexType name="ErrorResponseDetail">

```

Error Codes

```
<xs:sequence>
  <xs:element name="detail" minOccurs="0" type="xs:string" />

  <!-- HTTP-specific status/response code -->
  <xs:element name="http-response-code" type="xs:int" minOccurs="0"/>
</xs:sequence>
</xs:complexType>
```

Validation Failed

```
<xs:complexType name="ValidationFailureDetail">
  <xs:sequence minOccurs = "0" maxOccurs="unbounded">
    <xs:element name="message" type="xs:string"/>
    <xs:element name="xmlLocation" type="xs:anyType"/>
  </xs:sequence>
</xs:complexType>
</xs:schema>
<schema targetNamespace="http://www.oracle.com/wli/sb/errors"
  xmlns:err="http://www.oracle.com/wli/sb/errors"
  xmlns:tc="http://www.oracle.com/wli/sb/transport"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">
```

A Non-SOAP or Invalid Envelope Was Received

```
<element name="InvalidEnvelope">
  <complexType>
    <sequence>
      <element name="localpart" type="NCName"/>
      <element name="namespace" type="anyURI" minOccurs="0"/>
    </sequence>
  </complexType>
</element>
```

A WS-Security Fault Occurred

```
<element name="WebServiceSecurityFault">
  <complexType>
    <sequence>
      <element name="faultcode" type="QName"/>
      <element name="faultstring" type="string"/>
      <element name="detail" minOccurs="0">
        <complexType mixed="true">
          <sequence>
            <any namespace="##any" minOccurs="0" maxOccurs="unbounded"
processContents="lax"/>
          </sequence>
        </complexType>
      </element>
    </sequence>
  </complexType>
</element>
```

```

        </complexType>
      </element>
    </sequence>
  </complexType>
</element>

```

An Error Response Was Received

```

    <element name="ErrorResponseDetail" type="err:ErrorResponseDetail"/>
    <complexType name="ErrorResponseDetail">
      <sequence>
        <!-- Response metadata -->
        <element name="response-metadata" type="tc:ResponseMetaDataURL"
minOccurs="0" />
      </sequence>
    </complexType>
</schema>

```