



BEA AquaLogic Service Bus™

Using the AquaLogic Service Bus Console

Copyright

Copyright © 2005 BEA Systems, Inc. All Rights Reserved.

Restricted Rights Legend

This software and documentation is subject to and made available only pursuant to the terms of the BEA Systems License Agreement and may be used or copied only in accordance with the terms of that agreement. It is against the law to copy the software except as specifically allowed in the agreement. This document may not, in whole or in part, be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine readable form without prior consent, in writing, from BEA Systems, Inc.

Use, duplication or disclosure by the U.S. Government is subject to restrictions set forth in the BEA Systems License Agreement and in subparagraph (c)(1) of the Commercial Computer Software-Restricted Rights Clause at FAR 52.227-19; subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013, subparagraph (d) of the Commercial Computer Software--Licensing clause at NASA FAR supplement 16-52.227-86; or their equivalent.

Information in this document is subject to change without notice and does not represent a commitment on the part of BEA Systems. THE SOFTWARE AND DOCUMENTATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FURTHER, BEA Systems DOES NOT WARRANT, GUARANTEE, OR MAKE ANY REPRESENTATIONS REGARDING THE USE, OR THE RESULTS OF THE USE, OF THE SOFTWARE OR WRITTEN MATERIAL IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, OR OTHERWISE.

Trademarks or Service Marks

BEA, BEA JRockit, BEA Liquid Data for WebLogic, BEA WebLogic Server, Built on BEA, Jolt, JoltBeans, SteelThread, Top End, Tuxedo, and WebLogic are registered trademarks of BEA Systems, Inc. BEA AquaLogic, BEA AquaLogic Data Services Platform, BEA AquaLogic Enterprise Security, BEA AquaLogic Service Bus, BEA AquaLogic Service Registry, BEA Builder, BEA Campaign Manager for WebLogic, BEA eLink, BEA Manager, BEA MessageQ, BEA WebLogic Commerce Server, BEA WebLogic Enterprise, BEA WebLogic Enterprise Platform, BEA WebLogic Enterprise Security, BEA WebLogic Express, BEA WebLogic Integration, BEA WebLogic Java Adapter for Mainframe, BEA WebLogic JDriver, BEA WebLogic JRockit, BEA WebLogic Log Central, BEA WebLogic Personalization Server, BEA WebLogic Platform, BEA WebLogic Portal, BEA WebLogic Server Process Edition, BEA WebLogic WorkGroup Edition, BEA WebLogic Workshop, and Liquid Computing are trademarks of BEA Systems, Inc. BEA Mission Critical Support is a service mark of BEA Systems, Inc. All other company and product names may be the subject of intellectual property rights reserved by third parties.

All other trademarks are the property of their respective companies.

Contents

1. Introduction

What is BEA AquaLogic Service Bus?	1-1
Overview of the BEA AquaLogic Service Bus Console	1-2
Starting the BEA AquaLogic Service Bus Console.	1-6

2. Using the Change Center

Overview of the Change Center.	2-1
Using the Change Center	2-3
Activating a Session.	2-4
Viewing Configuration Changes	2-5
Undoing a Task	2-8
Order of Undoing Tasks	2-8
Viewing Task Details.	2-9
Viewing All Sessions	2-11
Finding and Replacing Environment Values	2-12
Viewing and Resolving Conflicts	2-13

3. Project Explorer

Overview of the Project Explorer	3-2
Projects and Folders	3-2
Uses of Projects and Folders.	3-3
Resources	3-4
Listing Projects	3-4

Adding a Project	3-5
Viewing Project Details	3-6
Deleting a Project	3-10
Adding a Folder.	3-11
Viewing Folder Details	3-12
Deleting a Folder.	3-15
Creating a Resource	3-16
Importing Resources in Bulk.	3-18
Loading Resources from a Zip File.	3-19
Loading Resources from a URL	3-20
Reviewing Loaded Resources	3-21
Viewing Import Results	3-23
Viewing References	3-24
Renaming a Resource	3-26
Moving a Resource	3-27
Exporting a WSDL	3-28

4. Resource Browser

Overview of Resource Browser	4-1
--	-----

5. XML Schemas

Overview of XML Schemas	5-1
Listing and Locating XML Schemas	5-2
Adding an XML Schema.	5-4
Viewing and Changing XML Schema Details	5-5
Deleting an XML Schema.	5-8
Viewing Unresolved XML Schema References	5-9
Resolving Unresolved XML Schema References.	5-10

6. WSDLs

Overview of WSDLs	6-1
Listing and Locating WSDLs	6-3
Adding a WSDL	6-5
Viewing and Changing WSDL Details	6-6
Deleting a WSDL	6-9
Viewing Unresolved WSDL References	6-10
Resolving Unresolved WSDL References	6-11

7. WS-Policies

Overview of WS-Policies	7-1
Listing and Locating WS-Policies	7-3
Adding a WS-Policy	7-4
Viewing and Changing WS-Policies	7-5
Deleting a WS-Policy	7-7

8. XQuery Transformations

Overview of XQuery Transformations	8-1
Listing and Locating XQuery Transformations	8-3
Adding an XQuery Transformation	8-4
Viewing and Changing XQuery Transformation Details	8-6
Deleting an XQuery Transformation	8-7

9. XSL Transformations

Overview of XSL Transformations (XSLTs)	9-1
Listing and Locating XSL Transformations	9-3
Adding an XSL Transformation	9-4
Viewing and Changing Details of an XSL Transformation	9-5
Deleting an XSL Transformation	9-8

Viewing Unresolved XSL Transformation References	9-9
Resolving Unresolved XSL Transformation References	9-10

10.MFLs

Overview of MFLs	10-1
Listing and Locating MFLs.	10-2
Adding an MFL.	10-4
Viewing and Changing Details of an MFL.	10-5
Deleting an MFL.	10-7

11.Service Accounts

Overview of Service Accounts	11-1
Listing and Locating Service Accounts	11-3
Adding a Service Account.	11-4
Viewing and Changing Service Account Details	11-5
Deleting a Service Account.	11-7

12.Proxy Service Providers

Overview of Proxy Service Providers.	12-1
Listing and Locating Proxy Service Providers	12-3
Adding a Proxy Service Provider	12-4
Viewing and Changing Proxy Service Provider Details.	12-6
Deleting a Proxy Service Provider	12-7

13.Business Services

Overview of Business Services.	13-1
Service Types.	13-2
Adding a Business Service	13-7
Listing and Locating Business Services	13-21

Viewing and Changing Business Services	13-23
Deleting Business Services	13-30

14.Proxy Services

Overview of Proxy Services	14-1
Service Types	14-3
Service Types and Transports.....	14-8
Adding a Proxy Service.....	14-9
Generating WSDLs from a Proxy Service	14-27
Listing and Locating Proxy Services.....	14-28
Viewing and Changing Proxy Services.....	14-30
Deleting Proxy Services	14-38

15.Proxy Services: Message Flow

Overview of Message Flow.....	15-1
Pipelines	15-2
Message Execution.....	15-4
Building a Message Flow Tree.....	15-4
Operational Branching	15-5
Viewing and Changing Message Flow	15-5
Adding a Pipeline Pair Node	15-8
Adding a Conditional Branch Node	15-11
Adding an Operational Branch Node	15-15
Adding a Stage.....	15-19
Adding a Route Node	15-22
Adding Route Node Actions	15-25
Viewing and Changing Conditional Branch Details	15-31
Viewing and Changing Operational Branch Details	15-34

Viewing and Changing Stage Configuration Details	15-36
--	-------

16.Proxy Services: Actions

Adding an Action	16-2
Assign	16-7
Delete	16-8
For Each	16-9
Scope of Variables in the For Each Action	16-10
Nested For Each Actions	16-12
If Then	16-12
Insert	16-13
Log	16-14
Publish	16-16
Publish Table	16-19
Raise Error	16-21
Rename	16-22
Replace	16-23
Reply	16-24
Report	16-25
Resume	16-27
Service Callout	16-28
Understanding Service Callout Actions	16-28
Configuring Service Callout Actions	16-29
How are Messages Constructed for Service Callouts?	16-35
Handling Errors	16-43
Skip	16-48
Transport Headers	16-48
Validate	16-57

17.Proxy Services: XQuery Editors

Using the Inline XQuery Expression Editor	17-2
Inline XQueries	17-2
Uses of the Inline XQuery Expression Editor	17-3
Accessing the Inline XQuery Expression Editor	17-3
Using the XQuery Condition Editor	17-5
Using the XPath Expression Editor	17-7
Defining a User Namespace	17-9
Creating a Variable Structure	17-11
Using Predefined Variables in the Inline Editors	17-17
Building an XQuery Expression Manually	17-20
Building an XPath Expression Manually	17-22
Selecting an XQuery Resource for Execution	17-23
Selecting an XSLT Resource for Execution	17-25
Building an XQuery Condition Using the Text Option	17-27
Entering a Comparison Expression Using the Builder Option	17-29
Entering a Unary Expression Using the Builder Option	17-32

18.Proxy Services: Error Handlers

Error Messages and Handling	18-1
Error Handlers	18-2
Nested Error Handlers	18-2
Empty Error Handlers	18-3
Error Handler Actions	18-3
Error Handler Configuration	18-4
Adding Error Handling for the Proxy Service	18-5
Adding Pipeline Error Handling	18-7
Adding Stage Error Handling	18-9

Adding Error Handling for the Route Node	18-12
Viewing and Changing an Error Handler	18-14
Deleting an Error Handler	18-15

19.Security Configuration

Overview of Security Configuration	19-2
Users	19-3
Groups	19-4
Roles	19-5
Adding a User	19-6
Listing and Locating Users	19-7
Viewing and Changing User Details	19-8
Deleting a User	19-9
Adding a Group	19-10
Listing and Locating Groups	19-11
Viewing and Changing Group Details	19-12
Deleting a Group	19-13
Adding a Role	19-14
Listing and Locating Roles	19-17
Viewing and Changing Role Details	19-18
Deleting a Role	19-19
Adding a Credential	19-20
Listing and Locating Credentials	19-23
Viewing and Changing Credential Details	19-24
Deleting a Credential	19-26
Listing and Locating Access Control Policies	19-26
Editing Transport Authorization Policies	19-28
Editing Service Authorization Policies	19-34

20. Monitoring

Overview of Monitoring	20-2
Alerts	20-3
Viewing the Dashboard Statistics	20-4
Listing and Locating Services	20-7
Configuring Monitoring for Specific Services	20-10
Setting the Aggregation Interval for a Service	20-12
Viewing Service Monitoring Details	20-13
Listing and Locating Servers	20-20
Customizing Your View of the Server Summary	20-21
Viewing a Chart of Servers	20-23
Viewing Server Details	20-23
Viewing Server Log Files	20-24
Viewing Details of Server Log Files	20-25
Listing and Locating Alerts	20-27
Viewing a Chart of Alerts	20-30
Customizing Your View of Alerts	20-30
Viewing Alert Details	20-32
Creating an Alert Rule	20-33
Listing and Locating Alert Rules	20-41
Viewing and Changing Alert Rule Details	20-43
Deleting an Alert Rule	20-45

21. Reporting

Overview of Reporting	21-1
Listing and Locating Messages	21-2
Viewing Message Details	21-4
Purging Messages	21-7

22. System Administration

Overview of System Administration	22-2
Enabling Monitoring	22-3
Resetting Statistics for All Services	22-4
Importing Configuration Data	22-5
Exporting Configuration Data	22-8
Displaying Runtime Tracing Status of Proxy Services	22-9
Enabling Runtime Tracing Status of Proxy Services	22-10
Setting the Dashboard Polling Interval Refresh Rate	22-11
Configuring a UDDI Registry	22-12
UDDI Configuration Settings	22-12
Searching for a UDDI Registry	22-13
Adding a UDDI Registry	22-13
Making Configuration Changes to an Existing Registry	22-14
Selecting a Service Account	22-15
Importing a Business Service from a UDDI Registry	22-16
Publishing a Proxy Service to a UDDI Registry	22-18

23. Test Console

Overview of the Test Console	23-1
Testing Services	23-3
Testing Proxy Services	23-3
Configuring Proxy Service Test Data	23-4
Viewing Proxy Service Test Results	23-11
Tracing Proxy Services	23-12
Testing Business Services	23-13
Configuring Business Service Test Data	23-15
Testing Transformations	23-21

MFL	23-22
XSLT	23-24
XQuery	23-26
Performing Inline XQuery Testing	23-28
Using the XQuery Expression/Condition Editors	23-29
Using the XPath Expression Editor	23-31
Understanding How the Run Time Uses the Transport Settings in the Test Console. .	23-32

Message Context

The Message Context Model	A-2
Predefined Context Variables	A-2
Message-Related Variables	A-3
Header Variable	A-4
Body Variable	A-4
Attachments Variable	A-4
Binary Content in the body and attachments Variables	A-6
Inbound and Outbound Variables	A-7
Sub-Elements of the inbound and outbound Variables.	A-8
Operation Variable.	A-14
Fault Variable	A-14
Initializing Context Variables	A-17
Initializing the attachments Context Variable.	A-18
Initializing the header and body Context Variables	A-18
Performing Operations on Context Variables	A-20
Constructing Messages to Dispatch.	A-22
SOAP Services	A-22
XML Services (Non SOAP).	A-22
Messaging Services	A-23

Message Context Schema A-25

Error Codes

Introduction

This section includes the following topics:

- [What is BEA AquaLogic Service Bus?](#)
- [Overview of the BEA AquaLogic Service Bus Console](#)
- [Starting the BEA AquaLogic Service Bus Console](#)

What is BEA AquaLogic Service Bus?

BEA AquaLogic Service Bus is a configuration-based, policy-driven Enterprise Service Bus (ESB). It is targeted for service-oriented integration, managing Web Services, and providing traditional message brokering across heterogeneous IT environments. It combines intelligent message brokering with service monitoring and administration in a unified software product. AquaLogic Service Bus manages the routing and transformation of messages in an enterprise system. Through the AquaLogic Service Bus Console you control the service and policy configurations and you monitor system and operations tasks. AquaLogic Service Bus relies on WebLogic Server run-time facilities. For more information, see *[BEA AquaLogic Service Bus Concepts and Architecture](#)*.

Overview of the BEA AquaLogic Service Bus Console

The following table lists the available modules in the AquaLogic Service Bus Console and summarizes the tasks associated with each.

Module	Associated Tasks
Change Center	Using the Change Center Activating a Session Viewing Configuration Changes Undoing a Task Viewing Task Details Viewing All Sessions Finding and Replacing Environment Values Viewing and Resolving Conflicts

Module	Associated Tasks
Project Explorer	Listing Projects Adding a Project Viewing Project Details Deleting a Project Adding a Folder Viewing Folder Details Deleting a Folder Creating a Resource Importing Resources in Bulk Loading Resources from a Zip File Loading Resources from a URL Reviewing Loaded Resources Viewing Import Results Viewing References Renaming a Resource Moving a Resource Exporting a WSDL Adding a Business Service Adding a Proxy Service Adding an XML Schema Adding a WSDL Adding an XQuery Transformation Adding an XSL Transformation Adding an MFL Adding a WS-Policy Adding a Service Account Adding a Proxy Service Provider Testing Services Testing Transformations

Module	Associated Tasks
Monitoring	Viewing the Dashboard Statistics Listing and Locating Services Configuring Monitoring for Specific Services Setting the Aggregation Interval for a Service Viewing Service Monitoring Details Listing and Locating Servers Customizing Your View of the Server Summary Viewing a Chart of Servers Viewing Server Details Viewing Server Log Files Viewing Details of Server Log Files Listing and Locating Alerts Viewing a Chart of Alerts Customizing Your View of Alerts Viewing Alert Details Creating an Alert Rule Listing and Locating Alert Rules Viewing and Changing Alert Rule Details Deleting an Alert Rule
Reporting	Listing and Locating Messages Viewing Message Details Purging Messages
Resource Browser	See “Overview of Resource Browser” on page 4-1 for a list of tasks associated with this module.

Module	Associated Tasks
Security Configuration	Adding a User Listing and Locating Users Viewing and Changing User Details Deleting a User Adding a Group Listing and Locating Groups Viewing and Changing Group Details Deleting a Group Adding a Role Listing and Locating Roles Viewing and Changing Role Details Deleting a Role Adding a Credential Listing and Locating Credentials Viewing and Changing Credential Details Deleting a Credential Listing and Locating Access Control Policies Editing Transport Authorization Policies Editing Service Authorization Policies
System Administration	Enabling Monitoring Resetting Statistics for All Services Importing Configuration Data Exporting Configuration Data Displaying Runtime Tracing Status of Proxy Services Enabling Runtime Tracing Status of Proxy Services Setting the Dashboard Polling Interval Refresh Rate Configuring a UDDI Registry Importing a Business Service from a UDDI Registry Publishing a Proxy Service to a UDDI Registry

Starting the BEA AquaLogic Service Bus Console

To Start the BEA AquaLogic Service Bus Console

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

- From the Windows Start menu, select:

Start→Programs→BEA Products→User Projects→*domain_name* →Start Server for AquaLogic Service Bus Domain.

Where *domain_name* represents the name you assigned your AquaLogic 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 the AquaLogic Service Bus domain: `startWebLogic.cmd` or `startWebLogic.sh`

An MS-DOS window is displayed showing status information about WebLogic Server.

Note: 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 [BEA Products 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 AquaLogic 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 of the AquaLogic Service Bus Console

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

Using the Change Center

This section includes the following topics:

- [Overview of the Change Center](#)
- [Using the Change Center](#)
- [Activating a Session](#)
- [Viewing Configuration Changes](#)
- [Undoing a Task](#)
- [Viewing Task Details](#)
- [Viewing All Sessions](#)
- [Finding and Replacing Environment Values](#)
- [Viewing and Resolving Conflicts](#)

Overview of the Change Center

The following table lists the pages you can access from the **Change Center** module. The tasks and help topics associated with each are provided.

Note: 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.

Page	Associated Tasks	Help Topics
View Configuration Changes	Inside session: View the configuration changes you have made during the current session.	Viewing Configuration Changes
	Outside session: View configuration changes that are caused by previous session activations.	
	Inside session: Undo a change you have made during the current session.	Undoing a Task
	Outside session: Undo an activation of a session	
View All Sessions	Inside and outside session: View all existing sessions within the AquaLogic Service Bus Console.	Viewing All Sessions
Activate Session	Inside session only: Activate the session	Activating a Session
Find and Replace	Inside session: Find and replace environment values	Finding and Replacing Environment Values
	Outside session: Find environment values (Replace is disabled)	

Page	Associated Tasks	Help Topics
View Conflicts	Inside session only: View and resolve all conflicts between changes in the current session and those made by all other sessions within the AquaLogic 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. This page also displays semantic errors for resources in the session.	Viewing and Resolving Conflicts
Task Details	Inside session: View details of a specific change you made in the current session Outside session: View details of specific changes made by a previous session activation	Viewing Task Details

Related Topics

[“Using the Change Center” on page 2-3](#)

Using the Change Center

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

To Use the Change Center

1. From the left navigation pane, select **Change Center**.
2. Click **Create** to begin a session. The name of the session is displayed in the left navigation pane under **Change Center**.

Starting the session enables you to make changes using the AquaLogic Service Bus Console. For example, you can create a resource, edit a resource, delete a resource, or import a configuration.

3. Make the appropriate changes on the relevant page of the console.
4. Click **Save** on each page where you make a change. All the changes you have made so far in the current session are saved.
Note: From the left navigation pane, click **Discard** at any time during the session to delete the changes you have made so far in the current session. The session also ends.
5. When you have finished making changes, click **Activate** in the **Change Center**. Continue in [“Activating a Session” on page 2-4](#).

About Exiting a Session

From the left navigation pane, click **Exit** under **Change Center** at any time to exit the session. However, the session does not end. You can click **Edit** from the left navigation pane 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 are persisted even if you log out of the console or the server is restarted.

Related Topics

[“Overview of the Change Center” on page 2-1](#)

[“Viewing Configuration Changes” on page 2-5](#)

[“Undoing a Task” on page 2-8](#)

[“Viewing Task Details” on page 2-9](#)

[“Viewing All Sessions” on page 2-11](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

[“Viewing and Resolving Conflicts” on page 2-13](#)

Activating a Session

The **Activate Session** page enables you to activate sessions. The page is displayed when you click **Activate** in the Change Center. To learn more, see [“Using the Change Center” on page 2-3](#).

To Activate a Session

1. Click **Activate** in the **Change Center**. The **Activate Session** page is displayed, which displays the session name, user name, and a Description field.

2. 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.
3. To activate the session, click **Activate**. The session ends and the configuration is deployed to run time.

Note: 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 Session Activation page displays an error indicating the user that has the pending Weblogic Server changes.

Related Topics

[“Viewing Configuration Changes” on page 2-5](#)

[“Undoing a Task” on page 2-8](#)

[“Viewing Task Details” on page 2-9](#)

[“Viewing All Sessions” on page 2-11](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

[“Viewing and Resolving Conflicts” on page 2-13](#)

Viewing Configuration Changes

The **View Configuration Changes** 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 page displays a list of configuration changes that you have made during the current session. To learn more, see [“To View Configuration Changes in a Session” on page 2-5](#). When you are outside a session, the page displays a list of configuration changes that were caused by previous session activations. To learn more, see [“To View Configuration Changes Caused by Session Activations” on page 2-6](#).

To View Configuration Changes in a Session

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. Make at least one change to the configuration.

3. From the left navigation pane, click **View Changes** from under **Change Center**. The **View Configuration Changes** page displays the following information for each change you have made to the configuration during the current session:

Property	Description
Task	A description of the task that was implemented. The task is a link to the Task Details page. To learn more, see “Viewing Task Details” on page 2-9 .
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 task was executed
User	The name of the user who implemented the change
Task Status	The status of the task: Completed —the task was completed Undone —the task was undone Undo Completed —the undo was completed
Undone By	The name of the user who undid the task. This field remains blank if the task has not been undone.
Options	Click the Undo icon to reverse the execution of the task. When you are working in a session, you can undo tasks in any order. 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. To learn more, see “Undoing a Task” on page 2-8 .

To View Configuration Changes Caused by Session Activations

1. Make sure you are not in a session.
2. From the left navigation pane, click **View Changes** from under **Change Center**. The **View Configuration Changes** page displays the following information for each session you have previously activated:

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. To learn more, see “Viewing Task Details” on page 2-9 .
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
Task Status	<p>The status of the session:</p> <p>Activated—the session was activated.</p> <p>Undone—the session was undone and all the operations performed in the session were lost.</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. AquaLogic Service Bus tracks session activation failures but not failures due to individual updates inside a session.</p>
Undone By	The name of the user who undid this task. This field remains blank if the session activation has not been undone.
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. To learn more, see “Undoing a Task” on page 2-8.</p>

Related Topics

[“Overview of the Change Center” on page 2-1](#)

[“Activating a Session” on page 2-4](#)

[“Viewing All Sessions” on page 2-11](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

[“Viewing and Resolving Conflicts” on page 2-13](#)

Undoing a Task

The **View Configuration Changes** page allows you to undo tasks that you have performed in your AquaLogic Service Bus configuration during your current session, and allows you to undo session activations outside of a session. To learn more about this page, see [“Viewing Configuration Changes” on page 2-5](#).

To Undo a Task in a Session

1. Make sure you are in a session.
2. From the left navigation pane, click **View Changes** from under **Change Center**. The **View Configuration Changes** page is displayed.
3. In the **Options** column for a specific task, click the **Undo** icon.

The task is undone.

To Undo a Session Activation

1. Make sure you are outside a session.
2. From the left navigation pane, click **View Changes** from under **Change Center**. The **View Configuration Changes** page is displayed.
3. In the **Options** column for a specific task, click the **Undo** icon.

The session activation is undone.

4. 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.

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.

Note: It is possible to undo an undo action. In the **Options** column of the **Undo of [task]**, click the **Undo** icon.

Related Topics

[“Overview of the Change Center” on page 2-1](#)

[“Using the Change Center” on page 2-3](#)

[“Activating a Session” on page 2-4](#)

[“Viewing All Sessions” on page 2-11](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

[“Viewing and Resolving Conflicts” on page 2-13](#)

[“Viewing Task Details” on page 2-9](#)

Viewing Task Details

The **Task Details** page allows you 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.

To View Task Details

1. On the **View Configuration Changes** page in the **System Administration** module, click the name of the task in the **Task** column. The **Task Details** page is displayed, which displays the following information for each task:

Property	Description
Task	The type of task you performed: <ul style="list-style-type: none">• Create• Update• Delete
Resource Type	Any of these resource types: <ul style="list-style-type: none">• Project• Folder• Business Service• Proxy Service• WSDL• XML Schema• WS-Policies• XQuery• XSLT• MFL file• Service Account• Service Provider
Resource	The name and path of the resource. The path is the project name and the name of the folder in which the resource resides.

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

Related Topics

[“Overview of the Change Center” on page 2-1](#)

[“Using the Change Center” on page 2-3](#)

[“Activating a Session” on page 2-4](#)

[“Viewing Configuration Changes” on page 2-5](#)

[“Viewing All Sessions” on page 2-11](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

Viewing All Sessions

The **View All Sessions** page allows you to view all existing sessions within the AquaLogic Service Bus Console. You can view these sessions if you are currently in a session or outside a session.

Note: You can only view all sessions if you are using the **Administrator** role.

To View All Sessions

1. From the left navigation pane, click **View All Sessions** from under **Change Center**. The **View All Sessions** page displays the following information for each existing session:

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.

Related Topics

[“Overview of the Change Center” on page 2-1](#)

[“Using the Change Center” on page 2-3](#)

[“Activating a Session” on page 2-4](#)

[“Viewing Configuration Changes” on page 2-5](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

[“Viewing and Resolving Conflicts” on page 2-13](#)

Finding and Replacing Environment Values

The **Find and Replace** page allows you to search for environment values that differ between different domains. Environment values (or environment dependent attributes) 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). There are two types of environment values in this release, which are found in the business service and proxy service definitions: URIs, and File/Directory names. The only difference between an environment value and a non-environment value is that you can change environment values in a wholesale manner using the **Find and Replace** page.

Note: You may need to modify many other objects when you move your configuration between domains. You must use the individual edit pages to change those values.

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.

To Find and Replace Environment Values

1. In the **Find** field, enter the environment value that you want to locate.
2. To display a list of environment values in your configuration that contain the value you entered, click **Find**.

Note: Select the **Options** checkbox if you want to locate only items changed in your current session, and select the environment value type for which you want to search—**URIs**, **IMAP Move Folders**, **Mail Server Hosts**, or **File Paths**.

A list of relevant values is displayed, which includes the **Owner**, **Type**, and the **Environment Value** columns.

3. In the **Replace** field, enter the new environment value.
4. To replace the original environment value with the new value, click **Replace All**.

All occurrences of the environment value you entered in the **Find** field are replaced with the environment value you entered in the **Replace** field.

Related Topics

[“Overview of the Change Center” on page 2-1](#)

[“Using the Change Center” on page 2-3](#)

[“Activating a Session” on page 2-4](#)

[“Viewing Configuration Changes” on page 2-5](#)

[“Viewing All Sessions” on page 2-11](#)

[“Viewing Task Details” on page 2-9](#)

[“Viewing and Resolving Conflicts” on page 2-13](#)

Viewing and Resolving Conflicts

The View Conflicts page allows you 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.

Three categories of information can be displayed:

- Concurrent WebLogic Server Updates—warn you if another user is making WebLogic Server updates
- Concurrent Updates—warn you about incompatible changes with other activated sessions
- Diagnostic Messages—inform you of critical conflicts within your configuration

View Conflicts

1. From the left navigation pane, click **View Conflicts** from under **Change Center**. The **View Conflicts** page can display one, two or all of the following sets of information depending on the nature of any conflicts.

In the case where there are Concurrent WebLogic Server updates, the name of the user making those updates is displayed. These updates may either be the deployment of the changes made by another session activation, or another user is making WebLogic Server changes explicitly.

In the case that there are diagnostic messages for the objects in your session, the following information is displayed:

Table 2-1 Diagnostic Messages

Property	Description
Name	The resource to which the diagnostic message refers. The name is a link to that resource.
Resource Type	The resource type
Messages	A description of the conflict. To resolve the conflict, see “Resolve Conflicts” on page 2-14 .

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

In the case that 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 following information is displayed:

Table 2-2 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.

Resolve Conflicts

To resolve a conflict, use the information provided in the **Messages** column (as described in [Table 2-1](#)) 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 2-2](#)), you can resolve the conflict in one of two ways:

- Click **Activate** in the Change Center. This saves your changes for the object to 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 2-2](#)). This action restores this object, in this session, to the state in which it is saved in the run time.

JMS Endpoint URIs Must be Available To Activate a Session

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.

AquaLogic 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, AquaLogic Service Bus checks if the specified connection factory exists; if it does not, a session activation error occurs.

Related Topics

[“Overview of the Change Center” on page 2-1](#)

[“Using the Change Center” on page 2-3](#)

[“Activating a Session” on page 2-4](#)

[“Viewing Configuration Changes” on page 2-5](#)

[“Viewing All Sessions” on page 2-11](#)

[“Viewing Task Details” on page 2-9](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

Using the Change Center

Project Explorer

This section includes the following topics:

- [Overview of the Project Explorer](#)
- [Listing Projects](#)
- [Adding a Project](#)
- [Viewing Project Details](#)
- [Deleting a Project](#)
- [Adding a Folder](#)
- [Viewing Folder Details](#)
- [Deleting a Folder](#)
- [Creating a Resource](#)
- [Importing Resources in Bulk](#)
- [Loading Resources from a Zip File](#)
- [Loading Resources from a URL](#)
- [Reviewing Loaded Resources](#)
- [Viewing Import Results](#)
- [Viewing References](#)

- [Renaming a Resource](#)
- [Moving a Resource](#)
- [Exporting a WSDL](#)

Overview of the Project Explorer

The following table lists the pages you can access from the **Project Explorer** module. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Projects	List projects	Listing Projects
	Add a project	Adding a Project
	Delete a project	Deleting a Project
Project View	View project details	Viewing Project Details
	Add a folder	Adding a Folder
	Create a resource	Creating a Resource
Folder View	View folder details	Viewing Folder Details
	Delete a folder	Deleting a Folder
	Create a resource	Creating a Resource

Projects and Folders

The **Project Explorer** module allows AquaLogic Service Bus developers to better organize related parts of large development projects by allowing logical grouping of AquaLogic Service Bus entities.

The **Project Explorer** module consists of projects and folders.

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

Note: When you create a domain in AquaLogic Service Bus, a default project is created for your use when you log on to the Console.

Folders are contained within projects. You use folders to hierarchically organize resources. They are similar to directories (or folders) in a file system. Each folder resides under another folder or the project (if it is the root folder in that project). The use of folders is optional.

Note: 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.

On the AquaLogic Service Bus Console, you can navigate to a project or folder in either of the following ways:

- Use the tree-based view on the left navigation pane of the Console pages
- Use the Project or Folder pages on the main pane of the Console.

The only difference between these ways is that the left navigation pane displays the whole hierarchy but does not display any resources.

Uses of Projects and Folders

Projects and folders are useful for the following reasons:

- Projects can serve as a unit of development in a large scale development effort. For example, projects `proj_HR`, and `proj_SALES` can contain, respectively, all AquaLogic Service Bus components designed for projects for the HR and Sales departments. Folders can further help organize resources within each project.
- Projects and folders serve as a namespace to distinguish between entities with the same name.
- Projects and folders provide classification and easy-browsing in a domain with a very large number of entities. For example, when you have 1000s of entities, it is preferable to browse a tree, not a table.
- Projects and folders simplify export and import. An import is always additive and never results in deleting resources. If the imported resource already exists, the system updates the resource; if it does not exist, the system creates the resource.

Resources

Projects and folders qualify AquaLogic Service Bus resources along with the name of that resource. Therefore, the project name and the name of the folder (path) is a part of resource name. In other words, a resource is referenced by pre-pending its name with a project name followed by an array of folder names, from root to the folder of the resource.

A reference to a resource is displayed as follows:

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

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

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

Related Topics

[“Listing Projects” on page 3-4](#)

[“Adding a Project” on page 3-5](#)

[“Viewing Project Details” on page 3-6](#)

[“Deleting a Project” on page 3-10](#)

[“Adding a Folder” on page 3-11](#)

[“Viewing Folder Details” on page 3-12](#)

[“Deleting a Folder” on page 3-15](#)

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Viewing References” on page 3-24](#)

Listing Projects

The **Projects** page displays a list of projects. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

The page displays the following information for each project.

Property	Description
Name	The name of the project. Click the name to display details of this project. To learn more, see “Viewing Project Details” on page 3-6 .
Options	Click the Delete Project icon to delete the project. To learn more, see “Deleting a Project” on page 3-10 .

This page also allows you to add a new project. To learn more, see [“Adding a Project” on page 3-5](#).

Related Topics

[“Adding a Folder” on page 3-11](#)

[“Viewing Folder Details” on page 3-12](#)

[“Deleting a Folder” on page 3-15](#)

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Renaming a Resource” on page 3-26](#)

[“Moving a Resource” on page 3-27](#)

[“Viewing References” on page 3-24](#)

Adding a Project

The **Projects** page allows you to add a new project. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

Note: 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.

To Add a Project

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

2. From the left navigation pane, select **Project Explorer**.
3. In the **Enter New Project Name** field, enter a unique name for the project, then click **Add Project**.

The new project is displayed in the list of projects.

Note: The new project is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

This page also you to view the list of projects. To learn more, see [“Listing Projects” on page 3-4](#).

Related Topics

[“Viewing Project Details” on page 3-6](#)

[“Deleting a Project” on page 3-10](#)

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Renaming a Resource” on page 3-26](#)

[“Moving a Resource” on page 3-27](#)

[“Viewing References” on page 3-24](#)

Viewing Project Details

The **Project View** page allows you to view details of a specific project. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

To View Project Details

1. From the left navigation pane, select **Project Explorer**. The **Projects** page is displayed.
2. In the **Name** column, click the name of a specific project to view details of that project. Alternatively, you can also link to the project you want to view from the left navigation pane under **Project Explorer**.

The **Project View** page is displayed, which displays the following information for the project:

Property	Description
Project Name	The name assigned to the project.
References	Click to view a list of resources outside of this project that are referenced by resources inside this project. To learn more, see “Viewing References” on page 3-24 .
Referenced by	Click to view a list of resources outside of this project that reference any resources inside this project. To learn more, see “Viewing References” on page 3-24 .
Description	A description of the project, if one exists. You can click Edit Description to add or edit a description of this project, and click Submit Description to update it.



It displays the following information for the folders:

Property	Description
Name	The name of the folder. Click the name to display folder details. To learn more, see “Viewing Folder Details” on page 3-12 .
Options	Click the Delete Folder icon to delete a folder. To learn more, see “Deleting a Folder” on page 3-15 .

It displays the following information for resources associated with this project:

Property	Description
Name	The name of the resource. The name is a link to details of the resource.

Property	Description
Resource Type	<div>Any of the following resource types:</div> <ul style="list-style-type: none">• Business service• MFL File• Proxy service• Proxy service provider• Resources from URL• Service Account• WS-Policy• WSDL• XML Schema• XQuery Transformation• XSL Transformation• Zipped Resources

Property	Description
Actions	<p>The Actions column displays up to four icons:</p> <ul style="list-style-type: none"> • A Manage Monitoring icon displays for any business or proxy services that you have created. Click this icon to enable or disable monitoring for a specific service, enable or disable the service itself, and view or configure alert rules for a specific service. To learn more, see “Listing and Locating Alert Rules” on page 20-41. • An Edit Message Flow icon displays for any proxy services you have created. Click this icon to edit the message flow of a specific proxy service. To learn more, see “Viewing and Changing Message Flow” on page 15-5. • A Launch Test Console icon displays for any business or proxy service, XQuery transformation, XSL transformation, or MFL File you have created. Click this icon to invoke the Test Console, which you use to validate and test the design of your services and transformations. For the services, you can only use the Test Console at run time; that is, when the session is activated. For the transformations, you can use the Test Console whether you are inside or outside a session. To learn more, see “Testing Services” on page 23-3 and “Testing Transformations” on page 23-21. • An Export WSDL icon displays for any WSDL-based proxy services. You use the Export WSDL functionality to quickly make a WSDL available for consumption by external tools such as IDEs. 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. Click the Export WSDL icon to export the WSDL. To learn more, see “Exporting a WSDL” on page 3-28.
Options	<p>The Options column displays three icons:</p> <ul style="list-style-type: none"> • Click the Rename Resource icon to rename a resource. To learn more, see “Renaming a Resource” on page 3-26 • Click the Move Resource icon to move a resource. To learn more, see “Moving a Resource” on page 3-27. • Click the Delete icon  to delete a resource. A Delete icon with a red X  is displayed when the resource cannot be deleted, which occurs when other resources reference this resource.

This page also enables you to do the following:



- Add a folder. To learn more, see [“Adding a Folder” on page 3-11](#).
- Create a resource. To learn more, see [“Creating a Resource” on page 3-16](#).

Related Topics

[“Adding a Project” on page 3-5](#)

Deleting a Project

The **Project View** page allows you to delete a project. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

Note: 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 cannot delete the project, as you cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon , a Delete icon with a red X  is displayed for these resources.

To Delete a Project

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, click **Projects** under **Project Explorer**. The **Projects** page is displayed.
3. In the **Options** field of the project you want to delete, click the **Delete Project** icon. The project is deleted from the list of projects.

Note: If necessary, you can undo the deletion of this project. To learn more, see [“Undoing a Task” on page 2-8](#).

The project is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing Projects” on page 3-4](#)

[“Adding a Project” on page 3-5](#)

[“Viewing Project Details” on page 3-6](#)

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Renaming a Resource” on page 3-26](#)

[“Moving a Resource” on page 3-27](#)

[“Viewing References” on page 3-24](#)

Adding a Folder

The **Project View** page allows you to add a folder. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

Note: 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.

To Add a Folder

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, click a project name from under **Project Explorer**. The **Project View** page is displayed.
3. In the **Enter New Folder Name** field, enter a unique name for the folder, then click **Add Folder**.

Note: 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.

The new folder is displayed in the list.

Note: The new folder is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing Folder Details” on page 3-12](#)

- [“Deleting a Folder” on page 3-15](#)
- [“Creating a Resource” on page 3-16](#)
- [“Importing Resources in Bulk” on page 3-18](#)
- [“Renaming a Resource” on page 3-26](#)
- [“Moving a Resource” on page 3-27](#)
- [“Viewing References” on page 3-24](#)

Viewing Folder Details

The **Folder View** page enables you to view details of a specific folder. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

To View Folder Details

1. From the left navigation pane, click a project name from under **Project Explorer**. The **Project View** page is displayed.
2. In the **Name** column, click the name of a folder to view its details. Alternatively, you can also link to the folder you want to view from the left navigation pane under **Project Explorer**.

The **Folder View** page is displayed, which displays the following information for the folder:



Property	Description
Folder Name	The name of the folder.
References	Click to view a list of resources outside of this project that are referenced by resources inside this project. To learn more, see “Viewing References” on page 3-24 .
Referenced by	Click to view a list of resources outside of this folder, that reference any resources inside this folder. To learn more, see “Viewing References” on page 3-24 .
Description	A description of the folder, if one exists. You can click Edit Description to add or edit a description of this folder, and click Submit Description to update it.

It displays the following information for the folders within this folder:

Property	Description
Name	The name of the folder. Click the name to display folder details.
Options	Click the Delete icon to delete a folder. To learn more, see “Deleting a Folder” on page 3-15 .

It displays the following information for resources associated with this folder:

Property	Description
Name	The name of the resource. The name is a link to details of the resource.
Resource Type	Any of the following resource types: <ul style="list-style-type: none">• Business service• MFL File• Proxy service• Proxy service provider• Resources from a URL• XML Schema• Service Account• WS-Policy• WSDL• XQuery Transformation• XSL Transformation• Zipped Resources

Property	Description
Actions	<p>The Actions column displays up to four icons:</p> <ul style="list-style-type: none">• A Manage Monitoring icon displays for any business or proxy services that you have created. Click this icon to enable or disable monitoring for a specific service, enable or disable the service itself, and view or configure alert rules for a specific service. To learn more, see “Listing and Locating Alert Rules” on page 20-41.• An Edit Message Flow icon displays for any proxy services you have created. Click this icon to edit the message flow of a specific proxy service. To learn more, see “Viewing and Changing Message Flow” on page 15-5.• A Launch Test Console icon displays for any business or proxy service, XQuery transformation, XSL transformation, or MFL File you have created. Click this icon to invoke the Test Console, which you use to validate and test the design of your services and transformations. For the services, you can only use the Test Console at run time; that is, when the session is activated. For the transformations, you can use the Test Console whether you are inside or outside a session. To learn more, see “Testing Services” on page 23-3 and “Testing Transformations” on page 23-21.• An Export WSDL icon displays for any WSDL-based proxy services. You use the Export WSDL functionality to quickly make a WSDL available for consumption by external tools such as IDEs. 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. Click the Export WSDL icon to export the WSDL. To learn more, see “Exporting a WSDL” on page 3-28.
Options	<p>The Options column displays three icons:</p> <ul style="list-style-type: none">• Click the Rename Resource icon to rename a resource. To learn more, see “Renaming a Resource” on page 3-26.• Click the Move Resource icon to move a resource. To learn more, see “Moving a Resource” on page 3-27.• Click the Delete icon  to delete a resource. A Delete icon with a red X  is displayed when the resource cannot be deleted, which occurs when other resources reference this resource.

This page also enables you to do the following:

- Add a folder. To learn more, see [“Adding a Folder” on page 3-11](#).
- Create a resource. To learn more, see [“Creating a Resource” on page 3-16](#).

Related Topics



[“Listing Projects” on page 3-4](#)

[“Adding a Project” on page 3-5](#)

[“Deleting a Project” on page 3-10](#)

Deleting a Folder

The **Project View** page allows you to delete a folder associated with a project, and the **Folder View** page enables you to delete a folder associated with another folder. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

Note: 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 cannot delete the folder, as you cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon , a Delete icon with a red X  is displayed for these resources.

To Delete a Folder

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, under **Project Explorer**, navigate to the parent project or folder that contains the folder that you want to delete. The **Project View** or **Folder View** page is displayed.
3. In the **Options** field of the folder you want to delete, click the **Delete Folder** icon. The folder is deleted from the list of folders.

Note: If necessary, you can undo the deletion of this project. To learn more, see [“Undoing a Task” on page 2-8](#).

The folder is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

- [“Adding a Folder” on page 3-11](#)
- [“Viewing Folder Details” on page 3-12](#)
- [“Creating a Resource” on page 3-16](#)
- [“Renaming a Resource” on page 3-26](#)
- [“Moving a Resource” on page 3-27](#)
- [“Viewing References” on page 3-24](#)

Creating a Resource

The **Project View** page allows you to create resources for a specific project. To learn more about projects and folders, see [“Overview of the Project Explorer” on page 3-2](#).

To Create a Resource for a Specific Project

- Note:** A resource can be created at a folder or subfolder level as well as the project level. To create it at a folder or sub-folder level, you can apply the steps below to the **Folder View** page.
1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
 2. From the left navigation pane, under **Project Explorer**, navigate to the parent project or folder in which you want to create the resource. The **Project View** or **Folder View** page is displayed.
 3. In the **Create Resource** field, select a resource type. Different pages are displayed subsequently, depending on the resource you select.

Resource Type	Page	Help Topic ¹
Service		
Business Service	Edit a Business Service - General Configuration	Adding a Business Service
Proxy Service	Edit a Proxy Service - General Configuration	Adding a Proxy Service

Resource Type	Page	Help Topic ¹
Interface		
WSDL	Create a New WSDL Resource	Adding a WSDL
XML Schema	Create a New XML Schema Resource	Adding an XML Schema
WS-Policy	Create a New WS-Policy	Adding a WS-Policy
Transformation		
XQuery Transformation	Create a New XQuery	Adding an XQuery Transformation
XSL Transformation	Create a New XSLT	Adding an XSL Transformation
MFL File	Create a New MFL File Resource	Adding an MFL
Security		
Service Account	Create a New Service Account	Adding a Service Account
Proxy Service Provider	Create a New Proxy Service Provider	Adding a Proxy Service Provider
Bulk		
Resources from URL	Load Resources from URL	Loading Resources from a URL
Zipped Resources	Load Resources from a Zip File	Loading Resources from a Zip File

1. To learn more about creating the type of resource you selected, see the appropriate help topic.

- When you create the resource, it is added to the list of resources on the **Project View** page.

Note: The new resource is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing Projects” on page 3-4](#)

[“Adding a Project” on page 3-5](#)

[“Viewing Project Details” on page 3-6](#)

[“Deleting a Project” on page 3-10](#)

[“Adding a Folder” on page 3-11](#)

[“Viewing Folder Details” on page 3-12](#)

[“Deleting a Folder” on page 3-15](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Viewing References” on page 3-24](#)

[“Renaming a Resource” on page 3-26](#)

[“Moving a Resource” on page 3-27](#)

Importing Resources in Bulk

The **Load Resources** page enables you to import resources in bulk into AquaLogic Service Bus. You can select the Zip or JAR file that contains the resources you want to load. During the import, AquaLogic Service Bus uses the existing file structure to resolve dependencies automatically. To learn more, see [“Loading Resources from a Zip File” on page 3-19](#).

Resources such as WSDLs or XML Schemas can define a full tree of dependent resources. To successfully add such resources, you must also add and resolve all the dependent resources. The **Load Resources** page enables you to import a given resource and all its dependents by specifying the URL of the root resource, if these resources are available through the Web. Specifying the root resource is sufficient to download the full tree. The dependency map is resolved automatically. To learn more, see [“Loading Resources from a URL” on page 3-20](#).

Note: There is a difference between bulk import functionality and the import functionality provided by AquaLogic Service Bus to facilitate the import of AquaLogic Service Bus configurations. You use bulk import to import resources that are not hosted by AquaLogic Service Bus; for example, to import resources that reside in a file or on the Web. You use the *import configuration* functionality for propagating a configuration from one AquaLogic Service Bus domain (for example, a testing domain) to another domain (for example, a production domain). To learn about this latter functionality, see [“Importing Configuration Data” on page 22-5](#)

Related Topics

[“Creating a Resource” on page 3-16](#)

[“Reviewing Loaded Resources” on page 3-21](#)

[“Viewing Import Results” on page 3-23](#)

Loading Resources from a Zip File

The **Load Resources** page enables you to import resources in bulk. You can select the Zip or JAR file that contains the resources you want to load; AquaLogic Service Bus locates and imports the resources from this Zip file.

Note: Resources like WSDL or XML Schema can define a full tree of dependent resources. The bulk load feature allows you to upload a set of resources at once; you need not resolve the dependencies manually.

To Load Resources from a Zip File

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the resources. You can add the resources directly under the project or under a selected folder.
Note: To select a folder, click the name of the folder. The **Folder View** page is displayed.
4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **Zipped Resources** from under **Bulk**. The **Load Resources** page is displayed.
5. Under **Select Zip File and Review Type Extensions**, do the following:
 - a. In the **Select Zip File** field, click **Browse** to locate an existing Zip file. This is a required field.
 - b. Click **Open** to select the file for import.
6. Review the Extension Map.

Each file in the Zip file is a possible resource, and the file extension is the commonly used way to identify the file type. AquaLogic 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 AquaLogic 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 AquaLogic Service Bus Console folder.

Note: An extension can only be associated with one file type.

7. Click **Next**. The **Review Loaded Resources** page is displayed. Continue in [“Reviewing Loaded Resources” on page 3-21](#).

Related Topics

[“Loading Resources from a URL” on page 3-20](#)

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Viewing Project Details” on page 3-6](#)

[“Viewing Folder Details” on page 3-12](#)

Loading Resources from a URL

The **Load Resources** page enables you to import a resource such as a WSDL or XML Schema and all its dependents by specifying the URL of the root resource, if these resources are available through the Web. Specifying the root resource enables you to download the full tree. The dependency map is resolved automatically.

To Load Resources from a URL

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the resources. You can add the resources directly under the project or under a selected folder.

Note: To select a folder, click the name of the folder. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **Resources from URL** from under **Bulk**. The **Load Resources** page is displayed.
5. In the **URL/Path** field, enter the URL or path of the resource. This is a required field.
6. In the **Resource Name** field, enter the name of the resource.
7. In the **Resource Type** field, select **WSDL**, **XML Schema**, **XQuery**, **XSLT**, **WS-Policy**, or **MFL** as the resource type.
8. Click **Next**. The **Review Loaded Resources** page is displayed. Continue in [“Reviewing Loaded Resources” on page 3-21](#).

Related Topics

[“Loading Resources from a Zip File” on page 3-19](#)

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Viewing Project Details” on page 3-6](#)

[“Viewing Folder Details” on page 3-12](#)

Reviewing Loaded Resources

The **Review Loaded Resources** page enables you to display loaded resources from a zip file or a URL and select the resources you want to import. You can access this page only when you have successfully loaded the resources from the zip file or URL.

To Review Loaded Resources

1. 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 3-19](#) or [“Loading Resources from a URL” on page 3-20](#).

The **Review Loaded Resources** page displays the following information:

Property	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 these resource types: <ul style="list-style-type: none">• WSDL• XML Schema• XQuery• XSLT• WS-Policy• MFL File

In addition, the **Review Loaded Resources** page displays a column that determines whether or not the resource is a known file. A check box is displayed if it is a known file, but a Warning icon is displayed if the file is unknown. (A file without an extension or one that does not have an extension defined in the map is considered *unknown*.) You cannot import the unknown files.

2. Make sure the check box associated with the resource is selected to include the resource when you import the resources. You can clear the check box to exclude the resource from the import.
3. To import the resources you have selected, click **Import**. The **Import Result** page is displayed. Continue in [“Viewing Import Results” on page 3-23](#).

Related Topics

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Viewing Project Details” on page 3-6](#)

[“Viewing Folder Details” on page 3-12](#)

Viewing Import Results

The **Import Result** page enables you to view the import results of loaded resources from a zip file or a URL. You can access this page only when you have successfully loaded the resources from the zip file or URL and clicked Import to import selected resources.

To View Import Results

1. 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 3-19](#) or [“Loading Resources from a URL” on page 3-20](#), and make sure you have completed the steps in [“Reviewing Loaded Resources” on page 3-21](#).

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

Property	Description
Status	The status of the resource; for example, whether or not it has been imported successfully.
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 these resource types: <ul style="list-style-type: none">• WSDL• XML Schema• XQuery• XSLT• WS-Policy• MFL File
Error Message	Displays the details of the error message if the resource has not been imported successfully.

2. Click **Load Another**. The imported resources are displayed in the list of resources on the **Project View** or **Folder View** page.

Related Topics

[“Creating a Resource” on page 3-16](#)

[“Importing Resources in Bulk” on page 3-18](#)

[“Viewing Project Details” on page 3-6](#)

[“Viewing Folder Details” on page 3-12](#)

Viewing References

The **View References** page enables you to view a list of resources that have references to, or references by resource under a particular project.

- **References:** This link displays resources that are outside of a project/folder and are references by resources inside that project/folder.
- **Referenced by:** This link displays resources that are outside of a project/folder and reference resources inside that project.

To View References

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. Click **References** or **Referenced By** on a project, folder or resource details page in the **Project Explorer** or **Resource Browser** modules. The **View References** page is displayed.

The page displays the following information:

Property	Description
Name	The name of the resource. The name is a link to details of the resource.

Property	Description
Resource Type	<p>Displays Project, Folder, or any of the following resource types:</p> <ul style="list-style-type: none"> • Business service • MFL File • Proxy service • Proxy service provider • XML Schema • Service Account • WS-Policy • WSDL • XQuery Transformation • XSL Transformation

If you are importing a set of resources, and you access this page by clicking the link in the **Reference** column of the **Import Configuration Data** page, the page displays the following information:

Property	Description
Type	<p>Any of these reference types:</p> <ul style="list-style-type: none"> • Business service • MFL File • Proxy service • Proxy service provider • XML Schema • Service Account • WS-Policy • WSDL • XQuery Transformation • XSL Transformation
Name/ID	The name and path of the reference.

3. To return to the previous page, click **OK**.

Related Topics

- [“Overview of the Project Explorer” on page 3-2](#)
- [“Listing Projects” on page 3-4](#)
- [“Viewing Project Details” on page 3-6](#)
- [“Viewing Folder Details” on page 3-12](#)
- [“Creating a Resource” on page 3-16](#)
- [“Renaming a Resource” on page 3-26](#)
- [“Moving a Resource” on page 3-27](#)

Renaming a Resource

The **Project View** or **Folder View** page enables you to rename a resource.

To Rename a Resource

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, click a project or folder from under **Project Explorer**. The **Project View** or **Folder View** page is displayed.
3. In the Resources section, click the **Rename** icon in the **Options** column of the specific resource you want to rename.

The Rename page is displayed. The page displays the following information:

Property	Description
Current Resource Name	The current name assigned to the resource.
Current Location	The current project and folder where the resource resides.

4. In the **New Resource Name** field, enter a new name for the resource.
5. Do one of the following:
 - To save the new resource name, click **Rename**. The resource is displayed with the new name in the list of resources.

- To disregard changes, click **Cancel**.

Related Topics

[“Overview of the Project Explorer” on page 3-2](#)

[“Listing Projects” on page 3-4](#)

[“Viewing Project Details” on page 3-6](#)

[“Viewing Folder Details” on page 3-12](#)

[“Creating a Resource” on page 3-16](#)

[“Viewing References” on page 3-24](#)

[“Moving a Resource” on page 3-27](#)

Moving a Resource

The **Project View** or **Folder View** page enables you to move a resource.

To Move a Resource

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, click a project or folder from under **Project Explorer**. The **Project View** or **Folder View** page is displayed.
3. In the Resources section, click the **Move** icon in the **Options** column of the specific resource you want to move.

The Move page is displayed. The page displays the following information:

Property	Description
Current Resource Name	The current name assigned to the resource.
Current Location	The current project and folder where the resource resides.

4. In the **New Location** field, select the project and sub-folder to which you want to move the file.

Note: If they exist, the sub-folders for a project are displayed when you select the project.

5. Do one of the following:
 - To save the new location, click **Move File**. The resource is moved to the new location.
 - To disregard changes, click **Cancel**.

Related Topics

[“Overview of the Project Explorer” on page 3-2](#)

[“Listing Projects” on page 3-4](#)

[“Viewing Project Details” on page 3-6](#)

[“Viewing Folder Details” on page 3-12](#)

[“Creating a Resource” on page 3-16](#)

[“Viewing References” on page 3-24](#)

[“Renaming a Resource” on page 3-26](#)

Exporting a WSDL

The **Project View** or **Folder View** page enables you to export a WSDL associated with a proxy service in your configuration. You can only do this when you are outside a session.

You use the Export WSDL functionality to quickly make a WSDL available for consumption by external tools such as IDEs. 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.

To Export a WSDL

1. From the left navigation pane, click a project or folder from under **Project Explorer**. The **Project View** or **Folder View** page is displayed.
2. In the **Actions** column of the appropriate proxy service, click the **Export WSDL** icon to create a configuration JAR file and export it. The **File Download** dialog box is displayed.
3. 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.

Related Topics

[“Overview of the Project Explorer” on page 3-2](#)

[“Listing Projects” on page 3-4](#)

[“Viewing Project Details” on page 3-6](#)

[“Viewing Folder Details” on page 3-12](#)

[“Creating a Resource” on page 3-16](#)

Project Explorer

Resource Browser

This section includes the following topics:

- [Overview of Resource Browser](#)

Overview of Resource Browser

The following table lists the pages you can access from the **Resource Browser** module. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Summary of Proxy Services	View a list of proxy services	Listing and Locating Proxy Services
	Filter proxy services	
	Delete a proxy service	Deleting Proxy Services
View Details of Proxy Service	View details of a specific proxy service	Viewing and Changing Proxy Services
	Update details of a proxy service	
Summary of Business Services	View a list of business services	Listing and Locating Business Services
	Filter business services	
	Delete a business service	Deleting Business Services

Page	Associated Tasks	Help Topics
View Details of Business Service	View details of a specific business service	Viewing and Changing Business Services
	Update details of a business service	
Summary of WSDLs	View a list of WSDLs	Listing and Locating WSDLs
	Filter WSDLs	
	Delete a WSDL	Deleting a WSDL
WSDL Details	View details of a WSDL	Viewing and Changing WSDL Details
	Edit WSDL details	
Edit the References of a WSDL Resource	Resolve WSDL references	Resolving Unresolved WSDL References
Summary of XML Schemas	View a list of XML schemas	Listing and Locating XML Schemas
	Filter XML schemas	
	Delete an XML schema	Deleting an XML Schema
XML Schema Details	View details of an XML schema	Viewing and Changing XML Schema Details
	Edit an XML schema	
Summary of WS-Policies	View a list of WS-Policies	Listing and Locating WS-Policies
	Filter WS-Policies	
	Delete a WS-Policy	Deleting a WS-Policy
WS-Policy Details	View details of a WS-Policy	Viewing and Changing WS-Policies
	Edit WS-Policy Details	
Summary of XQueries	View a list of XQuery Transformations	Listing and Locating XQuery Transformations
	Filter the list of XQuery Transformations	
	Delete an XQuery Transformation	Deleting an XQuery Transformation

Page	Associated Tasks	Help Topics
XQuery Details	View details of an XQuery Transformation	Viewing and Changing XQuery Transformation Details
	Edit details of an XQuery Transformation	
Summary of XSLTs	View a list of XSL Transformations	Listing and Locating XSL Transformations
	Filter the list of XSL Transformations	
	Delete an XSL Transformation	Deleting an XSL Transformation
XSLT Details	View details of an XSL Transformation	Viewing and Changing Details of an XSL Transformation
	Edit details of an XSL Transformation	
Edit the References of an XSLT Resource	Resolve XSLT references	Resolving Unresolved XSL Transformation References
Summary of MFL Files	View a list of MFLs	Listing and Locating MFLs
	Filter the list of MFLs	
	Delete an MFL	Deleting an MFL
MFL Details	View details of an MFL	Viewing and Changing Details of an MFL
	Edit details of an MFL	
Summary of Service Accounts	View a list of service accounts	Listing and Locating Service Accounts
	Filter the list of service accounts	
	Delete a service account	Deleting a Service Account
Service Account Details	View details of a service account	Viewing and Changing Service Account Details
	Edit details of a service account	
Summary of Proxy Service Providers	View a list of proxy service providers	Listing and Locating Proxy Service Providers
	Filter the list of proxy service providers	
	Delete a proxy service provider	Deleting a Proxy Service Provider

Page	Associated Tasks	Help Topics
Proxy Service Provider Details	View details of a proxy service provider	Viewing and Changing Proxy Service Provider Details
	Edit details of a proxy service provider	

XML Schemas

This section includes the following topics:

- [Overview of XML Schemas](#)
- [Listing and Locating XML Schemas](#)
- [Adding an XML Schema](#)
- [Viewing and Changing XML Schema Details](#)
- [Deleting an XML Schema](#)
- [Viewing Unresolved XML Schema References](#)
- [Resolving Unresolved XML Schema References](#)

Overview of 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. To learn more, see [“Viewing and Changing WSDL Details”](#) on page 6-6 and [“Resolving Unresolved WSDL References”](#) on page 6-11. You can also use XML schemas in the Message Flow of proxy services to validate an element specified with an XPath expression. To learn more, see the description of the Validation action in [“Validate”](#) on page 16-57.

The following table lists the XML Schema pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Summary of XML Schemas	View a list of XML schemas	Listing and Locating XML Schemas
	Filter XML schemas	
	Delete an XML schema	Deleting an XML Schema
Create a New XML Schema Resource	Add a new XML schema	Adding an XML Schema
XML Schema Details	View details of an XML schema	Viewing and Changing XML Schema Details
	Edit an XML schema	
Edit the References of an XML Schema Resource	Resolve unresolved XML schema references	Resolving Unresolved XML Schema References

Listing and Locating XML Schemas

The **Summary of XML Schemas** page enables you to view a list of 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. To learn more, see [“Overview of XML Schemas” on page 5-1](#).

To List and Locate XML Schemas

1. From the left navigation pane, select **XML Schemas** from under **Resource Browser**. The Summary of XML Schemas page is displayed, which displays the following information for each XML schema. For a more detailed description of the properties, see [“Viewing and Changing XML Schema Details” on page 5-5](#).

Property	Description
XML Schema Name	The unique name assigned to the XML schema. The name is a link to the XML Schema Details page. To learn more, see “Viewing and Changing XML Schema Details” on page 5-5 .
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. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
XML Schema namespace	The namespace used to qualify any of the definitions included in the XML schema.
Options	Click the Delete icon to enable you to delete a specific XML schema. To learn more, see “Deleting an XML Schema” on page 5-8 .

2. To locate a specific XML schema, do one of the following:
 - Filter by XML schema name. In the **Name**, **Path**, and **Name Space** fields, enter the name, path and name space of the search target, then click **Search**. The path is the project name and the name of the folder in which the XML Schema resides. The XML schemas matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **XML Schema Name** and **Path** columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all XML schemas.

Related Topics

[“Adding an XML Schema” on page 5-4](#)

[“Viewing Unresolved XML Schema References” on page 5-9](#)

[“Resolving Unresolved XML Schema References” on page 5-10](#)

Adding an XML Schema

The **Create a New XML Schema Resource** page allows you to add a new XML schema. 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. To learn more, see [“Overview of XML Schemas” on page 5-1](#).

To add a new XML schema, do one of the following:

- Import an existing XML schema
- Enter data in the text fields to write a new XML schema
- Copy and paste data from an existing XML schema into the text fields

To Add an XML Schema

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the XML schema. You can add an XML schema directly to the project, or you can add the XML schema to a selected folder that resides in the project.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **XML Schema** from under **Interface**. The **Create a New XML Schema Resource** page is displayed.
5. In the **Resource Name** field, enter a unique name for this XML schema. This is a required field.
6. In the **Resource Description** field, enter a description for the XML schema.
7. 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.

Note: This is a required field.

8. Do one of the following:

- To save the XML schema, click **Save**. The new XML schema is included in the list of resources.

Note: When you click **Save**, if there are any unresolved references for the new XML schema, the system displays them. To learn more, see [“Viewing Unresolved XML Schema References” on page 5-9](#).

- To disregard changes, click **Cancel**.

Note: The new XML schema is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating XML Schemas” on page 5-2](#)

[“Viewing and Changing XML Schema Details” on page 5-5](#)

[“Deleting an XML Schema” on page 5-8](#)

[“Resolving Unresolved XML Schema References” on page 5-10](#)

Viewing and Changing XML Schema Details

The **XML Schema Details** page displays structural and text views of a specific XML schema. 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. To learn more, see [“Overview of XML Schemas” on page 5-1](#).

To View and Change XML Schema Details

1. Locate the XML schema. To learn more, see [“Listing and Locating XML Schemas” on page 5-2](#).
2. Click the XML schema name. The **XML Schema Details** page displays the following information:

Property	Description
Resource Name	The name and path assigned to this XML schema.
Created By	The user who created this XML schema or imported it into the configuration.
Created On	The date and time that the user created this XML schema or imported it into the configuration.
References	The number of objects that this XML schema references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this XML schema. If such references exist, click the 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. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this XML schema, if one exists.

The structural view of the XML schema is displayed by default, which includes the following information:

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 TypesXML Schema ElementsXML Schema ImportsXML Schema Includes/Redefines

Property	Description
Schema State	<p>Status of the XML schema:</p> <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. To learn more, see “Resolving Unresolved XML Schema References” on page 5-10.

- Click **Text View** to display a text view of the XML schema details. The text view includes the following information:

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.

- If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
- To make a change to the fields, click **Edit**. See [“Adding an XML Schema” on page 5-4](#) for a description of the fields.
- Make the appropriate edits.
- Do one of the following:
 - To update the XML schema, click **Save**. The XML schema is updated.
The **Summary of XML Schemas** page is displayed.
 - To disregard changes, click **Cancel**.

Note: The XML schema is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Deleting an XML Schema” on page 5-8](#)

[“Viewing Unresolved XML Schema References” on page 5-9](#)

Deleting an XML Schema

The **Summary of XML Schemas** page enables you to delete 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. To learn more, see [“Overview of XML Schemas” on page 5-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

To Delete an XML Schema

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#)
2. From the left navigation pane, select **XML Schemas** from under **Resource Browser**. The **Summary of XML Schemas** page is displayed.
3. In the **Options** field of the XML schema you want to delete, click the **Delete** icon.

The XML schema is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The XML schema is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click

Discard at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating XML Schemas” on page 5-2](#)

[“Adding an XML Schema” on page 5-4](#)

[“Viewing and Changing XML Schema Details” on page 5-5](#)

[“Viewing Unresolved XML Schema References” on page 5-9](#)

[“Resolving Unresolved XML Schema References” on page 5-10](#)

Viewing Unresolved XML Schema References

The **View Unresolved Schema References** page displays the following information for each unresolved XML schema reference. To learn more about XML schemas, see [“Overview of XML Schemas” on page 5-1](#).

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. To learn more, see “Viewing and Changing XML Schema Details” on page 5-5 .
Namespace	The namespace used to qualify any of the definitions included in the XML schema.

To List and Locate References

To locate a specific reference, do one of the following:

- Resort the list. Ascending and descending arrow buttons indicate sortable columns. Click the button to change the sort order.
- Scroll through the pages. Use the controls in the lower right corner. 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.

Related Topics

[“Listing and Locating XML Schemas” on page 5-2](#)

[“Adding an XML Schema” on page 5-4](#)

[“Viewing and Changing XML Schema Details” on page 5-5](#)

[“Deleting an XML Schema” on page 5-8](#)

[“Resolving Unresolved XML Schema References” on page 5-10](#)

Resolving Unresolved XML Schema References

The **Edit the References of an XML Schema Resource** page enables you to resolve unresolved XML schema references by configuring the mapping for XML schema references such as XML schema imports. To learn more about XML schemas, see [“Overview of XML Schemas” on page 5-1](#).

To Resolve a Reference

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
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 **XML Schema Details** page is displayed.
3. Click **Edit References**. The **Edit the References of an XML Schema Resource** page is displayed.
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. Do one of the following:
 - To resolve the reference, click **Save**. The **XML Schema Details** page is displayed.
 - To disregard changes, click **Cancel**.
9. On the **XML Schema Details** page, click **OK**. The state of the XML schema is displayed as **Valid**.

Related Topics

[“Listing and Locating XML Schemas” on page 5-2](#)

[“Adding an XML Schema” on page 5-4](#)

[“Viewing and Changing XML Schema Details” on page 5-5](#)

[“Deleting an XML Schema” on page 5-8](#)

[“Viewing Unresolved XML Schema References” on page 5-9](#)

WSDLs

This section includes the following topics:

- [Overview of WSDLs](#)
- [Listing and Locating WSDLs](#)
- [Adding a WSDL](#)
- [Viewing and Changing WSDL Details](#)
- [Deleting a WSDL](#)
- [Viewing Unresolved WSDL References](#)
- [Resolving Unresolved WSDL References](#)

Overview of WSDLs

A WSDL (Web Service Definition Language) is the formal description of a Web service; in AquaLogic 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. This WSDL is used as the base for the final WSDL document.

When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. A WSDL port describes what the actual transport address is. You use it for a concrete interface. A

WSDL binding describes the structure of the interface and how it is packaged. You use it to map the transport address.

To create a business service or a proxy service from a WSDL port, select **WSDL port** from under **Create a New Service** on the **Add a Business Service - General Configuration** page or **Add a Proxy Service - General Configuration** page respectively. To create a business service or a proxy service from a WSDL binding, select **WSDL binding** from under **Create a New Service** on the **Add a Business Service - General Configuration** page or **Add a Proxy Service - General Configuration** page respectively. To learn more, see [“Adding a Business Service” on page 13-7](#) and [“Adding a Proxy Service” on page 14-9](#).

A WSDL document uses the following elements to define network services:

Property	Description
Type	A container for data type definitions using a specific type system (for example, XML Schemas).
Message	An abstract, typed definition of the data being communicated.
Operation	An abstract description of an action supported by the service.
Port Type	An abstract set of operations supported by one or more endpoints. Defines the abstract interface of a service independent of the file instance specific details. The Port Type is local to the WSDL file.
Binding	For a definition of a WSDL Binding, see http://www.w3.org/TR/wsdl#_bindings .
Port	For a definition of a WSDL port, see http://www.w3.org/TR/wsdl#_ports .
Service	A collection of related endpoints.
Endpoint	The transport URL for a service.
URL	The address at which a WSDL is located.

The following table lists the WSDL pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided:

Page	Associated Tasks	Help Topics
Summary of WSDLs	View a list of WSDLs. The WSDL name and WSDL namespace are displayed.	Listing and Locating WSDLs
	Filter WSDLs	
	Delete a WSDL	Deleting a WSDL
Create a New WSDL Resource	Add a new WSDL	Adding a WSDL
WSDL Details	View details of a WSDL	Viewing and Changing WSDL Details
	Edit WSDL details	
Edit the References of a WSDL Resource	Edit WSDL references	Resolving Unresolved WSDL References

Listing and Locating WSDLs

The **Summary of WSDLs** page enables you to view a list of WSDLs. A WSDL is the formal description of a Web service; in AquaLogic Service Bus, it describes a proxy service or a business service. To learn more, see [“Overview of WSDLs” on page 6-1](#).

To List and Locate WSDLs

1. From the left navigation pane, select **WSDLs** from under **Resource Browser**. The Summary of WSDLs page is displayed, which displays the following information for each WSDL. For a more detailed description of the properties, see [“Viewing and Changing WSDL Details” on page 6-6](#).

Property	Description
WSDL Name	The unique name assigned to the WSDL. The name is a link to the WSDL Details page. To learn more, see “Viewing and Changing WSDL Details” on page 6-6 .
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. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
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. To learn more, see “Deleting a WSDL” on page 6-9 .

2. To locate a specific WSDL, do one of the following:
- Filter by WSDL name. In the **Name**, **Path**, and **Name Space** fields, enter the name, path, and name space of the search target, then click **Search**. The path is the project name and the name of the folder in which the WSDL resides. The WSDLs matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **WSDL Name** and **Path** columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.
- Note:** Click **View All** to display all WSDLs.

Related Topics

[“Adding a WSDL” on page 6-5](#)

[“Viewing Unresolved WSDL References” on page 6-10](#)

[“Resolving Unresolved WSDL References” on page 6-11](#)

Adding a WSDL

The **Create a New WSDL Resource** page allows you to add a new WSDL. A WSDL is the formal description of a Web service; in AquaLogic Service Bus, it describes a proxy service or a business service. To learn more, see [“Overview of WSDLs” on page 6-1](#).

To add a new WSDL, do one of the following:

- Import an existing WSDL.
- Enter data in the text fields to write a new WSDL.
- Copy and paste data from an existing WSDL into the text fields.

To Add a New WSDL

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the WSDL. You can add a WSDL directly to the project, or you can add the WSDL to a selected folder that resides in the project.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **WSDL** from under **Interface**. The **Create a New WSDL Resource** page is displayed.
5. In the **Resource Name** field, enter a unique name for this WSDL. This is a required field.
6. In the **Resource Description** field, enter a description for the WSDL.
7. 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.

Note: This is a required field.

8. Do one of the following
 - To save the WSDL, click **Save**. The new WSDL is included in the list of resources.

Note: When you click **Save**, if there any unresolved references for the new WSDL, the system displays them. To learn more, see [“Viewing Unresolved WSDL References” on page 6-10](#).

– To disregard changes, click **Cancel**.

Note: The new WSDL is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating WSDLs” on page 6-3](#)

[“Viewing and Changing WSDL Details” on page 6-6](#)

[“Deleting a WSDL” on page 6-9](#)

[“Resolving Unresolved WSDL References” on page 6-11](#)

Viewing and Changing WSDL Details

The **WSDL Details** page displays detailed information about a specific WSDL. A WSDL is the formal description of a Web service; in AquaLogic Service Bus, it describes a proxy service or a business service. To learn more, see [“Overview of WSDLs” on page 6-1](#).

To View and Change WSDL Details

1. Locate the WSDL. To learn more, see [“Listing and Locating WSDLs” on page 6-3](#).
2. Click the WSDL name. The **WSDL Details** page displays the following information for the WSDL:

Property	Description
Resource Name	The name and path assigned to this WSDL.
Created By	The user who created this WSDL or imported it into the configuration.
Created On	The date and time that the user created this WSDL or imported it into the configuration.

Property	Description
References	The number of objects that this WSDL references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this WSDL. If such references exist, click the link to view a list of the objects. For example, if you select this WSDL’s 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. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this WSDL, if one exists.

The structural view of the WSDL is displayed by default, which includes the following information:

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

Property	Description
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> 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. To learn more, see “Resolving Unresolved WSDL References” on page 6-11.</p>

- Click **Text view** to display a text view of the WSDL details. The text view includes the following information:

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

- If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
- To make a change to the fields, click **Edit**. See [“Adding a WSDL” on page 6-5](#) for a description of the fields.
- Make the appropriate edits.
- Do one of the following:
 - To update the WSDL, click **Save**. The WSDL is updated.
The **Summary of WSDLs** page is displayed.
 - To disregard changes, click **Cancel**.

Notes: The updated WSDL is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

The **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.

Related Topics

[“Viewing Unresolved WSDL References” on page 6-10](#)

[“Resolving Unresolved WSDL References” on page 6-11](#)

[“Deleting a WSDL” on page 6-9](#)

Deleting a WSDL

The **Summary of WSDLs** page enables you to delete WSDLs. A WSDL is the formal description of a Web service; in AquaLogic Service Bus, it describes a proxy service or a business service. To learn more, see [“Overview of WSDLs” on page 6-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

To Delete a WSDL

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **WSDLs** from under **Resource Browser**. The **Summary of WSDLs** page is displayed.
3. In the **Options** field of the WSDL you want to delete, click the **Delete** icon.

The WSDL is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The WSDL is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

- [“Listing and Locating WSDLs” on page 6-3](#)
- [“Adding a WSDL” on page 6-5](#)
- [“Viewing and Changing WSDL Details” on page 6-6](#)
- [“Viewing Unresolved WSDL References” on page 6-10](#)
- [“Resolving Unresolved WSDL References” on page 6-11](#)

Viewing Unresolved WSDL References

The **View Unresolved WSDL References** page displays the following information for each WSDL reference. To learn more about WSDLs, see [“Overview of WSDLs” on page 6-1](#).

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 List and Locate References

To locate a specific reference, do one of the following:

- Resort the list. Ascending and descending arrow buttons indicate sortable columns. Click the button to change the sort order.
- Scroll through the pages. Use the controls in the lower right corner. 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.

Related Topics

[“Listing and Locating WSDLs” on page 6-3](#)

[“Adding a WSDL” on page 6-5](#)

[“Viewing and Changing WSDL Details” on page 6-6](#)

[“Deleting a WSDL” on page 6-9](#)

[“Resolving Unresolved WSDL References” on page 6-11](#)

Resolving Unresolved WSDL References

The **Edit the References of a WSDL Resource** page enables you 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. To learn more about WSDLs, see [“Overview of WSDLs” on page 6-1](#).

To Resolve an Unresolved WSDL or XML Schema Reference

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of WSDLs** page, in the **WSDL Name** column, click the appropriate WSDL name to view details of the unresolved reference. The **WSDL Details** page is displayed.
3. Click **Edit References**. The **Edit the References of a WSDL Resource** page is displayed.
4. In the **Resource Type** field, select **WSDL** or select **XML Schema**.
5. Click **Browse**. Depending on the resource type, the **WSDL Browser** or the **XML Schema Browser** is displayed.
6. In the **WSDL Browser** or **XML Schema Browser**, select a WSDL or XML Schema, then select a definition from the **Definitions** pane.
7. Click **Submit**. The WSDL or XML Schema you selected is displayed in the **Resource Name** field.
8. Do one of the following:
 - To resolve the reference, click **Save**. The **WSDL Details** page is displayed.

- To disregard changes, click **Cancel**.

9. On the **WSDL Details** page, click **OK**. The state of the WSDL is displayed as **Valid**.

To Resolve an Unresolved WS-Policy Reference

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of WSDLs** page, in the **WSDL Name** column, click the appropriate WSDL name to view details of the unresolved reference. The **WSDL Details** page is displayed.
3. Click **Edit References**. The **Edit the References of a WSDL Resource** page is displayed.
4. In the **WS-Policy Name** field, click **Browse**. The **Policy Browser** is displayed.
5. In the **Policy Browser**, select a WS-Policy.
6. Click **Submit**. The WS-Policy you selected is displayed in the **WS-Policy Name** field.
7. Do one of the following:
 - To resolve the reference, click **Save**. The **WSDL Details** page is displayed.
 - To disregard changes, click **Cancel**.
8. On the **WSDL Details** page, click **OK**. The state of the WSDL is displayed as **Valid**.

Related Topics

[“Listing and Locating WSDLs” on page 6-3](#)

[“Adding a WSDL” on page 6-5](#)

[“Viewing and Changing WSDL Details” on page 6-6](#)

[“Deleting a WSDL” on page 6-9](#)

[“Viewing Unresolved WSDL References” on page 6-10](#)

WS-Policies

This section includes the following topics:

- [Overview of WS-Policies](#)
- [Listing and Locating WS-Policies](#)
- [Adding a WS-Policy](#)
- [Viewing and Changing WS-Policies](#)
- [Deleting a WS-Policy](#)

Overview of WS-Policies

Web Service Policy Framework (WS-Policy) is an extensible XML-based framework that extends the configuration of a Web service with domain specific assertions and specifies the requirements, expectations, and capabilities of Web services. In AquaLogic Service Bus, one of the primary uses of WS-Policy is configuration of message-level security in proxy and business services using security policy statements. Because the WS-Policy specification has not been standardized, AquaLogic Service Bus supports a WebLogic Server-proprietary format that tracks the WS-Policy standard. For more information, see the [WebLogic Server Administration Console Online Help](#).

WS-Policy statements ensure message integrity, confidentiality, and authentication by specifying signing, encryption, application of security algorithms, and authentication mechanisms. A WS-Policy statement may include both security and reliable messaging assertions. At this time, AquaLogic Service Bus supports WS-Policy assertions, but not reliable messaging assertions.

WS-Policy statements are XML documents, which may be in-line in a WSDL or referenced from the WSDL. A WSDL may import other WSDLs containing policy attachments, either in-line or referenced. You can associate one or more WS-Policy statements to an entire message or parts of a message.

Note: To learn how to attach a WS-Policy to a WSDL, see [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

WS-Policies in AquaLogic Service Bus must have an ID attribute. The value of this attribute must be unique across all WS-Policies in the Service Bus repository. The `wsu:Id` attribute is optional in the WS-Policy schema. However, AquaLogic Service Bus does not allow you to import a WS-Policy unless it has a `wsu:Id` attribute.

The following table lists the pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Summary of WS-Policies	View a list of WS-Policies	Listing and Locating WS-Policies
	Filter WS-Policies	
	Delete a WS-Policy	Deleting a WS-Policy
Create a New WS-Policy	Add a new WS-Policy	Adding a WS-Policy
WS-Policy Details	View details of a WS-Policy	Viewing and Changing WS-Policies
	Edit WS-Policy Details	

Note: To learn more about WS-Policies and security, see [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

Listing and Locating WS-Policies

The **Summary of WS-Policies** page enables you to view a list of Web Service Policies. (WS-Policies). WS-Policies are used in AquaLogic Service Bus to associate Web service security policy with proxy services and business services. To learn more, see [“Overview of WS-Policies” on page 7-1](#).

To List and Locate WS-Policies

1. From the left navigation pane, select **WS-Policies** from under **Resource Browser**. The Summary of WS-Policies page is displayed, which displays the following information for each WS-Policy. For a more detailed description of the properties, see [“Viewing and Changing WS-Policies” on page 7-5](#).

Property	Description
WS-Policy Name	The unique name assigned to the WS-Policy. The name is a link to the WS-Policy Details page. To learn more, see “Viewing and Changing WS-Policies” on page 7-5 .
Path	The path is the project name and the name of the folder in which the WS-Policy resides. It is a link to the project or folder that contains this resource. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
Options	Click the Delete icon to delete a specific WS-Policy. To learn more, see “Deleting a WS-Policy” on page 7-7 .

2. To locate a specific WS-Policy, do one of the following:
 - Filter by policy 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 WS-Policy resides. Enter the search target, then click **Search**. The WS-Policies matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **WS-Policy Name** column. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

Related Topics

[“Adding a WS-Policy” on page 7-4](#)

Adding a WS-Policy

The **Create a New WS-Policy** page allows you to add a new Web Service Policy (WS-Policy). WS-Policies are used in AquaLogic Service Bus to associate Web service security policy with proxy services and business services. To learn more, see [“Overview of WS-Policies” on page 7-1](#).

To add a new WS-Policy, do one of the following:

- Import an existing WS-Policy.
- Enter data in the text fields to write a new WS-Policy.
- Copy and paste data from an existing WS-Policy into the text fields.

To Add a New WS-Policy

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.

3. Select the project to which you want to add the WS-Policy. You can add a WS-Policy directly to the project, or you can add it to a selected folder that resides in the project.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **WS-Policy** from under **Interface**. The **Create a New WS-Policy** page is displayed.

5. In the **Resource Name** field, enter a unique name for this WS-Policy. This is a required field.

6. In the **Resource Description** field, enter a description of this WS-Policy.

7. In the **Policy** field, do one of the following:

- Enter text for the new WS-Policy.
- Click **Browse** to locate and import an existing WS-Policy.
- Copy and paste text from an existing WS-Policy into this field.

Note: This is a required field.

8. Do one of the following:

- To save the WS-Policy, click **Save**. The WS-Policy is created.

The **Project View** or **Folder View** page is displayed. The new WS-Policy is included in the list of resources.

- To disregard changes, click **Cancel**.

Note: The new WS-Policy is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating WS-Policies” on page 7-3](#)

[“Viewing and Changing WS-Policies” on page 7-5](#)

[“Deleting a WS-Policy” on page 7-7](#)

[“Creating a Resource” on page 3-16](#)

Viewing and Changing WS-Policies

The **WS-Policy Details** page enables you to view and change details of a specific Web Service Policy (WS-Policy). WS-Policies are used in AquaLogic Service Bus to associate Web service security policy with proxy services and business services. To learn more, see [“Overview of WS-Policies” on page 7-1](#).

To View and Change WS-Policy Details

1. Locate the WS-Policy. To learn more, see [“Listing and Locating WS-Policies” on page 7-3](#).
2. Click the WS-Policy name. The **WS-Policy Details** page displays the following information:

Property	Description
Resource Name	The name assigned to this WS-Policy
Created By	The user who created this WS-Policy or imported it into the configuration.
Created On	The date and time that the user created this WS-Policy or imported it into the configuration.
References	The number of objects that this WS-Policy references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this WS-Policy. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this WS-Policy, if one exists.
Policy	The text for this WS-Policy.

3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
4. To make a change to the fields, click **Edit**. See [“Adding a WS-Policy” on page 7-4](#) for a description of the fields.

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

5. Do one of the following:
 - To update the WS-Policy, click **Save**. The WS-Policy is updated.
The **Summary of WS-Policies** page is displayed.
 - To disregard changes, click **Cancel**.

Note: The WS-Policy is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Deleting a WS-Policy” on page 7-7](#)

Deleting a WS-Policy

The **Summary of WS-Policies** page enables you to delete Web Service Policies (WS-Policies). WS-Policies are used in AquaLogic Service Bus to associate Web service security policy with proxy services and business services. To learn more, see [“Overview of WS-Policies” on page 7-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

To Delete a WS-Policy

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **WS-Policies** from under **Resource Browser**. The **Summary of WS-Policies** page is displayed.
3. In the **Options** field of the WS-Policy you want to delete, click the **Delete** icon.

The WS-Policy is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The WS-Policy is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating WS-Policies” on page 7-3](#)

[“Adding a WS-Policy” on page 7-4](#)

[“Viewing and Changing WS-Policies” on page 7-5](#)

XQuery Transformations

This section includes the following topics:

- [Overview of XQuery Transformations](#)
- [Listing and Locating XQuery Transformations](#)
- [Adding an XQuery Transformation](#)
- [Viewing and Changing XQuery Transformation Details](#)
- [Deleting an XQuery Transformation](#)

Overview of XQuery Transformations

Transformation maps describe the mapping between two data types. AquaLogic Service Bus supports data mapping using either XQuery or the eXtensible Stylesheet Language Transformation (XSLT) standard. XSLT maps describe XML-to-XML mappings, whereas XQuery maps can describe XML-to-XML, XML to non-XML, and non-XML to XML mappings.

XQuery transformation is the primary XML transformation tool provided in BEA AquaLogic Service Bus. BEA provides the BEA XQuery Mapper tool to help you create XQuery transformations (.xq files). The XQuery Mapper is a plug-in within the Eclipse development environment. Therefore, to use the XQuery Mapper, Eclipse must be installed and launched.

Eclipse and the XQuery Mapper are provided as part of the AquaLogic Platform installation. However, when using the XQuery Mapper with AquaLogic Service Bus, the XQuery Mapper must be invoked separately. To learn more, see “[Launching the XQuery Mapper](#)” in [Transforming Data Using XQuery](#) in *Transforming Data Using the XQuery Mapper*.

You can use XQuery transformations when you edit XQuery expressions in the Message Flow of proxy services. You can select the **XQ transformation** option to execute a specific XQuery transformation when you edit an XQuery expression on the **XQuery Expression Editor** page.

In the Message Flow of proxy services, you can assign XQuery expressions to message context variables, assign if then else 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. To learn more, see [“Overview of Message Flow” on page 15-1](#), [“Adding an Action” on page 16-2](#), and [“Using the Inline XQuery Expression Editor” on page 17-2](#).

The following table lists the XQuery transformation pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided:

Page	Associated Tasks	Help Topics
Summary of XQueries	View a list of XQuery transformations. The XQuery name is displayed.	Listing and Locating XQuery Transformations
	Filter the list of XQuery transformations	
	Delete an XQuery transformation	Deleting an XQuery Transformation
Create a New XQuery	Add a new XQuery transformation	Adding an XQuery Transformation
XQuery Transformation Details	View details of an XQuery transformation	Viewing and Changing XQuery Transformation Details
	Edit details of an XQuery transformation	

Listing and Locating XQuery Transformations

The **Summary of XQueries** page enables you to view a list of XQuery transformations. XQuery transformations describe the mappings between two data types. To learn more, see [“Overview of XQuery Transformations” on page 8-1](#).

To List and Locate XQuery Transformations

1. From the left navigation pane, select **XQueries** from under **Resource Browser**. The Summary of XQueries page is displayed, which displays the following information for each XQuery transformation. For a more detailed description of the properties, see [“Viewing and Changing XQuery Transformation Details” on page 8-6](#):

Property	Description
XQuery Name	The name assigned to the XQuery transformation. The name is a link to the XQuery Transformation Details page. To learn more, see “Viewing and Changing XQuery Transformation Details” on page 8-6 .
Path	The path is the project name and the name of the folder in which the XQuery transformation resides. It is a link to the project or folder that contains this resource. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
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 XQuery transformations, you can use the Test Console whether you are inside or outside a session. To learn more, see “Testing Transformations” on page 23-21 .
Options	Click the Delete icon to delete a specific XQuery transformation. To learn more, see “Deleting an XQuery Transformation” on page 8-7 .

2. To locate a specific transformation, do one of the following:
 - Filter by transformation name. 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 XQuery transformation resides. The transformations matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **XQuery Name** and **Path** columns. Click the button to change the sort order.

- Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all XQuery transformations.

Related Topics

[“Adding an XQuery Transformation” on page 8-4](#)

Adding an XQuery Transformation

The **Create a New XQuery** page allows you to add a new XQuery transformation. XQuery transformations describe the mapping between two data types. To learn more, see [“Overview of XQuery Transformations” on page 8-1](#).

To add a new XQuery transformation, do one of the following:

- Import an existing transformation.
- Enter data in the text fields to write a new transformation.
- Copy and paste data from an existing transformation into the text fields.

Note: XQuery transformation is the primary XML transformation tool provided in BEA AquaLogic Service Bus. BEA provides the BEA XQuery Mapper tool to help you create XQuery transformations (.xq files). The XQuery Mapper is a plug-in within the Eclipse development environment. Therefore, to use the XQuery Mapper, Eclipse must be installed and launched. Eclipse and the XQuery Mapper are provided as part of the AquaLogic Platform installation. However, when using the XQuery Mapper with AquaLogic Service Bus, the XQuery Mapper must be invoked separately. To learn more, see “Launching the XQuery Mapper” in [Transforming Data Using XQuery](#) in *Transforming Data Using the XQuery Mapper*.

To Add a New XQuery Transformation

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.

3. Select the project to which you want to add the XQuery transformation. You can add an XQuery transformation directly to the project, or you can add it to a selected folder that resides in the project.
Note: Click the name of a folder to select it. The **Folder View** page is displayed.
4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **XQuery** from under **Transformation**. The **Create a New XQuery** page is displayed.
5. In the **Resource Name** field, enter a unique name for this XQuery transformation. This is a required field.
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.**Note:** This is a required field.
8. Do one of the following:
 - To save the XQuery transformation, click **Save**. The XQuery transformation is created. The **Project View** or **Folder View** page is displayed. The new XQuery transformation is included in the list of resources.
 - To disregard changes, click **Cancel**.

Note: The new XQuery transformation is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating XQuery Transformations” on page 8-3](#)

[“Viewing and Changing XQuery Transformation Details” on page 8-6](#)

[“Deleting an XQuery Transformation” on page 8-7](#)

[“Creating a Resource” on page 3-16](#)

Viewing and Changing XQuery Transformation Details

The **XQuery Transformation Details** page enables you to view and change details of an XQuery transformation. XQuery transformations describe the mapping between two data types. To learn more, see [“Overview of XQuery Transformations” on page 8-1](#).

To View and Change XQuery Transformation Details

- 1. Locate the XQuery transformation. To learn more, see [“Listing and Locating XQuery Transformations” on page 8-3](#).
- 2. Click the XQuery transformation name. The **XQuery Transformation Details** page displays the following information:

Property	Description
Resource Name	The name assigned to this XQuery transformation
Created By	The user who created this XQuery transformation or imported it into the configuration.
Created On	The date and time that the user created this XQuery transformation or imported it into the configuration.
References	The number of objects that this XQuery transformation references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this XQuery transformation. If such references exist, click the 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” on page 3-24 .
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

- 3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

4. To make a change to the fields, click **Edit**. See [“Adding an XQuery Transformation” on page 8-4](#) for a description of the fields.

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

5. Do one of the following:

- To update the XQuery transformation, click **Save**. The XQuery transformation is updated.

The **Summary of XQueries** page is displayed.

- To disregard changes, click **Cancel**.

Note: The updated XQuery transformation is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Deleting an XQuery Transformation” on page 8-7](#)

Deleting an XQuery Transformation

The **Summary of XQueries** page enables you to delete XQuery transformations. XQuery transformations describe the mapping between two data types. To learn more, see [“Overview of XQuery Transformations” on page 8-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

To Delete an XQuery Transformation

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center”](#).
2. From the left navigation pane, select **XQuery Transformations** from under **Resource Browser**. The **Summary of XQueries** page is displayed.
3. In the **Options** field of the XQuery Transformation you want to delete, click the **Delete** icon.

The XQuery transformation is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The XQuery transformation is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time.

Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating XQuery Transformations” on page 8-3](#)

[“Adding an XQuery Transformation” on page 8-4](#)

[“Viewing and Changing XQuery Transformation Details” on page 8-6](#)

XSL Transformations

This section includes the following topics:

- [Overview of XSL Transformations \(XSLTs\)](#)
- [Listing and Locating XSL Transformations](#)
- [Adding an XSL Transformation](#)
- [Viewing and Changing Details of an XSL Transformation](#)
- [Deleting an XSL Transformation](#)
- [Viewing Unresolved XSL Transformation References](#)
- [Resolving Unresolved XSL Transformation References](#)

Overview of XSL Transformations (XSLTs)

Transformation maps describe the mapping between two data types. AquaLogic Service Bus supports data mapping using either XQuery or the eXtensible Stylesheet Language Transformation (XSLT) standard. XQuery maps describe the mappings between two data types, whereas XSLT maps describe XML-to-XML mappings only.

You can use XSL transformations when you edit XQuery expressions in the Message Flow of proxy services. You can select the **XSL transformation** option to execute a specific XSL transformation when you edit an XQuery expression on the **XQuery Expression Editor** page.

In the Message Flow of proxy services, you can assign XQuery expressions to message context variables, assign if then else 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. To learn more, see [“Overview of Message Flow” on page 15-1](#), [“Adding an Action” on page 16-2](#), and [“Using the Inline XQuery Expression Editor” on page 17-2](#).

The following table lists the **XSL transformation** pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided:

Page	Associated Tasks	Help Topics
Summary of XSLTs	View a list of XSL transformations. The XSLT name is displayed.	Listing and Locating XSL Transformations
	Filter XSL transformations.	
	Delete an XSL transformation.	Deleting an XSL Transformation
Create a New XSLT	Add a new XSL transformation resource.	Adding an XSL Transformation
XSLT Details	View XSL transformation details.	Viewing and Changing Details of an XSL Transformation
	Change XSL transformation details.	
Edit the References of an XSLT Resource	Resolve XSL transformation references	Resolving Unresolved XSL Transformation References

Listing and Locating XSL Transformations

The **Summary of XSLTs** page enables you to view a list of XSL transformations. An eXtensible Stylesheet Language Transformation (XSLT) describes XML-to-XML mappings in AquaLogic Service Bus. To learn more, see [“Overview of XSL Transformations \(XSLTs\)” on page 9-1](#).

To List and Locate XSL Transformations

1. From the left navigation pane, select **XSLTs** from under **Resource Browser**. The **Summary of XSLTs** page is displayed, which displays the following information for each XSL transformation. For a more detailed description of the properties, see [“Viewing and Changing Details of an XSL Transformation” on page 9-5](#):

Property	Description
XSLT Name	The name assigned to the XSL transformation. The name is a link to the XSLT Details page. To learn more, see “Viewing and Changing Details of an XSL Transformation” on page 9-5 .
Path	The path is the project name and the name of the folder in which the XSL transformation resides. It is a link to the project or folder that contains this resource. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
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 23-21 .
Options	Click the Delete icon to delete a specific XSL transformation. To learn more, see “Deleting an XSL Transformation” on page 9-8 .

2. To locate a specific transformation, do one of the following:
 - Filter by XSL transformation name. 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 XSL transformation resides. The transformations matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **XSLT Name** and **Path** columns. Click the button to change the sort order.

- Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all XSL transformations.

Related Topics

[“Adding an XSL Transformation” on page 9-4](#)

Adding an XSL Transformation

The **Create a New XSLT** page enables you to add a new XSL transformation. An eXtensible Stylesheet Language Transformation (XSLT) describes XML-to-XML mappings in AquaLogic Service Bus. To learn more, see [“Overview of XSL Transformations \(XSLTs\)” on page 9-1](#).

To add a new XSL transformation, do one of the following:

- Import an existing XSL transformation.
- Enter data in the text fields to write a new XSL transformation.
- Copy and paste data from an existing XSL transformation into the text fields.

To Add a New XSL Transformation

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the XSL transformation. You can add an XSL transformation directly to the project, or you can add it to a selected folder that resides in the project.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **XSLT** from under **Transformation**. The **Create a New XSLT** page is displayed.
5. In the **Resource Name** field, enter a unique name for this XSL transformation. This is a required field.

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.

Note: This is a required field.

8. Do one of the following:
 - To save the XSL transformation, click **Save**. The XSL transformation is created.
The **Project View** or **Folder View** page is displayed. The new XSL transformation is included in the list of resources.
 - To disregard changes, click **Cancel**.

Note: The new XSL transformation is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating XSL Transformations” on page 9-3](#)

[“Viewing and Changing Details of an XSL Transformation” on page 9-5](#)

[“Deleting an XSL Transformation” on page 9-8](#)

Viewing and Changing Details of an XSL Transformation

The **XSLT Details** page enables you to view and change details of an XSL transformation. An eXtensible Stylesheet Language Transformation (XSLT) describes XML-to-XML mappings in AquaLogic Service Bus. To learn more, see [“Overview of XSL Transformations \(XSLTs\)” on page 9-1](#).

To View and Change an XSL Transformation

1. Locate the XSL transformation. To learn more, see [“Listing and Locating XSL Transformations” on page 9-3](#).

2. Click the XSL transformation name. The **XSLT Details** page displays the structural view of the XSLT by default, which includes the following information:

Property	Description
Resource Name	The name assigned to this XSL transformation.
Created By	The user who created this XSL transformation or imported it into the configuration.
Created On	The date and time that the user created this XSL transformation or imported it into the configuration.
References	The number of objects that this XSL transformation references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this XSL transformation. If such references exist, click the 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” on page 3-24 .
Description	A description of this XSL transformation.
Target Namespace	The namespace used to qualify any of the definitions included in the XSL transformation.

Property	Description
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 9-10.</p>

- Click **Text view** to display a text view of the XSL transformation details. The text view includes the following information:

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.

- If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center”](#) on page 2-3.
- To make a change to the fields, click **Edit**. See [“Adding an XSL Transformation”](#) on page 9-4 for a description of the fields.

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

- Do one of the following:

- To update the XSL transformation, click **Save**. The XSL transformation is updated. The **Summary of XSLTs** page is displayed.
- To disregard changes, click **Cancel**.

Note: The updated XSL transformation is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing Unresolved XSL Transformation References” on page 9-9](#)

[“Deleting an XSL Transformation” on page 9-8](#)

Deleting an XSL Transformation

The **Summary of XSLTs** page enables you to delete XSL transformations. An eXtensible Stylesheet Language Transformation (XSLT) describes XML-to-XML mappings in AquaLogic Service Bus. To learn more, see [“Overview of XSL Transformations \(XSLTs\)” on page 9-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

To Delete an XSL Transformation

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **XSLTs** from under **Resource Browser**. The **Summary of XSLTs** page is displayed.
3. In the **Options** field of the XSL transformation you want to delete, click the **Delete** icon.

The XSL transformation is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The XSL transformation is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change**

Center. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating XSL Transformations” on page 9-3](#)

[“Adding an XSL Transformation” on page 9-4](#)

[“Viewing and Changing Details of an XSL Transformation” on page 9-5](#)

[“Viewing Unresolved XSL Transformation References” on page 9-9](#)

[“Resolving Unresolved XSL Transformation References” on page 9-10](#)

Viewing Unresolved XSL Transformation References

The **View Unresolved XSLT References** page displays the following information for each reference:

Property	Description
XSLT Name	The name assigned to the XSL transformation. Click the name of a specific XSL transformation to view details for that transformation.

To List and Locate References

1. To locate a specific reference, do one of the following:
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **XSLT Name** column. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

Related Topics

[“Overview of XSL Transformations \(XSLTs\)” on page 9-1](#)

[“Listing and Locating XSL Transformations” on page 9-3](#)

[“Adding an XSL Transformation” on page 9-4](#)

[“Viewing and Changing Details of an XSL Transformation” on page 9-5](#)

[“Deleting an XSL Transformation” on page 9-8](#)

[“Resolving Unresolved XSL Transformation References” on page 9-10](#)

Resolving Unresolved XSL Transformation References

The **Edit the References of an XSLT Resource** page enables you to resolve unresolved XSL transformation references by configuring the mapping for these references.

To Resolve a Reference

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of XSLTs** page, in the **XSLT Name** column, click the appropriate XSLT name to view details of the unresolved reference. The **XSLT Details** page is displayed.
3. Click **Edit References**. The **Edit the References of an XSL Transformation Resource** page is displayed.
4. In the **Resource Type** field, select **XSLT**.
5. Click **Browse**. The **XSLT Browser** is displayed.
6. In the **XSLT Browser**, select an XSLT, then select a dependency from the **Dependencies** pane.
7. Click **Submit**. The XSLT you selected is displayed in the **Resource Name** field.
8. Do one of the following:
 - To resolve the reference, click **Save**. The **XSLT Details** page is displayed.
 - To disregard changes, click **Cancel**.
9. On the **XSLT Details** page, click **OK**. The state of the XSL transformation is displayed as **Valid**.

Related Topics

[“Overview of XSL Transformations \(XSLTs\)” on page 9-1](#)

[“Listing and Locating XSL Transformations” on page 9-3](#)

[“Adding an XSL Transformation” on page 9-4](#)

[“Viewing and Changing Details of an XSL Transformation” on page 9-5](#)

[“Deleting an XSL Transformation” on page 9-8](#)

[“Viewing Unresolved XSL Transformation References” on page 9-9](#)

XSL Transformations

MFLs

This section includes the following topics:

- [Overview of MFLs](#)
- [Listing and Locating MFLs](#)
- [Adding an MFL](#)
- [Viewing and Changing Details of an MFL](#)
- [Deleting an MFL](#)

Overview of MFLs

A Message Format Language (MFL) document is a specialized XML document used to describe the layout of binary data. It is a BEA 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 the BEA 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](#).

The following table lists the MFL pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Summary of MFL Files	View a list of MFLs. The MFL file name is displayed.	Listing and Locating MFLs
	Filter MFLs	
	Delete a MFL	Deleting an MFL
Create a New MFL File Resource	Add a new MFL	Adding an MFL
MFL Details	View details of a specific MFL	Viewing and Changing Details of an MFL
	Edit details of a specific MFL	

Listing and Locating MFLs

The **Summary of MFL Files** page enables you to view a list of MFL (Message Format Language) files. An MFL is a specialized XML document used to describe the layout of binary data. It is a BEA proprietary language used to define rules to transform formatted binary data into XML data. To learn more, see [“Overview of MFLs” on page 10-1](#).

To List and Locate MFLs

1. From the left navigation pane, select **MFLs** from under **Resource Browser**. The **Summary of MFL Files** page is displayed, which displays the following information for each MFL file. For a more detailed description of the properties, see [“Viewing and Changing Details of an MFL” on page 10-5](#):

Property	Description
MFL File Name	The unique name assigned to the MFL. The name is a link to the MFL Details page. To learn more, see “Viewing and Changing Details of an MFL” on page 10-5 .
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. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
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. To learn more, see “Testing Transformations” on page 23-21 .
Options	Click the Delete icon to delete a specific MFL. To learn more, see “Deleting an MFL” on page 10-7 .

2. To locate a specific MFL, do one of the following:
 - Filter by MFL 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 MFL file resides. The MFLs matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **MFL File Name** and **Path** columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all MFL files.

Related Topics

[“Adding an MFL” on page 10-4](#)

Adding an MFL

The **Create a New MFL File Resource** page allows you to add a new MFL (Message Format Language) file. An MFL is a specialized XML document used to describe the layout of binary data. It is a BEA proprietary language used to define rules to transform formatted binary data into XML data. To learn more, see [“Overview of MFLs” on page 10-1](#).

To add a new MFL, do one of the following:

- Import an existing MFL file
- Enter data in the text fields to write a new MFL
- Copy and paste data from an existing MFL file into the text fields

To Add a New MFL File

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the MFL file. You can add an MFL file directly to the project, or you can add it to a selected folder that resides in the project.
Note: Click the name of a folder to select it. The **Folder View** page is displayed.
4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **MFL File** from under **Transformation**. The **Create a New MFL File Resource** page is displayed.
5. In the **Resource Name** field, enter a unique name for this MFL. This is a required field.
6. In the **Resource Description** field, enter a description for the MFL.
7. 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.

Note: This is a required field.

8. Do one of the following:

- To save the MFL file, click **Save**. The MFL file resource is created.

The **Project View** or **Folder View** page is displayed. The new MFL file is included in the list of resources.

- To disregard changes, click **Cancel**.

Note: The new MFL file resource is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating MFLs” on page 10-2](#)

[“Viewing and Changing Details of an MFL” on page 10-5](#)

[“Deleting an MFL” on page 10-7](#)

[“Creating a Resource” on page 3-16](#)

Viewing and Changing Details of an MFL

The **View MFL Details** page enables you to view and change detailed information for a specific MFL (Message Format Language) file. An MFL is a specialized XML document used to describe the layout of binary data. It is a BEA proprietary language used to define rules to transform formatted binary data into XML data. To learn more, see [“Overview of MFLs” on page 10-1](#).

To View and Change MFL Details

1. Locate the MFL file. To learn more, see [“Listing and Locating MFLs” on page 10-2](#).
2. Click the MFL file name. The **View MFL Details** page displays the following information:

Property	Description
Resource Name	The name assigned to this MFL file.
Created By	The user who created this MFL file or imported it into the configuration.

Property	Description
Created On	The date and time that the user created this MFL file or imported it into the configuration.
References	The number of objects that this MFL file references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this MFL file. If such references exist, click the 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. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this MFL file, if one exists.
MFL Text	The text for this MFL.

3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

4. To make a change to the fields, click **Edit**. For a description of the fields, see [“Adding an MFL” on page 10-4](#).

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

5. Do one of the following:

- To update the MFL file, click **Save**. The MFL file is updated.

The **Summary of MFL Files** page is displayed.

- To disregard changes, click **Cancel**.

Note: The MFL file resource is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Deleting an MFL” on page 10-7](#)

Deleting an MFL

The **Summary of MFL Files** page enables you to delete MFL (Message Format Language) files. An MFL is a specialized XML document used to describe the layout of binary data. It is a BEA proprietary language used to define rules to transform formatted binary data into XML data. To learn more, see [“Overview of MFLs” on page 10-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

To Delete an MFL

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **MFLs** from under **Resource Browser**. The **Summary of MFL Files** page is displayed.
3. In the **Options** field of the MFL you want to delete, click the **Delete** icon.

The MFL file is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The MFL file resource is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating MFLs” on page 10-2](#)

[“Adding an MFL” on page 10-4](#)

[“Viewing and Changing Details of an MFL” on page 10-5](#)

MFLs

Service Accounts

This section includes the following topics:

- [Overview of Service Accounts](#)
- [Adding a Service Account](#)
- [Listing and Locating Service Accounts](#)
- [Viewing and Changing Service Account Details](#)
- [Deleting a Service Account](#)

Overview of Service Accounts

A service account is an alias resource for a username and password. AquaLogic Service Bus uses service accounts to provide authentication when connecting to a service or server. For example, when configuring FTP transport-level security for a business service, you may need to provide a username and password to authenticate to the FTP server.

Service accounts are used when configuring business services, transport protocols, and proxy services. Before configuring your business and proxy services, you should define your service account. After you define a service account, you can specify the associated username and password to the service account using the **Credentials** section of the **Security Configuration** module. To learn more, see [“Adding a Credential” on page 19-20](#).

For proxy services with a JMS transport protocol, you can select a service account in the **JMS service account** field to use for a JMS server connection. The proxy services use this username and password to authenticate to the JMS server. You can also select a service account for proxy

services with Email and FTP transport protocols. For email, the service account is used to authenticate to the SMTP server; for FTP, the service account is used to authenticate to the FTP server. To learn more, see [“Adding a Proxy Service” on page 14-9](#).

For business services with a HTTP transport protocol, if you select the **Basic Authentication Required** field, you must select a service account in the **Service Account** field. For business services with a HTTPS transport protocol, you must also select a service account in the **Service Account** field if you select **Basic** in the **Business Service Authentication** field. The proxy service uses this username and password to authenticate at the HTTP transport when routing messages to the business services. To learn more, see [“Adding a Business Service” on page 13-7](#).

Note: Basic authentication over HTTP is strongly discouraged because the password is sent in clear text. However, it is safe to send passwords over HTTPS because HTTPS provides an encrypted channel.

For business services with a JMS transport protocol, you can enter a service account in the **JNDI Service Account** field to use for JNDI lookups and the **JMS Service Account** field to use for a JMS resource managed by the JMS server. You can also select a service account for business services with Email and FTP transport protocols. For email, the proxy service uses this username and password to authenticate to the SMTP server. For FTP, the proxy service uses this username and password to authenticate to the FTP server. To learn more, see [“Adding a Business Service” on page 13-7](#).

Note: To learn more about security, see [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

The following table lists the **Service Account** pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Summary of Service Accounts	View a list of service accounts	Listing and Locating Service Accounts
	Filter the list	
	Delete a service account	Deleting a Service Account
Create a New Service Account	Add a service account	Adding a Service Account

Page	Associated Tasks	Help Topics
Service Account Details	View details of a specific service account	Viewing and Changing Service Account Details
	Update details of a specific service account	

Listing and Locating Service Accounts

The **Summary of Service Accounts** page enables you to view a list of service accounts. A service account is an alias resource for a username and password. To learn more, see [“Overview of Service Accounts” on page 11-1](#).

To List and Locate Service Accounts

1. From the left navigation pane, select **Service Accounts** from under **Resource Browser**. The **Summary of Service Accounts** page is displayed, which displays the following information for each service account. For a more detailed description of the properties, see [“Viewing and Changing Service Account Details” on page 11-5](#):

Property	Description
Service Account Name	A unique name for the service account. The name is a link to the Service Account Details page. To learn more, see “Viewing and Changing Service Account Details” on page 11-5 .
Path	The path is the project name and the name of the folder in which the service account resides. It is a link to the project or folder that contains this resource. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
Options	Click the Delete icon to delete a specific service account. To learn more, see “Deleting a Service Account” on page 11-7 .

2. To locate a specific service account, do one of the following:
 - Filter by service account name. 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 service account resides. The service accounts matching the search criteria are displayed.

- Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Service Account Name** and **Path** columns. Click the button to change the sort order.
- Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all service accounts.

Related Topics

[“Adding a Service Account” on page 11-4](#)

Adding a Service Account

The **Create a New Service Account** page enables you to add a new service account. A service account is an alias resource for a username and password. To learn more, see [“Overview of Service Accounts” on page 11-1](#).

To Add a Service Account

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the service account. You can add a service account directly to the project, or you can add it to a selected folder that resides in the project.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **Service Account** from under **Security**. The **Create a New Service Account** page is displayed.
5. In the **Resource Name** field, enter a unique name for this service account. This is a required field.
6. In the **Resource Description** field, enter a description for the service account.
7. Do one of the following:

- To save the service account, click **Save**. The service account is created.

The **Project View** or **Folder View** page is displayed. The new service account is included in the list of resources.

Note: After you create a Service Account resource, you must go to the Security Configuration→Credentials panel in the AquaLogic Service Bus Console and add the username and password. For information about credentials, see [“Adding a Credential” on page 19-20](#).

- To disregard changes, click **Cancel**.

Note: The new service account is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Note: Newly created service accounts within a session are not visible to the **Credentials** section in the **Security Configuration** module. Therefore, you cannot associate a new service account with a username and password until you click **Activate** to commit the session.

Related Topics

[“Listing and Locating Service Accounts” on page 11-3](#)

[“Viewing and Changing Service Account Details” on page 11-5](#)

[“Deleting a Service Account” on page 11-7](#)

Viewing and Changing Service Account Details

The **Service Account Details** page enables you to view and change details of a specific service account. A service account is an alias resource for a username and password. To learn more, see [“Overview of Service Accounts” on page 11-1](#).

To View and Change Service Account Details

1. Locate the service account. To learn more, see [“Listing and Locating Service Accounts” on page 11-3](#).
2. Click the service account name. The **Service Account Details** page displays the following information:

Property	Description
Resource Name	The name of this service account.
Created By	The user who created this service account or imported it into the configuration.
Created On	The date and time that the user created this service account or imported it into the configuration.
References	The number of objects that this service account references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this service account. If such references exist, click the 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. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this service account, if one exists.

3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
4. To make a change to the fields, click **Edit**. See [“Adding a Service Account” on page 11-4](#) for a description of the fields.

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

5. Do one of the following:
 - To update the service account, click **Save**. The service account is updated. The **Summary of Service Accounts** page is displayed.
 - To disregard changes, click **Cancel**.

The updated service account is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to the run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Warning: When you employ a service account for authentication on outbound JMS transports, it can take up to 60 seconds for any changes you make to that service account to take effect on the server. By default, WebLogic Server JMS checks the ACL for each destination every 60 seconds. You can change this default time or ensure security checks are performed on JMS resources for every `send`, `receive`, and `getEnumeration` action on a JMS resource. To do so, set the `weblogic.jms.securityCheckInterval` attribute. A value of zero for this attribute ensures that an authorization check is performed for every `send`, `receive`, and `getEnumeration` action on a JMS resource.

Related Topics

[“Deleting a Service Account” on page 11-7](#)

[Ensuring the Security of Your Production Environment](#) in *Securing a Production Environment*, which is available at the following URL:

<http://e-docs.bea.com/wls/docs91/lockdown/index.html>

Deleting a Service Account

The **Summary of Service Accounts** page enables you to delete service accounts. A service account is an alias resource for a username and password. To learn more, see [“Overview of Service Accounts” on page 11-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

Warning: Deleting a service account does not delete the associated username/password credential. You must first delete the username/password credential before deleting the service account.

To Delete a Service Account

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Service Accounts** from under **Resource Browser**. The **Summary of Service Accounts** page is displayed.
3. In the **Options** field of the service account you want to delete, click the **Delete** icon. The service account is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The service account is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Adding a Service Account” on page 11-4](#)

[“Listing and Locating Service Accounts” on page 11-3](#)

[“Viewing and Changing Service Account Details” on page 11-5](#)

Proxy Service Providers

This section includes the following topics:

- [Overview of Proxy Service Providers](#)
- [Adding a Proxy Service Provider](#)
- [Listing and Locating Proxy Service Providers](#)
- [Viewing and Changing Proxy Service Provider Details](#)
- [Deleting a Proxy Service Provider](#)

Overview of Proxy Service Providers

Proxy service providers encapsulate all the PKI (Public Key Infrastructure) credentials used by one or more proxy services. Different PKI credentials (private-key/certificate pairs) for different purposes can be assigned to a proxy service provider. When you create a proxy service, you can specify a proxy service provider. If the proxy service needs PKI credentials, for example to open an HTTPS connection with client-certificate authentication, it gets the credentials from the proxy service provider. Multiple proxy services can use the same proxy service provider.

A proxy service provider can have one or more of the following credentials:

- TLS/SSL client authentication credential

A proxy service uses 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 service that requires client-certificate authentication.

- Digital signature credential

This key-pair is used with Web service security when a proxy service is required (by WS-Policy) to sign one or more parts of a SOAP envelope. Digital signature provides message integrity.

- Encryption credential

This key-pair is used with Web service security when a proxy service requires encryption (via its WS-Policy). This X.509 certificate is automatically embedded into the WSDL dynamically generated when fetching the proxy service's "?WSDL" URL. Clients use this certificate to encrypt message intended for the proxy service. The proxy service uses the private key to decrypt these messages. Encryption provides message confidentiality, and is required to include an X.509 authentication token.

- Web Services Security X509 Token

This key-pair is used with Web service security when a proxy service is required (by WS-Policy) to include an authentication token in the SOAP envelope. The X.509 authentication token configuration is used to authenticate AquaLogic Service Bus against an end service that requires authentication

To configure security for a proxy service, you first need to create a proxy service provider. After you commit your changes, you can associate PKI credentials with the proxy service provider using the **Credentials** section of the **Security Configuration** module. Newly created proxy service providers within a session are not visible to the **Credentials** section in the Console (and therefore cannot be assigned credentials) until the session is committed. To learn more, see [“Adding a Credential” on page 19-20](#).

You can specify a proxy service provider for a specific proxy service in the **Service Provider** field on the **Edit a Proxy Service - General Configuration** page. To learn more, see [“Adding a Proxy Service” on page 14-9](#).

Note: To learn more about security, see [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

The following table lists the **Proxy Service Provider** pages you can access from the **Resource Browser** and **Project Explorer** modules. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Summary of Proxy Service Providers	View a list of proxy service providers	Listing and Locating Proxy Service Providers
	Filter the list	
	Delete a proxy service provider	Deleting a Proxy Service Provider
Create a New Proxy Service Provider	Add a proxy service provider	Adding a Proxy Service Provider
Proxy Service Provider Details	View details of a specific proxy service provider	Viewing and Changing Proxy Service Provider Details
	Update details of a specific proxy service provider	

Listing and Locating Proxy Service Providers

The **Summary of Proxy Service Providers** page enables you to view a list of proxy service providers. A proxy service provider supplies credential-level validation to proxy services. You use proxy service providers to manage security credentials for proxy services. To learn more, see [“Overview of Proxy Service Providers” on page 12-1](#).

To List and Locate Proxy Service Providers

1. From the left navigation pane, select **Proxy Service Providers** from under **Resource Browser**. The Summary of Proxy Service Providers page is displayed, which displays the following information for each proxy service provider. For a more detailed description of the properties, see [“Viewing and Changing Proxy Service Provider Details” on page 12-6](#):

Property	Description
Name	A unique name for the proxy service provider. The name is a link to the Proxy Service Provider Details page. To learn more, see “Viewing and Changing Proxy Service Provider Details” on page 12-6 .
Path	The path is the project name and the name of the folder in which the proxy service provider resides. It is a link to the project or folder that contains this resource. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .

Property	Description
Options	Click the Delete icon to delete a specific proxy service provider. To learn more, see “Deleting a Proxy Service Provider” on page 12-7 .

2. To locate a specific proxy service provider, do one of the following:
 - Filter by proxy service provider 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 provider resides. The proxy service providers matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Name** and **Path** columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all proxy service providers.

Related Topics

[“Adding a Proxy Service Provider” on page 12-4](#)

Adding a Proxy Service Provider

The **Create a New Proxy Service Provider** page enables you to add a new proxy service provider. A proxy service provider supplies credentials to proxy services. You use a proxy service provider to manage and supply credentials to proxy services. To learn more, see [“Overview of Proxy Service Providers” on page 12-1](#).

Note: Newly created proxy service providers within a session are not visible to the **Credentials** section in the **Security Configuration** module. Therefore, you cannot associate a new proxy service provider with PKI credentials until you click **Activate** to commit the session.

To Add a Proxy Service Provider

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the proxy service provider. You can add a proxy service provider directly to the project, or you can add it to a selected folder that resides in the project.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **Proxy Service Provider** from under **Security**. The **Create a New Proxy Service Provider** page is displayed.
5. In the **Proxy Service Provider Name** field, enter a unique name for this proxy service provider. This is a required field.
6. In the **Description** field, enter a description for the proxy service provider.
7. Do one of the following:
 - To save the proxy service provider, click **Save**. The proxy service provider is created. The **Project View** or **Folder View** page is displayed. The new proxy service provider is included in the list of resources.
 - To disregard changes, click **Cancel**.

Note: The new proxy service provider is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating Proxy Service Providers” on page 12-3](#)

[“Viewing and Changing Proxy Service Provider Details” on page 12-6](#)

[“Deleting a Proxy Service Provider” on page 12-7](#)

Viewing and Changing Proxy Service Provider Details

The **Proxy Service Provider Details** page enables you to view and change details of a specific proxy service provider. A proxy service provider supplies credential-level validation to proxy services. You use proxy service providers to manage security credentials for proxy services. To learn more, see [“Overview of Proxy Service Providers” on page 12-1](#).

To View and Change Proxy Service Provider Details

1. Locate the proxy service provider. To learn more, see [“Listing and Locating Proxy Service Providers” on page 12-3](#).
2. Click the proxy service provider name. The **Proxy Service Provider Details** page displays the following information:

Property	Description
Proxy Service Provider Name	The name of this proxy service provider.
Created By	The user who created this proxy service provider or imported it into the configuration.
Created On	The date and time that the user created this proxy service provider or imported it into the configuration.
References	The number of objects that this proxy service provider references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this proxy service provider. If such references exist, click the link to view a list of the objects. For example, if you selected this proxy service provider as the service provider for a specific proxy service, the proxy service is listed as a reference when you click the link. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this proxy service provider, if one exists.

3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
4. To make a change to the fields, click **Edit**. See [“Adding a Proxy Service Provider” on page 12-4](#) for a description of the fields.

5. Do one of the following:

- To update the proxy service provider, click **Save**. The proxy service provider is updated.

The **Summary of Proxy Service Providers** page is displayed.

- To disregard changes, click **Cancel**.

Note: The proxy service provider is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Adding a Proxy Service Provider” on page 12-4](#)

[“Listing and Locating Proxy Service Providers” on page 12-3](#)

[“Deleting a Proxy Service Provider” on page 12-7](#)

Deleting a Proxy Service Provider

The **Summary of Proxy Service Providers** page enables you to delete proxy service providers. A proxy service provider supplies credential-level validation to proxy services. You use proxy service providers to manage security credentials for proxy services. To learn more, see [“Overview of Proxy Service Providers” on page 12-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

Warning: Deleting a proxy service provider does not delete the associated PKI credentials. You must first delete the PKI credentials before deleting the proxy service provider.

To Delete a Proxy Service Provider

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Proxy Service Providers** from under **Resource Browser**. The **Summary of Proxy Service Providers** page is displayed.

3. In the **Options** field of the proxy service provider you want to delete, click the **Delete** icon.

The service provider is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The proxy service provider is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time.

Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Adding a Proxy Service Provider” on page 12-4](#)

[“Listing and Locating Proxy Service Providers” on page 12-3](#)

[“Viewing and Changing Proxy Service Provider Details” on page 12-6](#)

Business Services

This section includes the following topics:

- [Overview of Business Services](#)
- [Adding a Business Service](#)
- [Listing and Locating Business Services](#)
- [Viewing and Changing Business Services](#)
- [Deleting Business Services](#)

Overview of Business Services

Business services are AquaLogic 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 BEA AquaLogic Service Bus pipelines.

Note: If a business service requires Web service security, make sure the WSDL you specify has the necessary WS-Policies attached when you create the business service. Furthermore, if the WS-Policy of the business service requires encryption, make sure the public certificate of the business service is embedded in the WSDL. If the business service is a WebLogic Server 9.0 Web service, you can retrieve its WSDL using the

`http://<host>:<port>/<service url>?WSDL` URL, the public certificate will be automatically embedded for you if necessary.

The following table lists the **Business Services** pages you can access from the **Resource Browser** and the **Project Explorer** modules:

Table 13-1 Pages Accessed from Project Explorer and Resource Browser Modules

Page	Associated Tasks	Help Topics
Summary of Business Services	View a list of business services.	Listing and Locating Business Services
	Filter the list.	
	Delete a business service.	Deleting Business Services
Edit a Business Service	Add a business service	Adding a Business Service
Business Service Details	View details of a specific business service	Viewing and Changing Business Services
	Change details of a specific business service	

Service Types

Each service type is modeled following the same pattern. Their configuration is composed of a common part and a service type specific part.

The common configuration consists of the following properties.

Table 13-2 Service Type Configuration

Property	Description
Resource Definition	The resource definition consists of: <ul style="list-style-type: none">• The service name (that is, project, path, and local name)• An optional description for the service• The service type (read only)

Property	Description
Transport Configuration	<p>You can configure the following parameters for each business service:</p> <ul style="list-style-type: none"> • List of <code><string URI, integer weight></code> pairs—for example, <code><http://www.bea.com, 100></code>. For a random-weighted list, the list should contain at least one element. • Load-balancing algorithm—enumeration, one of round-robin, random, or random-weighted. If you select random-weighted, the weights are applicable for each URI. • Retry Count • Retry Interval <p>The transport you select must be able to support the transport mode (that is, request/response, one-way or both) required by the binding definition, and be configured accordingly.</p> <p>For services exchanging messages in both modes, you must configure the binding layer so that it can choose the transport mode accordingly (for any transport implementing the request/response as two asynchronous calls, for example, JMS). This occurs automatically when the service is a concrete type, as it is described in the binding definition. When it is not a concrete type, to configure the binding layer, you must set the mode in the <code>\$outbound</code> variable.</p> <p>Based on the transport and WSDL, the transport mode is automatically selected, but you can overwrite it in <code>\$inbound</code> or <code>\$outbound</code>.</p>

Each service type must define the following configurations:

- Binding definition
- Run-time configuration
- Run-time variables (`$operation`, `$body`, `$header`, `$attachments`)

Table 13-3 Service Type Configuration

Property	Description
WSDL Port	<p>You can base SOAP and XML services on an existing WSDL resource. A WSDL document is available for proxy and business services for HTTP, HTTPS, and JMS transports. This WSDL is used as the base for the final WSDL document.</p> <p>When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL port describes what the actual transport address is. You use it for a concrete interface.</p> <p>For a definition of a WSDL port, see http://www.w3.org/TR/wsdl#_ports.</p>
WSDL Binding	<p>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. This WSDL is used as the base for the final WSDL document.</p> <p>When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL binding describes the structure of the interface and how it is packaged. You use it to map the transport address.</p> <p>For a definition of a WSDL Binding, see http://www.w3.org/TR/wsdl#_bindings.</p> <p>You may change the transport protocol of a service to another compatible one. The transport attribute of the <code><soap:binding></code> element, in the <code><wsdl:binding></code> referenced by the service, must reflect the value for the selected transport.</p> <p>For SOAP services, any existing <code><wsdl:service></code> definition is removed and a new one containing a single <code><wsdl:port></code> is created. This <code><wsdl:port></code> is configured based on the <code><wsdl:binding></code> referenced by the service and its SOAP address contains the address or the service (as defined by its transport).</p> <p>For XML services, the only standard WSDL binding definition available is the one defined for HTTP. However, BEA has added its own standard definition for JMS. So, except in the case of the JMS transport protocol, the standard HTTP binding is used.</p> <p>As for SOAP, any existing <code><wsdl:service></code> is removed and a new one is created to reflect the service address. As only HTTP and JMS one-way are supported as standards, the <code><wsdl:service></code> is not generated for any other configuration.</p>

Property	Description
Any SOAP Service	<p>Binding Definition: The only information this service type defines is that the service is receiving or sending SOAP messages—regardless of their WSDL binding definition. Therefore the binding configuration for this type is empty.</p> <p>In addition, as there is no binding configuration, the combination of this type and the content-type of the message is sufficient to determine whether or not there are attachments to the message.</p> <p>As per their definition, any services (SOAP or XML) do not have any WSDL definition. It is not possible to request a WSDL document for those services.</p> <p>Run-Time Variables:</p> <p>The <code>\$body</code> and <code>\$header</code> variables respectively hold the <code><soap:Body></code> and <code><soap:Header></code> of the incoming SOAP message.</p> <p>The <code>\$attachments</code> variable contains the SOAP message attachments if any.</p> <p>The <code>\$operation</code> variable is not applicable to this service type if the business or proxy service is not created from a WSDL.</p> <p>To learn more about the message context variables, see “Message-Related Variables” on page A-3.</p>
Any XML Services	<p>Binding Definition: The only information this service type defines is that the service is receiving/sending XML messages—regardless of their WSDL binding definition. Therefore, the binding configuration for this type is empty.</p> <p>In addition, as there is no binding configuration, the combination of this type and the content-type of the message is sufficient to determine whether or not there are attachments to the message.</p> <p>As per their definition, any services (SOAP or XML) do not have any WSDL definition. It is not possible to request a WSDL document for those services.</p> <p>Run-Time Variables:</p> <p>The <code>\$body</code> variable holds the incoming XML message wrapped in a <code><soap:Body></code> element.</p> <p>The <code>\$attachments</code> variable contains message attachments if there are any.</p> <p>The <code>\$header</code> variable is not applicable to this service type and is set to its default value.</p> <p>The <code>\$operation</code> variable is not applicable to this service type as you do not define a port type.</p> <p>To learn more about the message context variables, see “Message-Related Variables” on page A-3.</p>

Property	Description
Messaging Services	<p>Binding Definition: 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).</p> <p>By definition, messaging-based services do not have any WSDL definition. It is not possible to request a WSDL document for those services.</p> <p>The following content types are available to choose from for the request (and response):</p> <ul style="list-style-type: none">• Binary• Text• XML• MFL• None <p>Run-Time Variables:</p> <p>This service type is message based. There is no concept of multiple “operations” as for Web services. Therefore, the <code>\$operation</code> variable is left empty.</p> <p>The <code>\$body</code> variable holds the incoming message wrapped in a <code><soap:Body></code> element.</p> <p>The <code>\$header</code> variable is not applicable to this service type, and is set to its default value.</p> <p>The <code>\$attachments</code> variable contains message attachments if there are any.</p> <p>To learn more about the message context variables, see “Message-Related Variables” on page A-3.</p>

Adding a Business Service

The **Edit a Business Service** pages enable you to add a new business service. Business services are AquaLogic Service Bus definitions of the enterprise services with which you want to exchange messages. To learn more, see [“Overview of Business Services” on page 13-1](#).

To add a business service, you must first configure general information for the service, then configure general and protocol-dependent transport information for the service. If this is a messaging service, you must also configure the message types. You can review the configuration before you create the new business service.

The tasks in this procedure include:

- [To Add a Business - Service - General Configuration](#)
- [To Add a Business Service - Message Type Configuration](#)
- [To Add a Business Service - Transport Configuration](#)
- [To Add a Business Service - Protocol-Dependent Transport Configuration](#)
- [To Add a Business Service - General Configuration Review](#)

To Add a Business - Service - General Configuration

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the business service. You can add a business service directly under the project, or you can add the business service under a selected folder.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **Business Service** from under **Service**. The **Edit a Business Service - General Configuration** page is displayed.
5. In the **Service Name** field, enter a unique name. This is a required field.
6. In the **Description** field, enter a description for this business service.

7. In the **Service Type** field, do one of the tasks described in the following table.

Note: A service type defines the types and packaging of the messages exchanged by the service. This is a required field.

Table 13-4 Service Type Field

To...	Complete These Steps...
Create a service from WSDL port	<ol style="list-style-type: none">1. Select WSDL port from under Create a New Service.2. Click Browse. The WSDL Browser is displayed.3. In the WSDL Browser, select a WSDL resource, then select a port in the Definitions pane.4. Click Submit to close the dialog box and return to the General Configuration page. <p>Note: When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL port describes what the actual transport address is. You use it for a concrete interface.</p> <p>To learn more about this service type, see “Service Types” on page 13-2 in “Overview of Business Services” on page 13-1.</p>
Create a service from WSDL binding	<ol style="list-style-type: none">1. Select WSDL binding from under Create a New Service.2. Click Browse. The WSDL Browser is displayed.3. In the WSDL Browser, select a WSDL resource, then select a binding in the Definitions pane.4. Click Submit to close the dialog box and return to the General Configuration page. <p>Note: When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL binding describes the structure of the interface and how it is packaged. You use it to map the transport address.</p> <p>To learn more about this service type, see “Service Types” on page 13-2 in “Overview of Business Services” on page 13-1.</p>

To...	Complete These Steps...
Create a messaging service	<p>Select Messaging Service to create a service that exchanges messages of very different content-type. These exchanges can be either request/response or one-way. Unlike Web services, the content-type of the request and response need not be the same.</p> <p>To learn more about this service type, see “Service Types” on page 13-2 in “Overview of Business Services” on page 13-1.</p>
Create a SOAP service that does not have an explicitly defined, concrete interface	<p>Select Any SOAP Service to create a SOAP service that does not have an explicitly defined, concrete interface.</p> <p>To learn more about this service type, see “Service Types” on page 13-2 in “Overview of Business Services” on page 13-1.</p>
Create an XML service that does not have an explicitly defined, concrete interface	<p>Select Any XML Service to create an XML service that does not have an explicitly defined, concrete interface.</p> <p>Note: HTTP GET is only supported in the Any XML Service service type.</p> <p>To learn more about this service type, see “Service Types” on page 13-2 in “Overview of Business Services” on page 13-1.</p>
Create a service from an existing business service	<ol style="list-style-type: none"> 1. Select Business Service from under Create from Existing Service. 2. Click Browse. The Service Browser is displayed. 3. In the Service Browser, select a business service. 4. Click Submit to close the dialog box and return to the General Configuration page.
Create a service from an existing proxy service	<ol style="list-style-type: none"> 1. Select Proxy Service from under Create from Existing Service. 2. Click Browse. The Service Browser is displayed. 3. In the Service Browser, select a proxy service. 4. Click Submit to close the dialog box and return to the General Configuration page. <p>To learn more about proxy services, see “Overview of Proxy Services” on page 14-1.</p>

8. Click **Next**.

If you selected **Messaging Service** in the **Service Type** field, the **Edit a Business Service - Message Type Configuration** page is displayed. Continue in [“To Add a Business Service - Message Type Configuration” on page 13-10.](#)

For all other service types, the **Edit a Business Service - Transport Configuration** page is displayed. Continue in [“To Add a Business Service - Transport Configuration” on page 13-11.](#)

To Add a Business Service - Message Type Configuration

If you selected **Messaging Service** in the **Service Type** field, the **Edit a Business Service - Message Type Configuration** page is displayed when you click **Next** on the **Edit a Business Service - General Configuration** page.

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).

- 1. Select a message type for the request and response messages:
 - a. In the **Request Message Type** field, select a message type for the request message.

Table 13-5 Request Message Type Field

Message Type	Description
None	Select None if there no content-type for the message.
Binary	Select Binary if the content-type of the message is unknown or not important.
Text	Select Text if the message can be restricted to text.
MFL	Select MFL if the message is a binary document conforming to an MFL definition. You can configure only one MFL file. Note: For MFLs, you can click Browse to select an MFL from the MFL Browser , then click Submit .
XML	Select XML 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.

- b. In the **Response Message Type** field, select a message type for the response message.

Table 13-6 Response Message Type Field

Message Type	Description
None	Select None if there no content-type for the message.
Binary	Select Binary if the content-type of the message is unknown or not important.
Text	Select Text if the message can be restricted to text.
MFL	<p>Select MFL if the message is a binary document conforming to an MFL definition. You can configure only one MFL file.</p> <p>Note: For MFLs, you can click Browse to select an MFL from the MFL Browser, then click Submit.</p>
XML	Select XML 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.

2. Click **Next**.

The **Transport Configuration** page is displayed. Continue in [“To Add a Business Service - Transport Configuration” on page 13-11](#).

To Add a Business Service - Transport Configuration

The **Transport Configuration** page is displayed when you click **Next** on the **Edit a Business Service - General Configuration** page. It is displayed for messaging services when you click **Next** on the **Edit a Business Service - Message Type Configuration** page.

Note: This page enables you to configure transport information for the business service. Inbound transport-level security applies to the client applications and AquaLogic Service Bus proxy services. Outbound transport-level security applies to the connections between AquaLogic Service Bus proxy services and business services. For more information about transport-level security, see “Transport-Level Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

1. In the **Protocol** field, select one of these transport protocols:
 - Email
 - File
 - FTP
 - HTTP
 - HTTPS
 - JMS
2. In the **Load Balancing Algorithm** field, select one of these load-balancing algorithms.

Table 13-7 Load Balancing Algorithm Field

Load-Balancing Algorithm	Description
Round-robin	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	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	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	Orders the list of URLs that you enter in the Endpoint URI field for this business service from top to bottom.

3. In the **Endpoint URI** field, enter an endpoint URL in the format based on the transport protocol you selected in the **Protocol** field, then click **Add**.

Table 13-8 Endpoint URI Field

Transport Protocol	Format
Email	mailto:java-net@java.sun.com
File	file:///drivename:/somename
FTP	ftp://host:port/directory
HTTP	http://host:port/someService
HTTPS	https://host:port/someService
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

Note: You can configure multiple URLs. You can click **Delete** in the **Action** column to delete them at any time. At run time, the URLs are selected based on the load balancing algorithm you selected in the **Load Balancing Algorithm** field.

Note: 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**.

4. In the **Retry Count** field, specify the number of times the list is retried. The number of retries is for the list of URIs, not the URIs themselves. For example, if you specify 3 in this field, the list is cycled through 3 times.
5. In the **Retry Interval** field, specify the number of seconds' wait time between retries.
6. Click **Next**.

An additional **Transport Configuration** page is displayed. This page enables you to configure protocol-dependent transport information for the business service. Continue in [“To Add a Business Service - Protocol-Dependent Transport Configuration” on page 13-14](#).

To Add a Business Service - Protocol-Dependent Transport Configuration

The **[Protocol] Transport Configuration** page is displayed when you click **Next** on the **Edit a Business Service - Transport Configuration** page. This page enables you to configure additional transport information for the business service, based on the transport protocol you selected in the **Protocol** field.

- 1. Based on the transport protocol you selected in the **Protocol** field, do one of the following:

Table 13-9 Protocol Field

Transport Protocol...	Complete These Steps...
HTTP	<div><div><div>1. In the Timeout field, enter the timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout.</div><div>2. In the HTTP Request Method field, select POST or GET as the HTTP request method header for sending a message.</div><div><div>The GET method 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. The POST method 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 doesn't change at all.</div><div>3. Select the Basic Authentication Required checkbox to specify that basic authentication is required to access this service, or leave it blank to specify that basic authentication is not required. Basic authentication instructs WebLogic Server to authenticate the client using a username 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 username and password on the HTTP request header. If you select this field, you must also enter a service account in the Service Account field.</div></div><div><div><div>Note: Basic authentication over HTTP is strongly discouraged because the password is sent in clear text. However, it is safe to send passwords over HTTPS because HTTPS provides an encrypted channel.</div><div>4. In the Service Account field, enter a service account. A service account is an alias resource for a username and password. This is a required field if you selected the Basic Authentication Required field. To learn more about service accounts, see “Overview of Service Accounts” on page 11-1. You can create service accounts in the Project Explorer module. To learn more, see “Adding a Service Account” on page 11-4.</div></div></div></div></div>

Transport Protocol...	Complete These Steps...
HTTP continued	<ol style="list-style-type: none"> <li data-bbox="337 378 1247 612">5. Make sure the Follow HTTP Redirects checkbox is selected if HTTP redirects, which are requests with a response code 3xx, should be automatically followed. 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. If the Follow HTTP Redirects check box is selected, AquaLogic Service Bus automatically re-sends the request to the new URL without any action on your part. Uncheck this checkbox if you do not want the HTTP redirects to be automatically followed. <li data-bbox="337 621 1247 803">6. In the Dispatch Policy field, select a dispatch policy for this endpoint. Default signifies the default dispatch policy. Dispatch policy refers to the instance of WLS 9.0 Work Manager that you want to use for the service endpoint. For example, if the proxy service has a JMS transport protocol, the service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy. <li data-bbox="337 812 1247 873">7. In the Request encoding field, accept the default <code>iso-8859-1</code> as the char set encoding for requests in HTTP transports, or enter a different char set encoding. <li data-bbox="337 881 1247 939">8. In the Response encoding field, accept the default <code>iso-8859-1</code> as the char set encoding for responses in HTTP transports, or enter a different char set encoding.

Transport Protocol...	Complete These Steps...
HTTPS	<ol style="list-style-type: none"> <li data-bbox="274 383 1170 435">1. In the Timeout field, enter the timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout. <li data-bbox="274 447 1170 661">2. In the HTTP Request Method field, select POST or GET as the HTTP request method header for sending a message. The GET method 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. The POST method 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 doesn't change at all. <li data-bbox="274 673 1170 751">3. In the Business Service Authentication field, select None, Basic, or Client Certificates as the business service authentication method. If you select Basic, you must also enter a service account in the Service Account field. <li data-bbox="274 763 1170 907">4. In the Service Account field, click Browse to select a service account. A service account is an alias resource for a username and password. This is a required field if you selected Basic in the Business Service Authentication field. To learn more about service accounts, see “Overview of Service Accounts” on page 11-1. You can create service accounts in the Project Explorer module. To learn more, see “Adding a Service Account” on page 11-4. <li data-bbox="274 920 1170 1150">5. Make sure the Follow HTTP Redirects checkbox is selected if HTTP redirects, which are requests with a response code 3xx, should be automatically followed. 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. If the Follow HTTP Redirects check box is selected, AquaLogic Service Bus automatically re-sends the request to the new URL without any action on your part. Uncheck this checkbox if you do not want the HTTP redirects to be automatically followed. <li data-bbox="274 1163 1170 1341">6. In the Dispatch Policy field, select a dispatch policy for this endpoint. Default signifies the default dispatch policy. Dispatch policy refers to the instance of WLS 9.0 Work Manager that you want to use for the service endpoint. For example, if the proxy service has a JMS transport protocol, the service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy. <li data-bbox="274 1354 1170 1406">7. In the Request encoding field, accept the default <code>iso-8859-1</code> as the char set encoding for requests in HTTPS transports, or enter a different char set encoding. <li data-bbox="274 1418 1170 1480">8. In the Response encoding field, accept the default <code>iso-8859-1</code> as the char set encoding for requests in HTTPS transports, or enter a different char set encoding.

Transport Protocol...	Complete These Steps...
JMS	<ol style="list-style-type: none"> 1. In the Destination Type field, select Queue or Topic. 2. In the Message Type field, select Bytes or Text. 3. If you selected Queue in the Destination Type field, select the Is Response Required checkbox or leave it blank. This checkbox determines whether or not a response is expected after an outbound message is sent. When you select the checkbox, you must enter data in two additional fields: Response URI and Response Timeout. 4. In the Response URI field, enter a response URI in the format <code>jms://host:port/factoryJndiName/destJndiName</code>. This field is required if you selected Is Response Required. To target multiple servers, use the following URI format: <code>jms://host1:port,host2:port/QueueConnectionFactory/DestName</code> 5. In the Response Timeout field, enter the amount of time to wait for the response, in seconds. This field is required if you selected Is Response Required. 6. In the Request encoding field, accept the default <code>utf-8</code> as the character set encoding for requests in JMS transports, or enter a different character set encoding. 7. In the Response encoding field, accept the default <code>utf-8</code> as the character set encoding for requests in JMS transports, or enter a different character set encoding. 8. In the Dispatch Policy field, select a dispatch policy for this endpoint. Default signifies the default dispatch policy. Dispatch policy refers to the instance of WLS 9.0 Work Manager that you want to use for the service endpoint. For example, if the proxy service has a JMS transport protocol, the service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy. 9. Click Advanced Settings to display additional fields. 10. Select the Use SSL checkbox if the requests are made over a TLS/SSL connection or leave blank if they are not. 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 username and password. 11. In the Expiration field, enter the expiration or time-to-live value for a message, in seconds. If you enter 0, the message never expires.

Transport Protocol...	Complete These Steps...
JMS continued	<ol style="list-style-type: none"> 12. In the Unit of Order field, enter a message unit-of-order. Message Unit-of-Order is a WebLogic Server value-added feature that enables message producers to group messages into a single unit with respect to the processing order. This single unit is called a Unit-of-Order and requires that all messages from that unit be processed sequentially in the order they were created. 13. In the JNDI service account field, click Browse to select a service account to use for JNDI lookups. To learn more about service accounts, see “Overview of Service Accounts” on page 11-1. 14. In the JMS service account field, click Browse to select a service account to use for the JMS resource managed by the JMS server. To learn more, see “Overview of Service Accounts” on page 11-1.
Email	<ol style="list-style-type: none"> 1. In the Mail Server address field, enter an existing SMTP server in the format <code>host:port</code>. This is a required field if you do not select a JNDI name in the Mail Session field. 2. In the Service Account field, click Browse to select a service account. This is a required field if the SMTP Server used requires authentication. A service account is an alias resource for a username and password. To learn more about service accounts, see “Overview of Service Accounts” on page 11-1. You can create service accounts in the Project Explorer module. To learn more, see “Adding a Service Account” on page 11-4. 3. In the Mail Session field, 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. 4. In the From Name field, enter a display name for the originating email account for this service. 5. In the From Address field, enter the originating email account for this service. 6. In the Reply To Name field, enter a display name for the reply to email account. 7. In the Reply To Address field, enter an email address to reply to. 8. In the Connection Timeout field, enter the timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout. 9. In the Request encoding field, accept the default <code>iso-8859-1</code> as the char set encoding for requests in Email transports, or enter a different char set encoding.

Transport Protocol...	Complete These Steps...
File	<ol style="list-style-type: none"> 1. In the Prefix field, enter a prefix that is prepended to the file name. This is a required field. <p>Note: Do not enter * in this field. This character causes a run-time exception.</p> <ol style="list-style-type: none"> 2. In the Suffix field, enter a suffix that is appended to the file name. This is a required field. <p>Note: Do not enter * in this field. This character causes a run-time exception.</p> <ol style="list-style-type: none"> 3. In the Request encoding field, accept the default <code>utf-8</code> as the char set encoding for requests in File transports, or enter a different char set encoding.
FTP	<ol style="list-style-type: none"> 1. In the User Authentication field, 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. 2. In the Identity (e-mail id) or Service Account field, enter the mail ID for the anonymous user if you selected anonymous in the User Authentication field, or enter the service account if you selected external_user in the User Authentication field. This is a required field if you selected external_user. To learn more about service accounts, see “Overview of Service Accounts” on page 11-1. You can create service accounts in the Project Explorer module. To learn more, see “Adding a Service Account” on page 11-4. 3. In the Timeout field, enter the socket timeout, in seconds. The default is 60 seconds. 4. In the Prefix for destination File Name field, enter a prefix for the file name under which the file is stored on the remote server. This is a required field. <p>Note: Do not enter * in this field. This character causes a run-time exception.</p> <ol style="list-style-type: none"> 5. In the Suffix for destination File Name field, enter a suffix for the file name under which the file is stored on the remote server. This is a required field. <p>Note: Do not enter * in this field. This character causes a run-time exception.</p> <ol style="list-style-type: none"> 6. In the Transfer Node field, select ascii or binary as the transfer mode. 7. In the Request encoding field, accept the default <code>utf-8</code> as the char set encoding for requests in File transports, or enter a different char set encoding.

Note: If a business service is created from a WSDL that includes WS-Policy attachments, the policies (read-only) are displayed on the **[Protocol] 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.

2. Click **Next**.

The **General Configuration Review** page is displayed. Continue in [“To Add a Business Service - General Configuration Review” on page 13-20](#).

To Add a Business Service - General Configuration Review

The **General Configuration Review** page is displayed when you click **Next** on the **Protocol Transport Configuration** page. This page enables you to review the configuration data that you have entered for this business service. If necessary, you can click **Edit** to make changes to the configuration before you save the business service.

- Do one of the following:
 - To make a change to one of the configuration pages, click **Edit** for the appropriate page.
 - To return to the previous page, click **Back**.
 - To create the business service, click **Save**. The Business Service is created.

The **Project View** or **Folder View** page is displayed. The new business service is included in the list of resources.

- To disregard changes, click **Cancel**.

Note: The new business service is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating Business Services” on page 13-21](#)

[“Viewing and Changing Business Services” on page 13-23](#)

[“Deleting Business Services” on page 13-30](#)

Listing and Locating Business Services

The **Summary of Business Services** page enables you to view a list of business services. Business services are AquaLogic Service Bus definitions of the enterprise services with which you want to exchange messages. To learn more, see [“Overview of Business Services” on page 13-1](#).

To List and Locate Business Services

1. From the left navigation pane, select **Business Services** from under **Resource Browser**. The **Summary of Business Services** page is displayed, which displays the following information for each business service. For a more detailed description of the properties, see [“Viewing and Changing Business Services” on page 13-23](#).

Table 13-10 Summary of Business Services Page

Property	Description
Name	A unique name for the business service. The name is a link to the View Details page. To learn more, see “Viewing and Changing Business Services” on page 13-23 .
Path	The path is the project name and the name of the folder in which the business service resides. It is a link to the project or folder that contains this resource. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .

Property	Description
Actions	<p>For business services, the Actions column displays the following:</p> <ul style="list-style-type: none">• A Manage Monitoring icon, which is a link to the Monitoring Configuration - [service name] page. Click the icon to enable or disable monitoring for a specific service, enable or disable the service itself, and view or configure alert rules for a specific service. To learn more, see “Listing and Locating Alert Rules” on page 20-41.• A Launch Test Console icon, which you can click 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. To learn more, see “Testing Services” on page 23-3.
Options	<p>The Options column displays the following:</p> <ul style="list-style-type: none">• A Delete icon that enables you to delete a specific service. To learn more, see “Deleting Business Services” on page 13-30. <p>You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.</p>

2. To locate a specific business service, do one of the following:
- Filter by business service name. 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. The services matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Name** and **Path** columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all business services.

Related Topics

[“Adding a Business Service” on page 13-7](#)

Viewing and Changing Business Services

The **View Details** page enables you to view and change details of a specific business service. Business services are AquaLogic Service Bus definitions of the enterprise services with which you want to exchange messages. To learn more, see [“Overview of Business Services” on page 13-1](#).

To View and Change Business Service Details

1. Locate the business service. To learn more, see [“Listing and Locating Business Services” on page 13-21](#).
2. Click the business service name.

The **View Details** page displays the following information:

Table 13-11 View Details Page

Property	Description
Resource Name	The name of this business service.
Created By	The user who created this business service or imported it into the configuration.
Created On	The date and time that the user created this business service or imported it into the configuration.
References	The number of objects that this business service references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this business service. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this business service, if one exists.

The **View Details** page displays the following **General Configuration** information:

Table 13-12 General Configuration Information

Property	Description
Service Type	The service type

If the service type for this business service is Messaging Service, the page displays the following **Message Type Configuration** information:

Table 13-13 Message Type Configuration Information

Property	Description
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.

The page displays the following **Transport Configuration** information:

Table 13-14 Transport Configuration Information

Property	Description
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

If the transport protocol is Email, the page displays the following **Email Transport Configuration** information:

Table 13-15 Email Transport Configuration Information

Property	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 char set encoding for requests in Email transports.

If the transport protocol is File, the page displays the following **File Transport Configuration** information:

Table 13-16 File Transport Configuration Information

Property	Description
Prefix	A prefix that is prepended to the file name.
Suffix	A suffix that is appended to the file.
Request Encoding	The char set encoding for requests in File transports.

If the transport protocol is FTP, the page displays the following **FTP Transport Configuration** information:

Table 13-17 FTP Transport Configuration Information

Property	Description
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.
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 char set encoding for requests in FTP transports.

If the transport protocol is HTTP, the page displays the following **HTTP Transport Configuration** information:

Table 13-18 HTTP Transport Configuration Information

Property	Description
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 AquaLogic 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.

Property	Description
Request Encoding	The char set encoding for requests in HTTP transports.
Response Encoding	The char set encoding for responses in HTTP transports.

If the transport protocol is HTTPS, the page displays the following **HTTPS Transport Configuration** information:

Table 13-19 HTTPS Transport Configuration Information

Property	Description
Timeout	The amount of time in seconds it takes the service to time out.
HTTP Request Method	The HTTP request method: POST or GET.
Business Service Authentication	The authentication method for the business service: None, Basic, or Client Certificates.
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 AquaLogic 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 char set encoding for requests in HTTPS transports.
Response Encoding	The char set encoding for responses in HTTPS transports.

If the transport protocol is JMS, the page displays the following **JMS Transport Configuration** information:

Table 13-20 JMS Transport Configuration Information

Property	Description
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.
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.
JNDI service account	The service account to use for JNDI lookups.
Request Encoding	The char set encoding for requests in JMS transports.
Response Encoding	The char set encoding for responses in JMS transports.
JMS service account	The service account to use for the JMS resource managed by the JMS server.

3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

4. To make a change to the fields on the configuration pages, click **Edit** for the appropriate page. See [“Adding a Business Service” on page 13-7](#) for a description of the pages and fields.

Note: You cannot change the **Service Name** or **Service Type** fields.

5. Do one of the following:
 - To return to the previous page, click **Back**.
 - To update the business service, click **Finish**. The Business Service is updated.
The **Summary of Business Services** page is displayed.
 - To disregard changes, click **Cancel**.

Note: The business service is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Overview of Business Services” on page 13-1](#)

[“Listing and Locating Business Services” on page 13-21](#)

[“Adding a Business Service” on page 13-7](#)

[“Deleting Business Services” on page 13-30](#)

Deleting Business Services

The **Summary of Business Services** page enables you to delete a business service. Business services are AquaLogic Service Bus definitions of the enterprise services with which you want to exchange messages. To learn more, see [“Overview of Business Services” on page 13-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

To Delete a Business Service

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Business Services** from under **Resource Browser**. The **Summary of Business Services** page is displayed.
3. In the **Options** field of the business service you want to delete, click the **Delete** icon.

The business service is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The business service is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Listing and Locating Business Services” on page 13-21](#)

[“Adding a Business Service” on page 13-7](#)

[“Viewing and Changing Business Services” on page 13-23](#)

Proxy Services

This section includes the following topics:

- [Overview of Proxy Services](#)
- [Adding a Proxy Service](#)
- [Listing and Locating Proxy Services](#)
- [Viewing and Changing Proxy Services](#)
- [Deleting Proxy Services](#)

Overview of Proxy Services

This section includes the following topics:

- [Service Types](#)
- [Service Types and Transports](#)

Proxy services are AquaLogic Service Bus definitions of Web services implemented locally on WebLogic Server. You define a proxy service in terms of WSDLs, pipelines, and policies. If the proxy service requires security credentials, you can create a proxy service provider to manage these security credentials from the AquaLogic Service Bus Console. For information on how to configure a proxy service provider, see [“Adding a Proxy Service Provider” on page 12-4](#). You can configure access control policies on proxy services. To learn more, see [“Listing and Locating Access Control Policies” on page 19-26](#), [“Editing Transport Authorization Policies” on page 19-28](#), and [“Editing Service Authorization Policies” on page 19-34](#).

You implement a proxy service through configuring its Message Flow. Message Flows can include pipeline pairs and the following nodes: Start, Route, and Branch. To learn more, see [“Overview of Proxy Services” on page 14-1](#) and [“Viewing and Changing Message Flow” on page 15-5](#).

The following table lists the pages you can access from the **Project Explorer** and **Resource Browser** modules. The tasks and help topics associated with each are provided.

Table 14-1 Pages Accessed from Project Explorer and Resource Browser Modules

Page	Associated Tasks	Help Topics
Summary of Proxy Services	View a list of proxy services. The service name and alerts are displayed.	Listing and Locating Proxy Services
	Filter the list.	
	Delete a proxy service	Deleting Proxy Services
Edit a Proxy Service	Add a proxy service.	Adding a Proxy Service
Proxy Service Details	View and edit details of a specific proxy service.	Viewing and Changing Proxy Services
Edit Message Flow	View the message flow	Viewing and Changing Message Flow
	Change the message flow	
	Add a pipeline pair node	Adding a Pipeline Pair Node
	Add a conditional branch node	Adding a Conditional Branch Node
	Add an operational branch node	Adding an Operational Branch Node
	Add a route node	Adding a Route Node
	Add a stage	Adding a Stage
Edit Branch Node	Change branch details and add branch definitions	Viewing and Changing Conditional Branch Details
Edit Stage Configuration	Add an action	Adding an Action

Page	Associated Tasks	Help Topics
Edit Error Handler	Add an error handler for a proxy service	Adding Error Handling for the Proxy Service
	Add a pipeline error handler	Adding Pipeline Error Handling
	Add a stage error handler	Adding Stage Error Handling
	Add route node error handler	Adding Error Handling for the Route Node
XQuery Expression Editor	Edit an XQuery expression	Using the Inline XQuery Expression Editor
XQuery Condition Editor	Edit an XQuery condition	Using the XQuery Condition Editor
XPath Expression Editor	Edit an XPath expression	Using the XPath Expression Editor

Service Types

Each service type is modeled following the same pattern. Their configuration is composed of a common part and a service type specific part.

The common configuration consists of the following properties:

Table 14-2 Service Type Configuration

Property	Description
Resource Definition	<p>The resource definition consists of:</p> <ul style="list-style-type: none"> • The service name (that is, project, path, and local name) • An optional description for the service • The service type (read only)

Property	Description
Miscellaneous Configuration	<p>This configuration consists of:</p> <ul style="list-style-type: none"> The service provider for proxy services <p>Note: A service provider is only required if the proxy service routes messages to HTTPS services that require client-certificate authentication, or in some message-level security scenarios.</p>
Transport Configuration	<p>You can configure the following parameters for each proxy service:</p> <ul style="list-style-type: none"> Endpoint URI—string, for example: <code>/proxy1</code> or <code>jms://localhost:7001/QueueConnectionFactory/DestName.</code> (This is required.) <p>To target a target a JMS destination to multiple servers, use the following URI format: <code>jms://host1:port,host2:port/QueueConnectionFactory/DestName</code></p> <ul style="list-style-type: none"> Get all headers from request. This is a Boolean value; the default is true. User-specified Headers—a list of string header names, which is only applicable if you select False for the Get all headers option. <p>The transport you select must be able to support the transport mode (that is, request/response, one-way or both) required by the binding definition, and be configured accordingly.</p> <p>For services exchanging messages in both modes, you must configure the binding layer so that it can choose the transport mode accordingly (for any transport implementing the request/response as two asynchronous calls, for example, JMS). This occurs automatically when the service is a concrete type, as it is described in the binding definition. When it is not a concrete type, to configure the binding layer, you must set the mode in the <code>\$outbound</code> variable.</p> <p>Based on the transport and WSDL, the transport mode is automatically selected, but you can overwrite it in <code>\$inbound</code> or <code>\$outbound</code>.</p>

Each service type must define the following configurations:

- Binding definition
- Run-time configuration
- Run-time variables (\$operation, \$body, \$header, \$attachments)

Table 14-3 Service Type Configuration

Property	Description
WSDL Port	<p>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. This WSDL is used as the base for the final WSDL document.</p> <p>When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL port describes what the actual transport address is. You use it for a concrete interface.</p> <p>For a definition of a WSDL port, see http://www.w3.org/TR/wsdl#_ports.</p> <p>When you create a proxy service based on a WSDL Binding, AquaLogic Service Bus sets the new service and port definitions in the WSDL generated for the proxy service. Regardless of whether you define a proxy service based on a WSDL port or a WSDL binding, the WSDL generated for the proxy service defines only a single port. If the service is generated from port X in the template WSDL, then port X is also defined in the generated WSDL. Any other ports defined in the template WSDL are not included in the generated WSDL. Furthermore, if you base the proxy service on a WSDL port, the generated WSDL uses that port name and preserves any WS-Policies associated with that port. The binding is determined from the port, and in turn, the port type is determined from the binding.</p> <p>If the service is generated from binding Y in the template WSDL, the generated WSDL defines a new service and port (<service-name>QSService and <port-name>QSPort). None of the ports defined in the template WSDL are included in the generated WSDL.</p> <p>If you base the service on a WSDL binding template, there may be multiple ports in that WSDL associated with that binding. Each port can use a different URL and have a different WS-Policy attached to it. Therefore, the generated WSDL uses the binding but generates an artificial port for that binding with no WS-Policy. For all WSDL-based services, the transport type and transport URL can be overwritten in the transport section of the service definition.</p> <p>Note: You can get the WSDL for an HTTP(S)-based proxy service by entering the URL for the service appended with ?WSDL in your browser's Address field.</p>

Property	Description
WSDL Binding	<p>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. This WSDL is used as the base for the final WSDL document.</p> <p>When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL binding describes the structure of the interface and how it is packaged. You use it to map the transport address.</p> <p>For a definition of a WSDL Binding, see http://www.w3.org/TR/wSDL#_bindings.</p> <p>You may change the transport protocol of a service to another compatible one. The transport attribute of the <code><soap:binding></code> element, in the <code><wsdl:binding></code> referenced by the service, must reflect the value for the selected transport.</p> <p>For SOAP services, any existing <code><wsdl:service></code> definition is removed and a new one containing a single <code><wsdl:port></code> is created. This <code><wsdl:port></code> is configured based on the <code><wsdl:binding></code> referenced by the service and its SOAP address contains the address of the service (as defined by its transport).</p> <p>For XML services, the only standard WSDL binding definition available is the one defined for HTTP. However, BEA has added its own standard definition for JMS. So, except in the case of the JMS transport protocol, the standard HTTP binding is used.</p> <p>As for SOAP, any existing <code><wsdl:service></code> is removed and a new one is created to reflect the service address. As only HTTP and JMS one-way are supported as standards, the <code><wsdl:service></code> is not generated for any other configuration.</p>

Property	Description
Any SOAP Service	<p>Binding Definition: The only information this service type defines is that the service is receiving or sending SOAP messages—regardless of their WSDL binding definition. Therefore the binding configuration for this type is empty.</p> <p>In addition, as there is no binding configuration, the combination of this type and the content-type of the message is sufficient to determine whether or not there are attachments to the message.</p> <p>As per their definition, any services (SOAP or XML) do not have any WSDL definition. It is not possible to request a WSDL document for those services.</p> <p>Run-Time Variables:</p> <p>The <code>\$body</code> and <code>\$header</code> variables respectively hold the <code><soap:Body></code> and <code><soap:Header></code> of the incoming SOAP message.</p> <p>The <code>\$attachments</code> variable contains the SOAP message attachments if any.</p> <p>The <code>\$operation</code> variable is not applicable to this service type as you do not define a port type.</p> <p>To learn more about the message context variables, see “Message-Related Variables” on page A-3 and “Constructing Messages to Dispatch” on page A-22.</p>
Any XML Services	<p>Binding Definition: The only information this service type defines is that the service is receiving/sending XML messages—regardless of their WSDL binding definition. Therefore, the binding configuration for this type is empty.</p> <p>In addition, as there is no binding configuration, the combination of this type and the content-type of the message is sufficient to determine whether or not there are attachments to the message.</p> <p>As per their definition, any services (SOAP or XML) do not have any WSDL definition. It is not possible to request a WSDL document for those services.</p> <p>Run Time Variables:</p> <p>The <code>\$body</code> variable holds the incoming XML message wrapped in a <code><soap:Body></code> element.</p> <p>The <code>\$attachments</code> variable contains message attachments if there are any.</p> <p>The <code>\$header</code> variable is not applicable to this service type and is set to its default value.</p> <p>The <code>\$operation</code> variable is not applicable to this service type as you do not define a port type.</p> <p>To learn more about the message context variables, see “Message-Related Variables” on page A-3 and “Constructing Messages to Dispatch” on page A-22.</p>

Property	Description
Messaging Services	<p>Binding Definition: 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).</p> <p>As per their definition, messaging-based services do not have any WSDL definition. It is not possible to request a WSDL document for those services.</p> <p>There are four available content types to choose from for the request (and response):</p> <ul style="list-style-type: none">• Binary• Text• XML• MFL <p>Run Time Variables:</p> <p>This service type is message based. There is no concept of multiple “operations” as for Web services. Therefore, the <code>\$operation</code> variable is left empty.</p> <p>The <code>\$body</code> variable holds the incoming message wrapped in a <code><soap:Body></code> element.</p> <p>The <code>\$header</code> variable is not applicable to this service type, and is set to its default value.</p> <p>The <code>\$attachments</code> variable contains message attachments if there are any.</p> <p>To learn more about the message context variables, see “Message-Related Variables” on page A-3 and “Constructing Messages to Dispatch” on page A-22.</p>

Service Types and Transports

The following types of service types and transports are supported by AquaLogic Service Bus:

Table 14-4 Service Types and Transports Supported by AquaLogic Service Bus

Service Type	Transport Protocols
SOAP or XML WSDL	JMS ¹ HTTP(S)
SOAP (no WSDL)	JMS HTTP(S)

Service Type	Transport Protocols
XML (no WSDL) ²	HTTP(S)
	JMS
	Email
	File
	FTP
Messaging Type (Binary, Text, MFL, XML)	HTTP(S)
	JMS
	Email
	File
	FTP

1. Web service security (WSS) is supported only over one-way JMS on inbound and outbound. Attempting to configure WSS with JMS request/response results in a session conflict.
2. HTTP GET is only supported for XML with no WSDL.

Related Topics

[“Overview of Business Services” on page 13-1](#)

Adding a Proxy Service

The **Edit a Proxy Service - General Configuration** page enables you to add a proxy service.

Proxy services are AquaLogic Service Bus definitions of Web services implemented locally on WebLogic Server. You define a proxy service in terms of WSDLs, pipelines, and policies. To learn more, see [“Overview of Proxy Services” on page 14-1](#).

To add a proxy service, you must first configure general information for the service, configure general and protocol-dependent transport information for the service, then configure operation selection algorithms for the service if it includes operations. If this is a messaging service, you must also configure the message types. You can review the configuration before you create the proxy service.

The tasks in this procedure include:

- [To Add a Proxy Service - General Configuration](#)
- [To Add a Proxy Service - Messaging Type Configuration](#)
- [To Add a Proxy Service - Transport Configuration](#)
- [To Add a Proxy Service - Protocol-Dependent Transport Configuration](#)
- [To Add a Proxy Service - Operation Selection Configuration](#)
- [To Add a Proxy Service - General Configuration Review](#)

To Add a Proxy Service - General Configuration

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Project Explorer**. The **Project View** page is displayed.
3. Select the project to which you want to add the proxy service. You can add a proxy service directly under the project, or you can add the proxy service under a selected folder.

Note: Click the name of a folder to select it. The **Folder View** page is displayed.

4. From the **Project View** or **Folder View** page, in the **Create Resource** field, select **Proxy Service** from under **Service**. The **Edit a Proxy Service - General Configuration** page is displayed.
5. In the **Service Name** field, enter a unique name for the proxy service.
6. In the **Description** field, enter a description for the proxy service.
7. In the **Service Type** field, do one of the following:

Note: A service type defines the types and packaging of the messages exchanged by the service. This is a required field.

Table 14-5 Service Type Field

To...	Complete These Steps...
Create a service from WSDL port	<ol style="list-style-type: none"> 1. Select WSDL port from under Create a New Service. 2. Click Browse. The WSDL Browser is displayed. 3. In the WSDL Browser, select a WSDL resource, then select a port in the Definitions pane. 4. Click Submit to close the dialog box and return to the General Configuration page. <p>Note: When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL port describes what the actual transport address is. You use it for a concrete interface.</p> <p>To learn more about this service type, see “Service Types” on page 14-3 and “Service Types and Transports” on page 14-8 in “Overview of Proxy Services” on page 14-1. See also “Generating WSDLs from a Proxy Service” on page 14-27 in this topic.</p>
Create a service from WSDL binding	<ol style="list-style-type: none"> 1. Select WSDL binding from under Create a New Service. 2. Click Browse. The WSDL Browser is displayed. 3. In the WSDL Browser, select a WSDL resource, then select a binding in the Definitions pane. 4. Click Submit to close the dialog box and return to the General Configuration page. <p>Note: When you create a business service or proxy service based on a WSDL, you can select only a WSDL port or a WSDL binding, as a WSDL may only have one of these entities defined. The WSDL binding describes the structure of the interface and how it is packaged. You use it to map the transport address.</p> <p>To learn more about this service type, see “Service Types” on page 14-3 and “Service Types and Transports” on page 14-8 in “Overview of Proxy Services” on page 14-1. See also “Generating WSDLs from a Proxy Service” on page 14-27 in this topic.</p>

To...	Complete These Steps...
Create a messaging service	<p>Select Messaging Service 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. Unlike Web services, the content-type of the request and response need not be the same.</p> <p>To learn more about this service type, see “Service Types” on page 14-3 and “Service Types and Transports” on page 14-8 in “Overview of Proxy Services” on page 14-1.</p>
Create a SOAP service that does not have an explicitly defined, concrete interface	<p>Select Any SOAP Service to create a SOAP service that does not have an explicitly defined, concrete interface.</p> <p>To learn more about this service type, see “Service Types” on page 14-3 and “Service Types and Transports” on page 14-8 in “Overview of Proxy Services” on page 14-1.</p>
Create an XML service that does not have an explicitly defined, concrete interface	<p>Select Any XML Service to create an XML service that does not have an explicitly defined, concrete interface.</p> <p>Note: HTTP GET is only supported in the Any XML Service service type.</p> <p>To learn more about this service type, see “Service Types” on page 14-3 and “Service Types and Transports” on page 14-8 in “Overview of Proxy Services” on page 14-1.</p>
Create a proxy service from an existing business service	<ol style="list-style-type: none"> 1. Select Business Service from under Create from Existing Service. 2. Click Browse. The Service Browser is displayed. 3. In the Service Browser, select a business service. 4. Click Submit to close the dialog box and return to the General Configuration page. <p>This enables you to create a proxy service with a route node that routes to the business service you select. To learn more about business services, see “Overview of Business Services” on page 13-1.</p>
Create a proxy service from an existing proxy service	<ol style="list-style-type: none"> 1. Select Proxy Service from under Create from Existing Service. 2. Click Browse. The Service Browser is displayed. 3. In the Service Browser, select a proxy service. 4. Click Submit to close the dialog box and return to the General Configuration page. <p>This enables you to clone a new proxy service from the proxy service you select.</p>

8. In the **Proxy Service Provider** field, select the name of a proxy service provider:

- a. Click **Browse**. The **Service Provider Browser** is displayed.
- b. In the **Service Provider Browser**, select a proxy service provider.
- c. Click **Submit** to close the dialog box and return to the **General Configuration** page.

A proxy service provider is only required in certain cases: Outbound 2-way TLS/SSL, where the proxy service routes messages to HTTPS services that require client-certificate authentication, or in some Web service security scenarios; for example, if the proxy service requires messages to be encrypted. To learn more about proxy service providers, see [“Overview of Proxy Service Providers” on page 12-1](#). To learn how to create a proxy service provider, see [“Adding a Proxy Service Provider” on page 12-4](#).

Note: 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.

In the case of SOAP/WSS over JMS—Web service security (WSS) is supported only over one-way JMS on inbound and outbound. WSS with JMS request/response is not supported.

9. Click **Next**.

If you selected **Messaging Service** in the **Service Type** field, the **Edit a Proxy Service - Message Type Configuration** page is displayed. Continue in [“To Add a Proxy Service - Messaging Type Configuration” on page 14-13](#).

For all other service types, the **Edit a Proxy Service - Transport Configuration** page is displayed. Continue in [“To Add a Proxy Service - Transport Configuration” on page 14-15](#).

To Add a Proxy Service - Messaging Type Configuration

If you selected **Messaging Service** in the **Service Type** field, the **Edit a Proxy Service - Message Type Configuration** page is displayed when you click **Next** on the **Edit a Proxy Service - General Configuration** page.

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).

1. Select a message type for the request and response messages:
 - a. In the **Request Message Type** field, select a message type for the request message:

Table 14-6 Request Message Type Field

Message Type	Description
None	Select None if there no content-type for the message.
Binary	Select Binary if the content-type of the message is unknown or not important.
Text	Select Text if the message can be restricted to text.
MFL	<p>Select MFL if the message is a binary document conforming to an MFL definition. You can configure only one MFL file.</p> <p>Note: For MFLs, you can click Browse to select a MFL from the MFL Browser, then click Submit.</p>
XML	Select XML 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.

- b. In the **Response Message Type** field, select a message type for the response message:

Table 14-7 Response Message Type Field

Message Type	Description
None	Select None if there no content-type for the message.
Binary	Select Binary if the content-type of the message is unknown or not important.
Text	Select Text if the message can be restricted to text.
MFL	<p>Select MFL if the message is a binary document conforming to an MFL definition. You can configure only one MFL file.</p> <p>Note: For MFLs, you can click Browse to select a MFL from the MFL Browser, then click Submit.</p>
XML	Select XML 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.

2. Click **Next**.

The **Transport Configuration** page is displayed. Continue in [“To Add a Proxy Service - Transport Configuration” on page 14-15](#).

To Add a Proxy Service - Transport Configuration

The **Transport Configuration** page is displayed when you click **Next** on the **Edit a Proxy Service - General Configuration** page. It is displayed for messaging services when you click **Next** on the **Edit a Proxy Service - Message Type Configuration** page.

This page enables you to configure transport information for the proxy service. To learn more about the types of service types and transports supported by AquaLogic Service Bus, see [“Service Types and Transports” on page 14-8](#).

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

1. In the **Protocol** field, select one of these transport protocols:
 - Email
 - File
 - FTP
 - HTTP
 - HTTPS
 - JMS
2. In the **Endpoint URI** field, enter an endpoint URL in the format based on the transport protocol you selected in the **Protocol** field, then click **Add**:

Table 14-8 Endpoint URI Field

Transport Protocol	Format
Email	mailfrom:mail-server-hostname:mail-server-port
File	file:///drivename:/somename

Transport Protocol	Format
FTP	ftp://hostname:port/directory
HTTP	/someName
HTTPS	/someName
JMS	<p>jms://host:port/factoryJndiName/destJndiName</p> <p>To target a target a JMS destination to multiple servers, use the following URI format:</p> <p>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 if not available. However, in the case of JMS, when you activate the session, the endpoint must be available. To learn more, see “JMS Endpoint URIs Must be Available To Activate a Session” on page 2-15.</p>

Note: You can configure multiple URLs. You can click **Delete** in the **Action** column to delete them at any time. At run time, the URLs are selected based on the load balancing algorithm you selected in the **Load Balancing Algorithm** field.

3. In the **Get All Headers** field, select **Yes** if you want to retrieve all the headers from the transport or select **No** if you want to retrieve a defined set of headers. If you select **No**, enter a set of headers in the **Header** field, then click **Add**.
4. Click **Next**.

An additional **Transport Configuration** page is displayed. This page enables you to configure protocol-dependent transport information for the proxy service. Continue in [“To Add a Proxy Service - Protocol-Dependent Transport Configuration” on page 14-16.](#)

To Add a Proxy Service - Protocol-Dependent Transport Configuration

The [Protocol] **Transport Configuration** page is displayed when you click **Next** on the **Edit a Proxy Service - Transport Configuration** page. This page enables you to configure additional transport information for the proxy service, based on the transport protocol you selected in the **Protocol** field.

1. Based on the transport protocol you selected in the **Protocol** field, do one of the following:

Table 14-9 Protocol Field

Transport Protocol...	Complete These Steps...
HTTP	<ol style="list-style-type: none"> 1. Select the Basic Authentication Required checkbox to specify that basic authentication is required to access this service, or leave it blank to specify that basic authentication is not required. Basic authentication instructs WebLogic Server to authenticate the client using a username 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 username and password on the HTTP request header. Note: 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: When you create an HTTP proxy service endpoint that requires Basic Authentication, a transport-authorization policy is not automatically associated with the inbound endpoint URI. For Basic Authentication to be enforced, you must define a transport-authorization policy for the endpoint. To learn more, see Securing Inbound and Outbound Messages in the <i>BEA AquaLogic Service Bus User Guide</i>. 2. In the Dispatch Policy field, select a dispatch policy for this endpoint. Leave blank to use the default dispatch policy. Dispatch policy refers to the instance of WLS 9.0 Work Manager that you want to use for the service endpoint. For example, if the proxy service has a JMS transport protocol, the service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy. 3. In the Request encoding field, do the following: For HTTP inbound transports, if the character set encoding parameter of the Content-Type header is not specified in Client Request, enter a character set encoding parameter in this field. 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 AquaLogic Service Bus runtime decides the most appropriate encoding while it makes a request to the business service. In the case of a non-passthrough scenario, the default char set encoding is <code>utf-8</code> at runtime. However if it is a passthrough scenario, the runtime will pass through the encoding received with the outbound response.

Transport Protocol...	Complete These Steps...
HTTP continued	<p>4. In the Response encoding field, do the following:</p> <p>For HTTP inbound transports, if you do not enter a response encoding, the binding layer decides the most appropriate encoding while it sends back the response to client. In the case of a non-passthrough scenario, the default char set encoding is <code>utf-8</code> at runtime. However, in the case of a passthrough scenario, the runtime will pass through the encoding received with the outbound response.</p> <p>For HTTP outbound transports, if the character set encoding parameter of the Content-Type header is not specified in the Back End Service response, enter a character set encoding parameter in this field. If you do not enter a value, the field defaults to <code>iso-8859-1</code>.</p>
HTTPS	<p>1. In the Client Authentication field, select the client authentication method: None, Basic, or Client certificates.</p> <p>Warning: When you create an HTTPS proxy service endpoint that requires Basic Authentication, a transport-authorization policy is not automatically associated with the inbound endpoint URI. For Basic Authentication to be enforced, you must define a transport-authorization policy for the endpoint. To learn more, see Securing Inbound and Outbound Messages in the <i>BEA AquaLogic Service Bus User Guide</i>.</p> <p>2. In the Dispatch Policy field, 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 9.0 Work Manager that you want to use for the service endpoint. For example, if the proxy service has a JMS transport protocol, the service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy.</p> <p>3. In the Request encoding field, accept the default <code>iso-8859-1</code> as the char set encoding for requests in HTTPS transports, or enter a different char set encoding.</p> <p>4. In the Response encoding field, accept the default <code>iso-8859-1</code> as the char set encoding for requests in HTTPS transports, or enter a different char set encoding.</p>

Transport Protocol...	Complete These Steps...
JMS	<ol style="list-style-type: none"> 1. In the Destination Type field, select Queue or Topic. 2. If you selected Queue in the Destination Type field, select the Is Response Required checkbox or leave it blank. This checkbox determines whether or not a response is expected after an outbound message is sent. When you select the checkbox, you must enter data in an additional field: Response URI. 3. In the Response URI field, enter a response URI in the format <code>jms://host:port/MyFactory/MyQueue</code>. This field is required if you selected Is Response Required. To target multiple servers, use the following URI format: <code>jms://host1:port,host2:port/QueueConnectionFactory/DestName</code> 4. In the Response Message Type field, select Bytes or Text. If you selected the Is Response Required field. 5. In the Request encoding field, accept the default <code>utf-8</code> as the char set encoding for requests in JMS transports, or enter a different char set encoding. 6. In the Response encoding field, accept the default <code>utf-8</code> as the char set encoding for requests in JMS transports, or enter a different char set encoding. 7. In the Client Response Timeout field, enter the amount of time to wait for the response, in seconds. 8. In the Dispatch Policy field, select a dispatch policy for this endpoint. Default signifies the default dispatch policy. Dispatch policy refers to the instance of WLS 9.0 Work Manager that you want to use for the service endpoint. For example, if the proxy service has a JMS transport protocol, the service endpoint is an MDB (message-driven bean) JAR file that you can associate with the specific dispatch policy.

Transport Protocol...	Complete These Steps...
JMS continued	<ol style="list-style-type: none">9. Click Advanced Settings to display additional fields.10. Select the Use SSL checkbox if the requests are made over a TLS/SSL connection or leave blank if they are not. 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 username and password.11. In the Message Selector field, enter a message selector expression. Only messages with properties matching the expression are processed.12. Select the Durable Subscription checkbox if the subscription is durable or leave this checkbox blank if the subscription is not durable.13. In the Retry Count field, 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.14. In the Retry Interval field, enter the amount of time, in milliseconds, before rolled back or recovered messages are redelivered. This field only applies to WebLogic Server JMS destinations.15. In the Error Destination field, enter the name of the target destination for messages that have reached their redelivery limit. This field only applies to WebLogic Server JMS destinations.16. In the JMS service account field, 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. To learn more about service accounts, see “Overview of Service Accounts” on page 11-1.

Transport Protocol...	Complete These Steps...
Email	<ol style="list-style-type: none"> 1. In the Service Account field, enter a service account. You can click Browse to select service accounts from a browser. This is a required field. 2. In the Polling Interval field, enter a polling interval, in seconds. This is a required field. 3. In the Email Protocol field, select POP3 or IMAP as the server type for the email account. This is a required field. 4. In the Read Limit field, specify the maximum number of messages to read per polling sweep. Enter 0 to specify no limit. This is a required field. 5. Select the Pass By Reference field to stage the file in the archive directory and pass it as a reference in the headers, or leave the field blank not to do this. 6. In the Post Read Action field, select what happens to a message after it has been read: Archive - the message is archived Delete - the message is deleted Move - the message is moved. Move is only available with the IMAP protocol. Note: This is a required field. 7. In the Attachments field, select how attachments are handled: Archive - Attachments are saved to the Archive Directory Ignore - Attachments are ignored This is a required field. 8. In the IMAP Move Folder field, enter the folder to which the message is moved if the Post Read Action field is set to Move. 9. In the Download Directory field, enter a temporary location for downloading the emails. This is a required field. 10. In the Archive Directory field, specify 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. 11. In the Error Directory field, enter the file system directory path to write the message and any attachments if there is a problem. This is a required field. 12. In the Request encoding field, accept the default <code>iso-8859-1</code> as the character set encoding for requests in Email transports, or enter a different character set encoding.

Transport Protocol...	Complete These Steps...
File	<ol style="list-style-type: none">1. In the File Mask field, enter the regular expression for the files to be picked. The default is *.*.This is a required field.2. In the Polling Interval field, enter a polling interval, in seconds. The default is 60. This is a required field.3. In the Read Limit field, specify the maximum number of messages to read per polling sweep. Enter 0 to specify no limit. The default is 10. This is a required field.4. Select Sort By Arrival to specify that events are delivered in the order of arrival, or leave blank not to do this. Note that when the Sort By Arrival 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.5. Select the Scan SubDirectories checkbox to recursively scan all the directories or leave blank not to do this.6. Select the Pass By Reference checkbox to stage the file in the archive directory and pass it as a reference in the headers, or leave the field blank not to do this.7. In the Post Read Action field, select what happens to a message after it has been read: Archive - the message is archived Delete - the message is deleted This is a required field.8. In the Stage Directory field, enter an intermediate directory to temporarily stage the files while processing them. This is a required field.9. In the Archive Directory field, specify 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.10. In the Error Directory field, enter the location where messages and attachments are posted if there is a problem. This is a required field.11. In the Request encoding field, accept the default utf-8 as the char set encoding for requests in File transports, or enter a different char set encoding.

Transport Protocol...	Complete These Steps...
FTP	<ol style="list-style-type: none"> 1. In the User Authentication field, 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. 2. In the Identity (e-mail id) or Service Account field, enter the mail ID for the anonymous user if you selected anonymous in the User Authentication field, or enter the service account if you selected external_user in the User Authentication field. This is a required field if you selected external_user. 3. Select the Pass By Reference checkbox to stage the file in the archive directory and pass it as a reference in the headers. 4. Select the Remote Streaming checkbox to directly stream the FTP files from the remote server at the time of processing or leave blank not to do this. When you select Remote Streaming, 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. 5. In the File Mask field, enter the regular expression for the files to be picked. The default is *.*.This is a required field. 6. In the Polling Interval field, enter a polling interval, in seconds. The default is 60. This is a required field. 7. In the Read Limit field, specify the maximum number of messages to read per polling sweep. Enter 0 to specify no limit. The default is 10. This is a required field. 8. In the Post Read Action field, select what happens to a message after it has been read. This is a required field: Archive - the message is archived Delete - the message is deleted 9. In the Transfer Mode field, select ascii or binary as the transfer mode. 10. In the Download Directory field, enter the directory on your local machine where files are downloaded during the file transfer. This is a required field. 11. In the Archive Directory field, specify 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. 12. In the Error Directory field, enter the location where messages are posted if there is a problem. This is a required field. <p>Note: The archive, download, and error directories are absolute path, and they are automatically created. If you specify the relative path, the files are created relative to the Java process that starts the WebLogic Server.</p> <ol style="list-style-type: none"> 13. In the Request encoding field, accept the default <code>utf-8</code> as the char set encoding for requests in FTP transports, or enter a different char set encoding.

Transport Protocol...	Complete These Steps...
FTP continued	<ol style="list-style-type: none">14. Click Advanced Settings to display additional fields.15. Select the Scan SubDirectories checkbox to recursively scan all the directories or leave blank not to do this.16. Select the Sort By Arrival checkbox to deliver events in the order of arrival.17. In the Timeout field, enter the socket timeout interval, in seconds, before the connection is dropped. If you enter 0, there is no timeout.18. In the Retry Count field, specify the number of retries for FTP connection failures.

2. Click **Next**.

If this service has operations, the **Edit a Proxy Service - Operation Selection Configuration** page is displayed. Continue in [“To Add a Proxy Service - Operation Selection Configuration” on page 14-24](#).

If this service does not have operations, the **General Configuration Review** page is displayed. Continue in [“To Add a Proxy Service - General Configuration Review” on page 14-27](#).

To Add a Proxy Service - Operation Selection Configuration

If this service has operations, the **Operation Selection Configuration** page is displayed when you click **Next** on the **Protocol Transport Configuration** page. This page enables you to enforce WS-I compliance 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.

AquaLogic 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.

1. Select the **Enforce WS-I Compliance** checkbox if you want to specify whether or not the service is WS-I compliant in the AquaLogic Service Bus Console. Checks are performed when the proxy service receives a message as a response from an invoked service with a Service Callout action, a Route Node action, or on a proxy service request pipeline. If you

specify WS-I compliance testing for an invoked service, the pipeline generates a fault for response errors.

2. In the **Selection Algorithm** field, select one of the following:

Table 14-10 Selection Algorithm Field

Selection Algorithm	Description
Transport Header	If you select this selection algorithm, you can define the transport header that contains the lookup value.
SOAPAction Header	If you select this selection algorithm, operation mapping is done automatically from the WSDL associated with this proxy service.
WS-Addressing	If you select this selection algorithm, the lookup value is contained by the WS-Addressing Action tag located in the SOAP headers of the SOAP message.
SOAP Headers	If you select this selection algorithm, you can define an XPath expression evaluated against the SOAP headers, which allows you to get the lookup value.
SOAP Body Type	<p>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> <p>Note: If the proxy service is configured for a Web service security pass-through scenario with an encrypted body, you cannot select the SOAP Body Type selection algorithm. A similar caveat applies to pass-through encrypted SOAP headers.</p>

Note: If you are creating an XML service type based on a WSDL port or binding, the following selection algorithms are displayed on this page: **Transport Header** and **Payload Type**.

Note: Additional fields are displayed depending on the selection algorithm you select.

3. Based on the algorithm you selected in the **Selection Algorithm** field, do one of the following:

Table 14-11 Selection Algorithm Field

Selection Algorithm...	Complete These Steps...
Transport Header	<ol style="list-style-type: none"> 1. In the Header Name field, enter the transport header that extracts the value used as a key to select the operation being invoked. 2. 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. This is a required field.
SOAPAction Header	There are no additional fields displayed for this selection algorithm.
WS-Addressing	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. This is a required field.
SOAP Headers	<ol style="list-style-type: none"> 1. In the XPath Expression field, specify the XPath expression that extracts the value used as a key to select the operation being invoked. 2. 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. This is a required field.
SOAP Body Type	There are no additional fields displayed for this selection algorithm.
Payload Type	There are no additional fields displayed for this selection algorithm.

4. Click **Next**.

The **General Configuration Review** page is displayed. Continue in [“To Add a Proxy Service - General Configuration Review” on page 14-27](#).

Note: If the proxy service is created from a WSDL (port or binding) that has WS-Policies attached, the **Web Services Security Configuration** page is displayed when you click **Next**. This page displays read-only views of the effective request/response WS-Policy for all operations.

Do one of the following:

- Select **Process WS-Security Header** if you want the proxy service to behave as an active intermediary, which means it performs decryption, signature verification and so on.
- Leave **Process WS-Security Header** blank if you want the proxy service to behave as pass-through, which means the proxy service does not decrypt the message or verify the digital signature.

To learn more, see [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To Add a Proxy Service - General Configuration Review

The **General Configuration Review** page is displayed when you click **Next** on the **Operation Selection Configuration** page. This page enables you to review the configuration data that you have entered for this proxy service. If necessary, you can click **Edit** to make changes to the configuration before you save the proxy service.

- Do one of the following:
 - To make a change to one of the configuration pages, click **Edit** for the appropriate page.
 - To return to the previous page, click **Back**.
 - To create the proxy service, click **Save**. The proxy service is created.

The **Project View** or **Folder View** page is displayed. The new proxy service is included in the list of resources.

- To disregard changes, click **Cancel**.

Note: After you create a proxy service, the next step is to configure its Message Flow. Message Flow defines the implementation of a proxy service. Message Flows can include pipeline pairs and the following nodes: Start, Route, and Branch. To learn more, see [“Overview of Message Flow” on page 15-1](#) and [“Viewing and Changing Message Flow” on page 15-5](#).

Note: The new proxy service is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Generating WSDLs from a Proxy Service

When you create a proxy service based on a WSDL Binding, AquaLogic Service Bus sets the new service and port definitions in the WSDL generated for the proxy service. Regardless of whether you define a proxy service based on a WSDL port or a WSDL binding, the WSDL generated for the proxy service defines only a single port. If the service is generated from port X in the template WSDL, then port X is also defined in the generated WSDL. Any other ports defined in the template WSDL are not included in the generated WSDL. Furthermore, if you base the proxy service on a WSDL port, the generated WSDL uses that port name and preserves any WS-Policies

associated with that port. The binding is determined from the port, and in turn, the port type is determined from the binding.

If the service is generated from binding Y in the template WSDL, the generated WSDL defines a new service and port (<service-name>QSService and <port-name>QSPort). None of the ports defined in the template WSDL are included in the generated WSDL.

If you base the service on a WSDL binding template, there may be multiple ports in that WSDL associated with that binding. Each port can use a different URL and have a different WS-Policy attached to it. Therefore, the generated WSDL uses the binding but generates an artificial port for that binding with no WS-Policy. For all WSDL-based services, the transport type and transport URL can be overwritten in the transport section of the service definition.

You can get the WSDL for an HTTP(S)-based proxy service by entering the URL for the service appended with **?WSDL** in your browser's Address field.

Related Topics

[“Listing and Locating Proxy Services” on page 14-28](#)

[“Viewing and Changing Proxy Services” on page 14-30](#)

[“Deleting Proxy Services” on page 14-38](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Listing and Locating Proxy Services

The **Summary of Proxy Services** page enables you to view a list of proxy services. Proxy services are AquaLogic Service Bus definitions of Web services implemented locally on WebLogic Server. To learn more, see [“Overview of Proxy Services” on page 14-1](#).

To List and Locate Proxy Services

1. From the left navigation pane, select **Proxy Services** from under **Resource Browser**. The **Summary of Proxy Services** page is displayed. It displays the following information for each proxy service. For a more detailed description of the properties, see [“Viewing and Changing Proxy Services” on page 14-30](#):

Table 14-12 Summary of Proxy Services Page

Property	Description
Name	A unique name for the proxy service. The name is a link to the View Details page. To learn more, see “Viewing and Changing Proxy Services” on page 14-30 .
Path	The path is the project name and the name of the folder in which the proxy service resides. It is a link to the project or folder that contains this resource. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .
Actions	<p>For proxy services, the Actions column displays up to four icons:</p> <ul style="list-style-type: none"> • A Manage Monitoring icon, which is a link to the Monitoring Configuration - [service name] page. Click the icon to enable or disable monitoring for a specific service, enable or disable the service itself, and view or configure alert rules for a specific service. To learn more, see “Listing and Locating Alert Rules” on page 20-41. • A Launch Test Console icon, which you can click 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. To learn more, see “Testing Services” on page 23-3. • An Edit Message Flow icon, which is a link that enables you to edit pipelines for a specific service. To learn more, see “Viewing and Changing Message Flow” on page 15-5. • An Export WSDL icon displays for any WSDL-based proxy services. You use the Export WSDL functionality to quickly make a WSDL available for consumption by external tools such as IDEs. 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. Click the Export WSDL icon to export the WSDL. To learn more, see “Exporting a WSDL” on page 3-28.
Options	<p>The Options column displays the following:</p> <ul style="list-style-type: none"> • A Delete icon that enables you to delete a specific service. To learn more, see “Deleting Proxy Services” on page 14-38. <p>You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.</p>

2. To locate a specific proxy service, do one of the following:
 - Filter by proxy service name. 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. The services matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Name** and **Path** columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

Note: Click **View All** to display all proxy services.

Related Topics

[“Adding a Proxy Service” on page 14-9](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Viewing and Changing Proxy Services

The **View Details** page enables you to view and edit details of a specific proxy service. To learn more, see [“Overview of Proxy Services” on page 14-1](#).

To View and Edit Details of a Proxy Service

1. Locate the proxy service. To learn more, see [“Listing and Locating Proxy Services” on page 14-28](#).
2. Click the proxy service name.

The **View Details** page displays the following information

Table 14-13 View Details Page

Property	Description
Resource Name	The name of this proxy service.
Created By	The user who created this proxy service or imported it into the configuration.

Property	Description
Created On	The date and time that the user created this proxy service or imported it into the configuration.
References	The number of objects that this proxy service references. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Referenced by	The number of objects that reference this proxy service. If such references exist, click the link to view a list of the objects. To learn more, see “Viewing References” on page 3-24 .
Description	A description of this proxy service, if one exists.

The **View Details** page displays the following **General Configuration** information:

Table 14-14 General Configuration Information

Property	Description
Service Type	The service type
Proxy Service Provider	The name of the proxy service provider

If the service type for this proxy service is Messaging Service, the page displays the following **Message Type Configuration** information:

Table 14-15 Message Type Configuration Information

Property	Description
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 .

The page displays the following **Transport Configuration** information:

Table 14-16 Transport Configuration Information

Property	Description
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

If the transport protocol is Email, the page displays the following **Email Transport Configuration** information:

Table 14-17 Email Transport Configuration Information

Property	Description
Email Protocol	A server type for the email account: <ul style="list-style-type: none"> • pop3 • imap
Service Account	The service account for this mail server
Polling Interval	A polling interval, in seconds.
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
Post Read Action	Whether or not a message is archived, deleted or moved 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 <p>Note: Move is only available with the IMAP protocol.</p>
Attachments	Whether or not attachments are archived or ignored: <ul style="list-style-type: none"> • Archive - Attachments are saved to the Archive Directory • Ignore - Attachments are ignored

Property	Description
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 emails.
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.
Error Directory	The file system directory path to write the message and any attachments if there is a problem.
Request encoding	Displays the char set encoding for requests in Email transports. The default is <code>iso-8859-1</code> .

If the transport protocol is File, the page displays the following **File Transport Configuration** information:

Table 14-18 File Transport Configuration Information

Property	Description
File Mask	The regular expression applied for this file to be picked.
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.
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

Property	Description
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 char set encoding for requests in File transports. The default is <code>utf-8</code> .

If the transport protocol is FTP, the page displays the following **FTP Transport Configuration** information:

Table 14-19 FTP Transport Configuration Information

Property	Description
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.
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
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.

Property	Description
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.
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 char set encoding for requests in FTP transports. The default is <code>utf-8</code> .

If the transport protocol is HTTP, the page displays the following **HTTP Transport Configuration** information:

Table 14-20 HTTP Transport Configuration Information

Property	Description
Basic Authentication Required	Whether or not basic authentication is required: displays Enabled if it is required.
Request encoding	Displays the char set encoding for requests in HTTP transports. The default is <code>iso-8859-1</code> .
Response encoding	Displays the char set encoding for responses in HTTP transports. The default is <code>iso-8859-1</code> .

If the transport protocol is HTTPS, the page displays the following **HTTPS Transport Configuration** information:

Table 14-21 HTTPS Transport Configuration Information

Property	Description
Client Authentication	The client authentication method: None, Basic, or Client Certificates.
Request encoding	Displays the char set encoding for requests in HTTPS transports. The default is <code>iso-8859-1</code> .
Response encoding	Displays the char set encoding for responses in HTTPS transports. The default is <code>iso-8859-1</code> .

If the transport protocol is JMS, the page displays the following **JMS Transport Configuration** information.

Table 14-22 JMS Transport Configuration Information

Property	Description
Destination Type	The destination type: Queue or Topic.
Use SSL	Whether or not the requests are made over a TLS/SSL connection.
Is Response Required	Whether or not a response is expected after an outbound message is sent.
Request encoding	Displays the char set encoding for requests in JMS transports. The default is <code>utf-8</code> .
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/De stName</code>
JMS service account	The service account to use for the JMS resource managed by the JMS server.

The page displays the following **Operation Selection Configuration** information:

Table 14-23 Operation Selection Configuration Information

Property	Description
Enforce WS-I Compliance	Displays Yes if you selected this option to specify whether or not the service is WS-I compliant in the AquaLogic Service Bus Console, 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.

3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session or click **Edit** to enter an existing session to make changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).

4. To make a change to the fields on the configuration pages, click **Edit** for the appropriate page. See [“Adding a Proxy Service” on page 14-9](#) for a description of the pages and fields.

Note: You cannot change the **Service Name** or **Service Type** fields.

5. Do one of the following:

- To return to the previous page, click **Back**.
- To update the proxy service, click **Finish**. The Proxy Service is updated.
The **Summary of Proxy Services** page is displayed.
- To disregard changes and return to the **Summary of Proxy Services** page, click **Cancel**.

Note: The proxy service is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under

Change Center. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Adding a Proxy Service” on page 14-9](#)

[“Viewing and Changing Proxy Services” on page 14-30](#)

[“Deleting Proxy Services” on page 14-38](#)

Deleting Proxy Services

The **Summary of Proxy Services** page enables you to delete a proxy service. To learn more, see [“Overview of Proxy Services” on page 14-1](#).

Note: You cannot delete a resource if it is referenced by other resources in AquaLogic Service Bus. Instead of the Delete icon, a Delete icon with a red X is displayed for these resources.

Note: You must delete all service-level access control policies and transport-level access control policies associated with a proxy service before you delete that service from AquaLogic Service Bus.

To Delete a Proxy Service

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Proxy Services** from under **Resource Browser**. The **Summary of Proxy Services** page is displayed.
3. In the **Options** field of the proxy service you want to delete, click the **Delete** icon.

The proxy service is removed from the list.

Note: If necessary, you can undo the deletion of this resource. To learn more, see [“Undoing a Task” on page 2-8](#).

The proxy service is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click

Discard at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Adding a Proxy Service” on page 14-9](#)

[“Viewing and Changing Proxy Services” on page 14-30](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Proxy Services

Proxy Services: Message Flow

This section includes the following topics:

- [Overview of Message Flow](#)
- [Viewing and Changing Message Flow](#)
- [Adding a Pipeline Pair Node](#)
- [Adding a Conditional Branch Node](#)
- [Adding an Operational Branch Node](#)
- [Adding a Stage](#)
- [Adding a Route Node](#)
- [Adding Route Node Actions](#)
- [Viewing and Changing Conditional Branch Details](#)
- [Viewing and Changing Operational Branch Details](#)
- [Viewing and Changing Stage Configuration Details](#)

Overview of Message Flow

Message Flow defines the implementation of a proxy service. Message Flows can include pipeline pairs and the following nodes: Start, Route, and Branch. To learn how to implement Message Flow, see [“Viewing and Changing Message Flow”](#) on page 15-5.

This section includes the following topics:

- [Pipelines](#)
- [Message Execution](#)
- [Building a Message Flow Tree](#)
- [Operational Branching](#)

Pipelines

A pipeline is a named sequence of stages representing a non-branching one-way processing path. Pipelines are typed into one of three categories:

Table 15-1 Pipeline Categories

Pipeline Category	Description
Request	Request pipelines are used for processing the request path of the Message Flow.
Response	Response pipelines are used for processing the response path of the Message Flow.
Error	Error pipelines are used as error handlers.

To create the request and response paths, request and response pipelines are paired together and organized into a single-rooted tree structure. A branch node allows you to conditionally execute these pipeline pairs, and route nodes at the ends of the branches perform any request/response dispatching. This tree structure allows for a clear overview of the Message Flow behavior, making both route actions and branch conditions explicit parts of the overall design, rather than burying them deep inside a pipeline stage.

A message flow tree is constructed by chaining together instances of these top-level components:

Table 15-2 Pipeline Categories

Pipeline Category	Description
Pipeline pair node	<p>The pipeline pair node ties together a single request and a single response pipeline into one top-level element. A pipeline pair node may have only 1 direct descendant in the message flow tree. During request processing, only the request pipeline is executed when visiting a pipeline pair node. When reversing the path for response processing, only the response pipeline is executed.</p> <p>To learn how to add a pipeline pair node, see “Adding a Pipeline Pair Node” on page 15-8.</p>
Branch node	<p>A branch node allows processing to proceed down exactly one of several possible paths. Branching is driven by a simple 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 its value is used to determine which branch to follow. If no branch matches the value of the lookup variable, then the always-present default branch is followed. Setting the value of the lookup variable must be done before reaching the branch node. This approach ensures that exceptions do not occur within the branch node itself. A branch node may have several descendants in the message flow tree: one for each branch including the default branch.</p> <p>To learn how to add a branch node, see “Adding a Conditional Branch Node” on page 15-11.</p>
Route node	<p>The route node is used to perform request/response communication with another service. It represents the boundary between request and response processing for the proxy. When the route node dispatches a request message, request processing is considered finished. When the route node receives a response message, response processing begins. The route node itself has support for conditional routing as well as outbound and response transformations.</p> <p>You can choose whether conditions appear inside the route node or up in the message flow tree as branch nodes—it depends upon whether the condition is important enough to call out as part of the message flow tree structure.</p> <p>As the route node represents the boundary between request and response processing, it cannot have any descendants in the message flow tree.</p> <p>To learn how to add a route node, see “Adding a Route Node” on page 15-22.</p>

Message Execution

The following table demonstrates the journey of a message:

Table 15-3 Message Journey

Node	What Happens to the Message?
Request Processing	Request processing begins at the root of the message flow tree
Pipeline Pair	Executes the request pipeline only
Branch	Evaluates the lookup table and proceeds down the relevant branch
Route	Performs the route along with any outbound/response transformations. Note: Whether or not any routing is performed, the route node represents a change from request processing to response processing. When a response comes in, it reverses the path it took for the request. The same thing occurs for any request path that ends without a route node – it initiates response processing and walks back up the tree, but without waiting for any response.
Response Processing	See <i>Route</i> .
Pipeline Pair	Executes the response pipeline
Branch	Continues with the element that preceded the branch
Root of the Tree	Sends the response back to the client

Building a Message Flow Tree

Any element may appear at the root of the message flow tree. One of the simplest of Message Flow designs is to have just a route node at the top representing the entire tree. There is also no restriction on what two elements may be chained together. For example, two pipeline pair nodes may be chained together without a branching node in between. With regards to branching, each branch may start with a different element – one branch may immediately terminate with a route node, another may be followed by a pipeline pair and yet another may have no descendant whatsoever. In the latter case, a branch with no descendants means that response processing begins immediately if that branch is selected. In general, however, a message flow tree is likely to come in two forms: for non-operational services, the tree is likely to consist of a single pipeline pair at the root followed by a route node. For operational services, the tree is likely to consist

again of a single pipeline pair at the root, followed by a branch node based on operation, with each branch consisting of a pipeline pair followed by a route node.

Operational Branching

Since Message Flow is typically used with WSDL-based services, there is frequently a need to perform processing that is operation-specific. Rather than requiring you to manually configure a branching node based on operation, AquaLogic Service Bus provides a zero-configuration branching node that automatically branches based on operation. A branch is created for each operation defined on the service; the branching variable is `$operation`.

To learn how to add an operational branch node, see [“Adding an Operational Branch Node” on page 15-15](#).

Related Topics

[“Adding a Proxy Service” on page 14-9](#)

[“Listing and Locating Proxy Services” on page 14-28](#)

[“Viewing and Changing Proxy Services” on page 14-30](#)

[“Adding a Stage” on page 15-19](#)

[“Adding an Action” on page 16-2](#)

[“Adding Route Node Actions” on page 15-25](#)

Viewing and Changing Message Flow

The **Edit Message Flow** page enables you to view and change the Message Flow of a specific proxy service. To learn more about Message Flow, see [“Overview of Message Flow” on page 15-1](#). To learn more about proxy services, see [“Overview of Proxy Services” on page 14-1](#).

To View and Change the Message Flow

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Proxy Services** under **Resource Browser**. The **Summary of Proxy Services** page is displayed.

Alternatively, you can select a project or folder from under **Project Explorer** to display the project or folder’s list of resources.

- 3. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service.

Alternatively, if you selected a project or folder, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources.

The **Edit Message Flow** page is displayed. The page includes the following functionality:

- An icon that signifies the Start node for the proxy service, which you can click to add pipeline pair nodes, route nodes, and conditional and operational branches, and error handling for the service.
 - In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow. Click the name of an object to display the page associated with that object. When you add objects, the left navigation pane adds the appropriate links to the Message Flow map. If you have not yet constructed the Message Flow for this proxy service, the Message Flow contains links to the **Edit Message Flow** page only.
- 4. Do one of the following:

Table 15-4 Edit Message Flow Page

To...	Complete This Step...
Add a pipeline pair node	Click the Proxy Service icon, then click Add Pipeline Pair . To learn more, see “Adding a Pipeline Pair Node” on page 15-8 .
Add a route node	Click the Proxy Service icon, then click Add Route Node . To learn more, see “Adding a Route Node” on page 15-22 .
Add a conditional branch node	Click the Proxy Service icon, then click Add Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11 .
Add an operational branch node	Click the Proxy Service icon, then click Add Operational Branch Node . To learn more, see “Adding an Operational Branch Node” on page 15-15 .

To...	Complete This Step...
Paste a route node that you cut or copied from the message flow of another proxy service	Click the Proxy Service icon, then click Paste Route Node . Note: This option is not available if you have not cut or copied a route node.
Add error handling for this proxy service	Click the Proxy Service icon, then click Add Service Error Handler . To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5 .
Save the updates and return to the Summary of Proxy Services page	Click Save .
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .
Clear the changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click **Save**, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Adding a Proxy Service” on page 14-9](#)

[“Listing and Locating Proxy Services” on page 14-28](#)

[“Viewing and Changing Proxy Services” on page 14-30](#)

[“Deleting Proxy Services” on page 14-38](#)

[“Adding a Stage” on page 15-19](#)

[“Adding an Action” on page 16-2](#)

[“Adding Route Node Actions” on page 15-25](#)

Adding a Pipeline Pair Node

The **Edit Message Flow** page enables you to add a pipeline pair node. A pipeline pair node consists of a request pipeline and a response pipeline. 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. To learn more, see [“Overview of Message Flow” on page 15-1](#).

To Add a Pipeline Pair Node

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

On the **Summary of Proxy Services** page in the **Resource Browser**, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following functionality:

- An icon that signifies the Start node for the proxy service, which you can click to add pipeline pair nodes, route nodes, and conditional and operational branches, and error handling for the service.
- In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.

2. Click the **Proxy Service** icon, then click **Add Pipeline Pair**.

The **Pipeline Pair Node** icon and a default name are displayed.

3. To change the default name and add a description for the pipeline pair node, do the following:
 - a. Click the **Pipeline Pair Node** icon, click **Edit**, then click **Name and Description**.
 - b. In the **Name** field, enter a new name for the pipeline pair node.
 - c. In the **Description** field, enter a description for the pipeline pair node.

- d. To save the changes, click **Save**. The **Pipeline Pair Node** icon and the name you assigned are displayed.
4. When you save the pipeline pair node, do one of the following:

Table 15-5 Pipeline Pair Node

To...	Complete This Step...
Add a stage to a pipeline	Click the appropriate request or response pipeline, then click Add Stage . To learn more, see “Adding a Stage” on page 15-19 .
Add actions to a pipeline	Click the Stage icon for the appropriate pipeline (if you have already created a stage), click Edit , then click Stage . To learn more, see “Adding an Action” on page 16-2 .
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	Click the Pipeline Pair Node icon for the pipeline pair you created, then click Paste Stage . Alternatively, click the Stage icon in the appropriate pipeline (if you have already created a stage), then click Paste .
Add error handling for this pipeline	Click the Pipeline Pair Node icon for the pipeline pair you created, then click Add Pipeline Error Handler . To learn more, see “Adding Pipeline Error Handling” on page 18-7 .
Add another pipeline pair node	Click the Pipeline Pair Node icon for the pipeline pair you created, click Add , then click Add Pipeline Pair . Alternatively, you can click the Proxy Service icon again, then click Add Pipeline Pair .
Add a route node	Click the Pipeline Pair Node icon for the pipeline pair you created, click Add , then click Add Route Node . To learn more, see “Adding a Route Node” on page 15-22 .
Add a conditional branch node after the pipeline pair node	Click the Pipeline Pair Node icon for the pipeline pair you created, click Add , then click Add Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11 .
Add an operational branch node after the pipeline pair node	Click the Pipeline Pair Node icon for the pipeline pair you created, click Add , then click Add Operational Branch Node . To learn more, see “Adding an Operational Branch Node” on page 15-15 .

To...	Complete This Step...
Edit the name and description of the pipeline pair node	<p>Click the Pipeline Pair Node icon for the pipeline pair you created, click Edit, then click Name and Description.</p> <p>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 AquaLogic 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.</p>
Paste a route node that you cut or copied from the message flow of another proxy service	<p>Click the Pipeline Pair Node icon for the pipeline pair you created, then click Paste Route Node.</p> <p>Note: This option is not available if you have not cut or copied a route node.</p>
Delete the pipeline pair node	Click the Pipeline Pair Node icon for the pipeline pair you created, then click Delete .
Add error handling for this proxy service	Click the Proxy Service icon, then click Add Service Error Handler . To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5 .
Insert a conditional branch node between the start node of the proxy service and the pipeline pair node	Click the Proxy Service icon, then click Create Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11
Insert an operational branch node between the start node of the proxy service and the pipeline pair node	Click the Proxy Service icon, then click Create Operational Branch Node . To learn more, see “Adding an Operational Branch Node” on page 15-15 .
Save the updates and return to the Summary of Proxy Services page	Click Save .
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .

To...	Complete This Step...
Clear the changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Adding a Conditional Branch Node

The **Edit Message Flow** page enables you to add a conditional branch node. A branch node allows processing to proceed down exactly one of several possible paths. To learn more, see [“Overview of Message Flow” on page 15-1](#).

To Add a Conditional Branch Node

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following functionality:

- An icon that signifies the Start node for the proxy service, which you can click to add pipeline pair nodes, route nodes, and conditional and operational branches, and add error handling for the service.
 - In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.
 - If you have already added a pipeline pair node or service error handler, these icons are displayed.
3. Do one of the following:
 - To add a conditional branch node at the end of the message flow, click the appropriate icon, then select **Add Conditional Branch Node**. The **Branch Node** icon and a default name are displayed.
 - To insert a conditional branch node at a specific point in the message flow, click the appropriate icon, then click **Create Conditional Branch Node**. The **Branch Node** icon and a default name are displayed, and the nodes after the inserted branch node are moved to the default branch of the new branch node.
 4. To change the default name and add a description for the branch node, do the following:
 - a. Click the **Conditional Branch Node** icon, click **Edit**, then click **Name and Description**.
 - b. In the **Name** field, enter a new name for the branch node.
 - c. In the **Description** field, enter a description for the branch node.
 - d. To save the branch node, click **Save**. The **Conditional Branch Node** icon and the name you assigned to the branch node are displayed.
 5. To add branch definitions, click the **Conditional Branch Node** icon, click **Edit**, then click **Branch Node**. The **Edit Branch Node** page is displayed.
 6. In the Branch Definitions panel, do the following:
 - a. In the **Selected Path** field, click **Edit** to add an XPath expression. To learn more, see [“Using the XPath Expression Editor” on page 17-7](#).
 - b. In the **Variable** field, enter a context variable.
 - c. In the **Operator** field, select =, !=, <, >, <=, or >=.
 - d. In the **Value** field, enter a value for the branch.
 - e. In the **Label** field, enter a label for the branch.

7. Do one of the following:

Table 15-6 Adding a Conditional Branch Node

To...	Complete This Step...
Add another branch definition	Click Add a New Branch from the flyout menu of the Options column.
Delete a branch definition	Click Delete this Branch from the flyout menu of the Options column.
Move a branch down the list of definitions	Click Move Branch Down from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.
Move a branch up the list of definitions	Click Move Branch Up from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.

8. When you have finished working with the definitions, do one of the following:

Table 15-7 Adding a Conditional Branch Node

To...	Complete This Step...
Update the branch and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .

To...	Complete This Step...
Disregard changes and remain on the Edit Branch Node page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

9. When you save the branch node, do one of the following:

Table 15-8 Adding a Conditional Branch Node

To...	Complete This Step...
Add a pipeline pair node	Click the Proxy Service icon, then click Add Pipeline Pair . To learn more, see “Adding a Pipeline Pair Node” on page 15-8 .
Add a stage to an existing pipeline	Click the appropriate request or response pipeline, then click Add Stage . To learn more, see “Adding a Stage” on page 15-19 .
Add actions to an existing pipeline	Click the Stage icon for the appropriate pipeline, click Edit , then click Stage . To learn more, see “Adding an Action” on page 16-2 .
Add error handling for this proxy service	Click the Proxy Service icon, then click Add Service Error Handler . To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5 .
Delete the branch node	Click the Conditional Branch icon, then click Delete Branch Node .
Save the updates and return to the Summary of Proxy Services page	Click Save .
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .

To...	Complete This Step...
Clear the changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Adding an Operational Branch Node

The **Edit Message Flow** page enables you to add an operational branch node.

To Add an Operational Branch Node

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following functionality:

- An icon that signifies the Start node for the proxy service, which you can click to add pipeline pair nodes, route nodes, and conditional and operational branches, and add error handling for the service.

- In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.
 - If you have already added a pipeline pair node or service error handler, these icons are displayed.
3. Do one of the following:
- To add an operational branch node at the end of the message flow, click the appropriate icon, then select **Add Operational Branch Node**. The **Branch Node** icon and a default name are displayed.
 - To insert an operational branch node at a specific point in the message flow, click the appropriate icon, then click **Create Operational Branch Node**. The **Branch Node** icon and a default name are displayed, and the nodes after the inserted branch node are moved to the default branch of the new branch node.
4. To change the default name and add a description for the branch node, do the following:
- a. Click the **Operational Branch Node** icon, click **Edit**, then click **Name and Description**.
 - b. In the **Name** field, enter a new name for the branch node.
 - c. In the **Description** field, enter a description for the branch node.
 - d. To save the branch node, click **Save**. The **Operational Branch Node** icon and the name you assigned to the branch node are displayed.
5. To add branch definitions, select the branch node, click **Edit**, then click **Branch Node**. The **Edit a Branch** page is displayed.
6. In the Operation Branch Definitions panel, select a service operation.
7. Do one of the following:

Table 15-9 Adding an Operational Branch Node

To...	Complete This Step...
Add another branch definition	Click Add a New Branch from the flyout menu of the Options column.
Delete a branch definition	Click Delete this Branch from the flyout menu of the Options column.

To...	Complete This Step...
Move a branch down the list of definitions	Click Move Branch Down from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.
Move a branch up the list of definitions	Click Move Branch Up from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.

8. When you have finished working with the definitions, do one of the following:

Table 15-10 Adding an Operational Branch Node

To...	Complete This Step...
Update the branch and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Disregard changes and remain on the Edit Branch Node page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

9. When you saved the branch node, do one of the following:

Table 15-11 Adding an Operational Branch Node

To...	Complete This Step...
Add a pipeline pair node	Click the Proxy Service icon, then click Add Pipeline Pair . To learn more, see “Adding a Pipeline Pair Node” on page 15-8 .
Add a stage to an existing pipeline	Click the appropriate request or response pipeline, then click Add Stage . To learn more, see “Adding a Stage” on page 15-19 .
Add actions to an existing pipeline	Click the Stage icon for the appropriate pipeline, click Edit , then click Stage . To learn more, see “Adding an Action” on page 16-2 .
Add a conditional branch node	Click the Proxy Service icon, then click Add Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11 .
Add a route node	Click the Proxy Service icon, then click Add Route Node . To learn more, see “Adding a Route Node” on page 15-22 .
Add error handling for this proxy service	Click the Proxy Service icon, then click Add Service Error Handler . To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5 .
Delete the branch node	Click the Operational Branch icon, then click Delete Branch Node .
Save the updates and return to the Summary of Proxy Services page	Click Save .
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .
Clear the changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click

Activate under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Adding a Stage

The **Edit Message Flow** page enables you to add a stage. A stage is a container of actions. To learn more, see [“Overview of Message Flow” on page 15-1](#).

Note: You must create a pipeline pair node before you can add a stage. To learn more, see [“Adding a Pipeline Pair Node” on page 15-8](#).

To Add a Stage

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed.

3. Expand an existing pipeline pair node to view the pipeline pair, which consists of request and response pipelines.
4. Click the pipeline to which you want to add the stage, then click **Add Stage**.
The **Stage** icon and a default name are displayed.
5. To change the default name and add a description for the stage, do the following:
 - a. Click the **Stage** icon, click **Edit**, then click **Name and Description**.
 - b. In the **Name** field, enter a new name for the stage.
 - c. In the **Description** field, enter a description for the stage.

- d. To save the changes, click **Save**. The **Stage** icon and the name you assigned to the stage are displayed.
6. When you save the stage, do one of the following:

Table 15-12 Adding a Stage

To...	Complete This Step...
Add actions	Click the Stage icon, click Edit , then click Stage . To learn more, see “Adding an Action” on page 16-2 .
Add error handling for the stage	Click the Stage icon, then click Stage Error Handler. To learn more, see “Adding Stage Error Handling” on page 18-9 .
Delete a stage	Click the appropriate Stage icon, then click Delete .
Cut a stage	Click the appropriate Stage icon, then click Cut .
Copy a stage	Click the appropriate Stage icon, then click Copy .
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	Click the Stage icon in the appropriate pipeline, then click Paste . Alternatively, you can click the Pipeline Pair Node icon for the pipeline pair you created, then click Paste Stage .
Add error handling for this pipeline	Click the pipeline, then click Add Pipeline Error Handler . To learn more, see “Adding Pipeline Error Handling” on page 18-7 .
Add another pipeline pair	Click the Proxy Service icon, then click Add Pipeline Pair . Alternatively, you can click an existing Pipeline Pair Node icon, click Add , then click Add Pipeline Pair . To learn more, see “Adding a Pipeline Pair Node” on page 15-8 .
Add error handling for this proxy service	Click the Proxy Service icon, then click Add Service Error Handler . To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5 .
Add a route node	Click the Pipeline Pair Node icon, click Add , then click Add Route Node . To learn more, see “Adding a Route Node” on page 15-22 .

To...	Complete This Step...
Add a conditional branch node	Click the Pipeline Pair Node icon, click Add , then click Add Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11 .
Insert a conditional branch node between the start node of the proxy service and the pipeline pair node	Click the Proxy Service icon, then click Create Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11
Insert an operational branch node between the start node of the proxy service and the pipeline pair node	Click the Proxy Service icon, then click Create Operational Branch Node . To learn more, see “Adding an Operational Branch Node” on page 15-15 .
Save the updates and return to the Summary of Proxy Services page	Click Save .
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .
Clear the unsaved changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click **Save**, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

[“Viewing and Changing Stage Configuration Details” on page 15-36](#)

Adding a Route Node

The **Edit Message Flow** page enables you to add a route node. The route node is used to perform one way communication, such as using file or email transport. It represents the boundary between request and response processing for the proxy service. When the route node dispatches a request message, request processing is considered finished. When the route node receives a response message, response processing begins. To learn more about Message Flow, see [“Overview of Message Flow” on page 15-1](#).

AquaLogic Service Bus supports reliable messaging. When messages are routed to another service from a route node, the default quality of service (QoS) is *exactly once* if the proxy service transport is defined as JMS/XA; otherwise *best effort* QoS is supported. *Exactly once* reliability means that messages are delivered from inbound to outbound exactly once, assuming a terminating error does not occur before the outbound message send is initiated. The *exactly once* delivery reliability is a hint, not a directive. When *exactly once* is specified, *exactly once* reliability is provided if possible. If *exactly once* is not possible, then *at least once* delivery semantics are attempted; if that is not possible, *best effort* delivery is performed.

At least once semantics means the message is delivered to the outbound from the inbound at least once, assuming a terminating error does not occur before the outbound message send is initiated. Delivery is considered satisfied even if the target service responds with a transport-level error. However it is not satisfied in the case of a timeout, a failure to connect, or a broken communication link. If fail over URLs are specified, *at least once* semantics is provided with respect to at least one of the URLs.

Best effort means that there is no reliable messaging and there is no elimination of duplicate messages—however, performance is optimized.

To override the default *exactly once* quality of service attribute, you must set the `qualityOfService` in the outbound message context variable (`$outbound`). For more information, see [“Message Context Schema” on page A-25](#).

To Add a Route Node

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following functionality:

- An icon that signifies the Start node for the proxy service, which you can click to add pipeline pair nodes, route nodes, and conditional and operational branches, and add error handling for the service.
 - In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.
 - If you have already added a pipeline pair node or service error handler, these icons are displayed.
3. To add a route node, do one of the following:
- Click the **Proxy Service** icon, then select **Add Route Node**.
 - Click the **Pipeline Pair Node** icon of an existing pipeline pair, click **Add**, then click **Add Route Node**.

The **Route Node** icon and a default name are displayed.

4. To change the default name and add a description for the route node, do the following:
- a. Click the **Route Node** icon, click **Edit**, then click **Name and Description**.
 - b. In the **Name** field, enter a new name for the route node.
 - c. In the **Description** field, enter a description for the route node.
 - d. To save the changes, click **Save**. The **Route Node** icon and the name you assigned to the route node are displayed.

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 AquaLogic 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.

5. Click the route node, click **Edit**, then click **Route Node**. The **Edit Stage Configuration** page is displayed. Continue in [“Adding Route Node Actions” on page 15-25](#).
6. When you have finished adding routing node actions and saved the route node, do one of the following:

Table 15-13 Adding a Route Node

To...	Complete This Step...
Add a pipeline pair node	Click the Proxy Service icon, then click Add Pipeline Pair . To learn more, see “Adding a Pipeline Pair Node” on page 15-8 .
Add error handling for this proxy service	Click the Proxy Service icon, then click Add Service Error Handler . To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5 .
Add a stage to an existing pipeline	Click the appropriate request or response pipeline, then click Add Stage . To learn more, see “Adding a Stage” on page 15-19 .
Add actions to an existing pipeline	Click the Stage icon for the appropriate pipeline, then click Edit Stage . To learn more, see “Adding an Action” on page 16-2 .
Edit the route node actions	Click the Route Node icon, click Edit , then click Route Node .
Add an error handler for the route node	Click the Route Node icon, then click Add Error Handler . To learn more, see “Adding Error Handling for the Route Node” on page 18-12 .
Cut a stage	Click the Route Node icon, then click Cut .
Copy a stage	Click the Route Node icon, then click Copy .
Paste a route node that you cut or copied from the message flow of a different proxy service	Click the Route Node icon in the appropriate pipeline, then click Paste Route Node .
Insert a conditional branch node between the start node of the proxy service and the pipeline pair node	Click the Proxy Service icon, then click Create Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11
Insert an operational branch node between the start node of the proxy service and the pipeline pair node	Click the Proxy Service icon, then click Create Operational Branch Node . To learn more, see “Adding an Operational Branch Node” on page 15-15 .
Save the updates and return to the Summary of Proxy Services page	Click Save .

To...	Complete This Step...
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .
Clear the changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Modeling Message Flow in AquaLogic Service Bus in the *BEA AquaLogic Service Bus User Guide*.

Adding Route Node Actions

The **Edit Stage Configuration** page enables you to add route node actions when you click **Edit**, then click **Route Node** on the **Edit Message Flow** page. Route node actions define the handling of messages as they flow through the route node of the proxy service. To learn more about Message Flow, see [“Overview of Message Flow” on page 15-1](#).

To Add a Route Node Action

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed.

3. Click the **Route Node** icon, click **Edit**, then click **Route Node**. The **Edit Stage Configuration** page is displayed.
4. To add a route node action, click **Add an Action**, then select an action type. The list of action types and the procedures to configure them are displayed in the following table.

Note: To learn more about actions, see [Modeling Message Flow in AquaLogic Service Bus](#) in the *BEA AquaLogic Service Bus User Guide* for usage scenarios, design patterns, and best practices.

Table 15-14 Adding Route Node Actions

To...	Complete These Steps...
If... Then...	<p>Assign if then else actions based on the Boolean result of an XQuery expression:</p> <p>Note: Condition actions can be nested. However, there is a nesting limit of 4 cumulative levels in the stage editor. If you attempt to add a 5th 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.</p> <ol style="list-style-type: none"> 1. Click Add an Action, then select If... Then... The If... Then... action is displayed, which includes the following functionality: An If...Then... icon. If... condition then..., which is a link from which you can edit the condition. A field in which you can add request and response actions 2. Click Condition. The Edit an XQuery Condition page is displayed. To learn more, see “Using the XQuery Condition Editor” on page 17-5. 3. When you have finished editing the XQuery condition, click Add an Action, then select an action that you want to associate with the condition. <p>Note: In the route node, you can select the Routing or Routing Table actions only. To learn more about these actions, see the appropriate procedure in this table. However, these actions can contain request and response actions inside of them. To learn more, see the table of actions in “Adding a Route Node” on page 15-22.</p> <ol style="list-style-type: none"> 4. If necessary, click the If...Then... icon to add else-if conditions or else conditions, then click Add an Action to associate actions with these conditions. 5. Continue to the next step.

To...	Complete These Steps...
Routing	<p>Note: This is a terminal action, which means you cannot add another action after this one. However, this action can contain request and response actions inside of it.</p> <p>Identify a target service for the message and configure how the message is routed to that service:</p> <ol style="list-style-type: none">1. Click Add an Action, then select Routing. The Routing action is displayed, which includes the following functionality: A Routing icon A Service link that you can click to select a service A field in which you can add request and response actions2. Click Service. The Service Browser is displayed.3. Select a service from the list, then click Submit. The service is displayed instead of the default link.4. 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 an Action” on page 16-2.5. 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 an Action” on page 16-2.6. When you have finished adding actions, continue to the next step.

To...	Complete These Steps...
Routing Table	<p>Note: This is a terminal action, which means you cannot add another action after this one. However, this action can contain request and response actions inside of it.</p> <p>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.</p> <p>There is a nesting limit of 4 cumulative levels in the stage editor. If you attempt to add a 5th 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.</p> <p>Identify target services for messages and configure how the messages are routed to these services:</p> <ol style="list-style-type: none"> 1. Click Add an Action, then select Routing Table. The Routing Table action is displayed, which includes the following functionality: A Routing Table icon, an Expression link in which you can edit an XQuery expression, a Diamond icon that you can use to insert new cases, a field in which you can enter a comparison operator, a A field in which you can enter a value, a Service link that you can click to select a service, and a field in which you can add request and response actions. 2. Select one of these comparison operators: =, !=, <, >, <=, or >=, then enter a value expression in the field provided. 3. Click Service. The Service Browser is displayed. 4. Select a service from the list, then click Submit. The service is displayed. 5. 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. 6. 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. <p>Note: To learn more about the types of request and response actions you want to add, see the table of actions in “Adding an Action” on page 16-2.</p> <ol style="list-style-type: none"> 7. When you have finished adding actions, continue to the next step. 8. To insert a new case, click the Diamond icon, then select Insert New Case. 9. Repeat steps 2-7 for the new case. You can click the Diamond 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. 10. When you have finished adding cases, continue to the next step.

5. When you have finished adding route node actions, do one of the following:

Table 15-15 Adding Route Node Actions

To...	Complete This Step...
Delete an action	Click the appropriate icon, then click Delete this Action . The action is deleted.
Move an action down	Click the appropriate icon, then click Move Action Down . The action is moved below the next action contained in this stage. Note: This option is displayed only when there are two or more actions contained in the stage.
Move an action up	Click the appropriate icon, then click Move Action Up . The action is moved above the previous action contained in this stage. Note: This option is displayed only when there are two or more actions contained in the stage.
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 from within this stage	Click the appropriate icon, then click Paste Action . Note: You cannot paste actions across stages; you can only paste actions that are inside the same stage.
Save the updates and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Clear the unsaved changes and remain on the Edit Stage Configuration page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

6. When you save the actions, do one of the following:

Table 15-16 Adding Route Node Actions

To...	Complete This Step...
Edit the route node name and description	Click the Route Node icon, click Edit , then click Name and Description .
Add an error handler for the route node	Click the Route Node icon, then click Add Error Handler . To learn more, see “Adding Error Handling for the Route Node” on page 18-12 .
Save the updates and return to the Summary of Proxy Services page	Click Save .
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .
Clear the changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click **Save**, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Viewing and Changing Conditional Branch Details

The **Edit Branch Node** page enables you to view and change conditional branch details. To learn more about branch nodes, see [“Adding a Conditional Branch Node” on page 15-11](#) and [“Overview of Message Flow” on page 15-1](#).

Note: If you want to edit an operational branch, see [“Viewing and Changing Operational Branch Details” on page 15-34](#).

To View and Change Conditional Branch Details

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following functionality:

- A proxy service icon
 - The name of the proxy service
 - A pipeline pair node icon and name if you have already added a pipeline pair node
 - The conditional branch node icon and the name of the branch node
 - A route node icon if you have already added a route node
 - In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.
3. Click the **Conditional Branch Node** icon, click **Edit**, then click **Branch Node**. Alternatively, from the left navigation pane, you can select the branch node from the map of the Message Flow.

The **Branch Configuration** fields and the **Branch Definitions** are displayed.

4. Do one of the following:

Table 15-17 Branch Configuration Fields and Branch Definitions

To...	Complete This Step...
Edit the XPath expression in the Selected Path field	Click Edit . To learn more, see “Using the XPath Expression Editor” on page 17-7 .
Add another branch definition	Click Add a New Branch from the flyout menu of the Options column.
Delete a branch definition	Click Delete this Branch from the flyout menu of the Options column.
Move a branch down the list of definitions	Click Move Branch Down from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.
Move a branch up the list of definitions	Click Move Branch Up from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.

5. When you have finished updating the branch, do one of the following:

Table 15-18 Branch Configuration Fields and Branch Definitions

To...	Complete This Step...
Update the branch and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .

To...	Complete This Step...
Disregard changes and remain on the Edit Branch Node page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Viewing and Changing Operational Branch Details

The **Edit Branch Node** page enables you to view and change operational branch details. To learn more about operational branches, see [“Adding an Operational Branch Node” on page 15-15](#) and [“Overview of Message Flow” on page 15-1](#).

To View and Change Operational Branch Details

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following functionality:

- A proxy service icon

- The name of the proxy service
 - A pipeline pair node icon and name if you have already added a pipeline pair node
 - The conditional branch node icon and the name of the branch node
 - A route node icon if you have already added a route node
 - In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.
3. Click the **Operational Branch Node** icon, click **Edit**, then click **Branch Node**. Alternatively, from the left navigation pane, you can select the branch from the map of the Message Flow.

The **Branch Configuration** fields and the **Branch Definitions** are displayed.

4. Do one of the following:

Table 15-19 Branch Configuration Fields and Branch Definitions

To...	Complete This Step...
Add another branch definition	Click Add a New Branch from the flyout menu of the Options column.
Delete a branch definition	Click Delete this Branch from the flyout menu of the Options column.
Move a branch down the list of definitions	Click Move Branch Down from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.
Move a branch up the list of definitions	Click Move Branch Up from the flyout menu of the Options column. Note: This option displays only when more than one branch definition exists.

5. When you have finished updating the branch, do one of the following:

Table 15-20 Branch Configuration Fields and Branch Definitions

To...	Complete This Step...
Update the branch and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Disregard changes and remain on the Edit Branch Node page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Viewing and Changing Stage Configuration Details

The **Edit Stage Configuration** page enables you to edit a stage. To learn more about stages, see [“Adding a Stage” on page 15-19](#), [“Adding an Action” on page 16-2](#), and [“Overview of Message Flow” on page 15-1](#).

To View and Change Stage Configuration Details

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following attributes:

- A proxy service icon
 - The name of the proxy service
 - A pipeline pair node icon and name if you have already added a pipeline pair node
 - A route node icon if you have already added a route node
 - In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.
3. Select the stage that you want to edit:
 - a. Expand an existing pipeline to view the pipeline pair.
 - b. In the request or response pipeline, click the **Stage** icon, click **Edit**, then click **Stage**.

The **Edit Stage Configuration** page is displayed.

Note: Alternatively, from the left navigation pane, you can select the stage from the map of the Message Flow.

4. Do one of the following:

Table 15-21 Edit Stage Configuration Page

To...	Complete This Step...
Add an action	Click Add an Action , then select the appropriate action. To learn more, see “Adding an Action” on page 16-2 .
Delete an action	Select the action, then click Delete this Action .
Edit a variable field	Make the edits in the appropriate field.
Edit an XQuery expression	Click the expression you want to edit. To learn more, see “Using the Inline XQuery Expression Editor” on page 17-2 .

To...	Complete This Step...
Edit an XPath expression	Click the expression you want to edit. To learn more, see “Using the XPath Expression Editor” on page 17-7 .
Edit an XQuery condition	Click the condition you want to edit. To learn more, see “Using the XQuery Condition Editor” on page 17-5 .

5. When you have finished making changes, do one of the following:

Table 15-22 Edit Stage Configuration Page

To...	Complete This Step...
Move an action down	Click the appropriate icon, then click Move Action Down . The action is moved below the next action contained in this stage. Note: This option is displayed only when there are two or more actions contained in the stage.
Move an action up	Click the appropriate icon, then click Move Action Up . The action is moved above the previous action contained in this stage. Note: This option is displayed only when there are two or more actions contained in the stage.
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 from within this stage	Click the appropriate icon, then click Paste Action . Note: You cannot paste actions across stages; you can only paste actions that are inside the same stage.
Update the stage and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .

To...	Complete This Step...
Disregard changes and remain on the Edit Stage Configuration page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Viewing and Changing Message Flow” on page 15-5](#)

Proxy Services: Message Flow

Proxy Services: Actions

Proxy services are the definitions of services implemented locally on the AquaLogic Service Bus server. Actions allow you to design and configure the message flow in the pipelines, route nodes and branch nodes of a proxy services.

This topic describes how to add actions to stages in pipelines, route nodes, and branch nodes, and describes each of the actions available in AquaLogic Service Bus. It includes the following sections:

- [Adding an Action](#)
- [Assign](#)
- [Delete](#)
- [For Each](#)
- [If Then](#)
- [Insert](#)
- [Log](#)
- [Publish](#)
- [Publish Table](#)
- [Raise Error](#)
- [Rename](#)

- [Replace](#)
- [Reply](#)
- [Report](#)
- [Resume](#)
- [Service Callout](#)
- [Skip](#)
- [Transport Headers](#)
- [Validate](#)

Adding an Action

The **Edit Stage Configuration** page enables you to add actions. Actions are the elements of stages in pipelines and route and branch nodes that define the handling of messages as they flow through a proxy service. To learn more about Message Flow, see [“Overview of Message Flow” on page 15-1](#).

Note: You must create a pipeline pair node and add a stage before you can add actions. To learn more, see [“Adding a Pipeline Pair Node” on page 15-8](#) and [“Adding a Stage” on page 15-19](#).

To Add an Action

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed.

3. Expand an existing pipeline to view the pipeline, which consists of request and response pipelines.
4. Click the **Stage** icon of an existing stage to which you want actions, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed.

5. To add an action, click **Add an Action**, then select an action type.

The following table lists the actions you can configure for AquaLogic Service Bus message flows, and links you to topics that describe the actions, including how to configure them.

Table 16-1 AquaLogic Service Bus Actions

Action	Summary Description
Assign	Assign the result of an XQuery expression to a context variable
Delete	Delete a context variable or all the nodes specified by an XPath expression
For Each	Iterate over a sequence of values and execute a block of actions
If Then	Perform an action or set of actions conditionally, based on the Boolean result of an XQuery expression
Insert	Insert the result of an XQuery expression at an identified place relative to nodes selected by an XPath expression
Log	Construct a message to be logged
Publish	Specify a target service for a message and configure how the message is packaged and sent to that service
Publish Table	Specify a target service for a message and configure how the message is packaged and sent to that service. Use the Publish Table to wrap a set of routing options in switch-style condition logic
Raise Error	Raise an exception with a specified error code and description
Rename	Rename elements selected by an XPath expression without modifying the contents of the element
Replace	Replace a node or the contents of a node specified by an XPath expression
Reply	Specify that an immediate reply is sent to the invoker; can be a reply with success or failure
Report	Enable message reporting for a proxy service
Service Callout	Configure a synchronous (blocking) callout to an AquaLogic Service Bus-registered proxy or business service

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
Transport Headers	Set the transport header values in messages
Validate	Validate elements selected by an XPath expression against an XML schema element or a WSDL resource

Edit Stage Configuration

After you configure an action, you are returned to the **Edit Stage Configuration** page, which you can use to add additional actions, add branch nodes, add error handlers, update actions, and so on, as described in the following steps.

1. To add another action, click the icon for the previous action, click **Add an Action**, then select an action. Continue adding actions as necessary. To learn more about the type of action you want to add, see the appropriate procedure in [“Adding an Action” on page 16-2](#). There is no restriction on what actions may be chained together in your message flow.
2. When you have finished adding actions, you can further configure the stage by moving the actions in the message flow, deleting or disregarding your changes, and so on, as described in the following table.

Table 16-2 Tasks to Use When you Edit Stage Configuration

To...	Complete This Step...
Delete an action	Click the appropriate icon, then click Delete this Action . The action is deleted.
Move an action down	<p>Click the appropriate icon, then click Move Action Down. The action is moved below the next action contained in this stage.</p> <p>Note: This option is displayed only when there are two or more actions contained in the stage.</p>
Move an action up	<p>Click the appropriate icon, then click Move Action Up. The action is moved above the previous action contained in this stage.</p> <p>Note: This option is displayed only when there are two or more actions contained in the stage.</p>
Cut an action	Click the appropriate icon, then click Cut .

To...	Complete This Step...
Copy an action	Click the appropriate icon, then click Copy .
Paste an action that you have cut or copied from within this stage	Click the appropriate icon, then click Paste Action . Note: You cannot paste actions across stages; you can only paste actions that are inside the same stage.
Save the updates and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Clear the unsaved changes and remain on the Edit Stage Configuration page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

- When you complete the configuration in the **Edit Stage Configuration** page, you are returned to the **Edit Message Flow** page, on which you can complete the tasks described in the following table.

Table 16-3 Tasks to Use When you Edit Message Flow

To...	Complete This Step...
Add a stage to an existing pipeline	Click the appropriate request or response pipeline, then click Add Stage . To learn more, see “Adding a Stage” on page 15-19 .
Add a pipeline pair node	Click the Proxy Service icon, then click Add Pipeline Pair . Alternatively, click an existing Pipeline Pair Node icon, click Add , then click Add Pipeline Pair . To learn more, see “Adding a Pipeline Pair Node” on page 15-8 .
Add a route node	Click the Pipeline Pair Node icon, click Add , then click Add Route Node . To learn more, see “Adding a Route Node” on page 15-22 .

To...	Complete This Step...
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 you created, then click Paste Route Node . Note: This option is not available if you have not cut or copied a route node.
Add a conditional branch node	Click the Pipeline Pair Node icon, click Add , then click Add Conditional Branch Node . To learn more, see “Adding a Conditional Branch Node” on page 15-11.
Add error handling for this proxy service	Click the Proxy Service icon, then click Add Service Error Handler . To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5.
Edit the stage name and description	Click the appropriate Stage icon, click Edit , then click Name and Description .
Delete a stage	Click the appropriate Stage icon, then click Delete .
Save the updates and return to the Summary of Proxy Services page	Click Save .
Disregard changes and return to the Summary of Proxy Services page	Click Cancel .
Clear the changes and remain on the Edit Message Flow page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click **Save**, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is saved. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Note: To learn more about actions, see [Modeling Message Flow in AquaLogic Service Bus](#) in the *BEA AquaLogic Service Bus User Guide* for usage scenarios, design patterns, and best practices.

Update Actions

Update actions include Delete, Rename, Insert, and Replace actions. They are evaluated and executed as follows:

- The XPath expression you configure for any update actions is evaluated to select the nodes in the message on which to operate.
- In the case of Insert and Replace actions, you configure an XQuery expression, which is evaluated to determine the data to insert or replace.
- For each node identified by the evaluation of the XPath expression, the appropriate action on that node is performed. In other words:
 - Delete the variable or the node in the variable identified by the XPath expression
 - Rename the node identified by the XPath expression
 - Replace the node (or the contents of the node) identified by the XPath expression with the value returned by the XQuery expression
 - Insert the value returned by the XQuery expression before, after, or as a child of the node identified by XPath expression

Related Topics

[“Overview of Proxy Services” on page 14-1](#)

[“Adding a Proxy Service” on page 14-9](#)

[“Listing and Locating Proxy Services” on page 14-28](#)

[“Viewing and Changing Proxy Services” on page 14-30](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Assign

Use the Assign action to assign the result of an XQuery expression to a context variable.

To configure an Assign action:

1. Click **Add an Action**, then select **Assign**.

The Assign action is displayed, which includes the following functionality:

- An **Expression** link that you can click to edit an XQuery expression

- A **variable** field in which you can enter a context variable



2. 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. To learn more, see [“Using the Inline XQuery Expression Editor” on page 17-2](#).
3. When you finish editing the expression, enter a context variable in the **variable** field. To learn more about context variables, see [Appendix A, “Message Context.”](#) Specifically, see [“Inbound and Outbound Variables” on page A-7](#) and [“Constructing Messages to Dispatch” on page A-22](#).
4. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Related Topics

[“Transport Headers” on page 16-48](#)

[Appendix A, “Message Context”](#)

Delete

Use the Delete action to delete a context variable or all the nodes specified by an XPath expression. The Delete action is one of a set of Update actions. To learn more, see [“Update Actions” on page 16-7](#).

To configure a Delete action:

1. Click **Add an Action**, then select **Delete**.

The Delete action is displayed. It includes the following functionality:

- A **Variable** field and corresponding radio button
- An **XPath** link (and corresponding radio button) that you can click to edit an XPath expression, and an **in variable** field to specify the context variable upon which the XPath expression is to be executed.

 **Delete**

☒ Variable

☐ <XPath> in variable

2. To delete a context variable, select the radio button associated with this option, 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 radio button associated with the XPath option, then click **XPath**. The **XPath Expression Editor** page is displayed. To learn more, see [“Using the XPath Expression Editor” on page 17-7](#). After you save the expression, enter a context variable in the **in variable** field. To learn more about context variables, see [Appendix A, “Message Context.”](#)

3. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

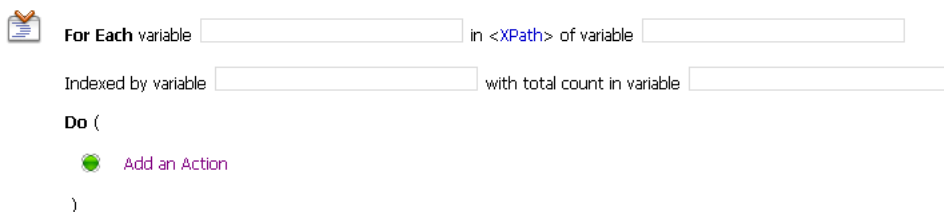
For Each

Use the For Each action to iterate over a sequence of values and execute a block of actions.

To configure a For Each action:


1. Click **Add an Action**, then select **For Each**. The For Each action is displayed.

Figure 16-1 The For Each Action Configuration Options

 **For Each** variable in <XPath> of variable

Indexed by variable with total count in variable

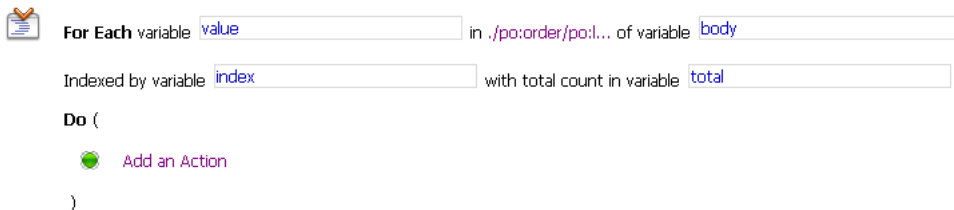
Do (

 [Add an Action](#)

)

2. Enter variable names in the fields provided, click XPath to open the XPath editor to create an XPath expression, and configure the actions in the **Do ()** loop.


Let us use the values shown in the following figure to describe how the For Each action is executed at run time.

Figure 16-2 Example Configuration for For Each Action


For Each variable in

Indexed by variable with total count in variable

Do (

 Add an Action

)

- The block of actions you define in the **Do()** loop is executed for each value returned as a result of the evaluation of the XPath expression against the **body** context variable. A sequence of zero or more values is returned by the evaluation of the XPath expression. In the event that a sequence of zero is returned, the **Do()** loop is not executed.
- Before each iteration, the context variable **value** points to the next value in the sequence and **index** is assigned the positional index (from 1 to N to match the XPath indices) of this next value.
- The context variable **total** is initialized once with the total count of values.

Specifying values for the **value**, **index**, and **total** variables, and for the XPath expression is optional. In other words, if they are not specified when you design the action, you can still activate the session.

Note: For information about the scope of the context variables in For Each actions, see [“Scope of Variables in the For Each Action” on page 16-10](#) and [“Nested For Each Actions” on page 16-12](#).

3. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Scope of Variables in the For Each Action

The **value** context variable is only visible inside the For Each action—when the For Each action finishes execution (whether it finishes successfully or with an error), the **value** variable falls out of scope and is removed from the message context. However, when the For Each action finishes execution, the **index** and **total** count variables remain in the context with their last known values. If the For Each action finishes successfully, then the index variable and the total count variable both have the same numeric value—the total number of items in the sequence.

If an error occurs when an iteration is in progress, the value of the **index** variable is smaller than the value of the **total** count variable. However, note that during the final iteration, **index** has the same value as **total** count. So, if an error occurs and the values in **index** and **total** are equal, then you can determine only that the error occurred either in the *final* iteration or *after* the For Each action finished successfully.

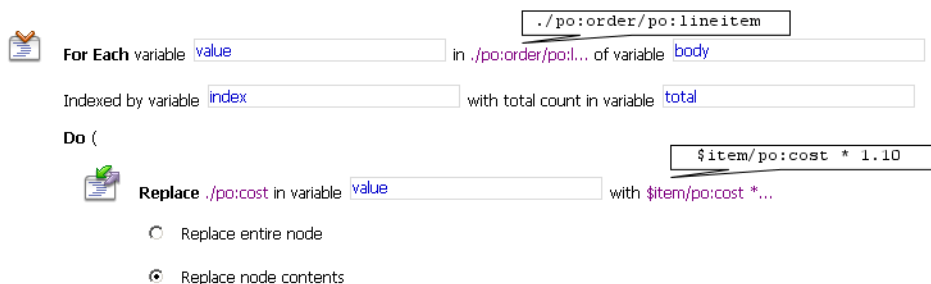
You can modify any of the variables (**value**, **index**, or **total**) in the **Do()** loop.


Value Variable

Because the values in the sequence returned as a result of executing the XPath are references to the content of the variable on which the XPath is run (**body**, in the example in the preceding figure), any updates to the **value** variable performed by actions in the For Each loop are reflected in the content of **body**. Consequently, you can perform in-place updates that are more complex than those you can perform with the [Insert](#) and [Update Actions](#).

For example, a For Each action configured as shown in the following figure iterates over a sequence of line items in a purchase order and increases the cost of each item by 10%.


Figure 16-3 Example of For Each Action Configuration



 **For Each** variable `value` in `./po:order/po:lineitem` of variable `body`

Indexed by variable `index` with total count in variable `total`

Do (

 **Replace** `./po:cost` in variable `value` with `$item/po:cost * 1.10`

☐ Replace entire node

☒ Replace node contents

Index Variable

At the start of each iteration, the value in the index variable is overwritten with the next index value. In other words, the loop behavior and the number of iterations performed is not affected by any changes that are made in the loop for the value of the **index** variable.

Total Variable

The total count variable is initialized at the beginning of the For Each action. Consequently, any changes to its value, as a result of actions in the **Do()** loop, are permanent. However, the loop behavior and the number of iterations performed is not affected by any changes to the value of the **total** variable.

Nested For Each Actions

You can configure nested For Each actions. When you do so, it is recommended that where possible you use unique variable names. If you reuse the variables in nested For Each actions, be aware of the scope of those variables. As described in the preceding section:

- The **index** and **total** variables remain in scope when a For Each action completes—therefore the values those variables were assigned in an inner (nested) For Each action become available in the outer For Each action
- Because the **value** variable falls out of scope when a given For Each loop finishes, on exit of an inner For Each loop in a nested scenario, the **value** variable is set to null

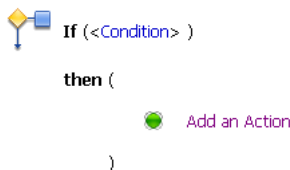
If Then

Use an If Then action to perform an action or set of actions conditionally, based on the Boolean result of an XQuery expression.

To configure an If Then Action:

1. Click **Add an Action**, then select **If... Then...**

The If... Then... action is displayed. It includes the following functionality:



- **If (<Condition>)**, which is a link from which you can edit the condition.
 - An **Add an Action** option within the **then** clause
2. Click **Condition**. The **XQuery Condition Editor** page is displayed.
The condition you create is used as the test that is executed before the **then()** clause is entered, per standard *if...then* logic. To learn more, see [“Using the XQuery Condition Editor” on page 17-5](#).
 3. 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 an Action” on page 16-2](#).

4. As your logic requires, click the **If...Then...** icon to add **else-if** conditions or **else** conditions, then click **Add an Action** to associate actions with these conditions.

Note: Condition actions can be nested. However, there is a nesting limit of 4 cumulative levels in the stage editor. If you attempt to add a 5th 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 action (to the last publish table), it is not displayed.

5. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

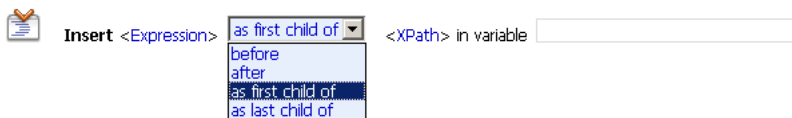
Insert

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. To learn more, see [“Update Actions” on page 16-7](#).

To configure an Insert action:

1. Click **Add an Action**, then select **Insert**.

The Insert action is displayed, which includes the following functionality:



- An **Expression** link that you can click 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.
 - A drop-down list from which you can select the relative location at which to insert the data relative to the nodes specified by the subsequent XPath expression
 - An **XPath** link that you can click to edit an XPath expression
 - A field in which you can specify the context variable—the XPath evaluates the contents of this variable.
2. Click **Expression**. The **XQuery Expression Editor** page is displayed. To learn more, see [“Using the Inline XQuery Expression Editor” on page 17-2](#).

3. 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.
4. Click **XPath**. The **XPath Expression Editor** page is displayed. To learn more, see [“Using the XPath Expression Editor” on page 17-7](#).
5. When you finish editing the XPath expression, enter a context variable in the **in variable** field. To learn more about context variables, see [Appendix A, “Message Context.”](#)
6. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Note: Valid configurations include those in which:

- XQuery and XPath expressions both return elements.
- The XPath expression does not return elements—in which case, the XQuery expression must return attributes.

Log

Use the Log action to construct a message to be logged and to define a set of attributes with which the message is logged. This topic includes the following sections:

- [Understanding Log Actions](#)
- [Configuring Log Actions](#)

Understanding Log Actions

The Log action allows you to log one or more log messages to the WebLogic Server log each time the stage is executed within a proxy service. One or more instances of a log action can be configured in a message flow.

The contents of the log message can consist of one or more of:

- Part(s) of the message context with which a stage is executed—The parts of the message context to be logged are specified through XQuery expressions on context variables.
- User-defined text that you want to log.

AquaLogic Service Bus uses the non catalog logger APIs to write messages to the WebLogic Server log. The AquaLogic Service Bus Console does not replicate logging configuration functionality provided by the WebLogic Server Administration Console. If you need specific log file configuration, like those described in the following listing, do the configuration through the WebLogic Server Administration Console:

- Specifying the location of the server and domain log files
- Specifying which severity levels cause messages to be written to the log files
- Specifying the severity levels of messages that will be forwarded from the server logs to the domain log

For information about logging in WebLogic Server, see [Configuring Log Files and Filtering Log Messages](#) in the WebLogic Server documentation.

Configuring Log Actions

To configure a Log action:

1. Click **Add an Action**, then select **Log**.

The Log action is displayed, which includes the following functionality:



- An **Expression** link, which you can click to edit an XQuery expression
- An **Annotation** field in which you can enter notes for this log action. These notes are logged along with the result of the previously defined expression
- A **severity level** drop-down list in which you can select the logging level

- 2. Click **Expression**. The **XQuery Expression Editor** page is displayed. You specify the message context to be logged through XQuery expressions on context variables. To learn more, see [“Using the Inline XQuery Expression Editor” on page 17-2](#).
- 3. In the **Annotation** field, enter notes for this log action.
- 4. In the **severity level** drop-down list, select one of the options.

Table 16-4 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.

- 5. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Publish

Use a Publish action to identify a target service for a message and configure how the message is packaged and sent to that service.This topic includes the following sections:

- [Understanding Publish Actions](#)
- [Configuring Publish Actions](#)

Understanding Publish Actions

The following quality of service and scope of the message context information applies to Publish actions and [Publish Table](#) actions.

Quality of Service

When a message is published to another service as the result of a Publish or Publish Table action, the default quality of service (QoS) is *best effort*, if the proxy service inbound transport and the outbound publish action use the JMS/XA transport. *Best effort* meaning that there is no reliable messaging and there is no elimination of duplicate messages—however, performance is optimized. To override the default *best effort* quality of service attribute, you must set the `qualityOfService` in the outbound message context variable (`$outbound`). For more information, see [Appendix A, “Message Context.”](#) For information about *exactly once* reliability, see [“Adding a Route Node” on page 15-22.](#)

For more information about quality of service, see [Modeling Message Flow in AquaLogic Service Bus](#) in the *BEA AquaLogic Service Bus User Guide*.

Scope of the Message Context

Each publish request transformation maintains its own local copy of message context. The changes to the predefined context variables in the publish request actions are isolated to that publish endpoint and do not affect subsequent processing by the message flow.

For the purposes of instruction, the following questions about working with the message context in publish actions are asked and answered considering an example scenario in which AquaLogic Service Bus receives a SOAP message with attachments (3 parts: SOAP, text, binary).

Are the Changes I Make to the Message Content Using the Request Actions Within a Publish Action Preserved in Subsequent Nodes in the Message Flow?

No. Any changes you make to an outbound message in a publish action only affect the published message. In other words, the changes you make in the publish action are rolled back before the message flow proceeds to any nodes that follow the stage that contains the publish action in your message flow.

An exception to this rule occurs in the case that you configure a Reply action as one of the Publish request actions. In this case, the message content is not rolled back. In other words the message that was sent as the published message is the one returned to the client as a result of the Reply action being executed. For example, for a case in which the sequence of actions configured in a stage are Assign and Reply as follows:

Stage: publish to someservice

Request Actions:

Assign `message_x` to `body`

Reply with Success

When this stage is executed at run time, the client receives `message_x` in the reply message.

What is Written if I Publish the Message Using a File Transport?

The nature of the message written to the file system depends on the type of your outbound service:

- In the case of SOAP services, the full multipart MIME message is written with the SOAP envelope (`<soap:Envelope>`) as the root part. (For more information, see [“SOAP Services” on page A-22](#).)
- In the case of XML services and messaging services, the full multipart MIME message is written with the contents of `$body` as the root part. (For more information, see [“XML Services \(Non SOAP\)” on page A-22](#) and [“Messaging Services” on page A-23](#).)

How Do I Publish Only the Binary Part of the Message?

1. You must copy the binary part into the message body. You can do so in one of the following ways:
 - Create an outbound transformation and assign the following XQuery to the body variable (`$body`):

```
$attachments/ctx:attachment[2]/ctx:body/*
```
 - Use a **Replace** action to replace the contents of `$body` with the binary part of the attachments:

```
$attachments/ctx:attachment[2]/ctx:body/*
```
2. Delete the content of the attachments context variable. To do so, configure a **Delete** action using the **XPath in variable** option, where
 - `./*` specifies the **XPath**
 - `attachments` is the **variable**

Must I Set the Transport Headers if I Want to Publish Using the HTTP Transport?

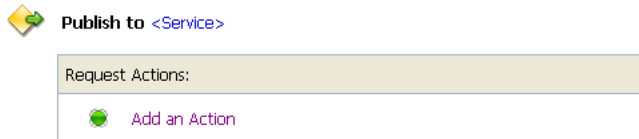
You need not set any transport headers. The `Content-Type` is set automatically according to the service type. For more information, see [“Initializing the attachments Context Variable” on page A-18](#).

Configuring Publish Actions

To configure a Publish action:

1. Click **Add an Action**, then select **Publish**.

The Publish action is displayed, which includes the following functionality:



- A **Service** link that you can click to select a service to which you want to publish a message
 - A table in which you can add request actions
2. Click **Service**. The **Service Browser** is displayed.
 3. Select a service from the list, then click **Submit**. The service is displayed instead of the default link. This is the target service for the message.
 4. In the **Request Actions** field, to configure how the message is packaged and sent to the service, click **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 actions you want to add, see [“Adding an Action” on page 16-2](#).
 5. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Related Topics

[“Transport Headers” on page 16-48](#)

[Appendix A, “Message Context”](#)

[“Publish Table” on page 16-19](#)

Publish Table

A publish 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. Use a Publish Table action to identify target services for messages and configure how the messages are packaged and sent to these services.

For information about the default quality of service and the scope of the message context for Publish actions, see [“Understanding Publish Actions” on page 16-16](#).

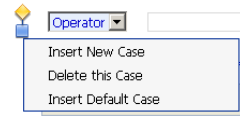
Note: There is a nesting limit of 4 cumulative levels in the stage editor. If you attempt to add a 5th level, this nesting action is not displayed. Cumulative levels include all branching actions: If... Then... Conditions, Publish Tables, and Route Tables. For example, you can have 2 levels of conditionals, 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.


To configure a Publish Table action:

1. Click **Add an Action**, then select **Publish Table**. The Publish Table action is displayed.



2. 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 is made. To learn more, see [“Using the Inline XQuery Expression Editor” on page 17-2](#).
3. From the **Operator** list, select one of these comparison operators: =, !=, <, <=, >, or >=.
4. In the field provided, enter a value against which the value returned as a result of the XQuery expression is 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 **Service Browser** is displayed.
6. Select a service from the list, then click **Submit**. The service is displayed instead of the default link. This is the target service for the message.
7. 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 an Action” on page 16-2](#).



8. To insert a new case, click , then select **Insert New Case**.
9. Repeat steps 3-7 for the new case.
10. Add additional cases as dictated by your business logic.
11. Click the **Diamond** icon of the last case you define in the sequence, then select **Insert Default Case** to add a default case at the end.
12. Configure the default case—the configuration of this case specifies the routing behavior in the event that none of the preceding cases is satisfied.
13. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Related Topics

[“Transport Headers” on page 16-48](#)

[Appendix A, “Message Context”](#)

[“Publish” on page 16-16](#)

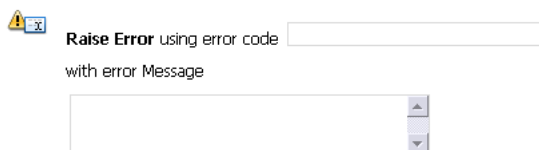
Raise Error

Use the Raise Error action to raise an exception with a specified error code (a string) and description.

To configure a Raise Error action:

1. Click **Add an Action**, then select **Raise Error**.

The Raise Error action is displayed. It includes the following functionality:



- An **error code** field in which you must enter the error code

- An **error message** field in which you can enter a description of the error
2. In the **error code** field, enter the error code you want to raise.
 3. In the **error message** field, enter a description of the error code.
 4. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4.](#)

Related Topics

To learn more about error handling actions, see [“Error Messages and Handling” on page 18-1.](#)

Rename

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. To learn more, see [“Update Actions” on page 16-7.](#)

To configure a Rename action:

1. Click **Add an Action**, then select **Rename**.

The Rename action is displayed. It includes the following functionality:



Rename [<XPath>](#) in variable to

☐ localname

☐ namespace

☒ localname and namespace

- An **XPath** link that you can click to edit an XPath expression
 - A field in which to identify the variable that holds the element you want to rename
 - **localname**, **namespace**, and combined **localname and namespace** radio buttons and fields
2. 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. The XPath expression must select elements, not attributes.

To learn more, see [“Using the XPath Expression Editor” on page 17-7.](#)

3. Enter a context variable in the **in variable** field. To learn more about context variables, see [Appendix A, “Message Context.”](#).
4. Do one of the following:
 - To rename selected elements using a localname, select the radio button associated with this option, then enter a localname in the **localname** field.
 - To rename selected elements using a namespace, select the radio button associated with this option, then enter a namespace in the **namespace** field.
 - To rename selected elements using a localname and namespace, select the radio button associated with this option, then enter a localname and namespace in the **localname** and **namespace** fields.
5. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4.](#)

Replace

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 or elements (XQuery expressions cannot return attributes). If the XPath identifies attributes, then the XQuery expression must evaluate to a simple value. An XQuery expression that returns nothing is equivalent to making the identified nodes empty or deleting the identified attributes.

The Replace action is one of a set of Update actions. To learn more, see [“Update Actions” on page 16-7.](#)

To configure a Replace action:

1. Click **Add an Action**, then select **Replace**.

The Replace action is displayed, which includes the following functionality:



Replace <XPath> in variable with <Expression>

- ☒ Replace entire node
- ☐ Replace node contents

- An **XPath** link that you can click to edit an XPath expression
- An **Expression** link that you can click to edit an XQuery expression

- A field in which to identify the variable that holds the element you want to replace
 - Radio buttons that allow you to specify whether to replace a node or the contents of a node with the value returned by the XQuery expression
2. 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. To learn more, see [“Using the XPath Expression Editor” on page 17-7](#).
 3. When you finish editing the XPath expression, enter a context variable in the **in variable** field. To learn more about context variables, see [Appendix A, “Message Context.”](#)
 4. 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. To learn more, see [“Using the Inline XQuery Expression Editor” on page 17-2](#).
 5. 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 `./*`
 6. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Reply

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 failure for SOAP services, a HTTP 500 error is returned. The Reply action specifies that an immediate reply is sent to the invoker.

To configure a Reply action:

1. Click **Add an Action**, then select **Reply**.

The Reply action is displayed, which includes the following functionality:

**Reply**☒ With Success☐ With Failure

– **With Success** and **With Failure** options

2. Select the **With Success** radio button to reply that the message was successful or select the **With Failure** radio button to reply that the message has a fault.
3. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Related Topics

To learn more about error handling actions, see [“Error Messages and Handling” on page 18-1](#)

For information about using the Reply action as one of the Publish action request actions, see [Scope of the Message Context in “Publish” on page 16-16](#)

Report

Use the Report action to enable message reporting for a proxy service.

AquaLogic Service Bus provides the capability to deliver message data and alerts to one or more reporting providers. Message data can be captured from the body of the message or from any other variables associated with the message, such as header or inbound variables. Alert data contains information about Service Level Agreement (SLA) violations or occurrences that you can configure to monitor proxy services. You can use the message or alert data delivered to the reporting provider for functions such as tracking messages or regulatory auditing.

To receive report messages from either the AquaLogic Service Bus JMS Reporting Provider or a user-defined reporting provider, you must first create a Report action in the message flow for the proxy service. The Report action allows you to extract information from each message and write it to the Reporting Data Stream.

You need not configure a report action for alert reporting. Alert data is always available in the Reporting Data Stream.

To configure a Report action:

1. Click **Add an Action**, then select **Report**.

The Report action is displayed. It includes the following functionality:



Report <Expression> with search keys:

Key Name	Key Value
Add a Key	

- An **Expression** link that you can click to edit an XQuery expression
 - A field in which you can add name and value pairs (key names and key values)
2. Click **Expression**. The **XQuery Expression Editor** page is displayed. To learn more, see [“Using the Inline XQuery Expression Editor” on page 17-2](#). The XQuery expression is used to create the data that will be reported to the AquaLogic Service Bus dashboard.
 3. 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. To learn more, see [“Listing and Locating Messages” on page 21-2](#) and [“Viewing Message Details” on page 21-4](#).

- a. Enter a key name in the **Key Name** field.
- b. Click **XPath**. The **Edit an XPath Expression** page is displayed. To learn more, see [“Using the XPath Expression Editor” on page 17-7](#).
- 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, you can click the **Key** icon, then select **Delete this Key**.


For an example of a Report Action configuration and the data reported on the AquaLogic Service Bus dashboard, see [Example Report Action Configuration and Resulting Reporting Data](#).

4. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Example Report Action Configuration and Resulting Reporting Data

Let us take an example in which we configure a Report action on an error handler in a stage. The goal is to report the contents of the `fault` context variable in the event of an error—we configure the Report action as shown in the following figure.

Figure 16-4 Example Key Name, Key Value Configuration

 **Report** `$body` with search keys:

Key Name	Key Value
<code>errorCode</code>	<code>./ctx:errorCode</code> in variable <code>fault</code>

Where `errorCode` is the key name, and the key value is extracted from the `fault` variable using the following XPath: `./ctx:errorCode`

Each time this Report action is executed at run time, a message is reported via the Reporting Data Stream. The following figure shows the Message Report Summary page in the AquaLogic Service Bus Console after the Report action configured with the key and value pair described in Figure 16-4 is executed twice.

Figure 16-5 Run Time Results of Executing Report Action

Message Report Summary Filter			
Report Index △	DB TimeStamp △	Inbound Service ▽	Error Code △
errorCode=BEA-382505	10/26/05 10:45 AM	MortgageBroker/ProxyServices/loanGateway3	BEA-382505
errorCode=BEA-382505	10/26/05 10:45 AM	MortgageBroker/ProxyServices/loanGateway3	BEA-382505

Related Topics

[“Reporting” on page 21-1](#)

Resume

The Resume action is used in error handlers. At run time, this action causes the message flow processing to continue as though no error has occurred. Processing continues after the node or stage in which the error handler is configured. You may need to configure the error handler with compensating logic to set the context variables and message state to correspond with the variable and message state expected by subsequent message flow logic. Configure the compensating logic prior to the Resume action.

This action has no parameters and can only be used in error pipelines. To create a Resume action for your message flow:

1. Click **Add an Action**, then select **Resume**. The **Resume** icon is displayed.
2. Continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Related Topics

To learn more about error handling actions, see [“Error Messages and Handling” on page 18-1](#).

Service Callout

Use a Service Callout action to configure a synchronous (blocking) call to a proxy or business service that is already registered with AquaLogic Service Bus. This topic includes the following sections:

- [Understanding Service Callout Actions](#)
- [Configuring Service Callout Actions](#)
- [How are Messages Constructed for Service Callouts?](#)
- [Handling Errors](#)

Understanding Service Callout Actions

Service Callouts allow you to make a callout from a proxy service to another service. Input parameters for the called service are constructed from the proxy service message context and outputs from the called service are mapped back to the message context. A service to which callouts are made must have the following characteristics:

- All AquaLogic Service Bus service types are supported:
 - WSDL-based services

Only SOAP document-style, XML (HTTP binding with mime:mimeXml body) and SOAP RPC-style (SOAP 1.1) Web services are supported. SOAP RPC/literal is supported and SOAP RPC/encoded is interpreted as SOAP RPC/literal.

Attachments are not supported.

Note: The endpoint URI for the service to which the callout is being made can be the same as the URI specified by the `soap:address` element in the WSDL, but it can be a different URI.

- Messaging services (text/binary/XML and MFL)

Attachments are not supported

- Any XML
- Any SOAP
- Service transport types can be HTTP, HTTPS or JMS.
- For services with HTTP and HTTPS transport types, the request method must be POST, not GET.
- The Service Callout operations must be request/response—that is, one-way operations are not supported.

The outbound request uses the AquaLogic Service Bus binding layer to achieve the correct construction of the request payload, based on the service type. Also, WS-Security is supported through the binding layer.

- Service Callouts with a JMS transport type are supported only for request/response services with quality-of-service of *best effort*. In other words, the enqueueing of a message to the JMS service is not done in the same transaction as that used to invoke the proxy service.
- For WSDL-based services, you can specify SOAP headers for callout requests and have the SOAP headers on the response, if any, bound to a pipeline variable.
- You can specify the set of transport headers for the callout request.

Note About Transport Headers

In addition to any transport headers you specify when configuring the Service Callout action, the following headers are automatically added by the AquaLogic Service Bus binding layer:

- `Content-Type = text/xml + charset` for HTTP/HTTPS services

The `charset` parameter will be set according to the configuration of the business service.

If you specify a value for the `Content-Type` transport header when you configure the Service Callout action, the value you specify will be used, not the default `text/xml` value.

- `SOAPAction` for SOAP document-style or SOAP RPC style HTTP/HTTPS services
- Only if present in SOAP Binding operation section of the WSDL.

Configuring Service Callout Actions

Populate the context by specifying a service and operation, and enter context variables to bind to the invocation input and output parameters:

1. Click **Add an Action**, then select **Service Callout**.

The Service Callout action is displayed. It includes a **Service** link that you can click to select a service.



2. Click **Service**. The **Service Browser** is displayed.
3. Select a service from the list of already registered proxy or business services, then click **Submit**.

The name of the service you selected is now displayed on the stage configuration page. The subsequent configuration options depend on whether your service is WSDL-based or not:

- [When the Service is Based on a WSDL](#)
- [When the Service is Not Based on a WSDL](#)

When the Service is Based on a WSDL

1. Select the operation name to be invoked on a service.
2. In the **Request Parameters** fields, enter the names of the variables that will be evaluated at run time to provide values for the request parameters.


Warning: You provide only the core payload documents in the input variable—the SOAP package is created for you by AquaLogic Service Bus. In other words, do not wrap the input document with `<soap-env:Body>...</soap-env:Body>`.

For example, when creating a `body` input variable that is used for this request parameter, you would define that variable's contents using the following XPath: `body/*` (to remove the wrapper `soap-env:Body`), not `$body` (which results in keeping the `soap-env:Body` wrapper).

3. In the **Response Parameters** fields, enter the names of the variable to which the responses will be assigned at run time.
4. Optionally, you can specify
 - A variable (in the **SOAP Request Header** field) that holds the XML of the SOAP Header element for the callout request

Warning: You must wrap the input document for the SOAP Request Header with `<soap-env:Header>...</soap-env:Header>`.


- A variable (in the **SOAP Response Header** field) to which the XML of the SOAP Headers on the response, if any, are bound.

 **Service Callout to** *CreditRatingService* invoking *processLoanApp* ▼




Request Parameters:	
loanRequest	<i>loanRequestVariable</i>
Response Parameters:	
return	<i>creditRating</i>

SOAP Request Header:

SOAP Response Header:

Transport Headers		
Name	Action	Options
 Add Header		

- Complete the following steps for each transport header you want to add (header values you specify are added to the message going to the callout service):
 - In the Transport Headers table, click **Add Header**. The first row in the Transport Headers table is populated as shown in the following figure.

Transport Headers		
Name	Action	Options
  <input type="text" value="Accept"/>	Set Header to <Expression>	
<input type="radio"/> Other: <input type="text"/>		

- Specify a header either by selecting from the drop-down list pre populated with headers specific to the transport of the target service or by entering a header name in the field provided.

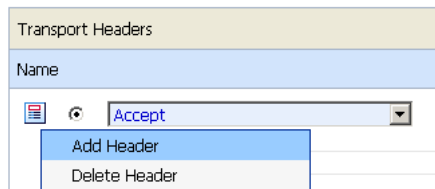
The drop-down list is populated with all of the predefined header names for the target transport (for example, *Content-Type* for HTTP transports, *JMSCorrelationID* for JMS transports, and so on). If you enter a header name in the **Other** field, and that header name is not one of the predefined headers for this service's transport, it becomes a *user-header*, as defined by the transport specification.

- c. Click **<Expression>** in **Set Header to <Expression>** to invoke the XQuery or XSLT expression editor, which you can use 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 AquaLogic 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 transport headers and metadata that you can specify in this action are honored at run time. That is, the values of certain headers and metadata can be overwritten, or ignored by the AquaLogic Service Bus run time. For information about which headers and metadata for a given transport you can set, and which of those set are honored at run time, see [“Understanding How the Run Time Uses the Transport Headers’ Settings”](#) on page 16-53.

- d. To add additional Headers to the table, click **Add Header**.



Note: In addition to the transport headers you specify, headers are added by the AquaLogic Service Bus binding layer. For more information, see [“Note About Transport Headers”](#) on page 16-29.

6. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration”](#) on page 16-4.

For examples that show how variables and message context is used for Service Callouts, see [“How are Messages Constructed for Service Callouts?”](#) on page 16-35

When the Service is Not Based on a WSDL

1. In the **Request Document Variable** field, enter the name of the variable to which a request document is assigned.

The variable is evaluated at run time to construct the body of the SOAP message sent to the service (in the case of SOAP Document-style services), or the body of the XML message sent in the case of **Any XML** service types.

Warning: You provide only the core payload documents in the input variable—the SOAP package is created for you by AquaLogic Service Bus. In other words, do not wrap the input document with `<soap-env:Body>...</soap-env:Body>`.

For example, when creating a `body` input variable that is used for this request parameter, you would define that variable's contents using the following XPath: `body/*` (to remove the wrapper `soap-env:Body`), not `$body` (which results in keeping the `soap-env:Body` wrapper).

The following restrictions apply to the variables in the case of Messaging services:

- For services that expect binary data, the variables must have a `ctx:binary-content` 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.
2. In the **Response Document Variable** field, enter the name of the variable to which a response document is assigned.
 3. In the case that the Service Callout is to an **Any SOAP** service type, you can specify
 - A variable (in the **SOAP Request Header** field) that holds the XML of the SOAP Header element for the callout request

Warning: You must wrap the input document for the SOAP Request Header with `<soap-env:Header>...</soap-env:Header>`.

- A variable (in the **SOAP Response Header** field) to which the XML of the SOAP Headers on the response, if any, are bound.






Service Callout to anysoap

Request document variable:	<input type="text" value="myreq"/>
Response document variable:	<input type="text" value="myresp"/>
SOAP Request Header:	<input type="text" value="reqheader"/>
SOAP Response Header:	<input type="text" value="respheader"/>

Transport Headers		
Name	Action	Options
Add Header		

4. Complete the following steps for each transport header you want to add (header values you specify are added to the message going to the callout service):

- a. In the Transport Headers table, click **Add Header**. The first row in the Transport Headers table is populated as shown in the following figure.

Transport Headers		
Name	Action	Options
  <input type="text" value="Accept"/>	Set Header to <Expression>	
<input type="radio"/> Other: <input type="text"/>		

- b. Specify a header either by selecting from the drop-down list pre populated with headers specific to the transport of the target service or by entering a header name in the field provided.



The drop-down list is populated with all of the predefined header names for the target transport (for example, `Content-Type` for HTTP transports, `JMSCorrelationID` for JMS transports, and so on). If you enter a header name in the **Other** field, and 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. Click **<Expression>** in **Set Header to <Expression>** to invoke the XQuery or XSLT expression editor, which you can use 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 AquaLogic 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 transport headers and metadata that you can specify in this action are honored at run time. That is, the values of certain headers and metadata can be overwritten, or ignored by the AquaLogic Service Bus run time. For information about which headers and metadata for a given transport you can set, and which of those set are honored at run time, see [“Understanding How the Run Time Uses the Transport Headers’ Settings”](#) on page 16-53.

- d. To add additional Headers to the table, click **Add Header**.

Transport Headers	
Name	
  <input type="text" value="Accept"/>	
<div>Add Header</div>	<input type="text"/>
<div>Delete Header</div>	

Note: In addition to the transport headers you specify, headers are added by the AquaLogic Service Bus binding layer. For more information, see [“Note About Transport Headers” on page 16-29](#).

5. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

For examples that show how variables and message context is used for Service Callouts, see [How are Messages Constructed for Service Callouts?](#)

How are Messages Constructed for Service Callouts?

When AquaLogic Service Bus makes a call to a service via a Service Callout action, the content of the message is constructed using the values of variables in the message context. The message content for outbound messages is handled differently depending upon the type of the target service. How the message content is created depends on the type of the target service, as described in the following topics:

- [SOAP Document Style Services](#)
- [XML Services](#)
- [SOAP RPC Style Services](#)
- [Messaging Services](#)


SOAP Document Style Services

In the case of SOAP Document Style services:

- The variable assigned for the request document contains the SOAP body.
- The variable assigned for the SOAP Request Header contains the SOAP Header.
- The response must be a single XML document—it is the content of the SOAP Body plus the SOAP Header (if specified)

To illustrate how messages are constructed during callouts to SOAP Document Style services, take for example a Service Callout action configured as shown in the following figure.

Figure 16-6 Service Callout Action Configuration for a SOAP Document Style Service

 **Service Callout to anysoap**

Request document variable:

myreq

Response document variable:

myresp


SOAP Request Header:

reqheader

SOAP Response Header:

respheader

Transport Headers

Name	Action	Options
 Add Header		

Assume also that at run time, the request document variable, `myreq`, is bound to the following XML.

Listing 16-1 Content of Request Variable (`myreq`)

```
<sayHello xmlns="http://www.openuri.org/">
  <intVal>100</intVal>
  <string>Hello AquaLogic</string>
</sayHello>
```

At run time, the SOAP Request Header variable, `reqheader`, is bound to the following SOAP header.

Listing 16-2 Content of SOAP Request Header Variable (`reqheader`)

```
<soap:Header xmlns:soap=http://schemas.xmlsoap.org/soap/envelope/
xmlns:wsa="http://schemas.xmlsoap.org/ws/2003/03/addressing">
  <wsa:Action>...</wsa:Action>
  <wsa:To>...</wsa:To>
  <wsa:From>...</wsa:From>
  <wsa:ReplyTo>...</wsa:ReplyTo>
  <wsa:FaultTo>...</wsa:FaultTo>
</soap:Header>
```

In this example scenario, the full body of the message sent to the external service is as shown in the following listing (the contents of the `myreq` and `reqheader` variables are shown in bold).

Listing 16-3 Message Sent to the Service as a Result of Service Callout Action

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header xmlns:soap=http://schemas.xmlsoap.org/soap/envelope/
xmlns:wsa="http://schemas.xmlsoap.org/ws/2003/03/addressing">
    <wsa:Action>...</wsa:Action>
    <wsa:To>...</wsa:To>
    <wsa:From>...</wsa:From>
    <wsa:ReplyTo>...</wsa:ReplyTo>
    <wsa:FaultTo>...</wsa:FaultTo>
  </soap:Header>
  <soapenv:Body>
    <sayHello xmlns="http://www.openuri.org/">
      <intVal>100</intVal>
      <string>Hello AquaLogic</string>
    </sayHello>
  </soapenv:Body>
</soapenv:Envelope>
```

Based on the configuration of the Service Callout action illustrated in the [Figure 16-6](#), the response from the service is assigned to the `myresp` variable. The full response from the external service is as shown in the following listing.

Listing 16-4 Response Message From the Service as a Result of Service Callout Action

```
<?xml version="1.0" encoding="UTF-8"?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:soapenc="http://schemas.xmlsoap.
org/soap/encoding/" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
```

```
<env:Header/>
<env:Body>
env:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
  <m:sayHelloResponse xmlns:m="http://www.openuri.org/">
    <result xsi:type="xsd:string">This message brought to you by
Hello AquaLogic and the number 100
    </result>
  </m:sayHelloResponse>
</env:Body>
</env:Envelope>
```

In this scenario, the `myresp` variable is assigned the value shown in the following listing.

Listing 16-5 Content of Response Variable (myresp) as a Result of Service Callout Action

```
<m:sayHelloResponse xmlns:m="http://www.openuri.org/">
  <result ns0:type="xsd:string"
xmlns:ns0="http://www.w3.org/2001/XMLSchema-instance">
This message brought to you by Hello AquaLogic and the number 100
  </result>
</m:sayHelloResponse>
```

XML Services

In the case of XML services:

- The request message is the content of the variable assigned for the request document.
- The content of the request variable must be a single XML document.
- The output document is the response message

To illustrate how messages are constructed during callouts to XML services, take for example a Service Callout action configured as shown in the following figure.

Figure 16-7 Service Callout Action Configuration for an XML Service

Service Callout to any xml

Request document variable:

Response document variable:

Transport Headers		
Name	Action	Options
Add Header		

Assume also that at run time, the request document variable, `myreq`, is bound to the following XML.

Listing 16-6 Content of myreq Variable

```
<sayHello xmlns="http://www.openuri.org/">
  <intVal>100</intVal>
  <string>Hello AquaLogic</string>
</sayHello>
```

In this scenario:

- The outbound message payload is the value of the `myreq` variable, as shown in the preceding listing.
- The response and the value assigned to the message context variable, `myresp`, is shown in the following listing.

Listing 16-7 Content of myresp Variable

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <env:Header/>
  <env:Body
    env:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
    <m:sayHelloResponse xmlns:m="http://www.openuri.org/">
```

```
        <result xsi:type="xsd:string">This message brought to you by  
Hello AquaLogic and the number 100  
    </result>  
  </m:sayHelloResponse>  
</env:Body>  
</env:Envelope>
```

SOAP RPC Style Services

In the case of SOAP RPC Style services:

- Request messages are assembled from message context variables using XQuery.
 - The SOAP Body is built based on the SOAP RPC format (operation wrapper, parameter wrappers, and so on).
 - The SOAP Header is the content of the variable specified for the SOAP Request Header, if one is specified.
 - Part as element—the parameter value is the variable content.
 - Part as simple type—the parameter value is the string representation of the variable content.
 - Part as complex type—the parameter corresponds to renaming the root of the variable content after the parameter name.
- Response messages are assembled as follows:
 - The output content is the content of SOAP Header, if a SOAP Header is specified.
 - Part as element—the output content is the child element of the parameter; there is at most one child element.
 - Part as simple/complex type—the output content is the parameter itself

To illustrate how messages are constructed during callouts to SOAP RPC Style services, take an example with the following configuration:

- A message context variable `input1` bound to a value 100
- A message context variable `input2` bound to a string value: Hello AquaLogic.
- A Service Callout action configured as shown in the following figure.

Figure 16-8 Service Callout Action Configuration for a RPC Style Service

The screenshot shows the 'Service Callout to helloWorld' configuration window. The 'invoking' dropdown is set to 'sayHello2'. The 'Request Parameters' section contains two entries: 'intval' with value 'input1' and 'string' with value 'input2'. The 'Response Parameters' section contains one entry: 'result' with value 'output1'. Below these are fields for 'SOAP Request Header', 'SOAP Response Header', and 'Transport Headers'. The 'Transport Headers' section is a table with columns 'Name', 'Action', and 'Options', and an 'Add Header' button below it.

Request Parameters:		
intval	input1	
string	input2	

Response Parameters:		
result	output1	

SOAP Request Header:

SOAP Response Header:

Transport Headers		
Name	Action	Options
Add Header		

In this scenario, the body of the outbound message to the service is shown in the following listing.

Listing 16-8 Content of Outbound Message

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Body>
    <sayHello2 xmlns="http://www.openuri.org/">
      <intval>100</intval>
      <string>Hello AquaLogic</string>
    </sayHello2>
  </soapenv:Body>
</soapenv:Envelope>
```

The response returned by the service to which the call was made is shown in the following listing.

Listing 16-9 Content of Response Message From the helloWorld Service

```
<?xml version="1.0" encoding="UTF-8"?>
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">
```

```
xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <env:Header/>
  <env:Body
env:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">
    <m:sayHello2Response xmlns:m="http://www.openuri.org/">
      <result xsi:type="n1:HelloWorldResult" xmlns:n1="java:">
        <message xsi:type="xsd:string">
          This message brought to you by Hello AquaLogic and the
number 100
        </message>
      </result>
    </m:sayHello2Response>
  </env:Body>
</env:Envelope>
```

The message context variable `output1` is assigned the value shown in the following listing.

Listing 16-10 Content of Output Variable (`output1`)

```
<message ns0:type="xsd:string"
xmlns:ns0="http://www.w3.org/2001/XMLSchema-instance">
This message brought to you by Hello AquaLogic and the number 100</message>
```

Messaging Services

In the case of Messaging services:

- The request message is the content of the request variable. The content can be simple text, XML, or binary data represented by an instance of `<binary-content ref=.../>` reference XML.
- Response messages are treated as binary, so the response variable will contain an instance of `<binary-content ref= ... />` reference XML, regardless of the actual content received.

For example, if the request message context variable `myreq` is bound to an XML document of the following format: `<hello>there</hello>`, the outbound message contains exactly this payload. The response message context variable (`myresp`) is bound to a reference element similar to the following:

```
<binary-content ref=" cid:1850733759955566502-2ca29e5c.1079b180f61.-7fd8"/>
```

Handling Errors

You can configure error handling at the Message Flow, pipeline, route node, and stage level. For information about doing so, see [“Error Messages and Handling” on page 18-1](#). The types of errors that are received from an external service as the result of a Service Callout include transport errors, SOAP faults, responses that do not conform to an expected response, and so on.

The `fault` context variable is set differently for each type of error returned. You can build your business and error handling logic based on the content of the `fault` variable. To learn more about `$fault`, see [“Fault Variable” on page A-14](#) and [Appendix B, “Error Codes.”](#)

Transport Errors

When a transport error is received from an external service and there is no error response payload returned to AquaLogic Service Bus by the transport provider (for example, in the case that an HTTP 403 error code is returned), the Service Callout action throws an exception, which in turn causes the pipeline to raise an error. The fault variable in a user-configured error handler is bound to a message formatted similarly to that shown in the following listing.

Listing 16-11 Contents of the AquaLogic Service Bus fault Variable—Transport Error, no Error Response Payload

```
<con:fault xmlns:con="http://www.bea.com/wli/sb/context">
  <con:errorCode>BEA-380000</con:errorCode>
  <con:reason>Not Found</con:reason>
  <con:details>
    .....
  </con:details>
  <con:location>
    <con:node>PipelinePairNode1</con:node>
    <con:pipeline>PipelinePairNode1_request</con:pipeline>
    <con:stage>stage1</con:stage>
```

```
</con:location>
</con:fault>
```

In the case that there is a payload associated with the transport error—for example, when an HTTP 500 error code is received from the business service and there is XML payload in the response—a message context fault is generated with the custom error code: BEA-382502.

The following conditions must be met for a BEA-382502 error response code to be triggered as the result of a response from a service—when that service uses an HTTP or JMS transport:

- (HTTP) The response code must be any code other than 200 or 202
- (JMS) The response must have a property set to indicate that it is an error response—the transport metadata status code set to 1 indicates an error.
- The content type must be text/xml
- If the service is AnySoap or WSDL-based SOAP, then it must have a SOAP envelope. The body inside the SOAP envelope must be XML format; it cannot be text.
- If the service type is AnyXML, or a messaging service of type text returns XML content with a non-successful response code (any code other than 200 or 202).

The `ErrorResponseDetail` element in the fault contains error response payload received from the service. The following listing shows an example of the `ErrorResponseDetail` element.

Listing 16-12 Contents of the AquaLogic Service Bus fault Variable—Transport Error, with Error Response Payload

```
<ctx:Fault xmlns:ctx="http://www.bea.com/wli/sb/context">
  <ctx:errorCode>BEA-382502</ctx:errorCode>
  <ctx:reason> Service callout has received an error response from the
server</ctx:reason>
  <ctx:details>
    <alsb:ErrorResponseDetail xmlns:alsb="http://www.bea.com/...">
      <alsb:detail> <![CDATA[
        . . .
      ]]>
    </alsb:detail>
```

```

        </alsb:ReceivedFault>
    </ctx:details>
    <ctx:location> . . . </ctx:location>
</ctx:Fault>

```

Note: The XML Schema for the Service Callout-generated fault is shown in [“XML Schema for the Service Callout-Generated Fault Details”](#) on page 16-47.

SOAP Faults

In case an external service returns a SOAP fault, the AquaLogic Service Bus run time sets up the context variable `$fault` with a custom error code and description with the details of the fault. To do so, the contents of the 3 elements under the `<SOAP-ENV:Fault>` element in the SOAP fault are extracted and used to construct an AquaLogic Service Bus fault element.

Take for example a scenario in which a service returns the following error.

Listing 16-13 SOAP Fault Returned From Service Callout

```

<SOAP-ENV:Envelope
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP-ENV:Body>
    <SOAP-ENV:Fault>
      <faultcode>SOAP-ENV:Client</faultcode>
      <faultstring>Application Error</faultstring>
      <detail>
        <message>That's an Error!</message>
        <errorcode>1006</errorcode>
      </detail>
    </SOAP-ENV:Fault>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>

```

The `<faultcode>`, `<faultstring>`, and `<detail>` elements are extracted and wrapped in an `<alsb:ReceivedFault>` element. Note that the `faultcode` element in [Listing 16-13](#) contains a QName—any related namespace declarations are preserved.

The generated `<alsb:ReceivedFault>` element, along with the custom error code and the error string are used to construct the contents of the `fault` context variable, which in this example takes a format similar to that shown in the following listing.

Listing 16-14 Contents of the AquaLogic Service Bus fault Variable—SOAP Fault

```
<ctx:Fault xmlns:ctx="http://www.bea.com/wli/sb/context">
  <ctx:errorCode>BEA-382500</ctx:errorCode>
  <ctx:reason> service callout received a soap Fault
response</ctx:reason>
  <ctx:details>
    <alsb:ReceivedFault xmlns:alsb="http://www.bea.com/...">
      <alsb:faultcode
xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">SOAP-ENV:Clie
      </alsb:faultcode>
      <alsb:faultstring>Application Error</alsb:faultstring>
      <alsb:detail>
        <message>That's an Error!</message>
        <errorcode>1006</errorcode>
      </alsb:detail>
    </alsb:ReceivedFault>
  </ctx:details>
  <ctx:location> </ctx:location>
</ctx:Fault>
```

Note: The unique error code BEA-382500 is reserved for the case when Service Callout actions receive SOAP Fault responses.

Unexpected Responses

When a service returns a response message that is not what the proxy service's run time expects, a message context fault will be generated and initialized with the custom error code BEA-382501. The details of the fault include the contents of the SOAP-Body element of the response.

The XML Schema for the Service Callout-generated fault is shown in [Listing 16-15](#).

XML Schema for the Service Callout-Generated Fault Details

The XML schema definition of the service callout-generated fault details is shown in the following listing.

Listing 16-15 XML Schema for the Service Callout-Generated Fault Details

```
<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>
        <xs:sequence>
          <xs:any namespace="##any" minOccurs="0"
maxOccurs="unbounded" processContents="lax" />
        </xs:sequence>
        <xs:anyAttribute namespace="##any" processContents="lax" />
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>

<xs:complexType name="UnrecognizedResponseDetail">
  <xs:sequence>
    <xs:element name="detail" minOccurs="0" type="xs:string" />
  </xs:sequence>
</xs:complexType>

<xs:complexType name="ErrorResponseDetail">
  <xs:sequence>
    <xs:element name="detail" minOccurs="0" type="xs:string" />
  </xs:sequence>
</xs:complexType>
```

Comparing Service Callout Actions and Route Nodes

How does a Service Callout action differ from a Route Node at run time?

The different behavior of the actions configured on a Route node and the Service Callout actions at run time are primarily as follows:

- A Service Callout action is synchronous. At run time, it results in the message flow blocking waiting for a response from the callout before proceeding.
Messages are sent asynchronously from Route nodes. At run time, the message flow does not block waiting for a response.
- Service Callout actions have no transactional semantics.
Routing configured on Route nodes exhibit transactional semantics.

Related Topics

[“Error Messages and Handling” on page 18-1](#)

[Appendix A, “Message Context.”](#)

[“Adding an Action” on page 16-2](#)

Skip

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 fault pipelines. To create a Skip action for your message flow:

1. Click **Add an Action**, then select **Skip**. The **Skip** icon is displayed.
2. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Transport Headers

Use a Transport Header action to easily set the header values in messages.

The Transport Header action allows you to set header values for outbound requests (the messages sent out by a proxy service in Route or Publish actions) and inbound responses (the response

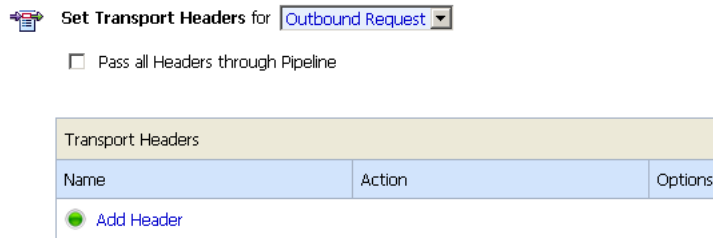
messages a proxy service sends back to clients). This specifies to the run time which of the message context locations are to be modified.

After you specify the header set to be modified, you configure the header values. You set the header values as an unordered table of name and value pairs. The run time declares namespaces and places header elements in their proper order when generating the corresponding XML

To configure a Transport Headers action:


1. Click **Add an Action**, then select **Transport Header**. The **Transport Header** action is displayed.

Figure 16-9 Transport Header Action Configuration—Outbound Request, Inbound Response



Set Transport Headers for **Outbound Request**

☐ Pass all Headers through Pipeline

Transport Headers		
Name	Action	Options
<div>  Add Header </div>		

2. From the drop-down menu, choose either **Outbound Request** or **Inbound Response**.

This is a required field and specifies to the run time whether the header values are to be set for outbound requests (the messages sent out by a proxy service in Route or Publish actions) and inbound responses (the response messages a proxy service sends back to clients).

Selecting **Outbound Request** or **Inbound Response** when you configure the Transport Headers action specifies to the run time which of the message context locations are to be modified—these header elements are located in the message context as follows:

- For outbound requests—\$outbound/ctx:transport/ctx:request/tp:headers
- For responses to clients—\$inbound/ctx:transport/ctx:response/tp:headers

Figure 16-10 Inbound/Outbound Request, Inbound/Outbound Response






3. Optionally, select **Pass all Headers through Pipeline**.

When you select this option, the Transport Headers action will automatically 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 [“About the Global Pass Through and Header-Specific Copy Options” on page 16-52](#).

- 4. Complete the following steps for each Header you want to add:
 - a. In the Transport Headers table, click **Add Header**. The first row in the Transport Headers table is populated as shown in the following figure.

Figure 16-11 Individual Transport Header Action Configuration Options

Transport Headers		
Name	Action	Options
<div><div></div><div><div><input checked="" type="radio"/></div><div>Accept</div><div></div></div><div><div><input type="radio"/></div><div>Other: <input type="text"/></div></div></div>	<div><div><input checked="" type="radio"/></div><div>Set Header to <Expression></div></div> <div><div><input type="radio"/></div><div>Delete Header</div></div> <div><div><input type="radio"/></div><div>Copy Header from Inbound Request</div></div>	<div></div>

- b. Specify a header either by selecting from the drop-down list pre populated with headers specific to the transport of the target service or by entering a header name in the field provided.

The drop-down list is populated with all of the predefined header names for the target transport (for example, `Content-Type` for HTTP transports, `JMSCorrelationID` for JMS transports, and so on). If you enter a header name in the **Other** field, and 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. From the options provided in the **Action** section, specify how to set the headers value:

Set Header to Expression

Selecting this option allows you to use and 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 AquaLogic 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 [“Understanding How the Run Time Uses the Transport Headers’ Settings”](#) on page 16-53.

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—see [Figure 16-10](#))

or

Copy Header from Outbound Response (if you are setting transport headers for the Inbound Response—see [Figure 16-10](#))

Specify 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`.

In the event that 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. In other words, this **Copy Header ...** option copies only headers that are present in the source to the target.

For information about using this option in conjunction with the global **Pass all Headers through Pipeline** option, see [“About the Global Pass Through and Header-Specific Copy Options”](#) on page 16-52.

- d. To add additional Headers to the table, click **Add Header**.


Transport Headers

Name
Accept

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.

Transport Headers		
Name	Action	Options
<div><div><div></div></div><div><div><div></div></div><div><div>Accept</div></div></div><div><div>Other: <input type="text"/></div></div></div>	<div><div><div></div></div><div>Set Header to <Expression></div></div> <div><div><div></div></div><div>Delete Header</div></div> <div><div><div></div></div><div>Copy Header from Inbound Request</div></div>	<div><div><div></div></div></div>
<div><div><div></div></div><div><div><div></div></div><div><div>Content-Length</div></div></div><div><div>Other: <input type="text"/></div></div></div>	<div><div><div></div></div><div>Set Header to <Expression></div></div> <div><div><div></div></div><div>Delete Header</div></div> <div><div><div></div></div><div>Copy Header from Inbound Request</div></div>	<div><div><div></div></div></div>

Copy Header from Inbound Request

The preceding figure displays a Transport Headers table with two headers; a different action is specified for each header. You can add as many headers as necessary to this table and remove headers from the table using the delete option  associated with that header row in the table. You need not 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.

5. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

About the Global Pass Through and Header-Specific Copy Options

As described in the preceding section, the following options are available when you configure a Transport Headers action:

- **Pass all Headers through Pipeline**
- **Copy Header from Inbound Request or Copy Header from Outbound Response**

Warning: Because transport headers are specific to the transport types, it is recommended that the pass-through (or copy) options only be used to copy headers between services of the same transport type. Passing (or copying) headers between services of different transport types can result in an error if the header being passed is not accepted by the

target transport. For the same reasons, be careful when you specify a header name using the Set Header option.

Selecting **Pass all Headers through Pipeline** specifies that at run time, the Transport Headers action passes all headers through from the inbound message to the outbound message or vice versa. Every header in the source set of headers is copied to the target header set, overwriting any existing values in the target header set.

Selecting a **Copy Header** option specifies that at run time, the Transport Headers action copies the specific header with which this option is associated from the inbound message to the outbound message or vice versa.

Use the options in a way that best suits your scenario. Both options result in the headers in the source header set being copied to the target header set, overwriting any existing value in the target set. Note that the **Pass all Headers through Pipeline** option is executed before the header-specific **Copy Header** options. In other words, for a given Transport Headers action configuration, if you select **Pass all Headers through Pipeline**, there is no need to select the **Copy Header** option for given headers.

However, you can select **Pass all Headers through Pipeline** to copy all headers, and subsequently configure the action such that individual headers are deleted by selecting **Delete Header** for specific headers.

Understanding How the Run Time Uses the Transport Headers' Settings

The preceding topics describe how the values of the transport headers for outbound requests (the messages sent out by a proxy service in Route or Publish actions) and inbound responses (the response messages a proxy service sends back to clients) can be configured for Transport Headers actions. In general, the header values can be:

- Specified using an XQuery expression
- Passed through from the source to the target service
- Deleted while going from the source to the target service

The Transport Headers action allows you to set, delete or pass-through the headers in `$inbound` or `$outbound`. If you set or delete these header and then log `$inbound` or `$outbound`, you can see the effects of your changes. However, when the message is sent out, the AquaLogic Service Bus binding layer may modify or remove some headers in `$inbound` or `$outbound` and the underlying transport may in turn, ignore some of these headers and use its own values. An

important distinction is that any modifications done by the binding layer on a header are done directly to `$inbound` and `$outbound`, whereas modifications done by the transport affects only the message's *wire format*. For example, although you can specify a value for the outbound `Content-Length` header, the binding layer deletes it from `$outbound` when sending the message. Consequently, the modification is visible in the response path (for example, you can see the modified value if you log `$outbound`). If you set the `User-Agent` header in `$outbound`, the HTTP transport ignores it and use its own value—however, the value in `$outbound` is not changed.

The following table describes the transport headers that are ignored or overwritten at run time and other limitations that exist for specific transport headers.

Table 16-5 Limitations to Transport Header Values You Specify in Transport Header Actions

Transport	Description of Limitation . . .	Transport Headers Affected By Limitation . . .	
		Outbound Request	Inbound Response
HTTP(S)	The AquaLogic Service Bus run time may overwrite these headers in the binding layer when preparing the message for dispatch. If these headers are modified, <code>\$inbound</code> and <code>\$outbound</code> are updated accordingly.	<ul style="list-style-type: none">Content-LengthContent-Type	<ul style="list-style-type: none">Content-LengthContent-Type
	The underlying transport may ignore these headers and use different values when sending the message. Any changes done by the transport will not be reflected in <code>\$inbound</code> or <code>\$outbound</code> .	<ul style="list-style-type: none">AcceptContent-Length.ConnectionHostUser-Agent	<ul style="list-style-type: none">Content-LengthDateTransfer-Encoding
JMS	Can only be set when the request is with respect to a one-way service. These headers are overwritten at run time if sending to a request/response service ¹ .	<ul style="list-style-type: none">JMSCorrelationID	<ul style="list-style-type: none">JMSCorrelationID

Transport	Description of Limitation . . .	Transport Headers Affected By Limitation . . .	
		Outbound Request	Inbound Response
	Should be set to the message time-to-live in milliseconds. The resulting value in the message received is the sum of the time-to-live value specified by the client and the GMT at the time of the send or publish ² .	<ul style="list-style-type: none"> JMSExpiration 	<ul style="list-style-type: none"> JMSExpiration
	The AquaLogic Service Bus run time sets these headers. In other words, any specifications you make for these headers at design time are overwritten at run time.	<ul style="list-style-type: none"> JMSMessageID JMSRedelivered JMSTimestamp JMSXDeliveryCount JMSXUserID JMS_IBM_PutDate³ JMS_IBM_PutTime³ JMS_IBM_PutApplType³ JMS_IBM_Encoding³ JMS_IBM_Character_Set³ 	<ul style="list-style-type: none"> JMSMessageID JMSRedelivered JMSTimestamp JMSXDeliveryCount JMSXUserID JMS_IBM_PutDate³ JMS_IBM_PutTime³ JMS_IBM_PutApplType³ JMS_IBM_Encoding³ JMS_IBM_Character_Set³
	Because IBM MQ does not allow certain properties to be set by a client application, if you set these headers with respect to an IBM MQ destination, a run-time exception is raised.	<ul style="list-style-type: none"> JMSXDeliveryCount JMSXUserID JMSXAppID 	<ul style="list-style-type: none"> JMSXDeliveryCount JMSXUserID JMSXAppID

Transport	Description of Limitation . . .	Transport Headers Affected By Limitation . . .	
		Outbound Request	Inbound Response
	These headers cannot be deleted when the Pass all Headers through Pipeline option is also specified.	<ul style="list-style-type: none">• JMSDeliveryMode• JMSExpiration• JMSMessageID• JMSRedelivered• JMSTimestamp• JMSXDeliveryCount	<ul style="list-style-type: none">• JMSDeliveryMode• JMSExpiration• JMSMessageID• JMSRedelivered• JMSTimestamp• JMSXDeliveryCount• JMSCorelationID—if the inbound message has the correlation ID set. For example, if the inbound response comes from a registered JMS business service
FTP	No limitations. In other words you can set or delete		
File	the header(s) ⁴ for File and FTP transports and your specifications are honored by the AquaLogic Service Bus run time.		
Email	The AquaLogic Service Bus run time sets these headers. In other words, any specifications you make for these headers at design time are overwritten at run time.	<ul style="list-style-type: none">• Content-Type	<ul style="list-style-type: none">• Content-Type

1. That is, this header is ignored and overwritten by the run time if the inbound response message has the correlation ID set—for example, if the inbound response comes from a JMS business service that is registered with AquaLogic Service Bus

2. For example, if you set the JMSExpiration header to 1000, and at the time of the send, GMT is 1,000,000 (as a result of System.currentTimeMillis()), the resulting value of the JMSExpiration property in the JMS message is 1,000,1000

3. Header names with the JMS_IBM prefix are to be used with respect to destinations hosted by an IBM MQ server

4. For business services, the header is filename. Its value is appended to the output file name. For proxy services, the filename is the name of the file that is being polled.

Note: The same limitations around setting certain transport headers and metadata are true when you set the `inbound` and `outbound` context variables, and when you use the AquaLogic Service Bus Test Console to test your proxy or business services. For more information, see the following topics:

- “Understanding How the Run Time Uses the Transport Settings in the Test Console” in [“Understanding How the Run Time Uses the Transport Settings in the Test Console” on page 23-32.](#)
- [“Inbound and Outbound Variables” on page A-7](#)

Validate

Use a Validate action to validate elements selected by an XPath expression against an XML schema element or a WSDL resource. To configure a Validate action:

1. Click **Add an Action**, then select **Validate**.

The Validate action is displayed, which includes the following functionality:



Validate <XPath> in variable against <resource>

☐ Save result of validation in variable

☒ Raise Error on validation failure

- An **XPath** link that you can click to edit an XPath expression
 - An **in variable** field in which you can enter the name of the variable in which the elements to be validated are located
 - A **resource** link from which you can select a type or element from an XML Schema or WSDL
2. Click **XPath**. The **XPath Expression Editor** page is displayed. To learn more, see [“Using the XPath Expression Editor” on page 17-7.](#)
 3. When you finish editing the XPath expression, enter the name of a variable in the **in variable** field—this variable holds the element to be validated.
 4. Click **resource**, then select **WSDL** or **Schema**. Depending on which resource type you select, the **WSDL Browser** or **XML Schema Browser** is displayed.
 5. Select the WSDL or XML schema, select the WSDL or XML schema type or element, then click **Submit**.

6. 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**.

7. When you complete the configuration of this action, continue by configuring other actions or saving your stage configuration, as described in [“Edit Stage Configuration” on page 16-4](#).

Note: The Validate action enables you to validate global elements only; AquaLogic Service Bus does not support validation against local elements.

Proxy Services: XQuery Editors

This section includes the following topics:

- [Using the Inline XQuery Expression Editor](#)
- [Using the XQuery Condition Editor](#)
- [Using the XPath Expression Editor](#)
- [Defining a User Namespace](#)
- [Creating a Variable Structure](#)
- [Using Predefined Variables in the Inline Editors](#)
- [Building an XQuery Expression Manually](#)
- [Building an XPath Expression Manually](#)
- [Selecting an XQuery Resource for Execution](#)
- [Selecting an XSLT Resource for Execution](#)
- [Building an XQuery Condition Using the Text Option](#)
- [Entering a Comparison Expression Using the Builder Option](#)
- [Entering a Unary Expression Using the Builder Option](#)

Using the Inline XQuery Expression Editor

The **XQuery Expression Editor** page enables you to create variable structures, define user namespaces, use predefined message context variables to build Inline XQuery expressions, build Inline XQuery expressions manually, and select XQuery or XSLT resources for execution as Inline XQueries. You can access this page through the Message Flow of a proxy service. To learn more about Message Flow, see [“Overview of Message Flow” on page 15-1](#).

This section includes the following topics:

- [Inline XQueries](#)
- [Uses of the Inline XQuery Expression Editor](#)
- [Accessing the Inline XQuery Expression Editor](#)

Inline XQueries

AquaLogic Service Bus allows you to import XQueries that have been created with an external tool such as the BEA XQuery Mapper. You can use these XQueries anywhere in the proxy service message flow by binding the XQuery resource input to an Inline XQuery, and binding the XQuery resource output to an action that uses the result as the action input; for example, the Assign, Replace, or Insert actions. However, you can enter the XQuery inline as part of the action definition instead of entering the XQuery as a resource. You can also use Inline XQueries for the condition in an **If...Then...** action.

The Inline XQuery and XPath editors allow you to declare a variable’s structure by mapping it to a type or element and then creating path expressions with a drag and drop action from the graphical representation of the structure. This is an ease-of-use feature. You can also enter the path expressions manually instead.

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.

To learn more about creating variable structures, see [“Creating a Variable Structure” on page 17-11](#), and “Variable Structures” in “Modeling Message Flow in AquaLogic Service Bus” in the BEA AquaLogic Service Bus User Guide.

Uses of the Inline XQuery Expression Editor

You typically use the Inline XQuery Expression Editor to enter simple XQueries that consist of the following:

- Fragments of XML with embedded XQueries.
- Simple variable paths along the child axis.

Note: For more complex XQueries, we recommend that you use the XQuery Mapper, especially if you are not familiar with XQuery.

Examples of good uses of Inline XQueries are:

- Extract or access a business document or RPC parameter from the SOAP envelope elements in `$header` or `$body`.
- Extract or access an attachment document in `$attachments`.
- Set up the parameters of a service callout by extracting it from the SOAP envelope.
- Fold the result parameter of a service callout into the SOAP envelope.
- Extract a sequence from the SOAP envelope to drive a `for loop`.
- Update an item in the sequence in a `for loop` with an Update action.

Accessing the Inline XQuery Expression Editor

You can access the Inline XQuery Expression Editor from the **Edit Stage Configuration** page.

To Access the Inline XQuery Expression Editor

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

3. Expand an existing pipeline to view the pipeline pair.

- 4. Click the **Stage** icon for the stage that you want to edit, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed. If you have previously added actions, the page displays these actions.
- 5. Locate an action that contains an XQuery expression.
- 6. To open the Inline Expression Editor, click the link for the XQuery expression contained within the action.

The **XQuery Expression Editor** page is displayed. The page includes the following functionality:

- XQuery Text, XQuery Resources, and XSLT Resources panels on the right side of the page.
 - A left navigation pane from which you can display the Namespace Definitions panel, XQuery Functions palette, or Variable Structures panel on the left side of the page.
 - A Property Inspector table, which enables you to view the contents of XQuery and XPath expressions, and XQuery functions. You can click **Copy Property** to copy the contents of the property inspector to the XQuery Text panel.
7. Do one of the following:

Table 17-1 XQuery Expression Editor Page

To...	Go To...
Define a user namespace	“Defining a User Namespace” on page 17-9
Create a variable structure	“Creating a Variable Structure” on page 17-11
Use a predefined message context variable	“Using Predefined Variables in the Inline Editors” on page 17-17
Build an XQuery expression manually	“Building an XQuery Expression Manually” on page 17-20
Select an XQuery resource for execution	“Selecting an XQuery Resource for Execution” on page 17-23
Select an XSLT resource for execution	“Selecting an XSLT Resource for Execution” on page 17-25

Related Topics

[“Using the XQuery Condition Editor” on page 17-5](#)

[“Using the XPath Expression Editor” on page 17-7](#)

[“Message Context” on page A-1](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Using the XQuery Condition Editor

The **XQuery Condition Editor** page enables you to define variable structures, define user namespaces, generate XPath for message context variables, and build XQuery conditions. You can access this page through the Message Flow of a proxy service. To learn more about Message Flow, see [“Overview of Message Flow” on page 15-1](#).

The Inline XQuery Condition Editor is similar to the Inline XQuery Expression Editor in that you use it to enter XQueries inline as part of action definitions. However, the Condition Editor enables you to enter Inline XQueries for conditions in an **If...Then...** action instead.

The Inline XQuery Condition editor also enables you to declare a variable’s structure by mapping it to a type or element and then creating path expressions with a drag and drop action from the graphical representation of the structure. This is an ease-of-use feature. You can also enter the path expressions manually instead. To learn more about creating variable structures, see [“Creating a Variable Structure” on page 17-11](#), and “Variable Structures” in “Modeling Message Flow in AquaLogic Service Bus” in the BEA AquaLogic Service Bus User Guide.

To Access the XQuery Condition Editor

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

3. Expand an existing pipeline to view the pipeline pair.

4. Select the **Stage** icon for the stage that you want to edit, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed. If you have previously added actions, the page displays these actions.
5. Locate an action that contains a condition.
6. To open the Condition editor, click the condition contained within the action.
The **XQuery Condition Editor** page is displayed. The page includes the following functionality:
 - Text and Builder panels on the right side of the page.
 - A left navigation pane from which you can display the Namespace Definitions panel, XQuery Functions palette, or Variable Structures panel on the left side of the page.
 - A Property Inspector table, which enables you to view the contents of XQuery and XPath expressions, and XQuery functions. You can click **Copy Property** to copy the contents of the property inspector to the Text and Builder panels.
7. Do one of the following:

Table 17-2 XQuery Condition Editor Page

To...	Go To...
Define a user namespace	“Defining a User Namespace” on page 17-9
Create a variable structure	“Creating a Variable Structure” on page 17-11
Use a predefined message context variable	“Using Predefined Variables in the Inline Editors” on page 17-17
Build an XQuery condition using the Text option	“Building an XQuery Condition Using the Text Option” on page 17-27
Enter a comparison expression using the Builder option	“Entering a Comparison Expression Using the Builder Option” on page 17-29
Enter a unary expression using the Builder option	“Entering a Unary Expression Using the Builder Option” on page 17-32

Related Topics

[“Using the Inline XQuery Expression Editor” on page 17-2](#)

[“Using the XPath Expression Editor” on page 17-7](#)

[“Message Context” on page A-1](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Using the XPath Expression Editor

The **XPath Expression Editor** page enables you to define user namespaces, define variable structure, generate XPath for message context variables, and build XPath expressions manually. You can access this page through the Message Flow of a proxy service. To learn more about Message Flow, see [“Overview of Message Flow” on page 15-1](#).

The Inline XQuery XPath Editor is similar to the Inline XQuery Expression Editor in that you use it to enter XQueries inline as part of action definitions.

The XQuery and XPath editors allow you to declare a variable’s structure by mapping it to a type or element and then creating path expressions with a drag and drop action from the graphical representation of the structure. This is an ease-of-use feature. You can also enter the path expressions manually instead.

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.

To learn more about creating variable structures, see [“Creating a Variable Structure” on page 17-11](#), and “Variable Structures” in “Modeling Message Flow in AquaLogic Service Bus” in the BEA AquaLogic Service Bus User Guide.

To Access the XPath Expression Editor

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

3. Expand the an existing pipeline to view the pipeline pair.
4. Click the **Stage** icon for the stage that you want to edit, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed. If you have previously added actions, the page displays these actions.
5. Locate an action that contains an XPath expression.
6. To open the Expression editor, click the link for the XPath expression contained within the action.

The **XPath Expression Editor** page is displayed. The page includes the following functionality:

- A pane in which you can edit the XPath expression on the right side of the page.
 - A left navigation pane from which you can display the Namespace Definitions panel, XQuery Functions palette, or Variable Structures panel on the left side of the page.
 - A Property Inspector table, which enables you to view the contents of XQuery and XPath expressions, and XQuery functions. You can click **Copy Property** to copy the contents of the property inspector to the XPath expression pane.
7. Do one of the following:

Table 17-3 XPath Expression Editor Page

To...	Go To...
Define a user namespace	“Defining a User Namespace” on page 17-9
Create a variable structure	“Creating a Variable Structure” on page 17-11
Use a predefined message context variable	“Using Predefined Variables in the Inline Editors” on page 17-17
Build the XPath expression manually	“Building an XQuery Expression Manually” on page 17-20

Related Topics

[“Using the XQuery Condition Editor” on page 17-5](#)

[“Using the Inline XQuery Expression Editor” on page 17-2](#)

[“Message Context” on page A-1](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Defining a User Namespace

The **XQuery Expression Editor**, **XQuery Condition Editor**, and **XPath Expression Editor** pages enable you to define user namespaces. To learn more about these editors, see [Using the XQuery Condition Editor](#), [Using the Inline XQuery Expression Editor](#), and [Using the XPath Expression Editor](#).

To Define a User Namespace

1. From the left navigation pane, select **Namespace Definitions**. The Namespace Definitions panel is displayed on the left side of the page. This panel includes a list of Default Namespaces, and a list of Variable Namespaces and User Defined Namespaces, if any exist.
2. In the Namespace Definitions panel, click **Add Namespace**. The **Prefix** and **URI** fields are displayed.
3. In the **Prefix** field, enter a prefix. The prefix is a unique identifier of the namespace. You cannot use the same prefix more than once.
4. In the **URI** field, enter a URL for this namespace in the format `http://url/.../` or enter a URN in the format `uddi:server:.`
5. Click **Add**. The namespace is displayed in the list of User Defined Namespaces.

Note: An XML namespace is a way of making the element and attribute names globally unique. You qualify the element and attribute names, which are local names, with the namespace prefix to achieve this uniqueness.
6. Do one of the following:

Table 17-4 Tasks You Can Do in the Expression and Condition Editors

To...	Complete These Steps...
Delete a user namespace	In the Namespace Definitions panel, click the Delete icon that corresponds to the user namespace you want to delete.
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11 .
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17 .

To...	Complete These Steps...
Build an XQuery expression manually, if you are in the XQuery Expression Editor	To learn more, see “Building an XQuery Expression Manually” on page 17-20.
Build an XPath expression manually, if you are in the XPath Expression Editor	To learn more, see “Building an XPath Expression Manually” on page 17-22.
Select an XQuery resource for execution, if you are in the XQuery Expression Editor	To learn more, see “Selecting an XQuery Resource for Execution” on page 17-23.
Select an XSLT resource for execution, if you are in the XQuery Expression Editor	To learn more, see “Selecting an XSLT Resource for Execution” on page 17-25.
Build an XQuery condition using the Text option, if you are in the XQuery Condition Editor	To learn more, see “Building an XQuery Condition Using the Text Option” on page 17-27.
Enter a comparison expression using the Builder option, if you are in the XQuery Condition Editor	To learn more, see “Entering a Comparison Expression Using the Builder Option” on page 17-29.
Enter a unary expression using the Builder option, if you are in the XQuery Condition Editor	To learn more, see “Entering a Unary Expression Using the Builder Option” on page 17-32.
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding a Route Node” on page 15-22.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>

To...	Complete These Steps...
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28 .
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Expression Editor page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Creating a Variable Structure

The **XQuery Expression Editor**, **XQuery Condition Editor**, and **XPath Expression Editor** pages enable you to create variable structures. To learn more about these editors, see [Using the XQuery Condition Editor](#), [Using the Inline XQuery Expression Editor](#), and [Using the XPath Expression Editor](#).

In a typical programming language, variables are statically scoped and their name and type is explicitly declared. The variable can be accessed anywhere within the static scope. In AquaLogic Service Bus, some predefined variables do exist, but you can also dynamically create variables by assigning a value to them; that is, when you create a variable structure mapping. When a value is assigned to a variable, the variable can be accessed anywhere in the proxy service message flow. The variable type is not declared but the type is essentially the underlying type of the value it contains at any point in time.

When you activate the session, the variables you dynamically create are deleted if you have saved them at the XQuery Expression Editor, Stage, and Pipeline levels. This means that at design time, AquaLogic Service Bus does not know which of the non-predefined variables exist and what their types are at any point in the message flow.

The variable structure mappings enable you to add predicates. 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 the stage or route node. Because variables are not statically typed, a variable can have different structures at different points (or at the same point) in the stage or route node. Therefore, you can map a variable to multiple structures, each with a different label. To view the structure, you can select the corresponding label with a drop down.

Note: You can also create variable structure mappings in the Inline XPath Expression Editor. However, although the variable is mapped to a structure, the XPath's generated when you select from the structure are relative XPath's relative to the variable. An example of a relative XPath is `./ctx:attachment/ctx:body`. However, the mapping used to generate this XPath would map `$attachments`.

To Create a Variable Structure

- 1. In the Variable Structures panel on the **XQuery Expression Editor**, **XPath Expression**, or **XQuery Condition Editor** pages, click **Add New Structure**.

The Variable Structures panel displays additional fields and options.

- 2. Do one of the following:

Table 17-5 Create a New Variable Structure

To...	Complete These Steps...
Create a variable structure that maps a variable to an XML Schema type	<ul style="list-style-type: none">1. Make sure the XML Type option is 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 runtime.3. In the Structure Path field, enter the path of the variable structure at runtime.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 or click Cancel to discard your changes.

To...	Complete These Steps...
Create a variable structure that maps a variable to a WSDL type	<ol style="list-style-type: none"> 1. Make sure the XML Type option is 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 runtime. 3. In the Structure Path field, enter the path of the variable structure at runtime. 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 or click Cancel to discard your changes.
Create a variable structure that maps a variable to an XML Schema element	<ol style="list-style-type: none"> 1. Make sure the XML Type option is 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 runtime. 3. In the Structure Path field, enter the path of the variable structure at runtime. 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 or click Cancel to discard your changes.

To...	Complete These Steps...
Create a variable structure that maps a variable to a WSDL element	<ol style="list-style-type: none">1. Make sure the XML Type option is 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 runtime.3. In the Structure Path field, enter the path of the variable structure at runtime.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 or click Cancel to discard your changes.
Create a variable structure that maps a variable to a child element	<ol style="list-style-type: none">1. Make sure the XML Type option is 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 runtime.3. In the Structure Path field, enter the path of the variable structure at runtime.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 checkbox to set the element as a child of the structure being created.7. Click Add to create the variable structure or click Cancel to discard your changes.

To...	Complete These Steps...
Create a variable structure that uses an MFL resource	<ol style="list-style-type: none"> 1. Make sure the XML Type option is 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 runtime. 3. In the Structure Path field, enter the path of the variable structure at runtime. 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 or click Cancel to discard your changes.
Create a Service Interface variable structure	<ol style="list-style-type: none"> 1. Select the Service Interface option. 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 runtime. 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 or click Cancel to discard your changes.
Create a Simple variable structure	<ol style="list-style-type: none"> 1. Select the Simple Type option. 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 runtime. 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 or click Cancel to discard your changes.

Note: When you click **Save**, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

3. Do one of the following:

Table 17-6 Tasks You Can Do in the Expression and Condition Editors

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9.
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17.
Build an XQuery expression manually, if you are in the XQuery Expression Editor	To learn more, see “Building an XQuery Expression Manually” on page 17-20.
Build an XPath expression manually, if you are in the XPath Expression Editor	To learn more, see “Building an XPath Expression Manually” on page 17-22.
Select an XQuery resource for execution, if you are in the XQuery Expression Editor	To learn more, see “Selecting an XQuery Resource for Execution” on page 17-23.
Select an XSLT resource for execution, if you are in the XQuery Expression Editor	To learn more, see “Selecting an XSLT Resource for Execution” on page 17-25.
Build an XQuery condition using the Text option, if you are in the XQuery Condition Editor	To learn more, see “Building an XQuery Condition Using the Text Option” on page 17-27.
Enter a comparison expression using the Builder option, if you are in the XQuery Condition Editor	To learn more, see “Entering a Comparison Expression Using the Builder Option” on page 17-29.
Enter a unary expression using the Builder option, if you are in the XQuery Condition Editor	To learn more, see “Entering a Unary Expression Using the Builder Option” on page 17-32.

To...	Complete These Steps...
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Expression Editor page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Using Predefined Variables in the Inline Editors

The **XQuery Expression Editor**, **XQuery Condition Editor**, and **XPath Expression Editor** pages enables you to use predefined message context variables to build XQuery expressions, XQuery conditions and XPath expressions in the Inline Editors. To learn more about these editors, see [Using the XQuery Condition Editor](#), [Using the Inline XQuery Expression Editor](#), and [Using the XPath Expression Editor](#).

To Use a Predefined Message Context Variable

- 1. From the left navigation pane, select **Variable Structures**. The Variable Structures panel is displayed on the left side of the page.
- 2. In the Variable Structures panel, select one of these predefined context variable types from the drop-down list: `attachments`, `body`, `header`, `outbound`, or `inbound`. To learn more about these predefined message context variables, see [“Message Context” on page A-1](#).
- 3. Click the displayed name to make the contents of the variable appear in the Property Inspector table.

Note: The displayed names are a tree view that may be expanded to reveal sub elements that may in turn be selected.

- 4. To build the expression, highlight the text in either the Variable Structures panel or the Property Inspector table, then drag the context variable, and drop it in the **XQuery Text** pane.
- 5. Do one of the following:

Table 17-7 Tasks You Can Do in the Expression and Condition Editors

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9 .
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11 .
Build an XQuery expression manually, if you are in the XQuery Expression Editor	To learn more, see “Building an XQuery Expression Manually” on page 17-20 .
Build an XPath expression manually, if you are in the XPath Expression Editor	To learn more, see “Building an XPath Expression Manually” on page 17-22 .
Select an XQuery resource for execution, if you are in the XQuery Expression Editor	To learn more, see “Selecting an XQuery Resource for Execution” on page 17-23 .
Select an XSLT resource for execution, if you are in the XQuery Expression Editor	To learn more, see “Selecting an XSLT Resource for Execution” on page 17-25 .

To...	Complete These Steps...
Build an XQuery condition using the Text option, if you are in the XQuery Condition Editor	To learn more, see “Building an XQuery Condition Using the Text Option” on page 17-27.
Enter a comparison expression using the Builder option, if you are in the XQuery Condition Editor	To learn more, see “Entering a Comparison Expression Using the Builder Option” on page 17-29.
Enter a unary expression using the Builder option, if you are in the XQuery Condition Editor	To learn more, see “Entering a Unary Expression Using the Builder Option” on page 17-32.
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Expression Editor page	Click Clear .

To...	Complete These Steps...
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Building an XQuery Expression Manually

The **XQuery Expression Editor** page enables you to build an Inline XQuery expression manually. To learn more about this editor, see [Using the Inline XQuery Expression Editor](#).

To Build an XQuery Expression Manually

1. Make sure the **XQuery Text** option is selected.
2. Enter or paste text into the **XQuery Text** field.

Note: To build the expression, you can drag XQuery functions from the XQuery Functions Palette on the left side of the page, and drop them in the **XQuery Text** field. You can also add predefined default namespaces, variable namespaces, and user-defined namespaces, which are listed in the Namespace Definitions panel on the left side of the page.

The drag-and-drop feature is supported only for the Internet Explorer browser. Other browsers do not support the JavaScript required to set the dragged text. To use the XML schema tree, instead of doing a drag-and-drop, you must click the node you are interested in. The XPath for this node is displayed in the text area at the bottom of the palette. You must then copy and paste the content of this text area into the **XQuery Text** field.

3. Do one of the following:

Table 17-8 Tasks You Can Do in the XQuery Expression Editor

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9 .

To...	Complete These Steps...
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11.
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17.
Select an XQuery resource for execution	To learn more, see “Selecting an XQuery Resource for Execution” on page 17-23.
Select an XSLT resource for execution	To learn more, see “Selecting an XSLT Resource for Execution” on page 17-25.
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Expression Editor page	Click Clear .

To...	Complete These Steps...
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Building an XPath Expression Manually

The **XPath Expression Editor** page enables you to build an Inline XPath expression manually. To learn more about this editor, see [Using the XPath Expression Editor](#).

To Build an XPath Expression Manually

1. Enter or paste text into the **Text** field.
Note: To build the expression, you can drag XQuery functions from the XQuery Functions Palette on the left side of the page, and drop them in the **Text** field. You can also add predefined default namespaces, variable namespaces, and user-defined namespaces, which are listed in the Namespace Definitions panel on the left side of the page.

The drag-and-drop feature is supported only for the Internet Explorer browser. Other browsers do not support the JavaScript required to set the dragged text. To use the XML schema tree, instead of doing a drag-and-drop, you must click the node you are interested in. The XPath for this node is displayed in the text area at the bottom of the palette. You must then copy and paste the content of this text area into the **Text** field.
2. Do one of the following:

Table 17-9 Tasks You Can Do in the XPath Expression Editor

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9 .
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11 .
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17 .

To...	Complete These Steps...
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XPath Expression Editor page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Selecting an XQuery Resource for Execution

The **XQuery Expression Editor** page enables you to select an XQuery resource for execution. To learn more about this editor, see [Using the Inline XQuery Expression Editor](#).

To Select an XQuery Resource for Execution

1. Select the **XQuery Resources** option.

- 2. Under the **Select an XQuery resource to execute** field, select the **XQuery Browser** icon.
- 3. In the **XQuery Browser**, select the radio button associated with the XQuery you want to execute, then click **Submit**.
- 4. Under the **Bind Variables** field, a label and a corresponding text box that you can scroll to see each input parameter of the transformation are displayed. 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 XQuery transformation has two input parameters named **one** and **two**, the **Variable Mapping** 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

- 5. Do one of the following:

Table 17-10 Tasks You Can Do in the XQuery Expression Editor

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9.
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11.
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17.
Build an XQuery expression manually	To learn more, see “Building an XQuery Expression Manually” on page 17-20.
Select an XSLT resource for execution	To learn more, see “Selecting an XSLT Resource for Execution” on page 17-25.

To...	Complete These Steps...
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Expression Editor page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Selecting an XSLT Resource for Execution

The **XQuery Expression Editor** page enables you to select an XSLT resource for execution. To learn more about this editor, see [Using the Inline XQuery Expression Editor](#).

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. Do one of the following:

Table 17-11 Tasks You Can Do in the XQuery Expression Editor

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9.
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11.
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17.
Build an XQuery expression manually	To learn more, see “Building an XQuery Expression Manually” on page 17-20.
Select an XQuery resource for execution	To learn more, see “Selecting an XQuery Resource for Execution” on page 17-23.

To...	Complete These Steps...
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Expression Editor page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Building an XQuery Condition Using the Text Option

The **XQuery Condition Editor** page enables you to build an XQuery condition using the Text option. To learn more about this editor, see [Using the XQuery Condition Editor](#).

To Build an XQuery Condition Using the Text Option

1. Make sure the **Text** option is selected.

2. Enter or paste text into the **Text** field.

Note: To build the condition, you can drag XQuery functions from the XQuery Functions Palette, or you can drag message context variables from the Message Context Variables Panel, and drop them in the **Text View** field. You can also add predefined default namespaces, variable namespaces, and user-defined namespaces, which are listed in the Namespace Definitions panel.

The drag-and-drop feature is supported only on an Internet Explorer browser. Other browsers do not support the JavaScript to set the dragged text. To use the XML schema tree, instead of doing a drag-and-drop, you must click the node you are interested in. The XPath for this node is displayed in the text area at the bottom of the palette. You must then copy and paste the content of this text area into the **Text View** field.

3. Do one of the following:

Table 17-12 Tasks You Can Do in the XQuery Condition Editor

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9.
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11.
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17.
Enter a comparison expression using the Builder option	To learn more, see “Entering a Comparison Expression Using the Builder Option” on page 17-29.
Enter a unary expression using the Builder option	To learn more, see “Entering a Unary Expression Using the Builder Option” on page 17-32.

To...	Complete These Steps...
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Condition Editor page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Entering a Comparison Expression Using the Builder Option

The **XQuery Condition Editor** page enables you to enter a comparison expression using the Builder option. To learn more about this editor, see [Using the XQuery Condition Editor](#).

To Enter a Comparison Expression Using the Builder Option

1. Select the **Builder** option.

2. Make sure the **Comparison Expression** option is selected.
3. In the **Operand** field, enter a context variable, namespace definition or XQuery function.
Note: To build the expression, you can drag XQuery functions from the XQuery Functions Palette, and drop them in the **Operand** field. You can also add predefined default namespaces, variable namespaces, and user-defined namespaces in this way from the Namespace Definitions panel.
4. In the **Operator** field, select =, !=, >, <, >=, or <=.
5. In the **Value** field, enter text or enter a context variable.
Note: You must enter the text in quotations—that is, enter "true", not true.
6. Click **Add**. The text you entered is displayed in the **Expressions** pane.
7. Repeat steps 2-6 to build additional conditions. Each condition is added to the end of the list of conditions.
Note: When you build additional expressions, make sure to select the **And** or the **Or** options in the **Conjunction** field.
Note: You can select a condition and click an **Up** arrow to move it up the list of conditions, click a **Down** arrow to move it down the list of conditions, click an **Edit** icon to update it, and click a **Delete** icon to delete it.
Note: Unary expressions may be intermixed with Comparison expressions in the overall definition of a condition.
8. Do one of the following:

Table 17-13 Tasks You Can Do in the XQuery Condition Editor

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9.
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11.
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17.

To...	Complete These Steps...
Build an XQuery condition using the Text option	To learn more, see “Building an XQuery Condition Using the Text Option” on page 17-27.
Enter a unary expression using the Builder option	To learn more, see “Entering a Unary Expression Using the Builder Option” on page 17-32.
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Condition Editor page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Entering a Unary Expression Using the Builder Option

The **XQuery Condition Editor** page enables you to enter a unary expression using the Builder option. To learn more about this editor, see [Using the XQuery Condition Editor](#).

To Enter a Unary Expression Using the Builder Option

1. Select the **Builder** option.
2. Select the **Unary Expression** option.
3. Select the **Not** checkbox to make this a negative expression or leave it blank.
4. Enter a context variable, namespace definition or XQuery function in the **Expression** field.
Note: To build the expression, you can drag XQuery functions from the XQuery Functions Palette, and drop them in the **Expression** field. You can also add predefined default namespaces, variable namespaces, and user-defined namespaces in this way from the Namespace Definitions panel.
5. Click **Add**. The text you entered is displayed in the pane below.
6. Repeat steps 2-4 to build additional conditions. Each condition is added to the end of the list of conditions.
Note: When you build additional expressions, make sure to select the **And** or the **Or** options in the **Conjunction** field.
Note: You can select a condition and click an **Up** arrow to move it up the list of conditions, click a **Down** arrow to move it down the list of conditions, click an **Edit** icon to update it, and click a **Delete** icon to delete it.
Note: Unary expressions may be intermixed with Comparison expressions in the overall definition of a condition.
7. Do one of the following:

Table 17-14 Tasks You Can Do in the XQuery Condition Editor

To...	Complete These Steps...
Define a user namespace	To learn more, see “Defining a User Namespace” on page 17-9 .

To...	Complete These Steps...
Create a variable structure	To learn more, see “Creating a Variable Structure” on page 17-11.
Use a predefined message context variable	To learn more, see “Using Predefined Variables in the Inline Editors” on page 17-17.
Build an XQuery condition using the Text option	To learn more, see “Building an XQuery Condition Using the Text Option” on page 17-27.
Enter a comparison expression using the Builder option	To learn more, see “Entering a Comparison Expression Using the Builder Option” on page 17-29.
Save the expression	<p>Click Save. The Edit Stage Configuration page is displayed. The expression is populated with the transformation you selected. To learn more, continue in “Viewing and Changing Stage Configuration Details” on page 15-36 or “Adding an Action” on page 16-2.</p> <p>Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click Activate under Change Center. The session ends and the core configuration is updated. Alternatively, click Discard at any time during the session to delete the changes you have made so far in the current session.</p>
Validate the expression	Click Validate . A message is displayed if the expression is validated successfully.
Test the expression	Click Test . To learn more, see “Performing Inline XQuery Testing” on page 23-28.
Discard your changes and return to the Edit Stage Configuration page	Click Cancel .
Discard your changes and remain on the XQuery Condition Editor page	Click Clear .

To...	Complete These Steps...
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Proxy Services: Error Handlers

This section includes the following topics:

- [Error Messages and Handling](#)
- [Adding Error Handling for the Proxy Service](#)
- [Adding Pipeline Error Handling](#)
- [Adding Stage Error Handling](#)
- [Adding Error Handling for the Route Node](#)
- [Viewing and Changing an Error Handler](#)
- [Deleting an Error Handler](#)

Error Messages and Handling

This section includes the following topics:

- [Error Handlers](#)
- [Nested Error Handlers](#)
- [Empty Error Handlers](#)
- [Error Handler Actions](#)
- [Error Handler Configuration](#)

Error Handlers

BEA AquaLogic Service Bus enables you to configure your system to format and return error messages.

Errors can occur during Message Flow processing for various reasons. For example, security errors occur if a username is not correctly validated or authorized; transformation errors occur if AquaLogic Service Bus is unable to successfully transform or validate a message; a routing error is raised if a routing service is unavailable, and so on. Typically, these errors originate from a specific stage, route node or from the proxy service, as this is where most of the Message Flow logic is implemented.

AquaLogic Service Bus provides a mechanism to handle these errors by enabling you to define error handlers. An error handler is a pipeline that allows you to perform various actions such as logging, transformation, and publishing to handle errors appropriately.

If an error occurs within a stage a sequence of steps are executed. This sequence of steps constitutes an error pipeline for that stage.

Nested Error Handlers

You can configure an error handler for the entire Message Flow as well as for every pipeline and stage within the Message Flow. You may also configure error handlers for route nodes but not for branch nodes.

When an error occurs, it is handled by the inner-most encompassing error handler. For example, a stage's error handler handles a transformation error if it occurs while executing the assign action in that stage. If there is no error handler configured for the stage, it is handled by the next level error handler, which is that of the pipeline that contains the transformation stage. If that error handler does not exist, it is then handled by the Message Flow-level error handler. If that fails, then a default system-level error handler processes the error.

The next level error handler for uncaught errors that occur in a route node is the Message Flow-level handler. Thus, unlike stage errors which can be handled at 3 levels by user-configured handlers, Message Flow errors can only be caught by at most 2 levels of user-configured handlers.

Every component—stage, pipeline or Message Flow—can have at most 1 error handler. Therefore, only 1 Message Flow-level error handler is used to process any error that occurs during either request or response processing (that is not handled at a lower level by a pipeline or stage error handler). Since the inbound binding layer is not associated with any particular stage or pipeline, errors that occur in the binding layer are always handled by the Message Flow-level

error handler. Outbound binding layer errors may occur in several places, depending on what entity is performing communication. For example, binding layer errors that occur during routing can be caught by the routing node's error handler. Similarly, binding layer errors that occur during a publish operation in a publish stage can be caught by the stage-level error handler.

Empty Error Handlers

An empty or unconfigured error handler is identical to not having an error handler. For example, if the stage-level error handler was created but never configured, then the error *bubbles-up* to the next level handler.

Error Handler Actions

When an error handler processes an error, it can finish with one of two actions:

Table 18-1 Error Handler Actions

Error Actions	Description
Reply	<p>If you assign this action, an error response is immediately created for the proxy service client. All further Message Flow processing stops and a response message is sent based on the message-related context variables. In this instance, you can configure the error handler to send a simple reply to the proxy service or a more detailed reply stating that an error occurred.</p> <p>The difference between HTTP reply with success and reply with failure is as follows:</p> <ul style="list-style-type: none"> • Reply with success sends status code 200 and \$body • Reply with failure status sends status code 500 and \$body
Resume	<p>When this action is included in a message flow, message flow processing continues as though no error has occurred. Processing continues after the node or stage in which the error handler is configured. You may need to configure the error handler with compensating logic to set the context variables and message state to correspond with the variable and message state expected by subsequent message flow logic. Configure the compensating logic prior to the Resume action.</p>

If neither the Reply nor the Resume action is initiated, the error is rethrown. In this case, the error is pushed forward and handled by the next level error handler. Unless otherwise specified, the rethrow action is the default action of an error handler.

To learn how Message Flow chooses among these actions, see [“Error Handler Configuration” on page 18-4](#).

Error Handler Configuration

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. Some actions, however, are not allowed to appear in an error handler.

In addition to the standard context variables, there is an additional context variable available to an error handler—the `$fault` variable. The `$fault` variable contains information about any error that occurs during Message Flow processing. When an error occurs, this variable is populated with information about the error, prior to the error-handler being invoked. The `$fault` variable is only ever defined within error handlers. It is never defined within a simple request and response pipeline. This is the key difference between an error pipeline and any other pipeline.

There are four core elements within the `$fault` variable:

Table 18-2 Error Handler Configuration

Element	Description
errorCode	Holds an error code as a string value
Reason	Contains a brief textual description of the error
Details	Contains arbitrary XML content about the error
Location	Identifies the pipeline and the stage where the error occurred

You can modify the `$fault` variable; however it is only relevant inside an error handler.

Related Topics

[“Adding a Proxy Service” on page 14-9](#)

[“Listing and Locating Proxy Services” on page 14-28](#)

[“Viewing and Changing Proxy Services” on page 14-30](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

Adding Error Handling for the Proxy Service

The **Edit Message Flow** page enables you to add error handling for the proxy service. You can configure error handling at the Message Flow, pipeline, route node, and stage level. To learn more, see [“Error Messages and Handling” on page 18-1](#).

To Add Error Handling for a Proxy Service

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected. The page includes the following functionality:

- A proxy service icon
 - The name of the proxy service
 - A pipeline pair node icon and name if you have already added a pipeline pair node
 - In the left navigation pane, a map of the Message Flow, which enables you to link to the pages associated with the various objects in the Message Flow.
3. Click the **Proxy Service** icon, then click **Add Service Error Handler**. The **Edit Error Handler** page is displayed, which includes an **Error Handler** icon.
 4. Click the **Error Handler** icon, then click **Add Stage**. The **Stage** icon is displayed.
 5. Click the **Stage** icon, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed.
 6. To add an action, 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 an Action” on page 16-2](#). There is no restriction on what actions may be chained together.

In addition, three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**. To learn more about these actions, see [“Error Handler Actions” on page 18-3](#) in [“Error Messages and Handling” on page 18-1](#).

When you have finished adding actions, continue to the next step.

- 7. Do one of the following:
 - To save the actions, click **Save**. The **Edit Error Handler** page is displayed.
 - To disregard changes and return to the **Edit Error Handler** page, click **Cancel**.
 - To clear any unsaved edits and remain on the **Edit Stage Configuration** page, click **Clear**.
- 8. When you have saved the actions, do one of the following:

Table 18-3 Adding Proxy Service Error Handling

To...	Complete This Step...
Continue adding actions to configure the error handler	Click the Stage icon, click Edit , then click Stage .
Edit the stage name and description	Click the Stage icon, click Edit , then click Name and Description .
Add another stage	Click the Error Handler or Stage icon, then click Add Stage .
Save the updates and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Clear the changes and remain on the Edit Error Handler page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click **Save**, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Error Messages and Handling” on page 18-1](#)

[“Adding Pipeline Error Handling” on page 18-7](#)

[“Adding Stage Error Handling” on page 18-9](#)

[“Adding Error Handling for the Route Node” on page 18-12](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

[“Overview of Proxy Services” on page 14-1](#)

Adding Pipeline Error Handling

The **Edit Message Flow** page enables you to add error handling for a pipeline. You can configure error handling at the Message Flow, pipeline, route node, and stage level. To learn more, see [“Error Messages and Handling” on page 18-1](#).

Note: You must create a pipeline pair node before you can add a pipeline error handler. To learn more, see [“Adding a Pipeline Pair Node” on page 15-8](#).

To Add Error Handling for a Pipeline

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

3. Expand an existing pipeline pair node to view the pipeline pair, which consists of request and response pipelines.

- 4. Click the pipeline to which you want to add error handling, then click **Add Pipeline Error Handler**. The **Edit Error Handler** page is displayed.
- 5. Click the **Error Handler** icon, then click **Add Stage**. The **Stage** icon is displayed.
- 6. Click the **Stage** icon, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed.
- 7. To add an action, 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 an Action” on page 16-2](#). There is no restriction on what actions may be chained together.

In addition, three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**. To learn more about these actions, see [“Error Handler Actions” on page 18-3](#) in [“Error Messages and Handling” on page 18-1](#).

When you have finished adding actions, continue to the next step.

- 8. Do one of the following:
 - To save the actions, click **Save**. The **Edit Error Handler** page is displayed.
 - To disregard changes and return to the **Edit Error Handler** page, click **Cancel**.
 - To clear any unsaved edits and remain on the **Edit Stage Configuration** page, click **Clear**.
- 9. When you have saved the actions, do one of the following:

Table 18-4 Adding Pipeline Error Handling

To...	Complete This Step...
Continue adding actions to configure the error handler	Click the Stage icon, click Edit , then click Stage .
Edit the stage name and description	Click the Stage icon, click Edit , then click Name and Description .
Add another stage	Click the Error Handler or Stage icon, then click Add Stage .

To...	Complete This Step...
Save the updates and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Clear the changes and remain on the Edit Error Handler page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

- [“Error Messages and Handling” on page 18-1](#)
- [“Adding Error Handling for the Proxy Service” on page 18-5](#)
- [“Adding Stage Error Handling” on page 18-9](#)
- [“Adding Error Handling for the Route Node” on page 18-12](#)
- [“Viewing and Changing Message Flow” on page 15-5](#)
- [“Overview of Proxy Services” on page 14-1](#)

Adding Stage Error Handling

The **Edit Message Flow** page enables you to add error handling for a stage. You can configure error handling at the Message Flow, pipeline, route node, and stage level. To learn more, see [“Error Messages and Handling” on page 18-1](#).

Note: You must create a stage before you can add a stage error handler. To learn more, see [“Adding a Stage” on page 15-19](#).

To Add Error Handling for a Stage

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

3. Expand an existing pipeline pair node to view the pipeline pair, which consists of request and response pipelines. If you have previously added stages, the **Stage** icons are also displayed.
4. Click the **Stage** icon for the stage you want to edit, click **Add**, then click **Add Stage Error Handler**. The **Edit Error Handler** page is displayed.
5. Click the **Error Handler** icon, then click **Add Stage**. The **Stage** icon is displayed.
6. Click the **Stage** icon, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed.
7. To add an action, 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 an Action” on page 16-2](#). There is no restriction on what actions may be chained together.

In addition, three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**. To learn more about these actions, see [“Error Handler Actions” on page 18-3](#) in [“Error Messages and Handling” on page 18-1](#).

When you have finished adding actions, continue to the next step.

8. Do one of the following:
 - To save the actions, click **Save**. The **Edit Error Handler** page is displayed.
 - To disregard changes and return to the **Edit Error Handler** page, click **Cancel**.

- To clear any unsaved edits and remain on the **Edit Stage Configuration** page, click **Clear**.
9. When you have saved the actions, do one of the following:

Table 18-5 Adding Stage Error Handling

To...	Complete This Step...
Continue adding actions to configure the error handler	Click the Stage icon, click Edit , then click Stage .
Edit the stage name and description	Click the Stage icon, click Edit , then click Name and Description .
Add another stage	Click the Error Handler or Stage icon, then click Add Stage .
Save the updates and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Clear the changes and remain on the Edit Error Handler page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click **Save**, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Error Messages and Handling” on page 18-1](#)

[“Adding Error Handling for the Proxy Service” on page 18-5](#)

[“Adding Pipeline Error Handling” on page 18-7](#)

[“Adding Error Handling for the Route Node” on page 18-12](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

[“Overview of Proxy Services” on page 14-1](#)

Adding Error Handling for the Route Node

The **Edit Message Flow** page enables you to add error handling for a route node. You can configure error handling at the Message Flow, pipeline, route node, and stage level. To learn more, see [“Error Messages and Handling” on page 18-1](#).

Note: You must create a route node before you can add a route node error handler. To learn more, see [“Adding a Route Node” on page 15-22](#).

To Add Error Handling for a Route Node

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

3. Click the **Route Node** icon, then click **Add Error Handler**. The **Edit Error Handler** page is displayed.
4. Click the **Error Handler** icon, then click **Add Stage**. The **Stage** icon is displayed.
5. Click the **Stage** icon, click **Edit**, then click **Stage**. The **Edit Stage Configuration** page is displayed.
6. To add an action, 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 an Action” on page 16-2](#). There is no restriction on what actions may be chained together.

In addition, three commonly-used error actions are **Raise Error**, **Reply**, and **Resume**. To learn more about these actions, see [“Error Handler Actions” on page 18-3](#) in [“Error Messages and Handling” on page 18-1](#).

When you have finished adding actions, continue to the next step.

7. Do one of the following:
 - To save the actions, click **Save**. The **Edit Error Handler** page is displayed.
 - To disregard changes and return to the **Edit Error Handler** page, click **Cancel**.
 - To clear any unsaved edits and remain on the **Edit Stage Configuration** page, click **Clear**.
8. When you have saved the actions, do one of the following:

Table 18-6 Adding Route Node Error Handling

To...	Complete This Step...
Continue adding actions to configure the error handler	Click the Stage icon, click Edit , then click Stage .
Edit the stage name and description	Click the Stage icon, click Edit , then click Name and Description .
Add another stage	Click the Error Handler or Stage icon, then click Add Stage .
Save the updates and return to the Edit Message Flow page	Click Save .
Disregard changes and return to the Edit Message Flow page	Click Cancel .
Clear the changes and remain on the Edit Error Handler page	Click Clear .
Discard your changes and exit the message flow	Click Cancel All . When you confirm that you want to exit the Message Flow, the Summary of Proxy Services page is displayed if you initially clicked the Edit Message Flow icon for the proxy service on that page or the Project View or Folder View pages are displayed if you clicked the Edit Message Flow icon for the proxy service on those pages.

Note: When you click Save, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Error Messages and Handling” on page 18-1](#)

[“Adding Error Handling for the Proxy Service” on page 18-5](#)

[“Adding Pipeline Error Handling” on page 18-7](#)

[“Adding Stage Error Handling” on page 18-9](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

[“Overview of Proxy Services” on page 14-1](#)

Viewing and Changing an Error Handler

The **Edit Message Flow** page enables you to view and change error handlers. You can configure error handling at the Message Flow, pipeline, route node, and stage level. To learn more, see [“Error Messages and Handling” on page 18-1](#).

To View and Change an Error Handler

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

3. Do one of the following:

Table 18-7 Viewing and Changing the Error Handler

To...	Complete This Step...
View and change the error handler for the proxy service	Click the Proxy Service icon, then click Edit Service Error Handler . The Edit Error Handler page is displayed. To learn more, see “Adding Error Handling for the Proxy Service” on page 18-5 .
View and change the pipeline error handler	Click the appropriate Pipeline Pair icon, then click Edit Pipeline Error Handler . The Edit Error Handler page is displayed. To learn more, see “Adding Pipeline Error Handling” on page 18-7 .
View and change the route node error handler	Click the Route Node icon, click Edit , then click Error Handler . The Edit Error Handler page is displayed. To learn more, see “Adding Error Handling for the Route Node” on page 18-12 .
View and change the stage error handler	Click the appropriate Stage icon, click Edit , then click Stage Error Handler . The Edit Error Handler page is displayed. To learn more, see “Adding Stage Error Handling” on page 18-9 .

Related Topics

[“Error Messages and Handling” on page 18-1](#)

[“Deleting an Error Handler” on page 18-15](#)

[“Viewing and Changing Message Flow” on page 15-5](#)

[“Overview of Proxy Services” on page 14-1](#)

Deleting an Error Handler

The **Edit Message Flow** page enables you to delete existing error handlers. You can configure error handling at the Message Flow, pipeline, route node, and stage level. To learn more, see [“Error Messages and Handling” on page 18-1](#).

To Delete an Error Handler

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

- 2. On the **Summary of Proxy Services** page, click the **Edit Message Flow** icon for the appropriate proxy service. Alternatively, if you are in the **Project Explorer** module, click the **Edit Message Flow** icon for the appropriate proxy service in the list of resources for a selected project or folder.

The **Edit Message Flow** page is displayed for the proxy service you selected.

- 3. Do one of the following:

Table 18-8 Deleting the Error Handler

To...	Complete This Step...
Delete the error handler for the proxy service	Click the Proxy Service icon, then click Delete Service Error Handler . The service error handler is deleted.
Delete the pipeline error handler	Click the appropriate Pipeline Pair icon, then click Delete Pipeline Error Handler . The pipeline error handler is deleted.
Delete the route node error handler	Click the Route Node icon, click Edit , then click Error Handler . The route node error handler is deleted.
Delete the stage error handler	Click the appropriate Stage icon, click Edit , then Stage Error Handler . The stage error handler is deleted.

Note: When you click Delete, the Message Flow is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

- [“Error Messages and Handling” on page 18-1](#)
- [“Viewing and Changing Message Flow” on page 15-5](#)
- [“Adding Error Handling for the Proxy Service” on page 18-5](#)
- [“Adding Pipeline Error Handling” on page 18-7](#)
- [“Adding Stage Error Handling” on page 18-9](#)
- [“Adding Error Handling for the Route Node” on page 18-12](#)
- [“Viewing and Changing an Error Handler” on page 18-14](#)

[“Overview of Proxy Services” on page 14-1](#)

Proxy Services: Error Handlers

Security Configuration

This section includes the following topics:

- [Overview of Security Configuration](#)
- [Adding a User](#)
- [Listing and Locating Users](#)
- [Viewing and Changing User Details](#)
- [Deleting a User](#)
- [Adding a Group](#)
- [Listing and Locating Groups](#)
- [Viewing and Changing Group Details](#)
- [Deleting a Group](#)
- [Adding a Role](#)
- [Listing and Locating Roles](#)
- [Viewing and Changing Role Details](#)
- [Deleting a Role](#)
- [Adding a Credential](#)
- [Listing and Locating Credentials](#)

- [Viewing and Changing Credential Details](#)
- [Deleting a Credential](#)
- [Listing and Locating Access Control Policies](#)
- [Editing Transport Authorization Policies](#)
- [Editing Service Authorization Policies](#)

Overview of Security Configuration

This section includes the following topics:

- [Users](#)
- [Groups](#)
- [Roles](#)

You use the **Security Configuration** module to determine who has access to the resources in AquaLogic Service Bus. You configure transport-level security and message-level security by configuring credentials and access control policies, using WSDLs, WS-Policy statements, and while creating and editing proxy and business services. For more information, see “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

The following table lists the pages you can access from the **Security Configuration** module. The tasks and help topics associated with each are provided:

Page	Associated Tasks	Help Topics
Summary of Users	View a list of users	Listing and Locating Users
	Filter the list	
	Add a user	Adding a User
	Delete a user	Deleting a User
User Details	View details of a specific user	Viewing and Changing User Details
	Update details of a specific user	

Page	Associated Tasks	Help Topics
Summary of Groups	View a list of groups	Listing and Locating Groups
	Filter the list	
	Add a group	Adding a Group
	Delete a group	Deleting a Group
Group Details	View details of a specific group	Viewing and Changing Group Details
	Update details of a specific group	
Global Roles	View a list of roles	Listing and Locating Roles
	Filter the list	
	Add a role	Adding a Role
	Delete a role	Deleting a Role
Role Details	View details of a specific role	Viewing and Changing Role Details
	Update details of a specific role	
Summary of Credentials	View a list of credentials	Listing and Locating Credentials
	Filter the list	
	Add a credential	Adding a Credential
	Delete a credential	Deleting a Credential
Credential Details	View details of a specific credential	Viewing and Changing Credential Details
	Update details of a specific credential	

Users

Users are entities that can be authenticated. You can define users to authenticate access to a proxy service or access to the console. Each user is assigned a unique identity within the realm. To make it easier to administer a large number of users, users can be organized into named groups. Groups can in turn be assigned membership in other groups.

User type depends on the group to which the user is assigned.

Groups

To make it easier to administer a large number of users, users can be organized into named groups. Groups can in turn be assigned membership in other groups.

The following table lists the group types:

Property	Description
IntegrationAdministrators	Has complete access to all AquaLogic Service Bus resources, with the following exceptions: <ul style="list-style-type: none"> • Cannot create, edit, or delete users, groups, roles, credentials, or access control policies.
IntegrationDeployers	Has complete access to all AquaLogic Service Bus resources, with the following exceptions: <ul style="list-style-type: none"> • Cannot create, edit, or delete users, groups, roles, credentials, or access control policies.
IntegrationMonitors	Has read access to all AquaLogic Service Bus resources.
IntegrationOperators	This group has the following privileges: <ul style="list-style-type: none"> • Has read access to all AquaLogic Service Bus resources • Has access to create, view, edit and delete alert rules • Has access to session management, including create, commit, discard and undo of sessions.
Administrators	Has complete access to all AquaLogic Service Bus objects and functions.
Deployers	Has read access to all objects. Can create, delete, edit, import or export resources, services, proxy service providers, or projects.
Monitors	Has read access to all objects. Can export any resource, service, proxy service provider, or project.
Operators	Has read and export access to all objects. Can configure alerts, enable or disable metric collection, and suspend or resume services.

Note: In this release, IntegrationAdministrators and IntegrationDeployers have the same privileges. This may change in future releases.

Roles

BEA AquaLogic Service Bus supports role-based authorization. Although the specific users that require access to the components that make up your AquaLogic Service Bus application may change depending upon the deployment environment, the roles that require access are typically more stable. Authorization involves granting an entity permissions and rights to perform certain actions on a resource.

In role-based authorization, security policies define the roles that are authorized to access the resource. In addition to the built-in roles that are associated with certain administrative and monitoring privileges, security policies that control access to the following resources can be configured from the AquaLogic Service Bus Console. Only a WebLogic Server administrator can edit security roles. To learn more about roles, see “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

This **Global Roles** page displays key information about each global security role that has been configured in this security realm.

There are four types of roles:

Type	Name	Description
IA	Integration Administrator	Has complete access to all AquaLogic Service Bus resources, with the following exceptions: <ul style="list-style-type: none"> Cannot create, edit, or delete users, groups, roles, credentials, or access control policies.
ID	Integration Deployer	Has complete access to all AquaLogic Service Bus resources, with the following exceptions: <ul style="list-style-type: none"> Cannot create, edit, or delete users, groups, roles, credentials, or access control policies.
IM	Integration Monitor	Has read access to all AquaLogic Service Bus resources.
IO	Integration Operator	This group has the following privileges: <ul style="list-style-type: none"> Has read access to all AquaLogic Service Bus resources Has access to create, view, edit and delete alert rules Has access to session management, including create, commit, discard and undo of sessions.

Note: To learn more about roles, including role-based access in the AquaLogic Service Bus Console, see [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

Adding a User

The **Create New User - General Configuration** page enables you to add a new user. To learn more about users, groups, and roles, see “[Overview of Security Configuration](#)” on page 19-2, and “[Access Control Security](#)” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To Add a User

1. From the left navigation pane, select **Security Configuration**. The **Summary of Users** page is displayed.
2. Click **Add New**. The **Create a New User - General Configuration** page is displayed.
3. In the **User Name** field, enter a unique name. This is a required field.
4. In the **Password** field, enter a password. The password must be at least 8 characters long. This is a required field.
5. In the **Confirm Password** field, enter the same password you entered for the **Password** field. This is a required field.
6. In the **Authentication Provider** field, select the authentication provider for this user.
7. 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.

Note: The group you select determines the level of access this user has in the AquaLogic Service Bus Console. To learn about types of groups and role-based access, see “[Groups](#)” on page 19-4.

8. Do one of the following:
 - To create the user, click **Save**.
The **Summary of Users** page is displayed. The new user is included in the list.
 - To disregard changes and return to the **Summary of Users** page, click **Cancel**.

Note: You cannot export users, groups, roles, credentials, certificates or access control policies when you export a configuration, as these objects are created through the WebLogic Server. You must create these objects again when you import the exported configuration, or where available use specific WebLogic Server tools to export and import them.

Related Topics

[“Listing and Locating Users” on page 19-7](#)

[“Viewing and Changing User Details” on page 19-8](#)

[“Deleting a User” on page 19-9](#)

Listing and Locating Users

The **Summary of Users** page enables you to view a list of users that have been created in the AquaLogic Service Bus Console. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To List and Locate Users

1. From the left navigation pane, select **Users** from under **Security Configuration**. The Summary of Users page is displayed, which displays the following information for each user. For a more detailed description of the properties, see [“Viewing and Changing User Details” on page 19-8](#).

Property	Description
User Name	The name assigned to the user. The name is a link to the View User Details page. To learn more, see “Viewing and Changing User Details” on page 19-8 .
Group Membership	The name of the group to which this user belongs. The name is a link to the View Group Details page. To learn more, see “Viewing and Changing Group Details” on page 19-12 .
Authentication Provider	The authentication provider for this user.
Options	Click the Delete icon to delete a specific user. To learn more, see “Deleting a User” on page 19-9 .

2. To locate a specific user, do one of the following:
 - Filter by user name. Click **Search**, enter the search target, then click **Search** again. Wild cards can be used. The users matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Group Name** and **Authentication Provider** fields. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

The **Summary of Users** page also enables you to do the following:

- To create a new user, click **Add New**. To learn more, see [“Adding a User” on page 19-6](#).

Related Topics

[“Overview of Security Configuration” on page 19-2](#)

Viewing and Changing User Details

The **View User Details** page enables you to view and change details of a specific user. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and [“Access Control Security” in *Securing Inbound and Outbound Messages* in the *BEA AquaLogic Service Bus User Guide*](#).

To View and Change User Details

1. Locate the user. To learn more, see [“Listing and Locating Users” on page 19-7](#).
2. Click the user name. The **View User Details** page displays the following information.

Property	Description
User Name	The name of this user
Authentication Provider	The authentication provider for this user.
Group Membership	The name of the group to which this user belongs.

3. Click **Back** to return to the **Summary of Users** page or click **Reconfigure** to edit the user details. When you click Reconfigure, the **Edit User Details** page is displayed.

4. Make the appropriate changes to the **New Password**, **Confirm Password**, and **Group Membership** fields. See [“Adding a User” on page 19-6](#) for a description of the fields.

Note: You cannot change the **User Name** field.

5. Do one of the following:
 - To update the user, click **Save Changes**. The **Summary of Users** page is displayed.
 - To disregard changes and return to the **Summary of Users** page, click **Cancel**.

Related Topics

[“Deleting a User” on page 19-9](#)

Deleting a User

The **Summary of Users** page enables you to delete a selected user or multiple users. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and [“Access Control Security” in *Securing Inbound and Outbound Messages* in the *BEA AquaLogic Service Bus User Guide*](#).

To Delete a User

1. From the left navigation pane, select **Security Configuration**. The **Summary of Users** page is displayed.
2. Select the user you want to delete. You can select multiple users if necessary.
3. Click **Delete**. A message prompting you to confirm that you want to delete the user is displayed.
4. Do one of the following:
 - To delete the user, click **OK**. The user is removed from the list.
 - To disregard changes and return to the **Summary of Users** page, click **Cancel**.

Note: Alternatively, you can click the **Delete** icon in the **Options** column of the user you want to delete.

Related Topics

[“Adding a User” on page 19-6](#)

[“Listing and Locating Users” on page 19-7](#)

[“Viewing and Changing User Details” on page 19-8](#)

Adding a Group

The **Create New Group** page enables you to add a new group. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic User Guide*.

To Add a Group

1. From the left navigation pane, select **Groups** from under **Security Configuration**. The **Summary of Groups** page is displayed.
2. Click **Add New**.
3. In the **Group Name** field, enter a unique name. Note that you cannot enter spaces or special characters. This is a required field.
4. In the **Authentication Provider** field, select the authentication provider.
5. In the **Group Membership** field, select a group to which this group can belong:
 - a. Select a group from the **Available Groups** field.
 - b. Click the arrow to move the group into the **Current Groups** field.

Note: The group you select determines the level of access this user has in the AquaLogic Service Bus Console. To learn about types of groups and role-based access, see [“Groups” on page 19-4](#).

6. Do one of the following:
 - To create the group, click **Save**.
The **Summary of Groups** page is displayed. The new group is included in the list.
 - To disregard changes and return to the **Summary of Groups** page, click **Cancel**.

Note: You cannot export users, groups, roles, credentials, certificates or access control policies when you export a configuration, as these objects are created through the WebLogic Server. You must create these objects again when you import the exported configuration, or where available use specific WebLogic Server tools to export and import them.

Related Topics

[“Listing and Locating Groups” on page 19-11](#)

[“Viewing and Changing Group Details” on page 19-12](#)

[“Deleting a Group” on page 19-13](#)

Listing and Locating Groups

The **Summary of Groups** page enables you to view a list of groups. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To List and Locate Groups

1. From the left navigation pane, select **Groups** from under **Security Configuration**. The Summary of Groups page is displayed, which displays the following information for each group. For a more detailed description of the properties, see [“Viewing and Changing Group Details” on page 19-12](#).

Property	Description
Group Name	The name of the group. The name is a link to the View Group Details page. To learn more, see “Viewing and Changing Group Details” on page 19-12 .
Group Membership	The group to which this group belongs. The name is a link to the View Group Details page. To learn more, see “Viewing and Changing Group Details” on page 19-12 .
Authentication Provider	The authentication provider for this group.
Delete	Click the Delete icon to delete a specific group. To learn more, see “Deleting a Group” on page 19-13 .

2. To locate a specific group, do one of the following:
 - Filter by group name. Click **Search**, enter the search target, then click **Search** again. Wild cards can be used. The groups matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Group Name** and **Authentication Provider** fields. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

The **Summary of Groups** page also enables you to do the following:

- To create a new group, click **Add New**. See [“Adding a Group” on page 19-10](#).

Related Topics

[“Overview of Security Configuration” on page 19-2](#)

Viewing and Changing Group Details

The **View Group Details** page enables you to view and change details of a specific group. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To View and Change Group Details

1. Locate the group. To learn more, see [“Listing and Locating Groups” on page 19-11](#).
2. Click the group name. The **View Group Details** page displays the following information:

Property	Description
Group Name	The name of this group
Authentication Provider	The authentication provider for this group
Groups	The group to which this group belongs

3. Click **Back** to return to the **Summary of Groups** page or click **Reconfigure** to edit the group details. When you click Reconfigure, the **Edit Group Details** page is displayed.
4. Make the appropriate changes to the **Group Membership** field. See [“Adding a Group” on page 19-10](#) for a description of the field.

Note: You cannot change the **Group Name** field.

5. Do one of the following:
 - To update the group, click **Save Changes**. The **Summary of Groups** page is displayed.
 - To disregard changes and return to the **Summary of Groups** page, click **Cancel**.

Related Topics

[“Deleting a Group” on page 19-13](#)

Deleting a Group

The **Summary of Groups** page enables you to delete a selected group or multiple groups. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To Delete a Group

1. From the left navigation pane, select **Security Configuration**. The **Summary of Groups** page is displayed.
2. Select the group you want to delete. You can select multiple groups if necessary.
3. Click **Delete**. A message prompting you to confirm that you want to delete the group is displayed.
4. Do one of the following:
 - To delete the group, click **OK**. The group is removed from the list.
 - To disregard changes and return to the **Summary of Groups** page, click **Cancel**.

Note: Alternatively, you can click the **Delete** icon in the **Options** column of the group you want to delete.

Related Topics

[“Adding a Group” on page 19-10](#)

[“Listing and Locating Groups” on page 19-11](#)

[“Viewing and Changing Group Details” on page 19-12](#)

Adding a Role

The **Create New Role** page enables you to add a new role. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To Add a New Role

1. From the left navigation pane, select **Roles** from under **Security Configuration**. The **Global Roles** page is displayed.
2. Click **New**.
3. In the **Role Name** field, enter a unique name. Note that you cannot enter spaces or special characters. This is a required field.

Note: Be sure that there are no spaces or < > characters in the security role name. Security role names are case sensitive. The BEA convention is that all security role names are singular.

4. Do one of the following:

- To create the role, click **OK**.

The **Global Roles** page is displayed. The new role is included in the list.

- To disregard changes and return to the **Global Roles** page, click **Cancel**.

When you click OK to create the role, the next step is to define the conditions under which the role applies. On the Global Roles page, click the name of the new global role.

The **Global Role Conditions** page is displayed.

5. Under **Role Conditions**, click **Add Condition**.

The following prompt is displayed:

Choose the predicate you wish to use as your new condition

6. 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).

7. Click **Next**. The next steps depend on what you chose for your condition predicate. Do one of the following:

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.

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.

8. If necessary, repeat steps 5-7 to add expressions based on different role conditions. You can do the following in the Role Conditions section to modify the expressions:

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 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 .

- When all the expressions in the Role Conditions section are correct, click **Save**. To activate these changes, in the **Change Center**, click **Activate**.

Note: Some changes affect only particular servers. Not all changes take effect immediately—some require a restart.

Note: You cannot export users, groups, roles, credentials, certificates or access control policies when you export a configuration, as these objects are created through the WebLogic Server. You must create these objects again when you import the exported configuration, or where available use specific WebLogic Server tools to export and import them.

Related Topics

[“Listing and Locating Roles” on page 19-17](#)

[“Viewing and Changing Role Details” on page 19-18](#)

[“Deleting a Role” on page 19-19](#)

Listing and Locating Roles

The **Global Roles** page enables you to view a list of roles. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and [“Access Control Security” in Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To List and Locate Roles

- From the left navigation pane, select **Roles** from under **Security Configuration**. The Global Roles page is displayed, which displays the following information for each role. For a more

detailed description of the properties, see [“Viewing and Changing Role Details” on page 19-18](#):

Property	Description
Role Name	The name of the role. The name is a link to the View Role Details page. To learn more, see “Viewing and Changing Role Details” on page 19-18 .
Provider Name	The authentication provider for this group.

2. To locate a specific role, scroll through the pages. Use the controls in the lower right corner. 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.

This page also enables you to do the following:

- To create a new role, click **Add New**. To learn more, see [“Adding a Role” on page 19-14](#).
- To delete a selected role, click **Delete**. To learn more, see [“Deleting a Role” on page 19-19](#).

Related Topics

[“Overview of Security Configuration” on page 19-2](#)

Viewing and Changing Role Details

The **View Role Details** page enables you to view and change details of a specific role. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and [“Access Control Security” in *Securing Inbound and Outbound Messages* in the *BEA AquaLogic Service Bus User Guide*](#).

To View and Change Role Details

1. Locate the role. To learn more, see [“Listing and Locating Roles” on page 19-17](#).
2. Click the role name. The **View Role Details** page enables you to view and change details of a specific role. It displays the following information:

Property	Description
Name	The name of the role.
Role Conditions	The conditions which determine membership in this role.

- Do one of the following:

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 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 .

- Click **Save**. The **Global Roles** page is displayed.

Related Topics

[“Adding a Role” on page 19-14](#)

[“Listing and Locating Roles” on page 19-17](#)

[“Deleting a Role” on page 19-19](#)

Deleting a Role

The **Global Roles** page enables you to delete roles. To learn more about users, groups, and roles, see [“Overview of Security Configuration” on page 19-2](#), and [“Access Control Security” in Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To Delete a Role

- From the left navigation pane, select **Roles** from under **Security Configuration**. The **Global Roles** page is displayed.
- Select the role you want to delete. You can select multiple roles if necessary.
- Click **Delete**. A message prompting you to confirm that you want to delete the role is displayed.
- Do one of the following:
 - To delete the role, click **OK**. The role is removed from the list.

- To disregard changes and return to the **Global Roles** page, click **Cancel**.

Related Topics

[“Adding a Role” on page 19-14](#)

[“Listing and Locating Roles” on page 19-17](#)

[“Viewing and Changing Role Details” on page 19-18](#)

Adding a Credential

The **Create New Credential** page allows you to add a new credential. To learn more about credentials, see “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

Note: To access the **Credentials** or **Access Controls** page in the AquaLogic Service Bus Console, you must first activate the session. Credentials and access controls are created outside of sessions and associated with resources that are already activated. Activating a session deploys the resources you have configured to run time, making them available to credentials and access controls.

To Add a Credential

1. From the left navigation pane, select **Credentials** from under **Security Configuration**. The **View Summary of Credential Resources** page is displayed.
2. Click **Add New**. The **Create a New Credential - General Configuration** page is displayed.
3. In the **Select Resource Type** field, select a resource type for which you want to create credentials. You can select one of the following resource types:

Resource Type...	Description...
Proxy Service Provider	<p>Proxy service providers encapsulate all the PKI (Public Key Infrastructure) credentials used by one or more proxy services. Different PKI credentials (private-key/certificate pairs) for different purposes can be assigned to a proxy service provider. When a proxy is created, a proxy service provider can be specified. If the proxy needs PKI credentials, for example to open an HTTPS connection with client-certificate authentication, it gets the credentials from the proxy service provider. Multiple proxies can use the same proxy service provider.</p> <p>The PKI credential mapper is a security provider and must be configured with the location of a keystore, (relative to the domain root), keystore password, keystore type (optional), and keystore provider (optional). This keystore can be the same as the server's identity keystore or a different one. If you define a proxy service provider, you must configure a PKI credential mapper in your security realm. By default the realm configuration does not have a PKI mapper. If you do not define a proxy service provider, you do not need to define a PKI mapper within the security realm. For more information, see <i>Digital Certificates in Security Fundamentals</i> in Understanding WebLogic Security.</p> <p>To learn more about proxy service providers, see “Overview of Proxy Service Providers” on page 12-1.</p>
Service Account	<p>A service account is an alias resource for a username and password. AquaLogic Service Bus uses service accounts to provide authentication when connecting to a service or server.</p> <p>To learn more about service accounts, see “Overview of Service Accounts” on page 11-1.</p>

- Click **Next**. If you selected Proxy Service Provider, a list of available proxy service providers is displayed. If you selected Service Account, a list of available service accounts is displayed.

Note: You must have previously created the proxy service providers and service accounts in a session and activated that session to display these resources on this page.

- In the **Select** column, click **Select** for the specific resource you want to use.

6. In the **Purpose of this Credential** field, select the purpose of the credential that you want to associate with the selected resource.

For proxy service providers, you can select one of the following purposes:

Available Purpose...	Description...
SSL Client Authentication	<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.</p> <p>This key-pair is used when a proxy is required to invoke a service that requires TLS/SSL client certificate authentication.</p>
Digital Signature	<p>This key-pair is used with Web service security when a proxy is required to sign one or more parts of a SOAP envelope. Digital signature provides message integrity.</p>
Encryption	<p>This key-pair is used with Web service security when a proxy is required to decrypt one or more parts of a SOAP envelope. Encryption provides message confidentiality.</p>
Web Services Security X509 Token	<p>This key-pair is used with web service security when a proxy is required to include an authentication token in the SOAP envelope.</p>

7. Click **Next**.
8. In the **Credential Provider** field, select the credential provider.
9. Click **Next**.
10. In the **Username** field, select a valid user name.
11. In the **Key Password** field, enter a password (minimum 8 characters).
12. In the **Confirm Key Password** field, enter the same password you entered in the **Key Password** field.
13. Click **Next**. A summary of the data you entered is displayed.
14. Review the data you entered for this new credential.
15. Do one of the following:

- To create the credential, click **Finish**.

The **View Summary of Credential Resources** page is displayed. The new credential is included in the list.

- To disregard changes and return to the **View Summary of Credential Resources** page, click **Cancel**.

Note: You cannot export users, groups, roles, credentials, certificates or access control policies when you export a configuration, as these objects are created through the WebLogic Server. You must create these objects again when you import the exported configuration.

Related Topics

[“Listing and Locating Credentials” on page 19-23](#)

[“Viewing and Changing Credential Details” on page 19-24](#)

[“Deleting a Credential” on page 19-26](#)

Listing and Locating Credentials

The **View Summary of Credential Resources** page enables you to view a list of credentials. To learn more about credentials, see “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To List and Locate Credentials

1. From the home page, select **Credentials** from under **Security Configuration**. The View Summary of Credential Resources page is displayed, which displays the following information for each credential resource. For a more detailed description of the properties, see [“Viewing and Changing Credential Details” on page 19-24](#):

Property	Description
Name of Resource	The resource name, which is a link to the resource details. Click the name to view and change details. To learn more, see “Viewing and Changing Credential Details” on page 19-24 .
Resource Type	The resource type: <ul style="list-style-type: none"> • Proxy Service Provider • Service Account

Property	Description
Credential Purpose	The purpose of the credential
Credential Provider Name	The name of the credential provider
Options	Click the Delete icon to delete a specific credential resource. To learn more, see “Deleting a Credential” on page 19-26 .

2. To locate a specific credential, do one of the following:
- Filter by credential name. Enter the search target, then click **Search**. The credentials matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

From this page, you can also do the following:

- To create a new credential resource, click **Add New**. See [“Adding a Credential” on page 19-20](#).
- To delete a selected credential, click **Delete**. See [“Deleting a Credential” on page 19-26](#).

Related Topics

[“Overview of Security Configuration” on page 19-2](#)

Viewing and Changing Credential Details

The **View Credential Details** page enables you to view and change details of a specific credential. To learn more about credentials, see “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

Note: To access the **Credentials** or **Access Controls** page in the AquaLogic Service Bus Console, you must first activate the session. Credentials and access controls are created outside of sessions and associated with resources that are already activated. Activating a session deploys the resources you have configured to run time, making them available to credentials and access controls.

To View and Change Credential Details

1. Locate the credential resource. See [“Listing and Locating Credentials” on page 19-23](#).
2. Click the name of the resource. The **Create a New Credential - General Configuration** page is displayed. The page displays the following information:

Property	Description
General Configuration	
Resource Name	The resource name.
Resource Type	The resource type: <ul style="list-style-type: none">• Proxy Service Provider• Service Account
Purpose of this Credential	The purpose of the credential
Credential Configuration	
Username	The user name associated with this credential.

3. Do one of the following:
 - To change the details of this credential, click **Edit**.
 - To return to the **View Summary of Credential Resources** page, click **OK**.
4. Make the appropriate changes to the fields that are displayed. See [“Adding a Credential” on page 19-20](#) for a description of the fields.
5. Do one of the following:
 - To update the credential, click **Finish**.

The **View Summary of Credential Resources** page is displayed. The new credential is included in the list.
 - To return to the previous page, click **Back**.
 - To disregard changes and return to the **View Summary of Credential Resources** page, click **Cancel**.

Related Topics

[“Adding a Credential” on page 19-20](#)

[“Listing and Locating Credentials” on page 19-23](#)

[“Deleting a Credential” on page 19-26](#)

Deleting a Credential

You can delete a selected credential or multiple credentials from the **Summary of Credentials** page. To learn more about credentials, see “Access Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

To Delete a Credential

1. From the left navigation pane, select **Credentials** from under **Security Configuration**. The **View Summary of Credential Resources** page is displayed.
2. Select the credential you want to delete. You can select multiple credentials if necessary.
3. Click **Delete**. A message prompting you to confirm that you want to delete the role is displayed.
4. Do one of the following:
 - To delete the role, click **OK**. The role is removed from the list.
 - To disregard changes and return to the **View Summary of Credential Resources** page, click **Cancel**.

Note: Alternatively, you can click the **Delete** icon in the **Options** column of the credential you want to delete.

Related Topics

[“Adding a Credential” on page 19-20](#)

[“Listing and Locating Credentials” on page 19-23](#)

[“Viewing and Changing Credential Details” on page 19-24](#)

Listing and Locating Access Control Policies

The **Access Control for Proxy Services** page lists the defined access control policies. Only a WebLogic Server administrator can define access control policies. To learn more, see “Access

Control Security” in [Securing Inbound and Outbound Messages](#) in the *BEA AquaLogic Service Bus User Guide*.

Note: To view the access control policies for a proxy service in the AquaLogic Service Bus Console, you must first activate the session. Access control policies are created outside of sessions and associated with resources that are already activated. Activating a session deploys the resources you have configured to run time, making them available to credentials and access controls.

To List and Locate Access Control Policies

From the left navigation pane, select **Access Controls** from under **Security Configuration**. The **Access Control for Proxy Services** page is displayed, which displays the following information for each access control policy:

Property	Description
Name	The name of the proxy service. The name is a link to the Proxy Service Details page. To learn more, see “Viewing and Changing Proxy Services” on page 14-30 .
Transport Authorization Policy	The transport authorization policy. The policy is a link to the View Policy Details page. This only applies to HTTP or HTTPS proxy services. To learn more, see “Editing Transport Authorization Policies” on page 19-28 .
Service Authorization Policy	The service authorization policy, if there is one. The policy is a link to the View Policy Details page. This policy is related to WS-Security. This only applies to SOAP proxy services that have Web service security policies in the WSDL. To learn more, see “Editing Service Authorization Policies” on page 19-34 .

From this page, you can also do the following:

- To view proxy services, click **View Proxy Services**. To learn more, see [“Listing and Locating Proxy Services” on page 14-28](#).

Note: The **Policy Details** page allows you to configure a new access control policy, edit an existing access control policy or delete an access control policy. For more information, see [Security Policies](#) in *Securing WebLogic Resources* and [Manage Security Policies](#) in the *BEA WebLogic Server Administration Console Online Help*.

Related Topics

[“Overview of Security Configuration” on page 19-2](#)

Editing Transport Authorization Policies

The **Policy Details** page enables you to edit the transport-level security policy of a proxy service that uses HTTP or HTTPS as its transport protocol. You access this page when you click **View Policies** in the **Transport Authorization Policy** column of a specific proxy service on the **Access Control for Proxy Services** page. The page displays the following information:

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 you can select from the Authorization Provider field. AquaLogic Service Bus supports both the WebLogic DefaultAuthorizer and the WebLogic XACML Authorization Provider.
Policy Conditions	Displays the conditions that determine the access control to the proxy service resources.

To Edit a Transport Authorization Policy

Note: You can edit the transport authorization policy for an existing proxy service either inside or outside a session. When you create a new proxy service in a session, the Access Controls for Proxy Services page will not display it until you have the activated the session.

1. In the **Authorization Provider** field, accept the default WebLogic Authorization Provider that is displayed.
2. 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 dropdown list.
4. Click **Next**. The next steps depend on what you chose for your condition predicate. Do one of the following:

Condition Predicate...	Complete These Steps...
<p>If you selected Role, enter one or more arguments that define the group or groups that should hold this role</p>	<ol style="list-style-type: none"> 1. In the Role 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. Do one of the following: <ul style="list-style-type: none"> 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>If you selected Group, enter one or more arguments that define the group or groups that should hold this role</p>	<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. Do one of the following: <ul style="list-style-type: none"> 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.

Condition Predicate...	Complete These Steps...
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. 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.
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 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.

Condition Predicate...	Complete These Steps...
<p>If you selected a time-constrained predicate such as Access occurs between specified hours, select start and end times and a GMT offset</p>	<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: <ul style="list-style-type: none"> 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>If you selected 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, enter a context element name and a numeric value to compare it against</p>	<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. Do one of the following: <ul style="list-style-type: none"> 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>If you selected 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>

Condition Predicate...	Complete These Steps...
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. 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.
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 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. 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.

Condition Predicate...	Complete These Steps...
If you selected Context element's value equals a string constant , 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. 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.
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. 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.
5. If necessary, repeat steps 3-5 to add expressions based on different policy conditions. You can do the following in the Policy Conditions section to modify the expressions:	
To...	Complete These Steps...
Change the ordering of the selected expression	Select the checkbox 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 checkbox associated with the appropriate conditions, then click Combine and Uncombine .

To...	Complete These Steps...
Make a condition negative; for example, NOT Group Operators excludes the Operators group from the policy.	Select the checkbox associated with the condition, then click Negate .
Delete a selected expression	Select the checkbox associated with the condition, then click Remove .

6. When you have finished entering conditions in the **Policy Conditions** section, click **Save**.

Related Topics

[“Overview of Security Configuration” on page 19-2](#)

Editing Service Authorization Policies

The **Policy Details** page enables you to edit the service-level security policy of a proxy service. You access this page when you click **View Policies** in the **Service Authorization Policy** column of a specific proxy service on the **Access Control for Proxy Services** page. The page displays the following information:

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 you can select from the Authorization Provider field. AquaLogic Service Bus supports authorization using the default WebLogic Authorization Provider.
Policy Conditions	Displays the conditions that determine the access control to the proxy service resources.

To Edit a Service Authorization Policy

Note: You can edit the transport authorization policy for an existing proxy service either inside or outside a session. When you create a new proxy service in a session, the Access Controls for Proxy Services page will not display it until you have activated the session.

1. In the **Authorization Provider** field, accept the default WebLogic Authorization Provider that is displayed.

2. 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 dropdown list.
4. Click **Next**. The next steps depend on what you chose for your condition predicate. Do one of the following:

Condition Predicate...	Complete These Steps...
If you selected Role , 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 Role 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. Do one of the following: <ul style="list-style-type: none"> 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.
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. Do one of the following: <ul style="list-style-type: none"> 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.

Condition Predicate...	Complete These Steps...
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. 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.
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 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.

Condition Predicate...	Complete These Steps...
<p>If you selected a time-constrained predicate such as Access occurs between specified hours, select start and end times and a GMT offset</p>	<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: <ul style="list-style-type: none"> 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>If you selected 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, enter a context element name and a numeric value to compare it against</p>	<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. Do one of the following: <ul style="list-style-type: none"> 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>If you selected 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>

Condition Predicate...	Complete These Steps...
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. 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.
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 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. 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.

Condition Predicate...	Complete These Steps...
If you selected Context element's value equals a string constant , 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. 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.
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. 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.
5. If necessary, repeat steps 3-5 to add expressions based on different policy conditions. You can do the following in the Policy Conditions section to modify the expressions:	
To...	Complete These Steps...
Change the ordering of the selected expression	Select the checkbox 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 checkbox associated with the appropriate conditions, then click Combine and Uncombine .

To...	Complete These Steps...
Make a condition negative; for example, NOT Group Operators excludes the Operators group from the policy.	Select the checkbox associated with the condition, then click Negate .
Delete a selected expression	Select the checkbox associated with the condition, then click Remove .

6. When you have finished entering conditions in the **Policy Conditions** section, click **Save**.

Related Topics

[“Overview of Security Configuration” on page 19-2](#)

Monitoring

This section includes the following topics:

- [Overview of Monitoring](#)
- [Viewing the Dashboard Statistics](#)
- [Listing and Locating Services](#)
- [Configuring Monitoring for Specific Services](#)
- [Setting the Aggregation Interval for a Service](#)
- [Viewing Service Monitoring Details](#)
- [Listing and Locating Servers](#)
- [Customizing Your View of the Server Summary](#)
- [Viewing a Chart of Servers](#)
- [Viewing Server Details](#)
- [Viewing Server Log Files](#)
- [Viewing Details of Server Log Files](#)
- [Listing and Locating Alerts](#)
- [Viewing a Chart of Alerts](#)
- [Customizing Your View of Alerts](#)

- [Viewing Alert Details](#)
- [Creating an Alert Rule](#)
- [Viewing and Changing Alert Rule Details](#)
- [Listing and Locating Alert Rules](#)
- [Viewing and Changing Alert Rule Details](#)
- [Deleting an Alert Rule](#)

Overview of Monitoring

When you create a business or proxy service, monitoring is disabled by default for that service. To explicitly enable monitoring for the service, set an aggregation interval over which statistics are computed and define alert rules for that service, you must use the **Monitoring Configuration** page. You can access this page from the **Resource Browser** or **Project Explorer** module. In the **Actions** column for the service, click the **Manage Monitoring** icon. To learn more, see [“Listing and Locating Alert Rules” on page 20-41](#).

Note: The aggregation interval is the period over which aggregated statistics are computed for display in the console. The aggregation interval set from the **Monitoring Configuration** page has no effect on when alert rules are triggered. Each alert rule allows you to specify the aggregation interval for that rule when configuring the alert rule.

Note: When you are in a session, the **Enable Monitoring** option on the **Global Settings** page of the **System Administration** module enables you to enable or disable monitoring of all services that have individually been enabled for monitoring. To learn more, see [“Enabling Monitoring” on page 22-3](#).

The following table lists the pages you can access from the **Monitoring** module. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Dashboard	View Dashboard statistics	Viewing the Dashboard Statistics
Service Monitoring Summary	View a summary of services	Listing and Locating Services

Page	Associated Tasks	Help Topics
Service Monitoring Details - [service name]	View details of a specific service	Viewing Service Monitoring Details
Server Summary	View a summary of servers	Listing and Locating Servers
	Customize your view of the server summary	
Server Details	View details of a specific server	Viewing Server Details
Customized System Alert History	View a summary of alerts	Listing and Locating Alerts
	Search for alerts	
System Alert Details	View alert details	Viewing Alert Details
Monitoring Configuration - [service name]	Configure monitoring for specific services	Configuring Monitoring for Specific Services
	List and locate alert rules	Listing and Locating Alert Rules

Alerts

BEA AquaLogic Service Bus implements Service Level Agreements (SLAs) and automated responses to SLA violations by enabling you to define rules that specify unacceptable service performance and the system response you require under those circumstances. You can construct rules that AquaLogic Service Bus evaluates against its aggregated metrics each time it updates that data. When a rule evaluates to `true`, it raises an alert. Rules can be configured to generate an Alert Log that is displayed on the Dashboard. In addition, AquaLogic Service Bus executes the action you specified for the rule when it evaluates to `true`. You can assign any of the following types of actions to a rule:

- Send email notification
- Send a JMS message

To learn about creating alert rules, see [“Creating an Alert Rule” on page 20-33](#).

Note: When an alert is fired in your configuration, an entry is made to your domain log, which resides at the following location:

```
BEA_HOME\servers\server_name\logs\domain_name.log
```

Where *domain_name* represents the name you assigned your AquaLogic Service Bus domain when you created it.

The message is logged as an alert and has this message ID: BEA-394015

The message body is a string that consists of the following elements:

- Alert Rule ID
- Alert Rule Name
- Severity
- Timestamp
- Name of the service associated with the alert

Viewing the Dashboard Statistics

The **Dashboard** page enables you to view service monitoring, server, and alerts information. When you create a business or proxy service, monitoring is disabled by default for that service. To explicitly enable monitoring for the service and set an aggregation interval over which statistics are computed for that service, you must visit the **Monitoring Configuration** page. You can access this page from the **Resource Browser** or **Project Explorer** module. In the **Actions** column for the service, click the **Manage Monitoring** icon. To learn more, see [“Listing and Locating Alert Rules” on page 20-41](#).

At run time, the default refresh rate for this page is one minute. However, depending on the timing of the alert rule, it may take up to three minutes for the information to refresh. To learn more, see “Refresh Rate of Monitored Information” in [Monitoring](#) in the *BEA AquaLogic Service Bus User Guide*.

This page includes the following information:

Property	Description
Service Summary (30 mins)	<p>The Service Summary panel includes the following attributes:</p> <ul style="list-style-type: none"> • A pie chart of the services with alerts over the past 30 minutes, which is the default interval. This information is gathered from the alert log. You can click the area in the chart corresponding to the alert severity to display more details. • The percentage of services that have normal, warning, minor, major, critical, and fatal alerts. • A list of the services with the most alerts in the current aggregation interval. Each service name is a link to the service monitoring details. To learn more, see “Viewing Service Monitoring Details” on page 20-13. • A link to the Service Monitoring Summary page. To display the list of services, click View Service Monitoring Summary. To learn more, see “Listing and Locating Services” on page 20-7. <p>Note: To display service summary information only on this page, you can click the Maximize icon in the right-hand corner of the Service Summary panel.</p>
Server Summary	<p>The Server Summary panel includes the following attributes:</p> <ul style="list-style-type: none"> • A pie chart of the servers that have monitoring enabled. You can click the area in the chart that corresponds to the server to display more details. • A list of the most critical servers. Each server name is a link to the server details. To learn more, see “Listing and Locating Servers” on page 20-20. • A link to the Server Summary page. To display the list of servers, click View Server Summary List. To learn more, see “Listing and Locating Servers” on page 20-20. • A link to the Server Summary Log. To display the log, click View Log Summary. To learn more, see “Viewing Server Log Files” on page 20-24. <p>Note: To display server summary information only on this page, you can click the Maximize icon in the right-hand corner of the Server Summary panel.</p>

Property	Description
Alert Summary (30 mins)	<p>The Alert Summary panel includes the following attributes:</p> <ul style="list-style-type: none">• A link that enables you to customize the table of alerts on this page. To display the list of options, click Customize table. To learn more, see “To Customize the Alert Summary Table” on page 20-6.• A link to the Customized System Alert History page. To display the list of alerts, click View Alert Summary List. To learn more, see “Listing and Locating Alerts” on page 20-27.• Fields that display alert information depending on your customized settings for the alert table. For example, alert severity, timestamp, alert name, and the names of the service and project associated with the alert. To learn more about these fields, see “Listing and Locating Alerts” on page 20-27.• The Alert Summary displays alerts for the past 30 minutes only. This is a sliding window. Any alerts older than 30 minutes are not available on the Dashboard page. The number of alerts on the page match the pie chart that displays on the Service Summary panel, which displays the breakdown of the number of alerts over the past 30 minutes. <p>Note: To display alert summary information only on this page, you can click the Maximize icon in the right-hand corner of the Alert Summary panel.</p> <p>Note: To learn more about alerts, see “Alerts” on page 20-3.</p>

To Customize the Alert Summary Table

1. Click **Customize table**. Additional fields are displayed.

Note: You can click **Close table customizer** at any time to close this table and retain the original settings.
2. In the **Columns Display** 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.

Note: In the **Chosen** field, you can use the Up and Down arrows to reorder the column names as required.
3. Do one of the following:

- To save these settings, click **Apply**.
- To discard your changes and retain the original settings, click **Reset**.

Related Topics

- “Overview of Monitoring” on page 20-2
- “Setting the Dashboard Polling Interval Refresh Rate” on page 22-11
- “Viewing Service Monitoring Details” on page 20-13
- “Viewing Server Details” on page 20-23
- “Viewing Alert Details” on page 20-32
- “Creating an Alert Rule” on page 20-33
- “Configuring Monitoring for Specific Services” on page 20-10
- “Listing and Locating Alert Rules” on page 20-41
- “Viewing and Changing Alert Rule Details” on page 20-43

Listing and Locating Services

The **Service Monitoring Summary** page displays the list of services that have monitoring enabled. To learn how to enable monitoring for a service, see “[Configuring Monitoring for Specific Services](#)” on page 20-10.

To List and Locate Services that have Monitoring Enabled

1. From the left navigation pane, select **Monitoring**. The **Dashboard** page is displayed.
2. In the Service Summary panel, click **View Service Monitoring Summary**. The **Service Monitoring Summary** page is displayed, which displays statistics for each service.
3. In the **Show Metrics For** 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**. Current Aggregation Interval displays a moving statistic view of the service metrics
 - To display monitoring statistics for the period since you last clicked **Reset All Statistics** on the **Global Settings** page to reset statistics for all services, select **Since Last Reset**. Since Last Reset displays a running count of the metrics.

The following information is displayed for each service:

Property	Description
Name	The name assigned to the service. The name is a link to Service Monitoring Details page. To learn more, see “Viewing Service Monitoring Details” on page 20-13 .
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
Aggregation Interval	The current aggregation interval set for monitoring this service, in terms of hours and minutes. You set this interval on the Monitoring Configuration page. To learn more, see “Setting the Aggregation Interval for a Service” on page 20-12 . This field is displayed only when you have selected Current Aggregation Interval in the Show Metrics For field.
Avg. Exec Time	The average execution time (in msec) for this service for the period of the current aggregation interval or for the period since the last reset.
Message Count	The number of messages associated with this service for the period of the current aggregation interval or for the period since the last reset.
Error Count	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.
Alert Count	The number of alerts associated with this service for the period of the current aggregation interval or for the period since the last reset.
Action	In this column, you can click the Reset Statistics 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 the last time you clicked the Reset Statistics icon or the last time you clicked Reset All Statistics on the Global Settings page. However, the system does not delete the statistics being collected during the Current Aggregation Interval for the service. Additionally, after you click the Reset Statistics icon, the system immediately starts collecting monitoring statistics for the service again. This field is displayed only when you have selected Since Last Reset in the Show Metrics For field.

4. To locate a specific service, do one of the following:

- Filter by service name. In the **Name** field, enter the name of the search target, then click **Search**. The services matching the search criteria are displayed.

Note: 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. All the services that reside in that path are displayed.

Note: 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 services with alerts. Select the **Has Alerts** option, then click **Search**. The services matching the search criteria are displayed.
- Filter by services with errors. Select the **Has Errors** option, then click **Search**. The services matching the search criteria are displayed.
- Filter by proxy service. Select the **Invoked by Proxy** option, enter the name and path of a proxy service in the field provided, then click **Search**. The business services invoked by the proxy service you specified are displayed.
- Resort the list. Ascending and descending arrow buttons indicate sortable columns. Click the button to change the sort order.
- Scroll through the pages. Use the controls in the lower right corner. 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.

This page also enables you to do the following:

- To remove the search filter and display all services, click **View All**.
- To update this page with the latest information, click **Refresh**.

Note: When you click **Refresh**, the **Service Monitoring Summary** page is refreshed with statistics for all services. Any search criteria you have selected for this page are removed; therefore you need to apply the search criteria again. As an alternative to **Refresh**, you can click **Search** every few minutes to maintain your search criteria.

Clicking **Refresh** is preferable only when you do not have any search criteria selected for this page.

- To return to the **Dashboard** page, click **Back**. To learn more, see [“Viewing the Dashboard Statistics” on page 20-4](#).

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing Service Monitoring Details” on page 20-13](#)

Configuring Monitoring for Specific Services

The **Monitoring Configuration - [service name]** page enables you to enable and disable monitoring for specific services.

To Configure Monitoring for a Specific Service

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Business Services** or **Proxy Services** from under **Resource Browser**. Depending on what you select, the **Summary of Business Services** or **Summary of Proxy Services** page is displayed.
3. In the **Actions** column, select the **Manage Monitoring** icon for a specific service. The **Monitoring Configuration - [service name]** page is displayed for the service.
4. Do one of the following:
 - To disable a service that is currently enabled, clear the **Enable Service** checkbox, then click **Update**. When you activate the session, the system deletes all monitoring statistics previously collected for the service. The system also stops evaluating any alert rules configured for the service; therefore, you no longer receive alerts associated with the service.
 - To disable monitoring for the service that is currently enabled, clear the **Enable Monitoring** checkbox, then click **Update**. When you activate the session, the system stops collecting monitoring statistics for the service, and deletes any statistics collected previously.
 - To enable a service that is currently disabled, select the **Enable Service** checkbox, then click **Update**. When you activate the session, the system starts evaluating any alert

rules configured for the service; therefore, you may start to receive alerts associated with the service.

- To enable monitoring for the service that is currently disabled, select the **Enable Monitoring** checkbox, then click **Update**. When you activate the session, the system starts collecting monitoring statistics for the service. You must also select an aggregation interval for the service when you select the **Enable Monitoring** checkbox.
- To select an aggregation interval for the service, make sure the **Enable Monitoring** checkbox is selected, select the interval in terms of hours or minutes, then click **Update**. If your selection for hours exceeds 0, then the default selection for minutes is always zero. However, if your selection for hours is 0, then you can configure intervals in terms of minutes. To learn more, see [“Setting the Aggregation Interval for a Service” on page 20-12](#).

Note: The updates are saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

The **Monitoring Configuration - [service name]** page also enables you to do the following:

To...	Do This...
List and locate alert rules	See “Listing and Locating Alert Rules” on page 20-41 .
Add a new alert rule	Click Add New . To learn more, see “Creating an Alert Rule” on page 20-33 .

Note: Suppose a proxy service **ProxyService1** currently exists in your configuration that has monitoring enabled and an alert rule **AlertRule1** configured. The Aggregation Interval for this proxy service is set to 10 minutes. You import a configuration JAR file that includes the same proxy service **ProxyService1**, which does not have monitoring enabled and does not have alert rules associated with it. After the import, monitoring is disabled and the Aggregation Interval is set to zero. However, the Summary of Alerts list still contains **AlertRule1**. Therefore, you must enable monitoring again and reset the aggregation interval for **ProxyService1**, but you do not need to recreate the alert rules associated with this proxy service.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Alerts” on page 20-27](#)

[“Viewing a Chart of Alerts” on page 20-30](#)

[“Customizing Your View of Alerts” on page 20-30](#)

[“Viewing Alert Details” on page 20-32](#)

Setting the Aggregation Interval for a Service

The **Monitoring Configuration - [Service Name]** page enables you to set the aggregation interval for a specific service.

Warning: If you change the aggregation interval for a service, for example from 20 minutes to 30 minutes, the statistical information collected so far for all the services and alerts associated with that service is deleted. The Service Monitoring Summary page shows all statistics as zero. The system starts to collect statistics again from zero.

To Set the Aggregation Interval for a Service

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Proxy Services** or **Business Services** from under **Resource Browser**.
3. In the **Actions** column, click the **Manage Monitoring** icon for the proxy service or business service for which you want to set the aggregation interval. The **Monitoring Configuration - [Service Name]** page is displayed.
4. Make sure the **Enable Service** checkbox is selected.
5. Select the **Enable Monitoring** checkbox to enable monitoring for the service.
6. In the **Select Aggregation Interval for the service** field, select the length of the aggregation interval in terms of hours and minutes, then click **Update**. If your selection for hours exceeds 0, then the default selection for minutes is always zero. However, if your selection for hours is 0, then you can configure intervals in terms of minutes.

Note: The updates are saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time.

Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Services” on page 20-7](#)

[“Configuring Monitoring for Specific Services” on page 20-10](#)

[“Setting the Dashboard Polling Interval Refresh Rate” on page 22-11](#)

[“Listing and Locating Alerts” on page 20-27](#)

[“Creating an Alert Rule” on page 20-33](#)

[“Listing and Locating Alert Rules” on page 20-41](#)

Viewing Service Monitoring Details

The **Service Monitoring Details** page enables you to view monitoring details of a specific service.

To View Monitoring Details of a Service

1. Locate the service in the **Monitoring** module. To learn more, see [“Listing and Locating Services” on page 20-7](#).
2. Click the name of the service.
3. In the **Show Metrics For** field, do one of the following:
 - To display monitoring statistics for the service for the period of the current aggregation interval, select **Current Aggregation Interval**. Current Aggregation Interval displays a moving statistic view of the service metrics.
 - To display monitoring statistics for this service for the period since you last clicked the **Reset Statistics** icon or since you last clicked **Reset All Statistics** on the **Global Settings** page to reset statistics for all services, select **Since Last Reset**. Since Last Reset displays a running count of the metrics.

If you select **Current Aggregation Interval**, the **Service Monitoring Details** page displays the following information:

Property	Description
Alert Status	The alert status for this service as of the current time and date. For example, it may display the following status: Normal at 11:57:32 AM November 16, 2005
Aggregation Interval	The current aggregation interval set for monitoring this service, in terms of hours and minutes. You set this interval on the Monitoring Configuration page. To learn more, see “Setting the Aggregation Interval for a Service” on page 20-12.
Alerts for Last Aggregation Interval	The total number of alerts associated with this service within the last aggregation interval.
Alert History	This is a link to the Customized System Alert History page, which displays the total number of alerts in the system since the last time you reset statistics. To learn more, see “Listing and Locating Alerts” on page 20-27.
Location Path	The location of this service; that is, the project and folder where it resides in your configuration.
Display Metrics For	Select a server from the drop-down list to display metrics for that server. Note: For a single node, only one item displayed in this drop-down list. If a cluster exists, then more items are displayed.
If you select Since Last Reset , the Service Monitoring Details page displays the following information:	

Property	Description
Alerts since last reset	The total number of alerts associated with this service since you last clicked the Reset Statistics icon for the service or since you last clicked Reset All Statistics on the Global Settings page to reset statistics for all services.
Alert History	This is a link to the Customized System Alert History page, which displays the total number of alerts in the system since the last time you reset statistics. To learn more, see “Listing and Locating Alerts” on page 20-27.

Property	Description
Location Path	The location of this service; that is, the project and folder where it resides in your configuration.
Display Metrics For	Select a server from the drop-down list to display metrics for that server. Note: For a single node, only one item displayed in this drop-down list. If a cluster exists, then more items are displayed.

The page displays the following **Operations** information:

Note: If there are multiple pages of statistics for operations, you can scroll through the pages by using the arrow button controls in the lower right corner. You can also 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.

Property	Description
Operations	The operations associated with this service
Message Count	If you have selected Current Aggregation Interval in the Show Metrics For field, the total number of messages that this operation has executed within the period of the current aggregation interval. If you have selected Since Last Reset in the Show Metrics For field, the total number of messages that this operation has executed within the period since you last reset statistics.
Error Count	If you have selected Current Aggregation Interval in the Show Metrics For field, the number of messages with errors that this operation has executed within the period of the current aggregation interval. If you have selected Since Last Reset in the Show Metrics For field, the number of messages with errors that this operation has executed within the period since you last reset statistics.
Min Resp. Time	If you have selected Current Aggregation Interval in the Show Metrics For field, the minimum response time this operation has taken to execute messages within the period of the current aggregation interval. If you have selected Since Last Reset in the Show Metrics For field, the minimum response time this operation has taken to execute messages within the period since you last reset statistics.

Property	Description
Max Resp Time	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For field, the maximum response time this operation has taken to execute messages within the period since you last reset statistics.</p>
Avg. Exec Time	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For field, the overall average time this operation has taken to execute messages within the period since you last reset statistics.</p>

The page displays the following **Performance** information:

Property	Description
Min Response Time	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For 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 Show Metrics For 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 Show Metrics For field, the maximum response time this service has taken to execute messages within the period since you last reset statistics.</p>

Property	Description
Overall Avg. Execution Time (msecs)	<p>If you have selected Current Aggregation Interval in the Show Metrics For field, the overall average 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 Show Metrics For field, the overall average time this service has taken to execute messages within the period since you last reset statistics.</p>
Total Number of Messages	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For field, the total number of messages that this service has executed within the period since you last reset statistics.</p>
Messages With Errors	<p>If you have selected Current Aggregation Interval in the Show Metrics For field, the number of messages with 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 Show Metrics For field, the number of messages with errors that this service has executed within the period since you last reset statistics.</p>
Failover Count	<p>For business services only:</p> <p>If you have selected Current Aggregation Interval in the Show Metrics For field, the number of failover 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 Show Metrics For field, the number of failover messages that this service has executed within the period since you last reset statistics.</p>
Success Ratio (%)	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For 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>

Property	Description
Failure Ratio (%)	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For 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>
Number of WS Security Errors	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For field, the number of messages with WS security errors that this service has executed within the period since you last reset statistics.</p>
Number of 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 Show Metrics For 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 Show Metrics For field, the number of messages with validation errors that this service has executed within the period since you last reset statistics.</p>

If this is a proxy service that has pipelines, the page displays the following **Flow Components** information:

Note: If there are multiple pages of statistics for flow components, you can scroll through the pages by using the arrow button controls in the lower right corner. You can also 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.

Property	Description
Component Name	The name of the component.
Message Count	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For field, the total number of messages that this component has executed within the period since you last reset statistics.</p>
Error Count	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For field, the number of messages with errors that this component has executed within the period since you last reset statistics.</p>
Avg. Execution Time (msecs)	<p>If you have selected Current Aggregation Interval in the Show Metrics For 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 Show Metrics For field, the overall average time this component has taken to execute messages within the period since you last reset statistics.</p>

- To return to the **Service Monitoring Summary** page, click **Back**. To learn more, see [“Listing and Locating Services” on page 20-7](#).

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Configuring Monitoring for Specific Services” on page 20-10](#)

Listing and Locating Servers

The **Server Summary** page displays information for each server, depending on the filter settings you have specified. To learn more, see [“Customizing Your View of the Server Summary” on page 20-21](#).

To List and Locate Servers

1. From the left navigation pane, select **Dashboard** from under **Monitoring**. The **Dashboard** page is displayed.
2. In the Server Summary panel, select the pie chart or click **View Server Summary List**. The **Server Summary** page is displayed. These are the fields that the page can display. For a more detailed description of each server, see [“Viewing Server Details” on page 20-23](#).

Property	Description
Status	The status of the server: <ul style="list-style-type: none">• Fatal—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 Runtime MBean for more details.• Warning—the server could have problems in the future. Check the server logs and the corresponding RuntimeMBean for more details.• OK—the server is functioning without any problems• Overloaded—the server has more work assigned to it than the configured threshold; it might refuse more work.
Server	The name of the server. The name is a link to the View Server Details page. To learn more, see “Viewing Server Details” on page 20-23 .
Cluster Name	The name of the cluster associated with this server.
Machine Name	The name of the machine associated with this server.
State	The state of the server: <ul style="list-style-type: none">• RUNNING• FAILED• SHUTDOWN
Uptime	The length of time this server has been running.

3. To locate a specific server, do one of the following:
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.

The **Server Summary** page also enables you to do the following:

- To display the list of servers in a pie chart or bar chart, click **View as Graph**. To learn more, see [“Viewing a Chart of Servers” on page 20-23](#).
- To customize your view of the server information, click **Customize table**. To learn more, see [“Customizing Your View of the Server Summary” on page 20-21](#).
- To update the page with the latest information, click **Refresh**.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

Customizing Your View of the Server Summary

The **Server Summary** page enables you to customize the display of information for each server. For a description of each field, see [“Listing and Locating Servers” on page 20-20](#).

To Customize Your View of the Server Summary

1. From the left navigation pane, select **Dashboard** from under **Monitoring**. The **Dashboard** page is displayed.
2. In the Server Summary panel, select the pie chart or click **View Server Summary List**. The **Server Summary** page is displayed.
3. On the **Server Summary** page, click **Customize table**. Additional fields are displayed.

Note: You can click **Close table customizer** at any time to close this table and retain the original settings.
4. In the **Server Summary Table Filter** fields, do the following:

- a. Select the **Severity** checkbox to include severity in the filter criteria, then select the alert severity: **All**, **Critical**, **Fatal**, **Overloaded**, **OK** or **Warning**.
 - b. Select the **Server** checkbox to include server names in the filter criteria, then select **All** or select a specific server name.
 - c. Select the **Cluster Name** checkbox to include cluster names in the filter criteria, then select **All** or select a specific cluster name.
 - d. Select the **Machine Name** checkbox to include machine names in the filter criteria, then select **All** or select a machine name.
 - e. Select the **State** checkbox to include server states in the filter criteria, then select a server state: **All**, **RUNNING**, **FAILED**, or **SHUTDOWN**.
5. In the **Columns Display** field, select the names of 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.
- Note:** In the **Chosen** field, you can use the Up and Down arrows to reorder the column names as required.
6. In the **Number of rows displayed per page**, select the number of rows you want to display on a single page. You can select **10**, **20**, or **30**.
7. In the **Maximum Results Returned** field, select the maximum number of results you want to display in total. You can select **10**, **20**, or **30**.
8. Do one of the following:
- To save the new settings, click **Apply**.
 - To discard your changes and retain the original settings, click **Reset**.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Servers” on page 20-20](#)

[“Viewing a Chart of Servers” on page 20-23](#)

[“Viewing Server Details” on page 20-23](#)

Viewing a Chart of Servers

The **Server Summary** page enables you to view a pie chart and bar chart of server data. A pie chart is displayed by default.

This page enables you to do the following:

- To display an updated version of the data, click **Refresh chart information**.
- To display the data in tabular format, click **View data as table**. To learn more, see [“Listing and Locating Servers” on page 20-20](#).
- To display the same data in a bar chart, click **View as bar chart**.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Customizing Your View of the Server Summary” on page 20-21](#)

[“Viewing Server Details” on page 20-23](#)

Viewing Server Details

The **View Server Details** page provides general run-time information about the current server.

The objects displayed on the Server Details 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://edocs.bea.com/wls/docs91/ConsoleHelp/index.html>

- Access the online help system from the AquaLogic Service Bus Console when the server is running. In this case, the WebLogic Server Administration Console *Online Help* is available at the following URL:

<http://host:port/console-help/doc/en-us/com/bea/wlserver/core/index.html>

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 host and port configuration, enter the following URL in your browser:

```
http://localhost:7001/console-help/doc/en-us/com/bea/wlserver/core/index.html
```

The top level of the *BEA* WebLogic Server Administration Console *Online Help* is displayed.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Servers” on page 20-20](#)

[“Customizing Your View of the Server Summary” on page 20-21](#)

[“Viewing a Chart of Servers” on page 20-23](#)

Viewing Server Log Files

The **Server Log Summary** page enables you to view a summary of domain log file entries.

To View Domain Log File Entries

1. From the left navigation pane, select **Dashboard** from under **Monitoring**. The **Dashboard** page is displayed.
2. In the Server Summary panel, click **View Log Summary**. A table is displayed, which displays the number of messages currently raised by the system. The server message information is grouped according to its severity: **Alert**, **Critical**, **Emergency**, **Error**, **Info**, **Notice**, and **Warning**.
3. To display domain log file entries for a specific type of alert, click the link that displays the number of messages for a given severity. The **Server Log Summary** page is displayed.

This page displays the latest domain log file entries. It displays the following information for each entry:

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

Note: To display details of a specific log file, select the radio button for the appropriate entry, then click **View**. To learn more, see [“Viewing Details of Server Log Files” on page 20-25](#).

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Viewing Service Monitoring Details” on page 20-13](#)

Viewing Details of Server Log Files

The **Server Log Details** page enables you to view details of a domain log file entry.

To View Details of a Domain Log Entry

1. From the left navigation pane, select **Dashboard** from under **Monitoring**. The **Dashboard** page is displayed.
2. In the Server Summary panel, click **View Log Summary**. A table is displayed, which displays the number of messages currently raised by the system. The server message information is grouped according to its severity: **Alert**, **Critical**, **Emergency**, **Error**, **Info**, **Notice**, and **Warning**.
3. To display domain log file entries for a specific type of alert, click the appropriate link. The **Server Log Summary** page is displayed.

4. Select the radio button associated with the log entry you want to view, then click **View**. The **Server Log Details** page is displayed, which includes the following information:

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.
Severity	Indicates the degree of impact or seriousness of the event reported by the message: 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.

Property	Description
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.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Viewing Service Monitoring Details” on page 20-13](#)

[“Viewing Server Log Files” on page 20-24](#)

Listing and Locating Alerts

The **Customized System Alert History** page enables you to view a summary of system alerts. To learn more about alerts, see [“Alerts” on page 20-3](#).

About Alerts and the Domain Log

When an alert is fired in your configuration, a message is sent to your domain log, which resides at the following location:

```
BEA_HOME\servers\server_name\logs\domain_name.log
```

Where *domain_name* represents the name you assigned your AquaLogic Service Bus domain when you created it.

The message is logged as an alert and has this message ID: BEA-394015.

The message body is a string that consists of the following elements:

- Alert Rule ID
- Alert Rule Name
- Severity
- Timestamp
- Name of the service associated with the alert

To List and Locate Alerts

1. From the left navigation pane, select **Dashboard** from under **Monitoring**.
2. In the Alert Summary panel, click **View Alert Summary List**. The **Customized System Alert History** page is displayed. At the top of the page, a table displays the number of alerts currently raised by the system. The alerts are grouped according to their severity:

Property	Description ¹
Fatal	The number of fatal alerts
Critical	The number of critical alerts
Major	The number of major alerts
Minor	The number of minor alerts
Warning	The number of warning alerts
Normal	The number of normal alerts

1. For each alert type, you can click the number to display more details.

The page also displays fields that display alert information depending on your customized settings for the alert table. For example, the page can display the alert, alert name, timestamp, and the name of the service or project associated with the alert:

Property	Description
Alert Severity	<p>The severity of the alert. This is a link to the System Alert Details page. To learn more, see “Viewing Alert Details” on page 20-32:</p> <ul style="list-style-type: none"> • Fatal • Critical • Major • Minor • Warning • Normal
Alert Rule Name	<p>The name assigned to the alert. The name is a link to the Alert Rule Details page. To learn more, see “Viewing and Changing Alert Rule Details” on page 20-43.</p>
Timestamp	<p>The date and time that the alert occurred.</p>
Service/Project Name	<p>The name of the service or project associated with the alert. The name is a link to the Service Monitoring Details page. To learn more, see “Viewing Service Monitoring Details” on page 20-13.</p>

3. To locate a specific alert, do one of the following:

- Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Alert Severity** and **Timestamp** columns. Click the button to change the sort order.
- Scroll through the pages. Use the controls in the lower right corner. 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.

This page also enables you to do the following:

- To display the list of alerts in a pie chart or bar chart, click **View Graph**. To learn more, see [“Viewing a Chart of Alerts” on page 20-30](#).
- To customize the display of information for each alert, click **Customize table**. To learn more, see [“Customizing Your View of Alerts” on page 20-30](#).
- To update the page with the latest information, click **Refresh**.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

Viewing a Chart of Alerts

The **Customized System Alert History** page provides a link (**View as Graph**) that allows you to view a pie chart and a bar chart of system alerts for the previous designated time. The pie chart is displayed by default. To learn more about alerts, see [“Alerts” on page 20-3](#).

This page enables you to do the following:

- To display an updated version of the data, click **Refresh chart information**.
- To display the data in a tabular format, click **View data as table**.
- To display the same data in a bar chart, click **View as bar chart**.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Alerts” on page 20-27](#)

[“Customizing Your View of Alerts” on page 20-30](#)

[“Viewing Alert Details” on page 20-32](#)

Customizing Your View of Alerts

The **Customized System Alert History** page enables you to customize the display of information for each alert. For a description of each field, see [“Listing and Locating Alerts” on page 20-27](#). To learn more about alerts, see [“Alerts” on page 20-3](#).

To Customize Your View of the Alerts Summary

1. From the left navigation pane, select **Dashboard** from under **Monitoring**. The Dashboard page is displayed.
2. In the Alert Summary panel, click **View Alert Summary List**. The **Customized System Alert History** page is displayed.
3. Click **Customize table**. Additional fields are displayed.

Note: You can click **Close table customizer** at any time to close this table and retain the original settings.

4. In the **System Alerts Table Filter** fields, do the following:
 - a. In the **Time** field, select the appropriate radio button, then select the number of days, hours, and minutes from which you want to view alerts. Alternatively, you can select a different radio button, then select the specific month, date, year, hour, and minute from which you want to view alerts.
 - b. Select the **Severity** checkbox to include severity in the filter criteria, then select the alert severity: **All**, **Critical**, **Fatal**, **Major**, **Minor**, **Warning**, or **Normal**.
 - c. Select the **Service** checkbox to include services in the filter criteria, then select a service name. The default is **All**.
 - d. Select the **Alert Rule Name** checkbox to include alert rule names in the filter criteria, then select an alert rule name. The default is **All**.
5. In the **Columns Display** 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.

Note: In the **Chosen** field, you can use the Up and Down arrows to reorder the column names as required.
6. In the **Number of rows displayed per page** field, select the number of alerts you want to display on a single page.
7. In the **Maximum Results Returned** field, select the maximum number of alerts you want to display in total or select **Show All** to display all of them.
8. Do one of the following:
 - To save the new settings, click **Apply**.
 - To discard your changes and retain the original settings, click **Reset**.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Alerts” on page 20-27](#)

[“Viewing a Chart of Alerts” on page 20-30](#)

[“Viewing Alert Details” on page 20-32](#)

Viewing Alert Details

The **System Alert Details** page displays details of a specific alert. To learn more about alerts, see [“Alerts” on page 20-3](#). The page displays the following information:

Property	Description
Alert Name	The name assigned to the alert.
Description	A description of this alert.
Timestamp	The date and time the alert occurred.
Severity	The severity of the alert: <ul style="list-style-type: none">FatalCriticalMajorMinorWarningNormal
Alert Rule Name	The alert rule name. The name is a link to the View Alert Rule Details page. To learn more, see “Viewing and Changing Alert Rule Details” on page 20-43 .
Service	The name and path of the service associated with this alert. The field is a link to the Service Monitoring Details page. To learn more, see “Viewing Service Monitoring Details” on page 20-13 .
Annotation	Notes associated with this alert, if any exist.

This page enables you to do the following:

- To return to the **Dashboard** page, click **Cancel**. To learn more, see [“Viewing the Dashboard Statistics” on page 20-4](#).
- To add notes for this alert, enter notes in the **Annotation** field, then click **OK**.

- To delete this alert, click **Delete**.

Related Topics

- [“Overview of Monitoring” on page 20-2](#)
- [“Viewing the Dashboard Statistics” on page 20-4](#)
- [“Listing and Locating Alerts” on page 20-27](#)
- [“Viewing a Chart of Alerts” on page 20-30](#)
- [“Customizing Your View of Alerts” on page 20-30](#)

Creating an Alert Rule

The **New Alert Rule** pages enable you to create new alert rules. To learn more about alerts, see [“Alerts” on page 20-3](#).

To create an alert rule, you must first configure general information for the alert rule, then define conditions for the alert rule, and finally define alert rule actions. You can review the configuration before you create the new alert.

The tasks in this procedure include:

- [To Configure General Information for an Alert Rule](#)
- [To Define Alert Rule Conditions](#)
- [To Define Alert Rule Actions](#)
- [To Review Configuration](#)

To Configure General Information for an Alert Rule

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Proxy Services** or **Business Services** from under **Resource Browser**.
3. In the **Actions** column, click the **Manage Monitoring** icon for the proxy service or business service for which you want to create a new alert rule. The **Monitoring Configuration - [service name]** page is displayed.

4. Select the **Enable Monitoring** checkbox to enable monitoring for the service. Rules can only be created for services that are enabled for monitoring. To learn more, see [“Configuring Monitoring for Specific Services” on page 20-10](#).
5. In the **Select Aggregation Interval for the service** field, select the length of the aggregation interval in terms of hours and minutes, then click **Update**.
6. Click **Add New**. The **New Alert Rule - General Configuration [service name]** page is displayed.
7. In the **Rule Name** field, enter a name for the alert rule. This is a required field.
8. In the **Rule Description** field, enter a description for the alert rule.
9. In the **Start Time** field, enter a start time in the format HH:MM. For example, enter 09.00.
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 17.00.
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.
Note: 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 12.01am 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:

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>. Rules are executed once every aggregation interval, therefore you receive an alert for each aggregation interval that the 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 fired 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>
Once Until Conditions Clear	<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.</p> <p>Therefore, if you select this option, after an alert is fired the first time in an aggregation interval, it is not fired again in the same aggregation interval.</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`. This option enables you to stop evaluating subsequent rules when there are multiple rules associated with a particular service. Keep **No** as the default to continue processing rules.

Note: This option behaves like the **Stop Processing More Rules** option in the Rules Wizard in Microsoft Outlook.

16. Keep **Yes** as the default or select **No** for the **Include Log In Management Data Set** option. If you select **Yes**, when an alert is raised, a log of the alert is included in management data set. These alert logs are visible on the Dashboard in the Alert Summary table. If you select **No**, a log of the alert is not generated in the management data set.

17. Select **Yes** or keep **No** as the default for the **Include Log In Reporting Data Set** option. If you select Yes, when an alert is raised, a log of the alert is included in reporting data set. If you select No, a log of the alert is not included in this data set. Viewing the reporting data set requires developing a Reporting Provider to fetch and display these logs. To learn more, see [Reporting](#) in the *BEA AquaLogic Service Bus User Guide*.
18. Do one of the following:
 - To continue, click **Next**. The **New Alert Rule - Define Conditions [service name]** page is displayed.
 - To disregard changes, click **Cancel**.

To Define Alert Rule Conditions

The **New Alert Rule - Define Conditions [service name]** page is displayed when you click **Next** on the **New Alert Rule - General Configuration** page. This page enables you 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**, or **Average**.
- b. In the next drop-down field, select an operand.

Depending on whether you select **Count**, **Minimum**, **Maximum**, or **Average** 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. This operand allows you 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.

When you select **Count**, this field displays the following operands:

Property	Description
Success Ratio (%)	The ratio of messages successfully processed versus the number of errors encountered over the specified aggregation interval.
Failure Ratio (%)	The ratio of errors encountered versus the number of messages successfully processed over the specified aggregation interval.
Message count	The total number of messages processed.
Error count	The total number of erroneous messages processed. This counter is incremented when an error occurs in the transport or the message flow and is not handled by an error handler in the pipeline.
Failover count	The failover count.
Validation Error Count	The number of validation errors.
Order Processing Pipeline_request.Message Count	The number of messages processed by the request pipeline.
Order Processing Pipeline_request.Error Count	The number of erroneous messages processed by the request pipeline.
WSS Error Count	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 checkbox for each of the two expressions.

- d. Click **And** or **Or** to combine the expressions into a complex expression.

Note: The **Split** option is available after you combine multiple expressions. This option is used to split complex expressions back into separate simple expressions.

4. Do one of the following:
 - To return to the **General Configuration** page, click **Back**.
 - To continue, click **Next**. The **New Alert Rule - Define Actions [service name]** page is displayed. Continue in [“To Define Alert Rule Actions” on page 20-38](#).
 - To disregard changes, click **Cancel**.

To Define Alert Rule Actions

The **New Alert Rule - Define Actions [service name]** page is displayed when you click **Next** on the **New Alert Rule - Define Conditions** page. This page enables you to define actions for the alert rule.

1. In the **Add Action** field, select **Send an alert via email** or **Send an alert to a JMS destination**, then click **Add action**. If you selected **Send an alert via email**, the **New Alert Rule - Define Actions: Send an alert via email** page is displayed. If you selected **Send an alert to a JMS destination**, the **New Alert Rule - Define Actions: Send an alert to a JMS destination** page is displayed.
2. Based on the option you selected in the **Add action** field, do one of the following:

Action...	Complete These Steps...
Send an alert via email	<ol style="list-style-type: none"> 1. In the Mail URI field, enter a URI in the format <code>mailto:name@company.com</code>. This format is displayed in the tooltip for this field. 2. The value for the Subject field is generated by the system and displays the text Service Bus Alert followed by the name of the Alert Rule. This is a read only field. 3. In the Mail Server address field, enter an existing SMTP server in the format <code>host:port</code>. This is a required field if you do not select a JNDI name in the Mail Session field. 4. In the Service Account field, enter a service account. A service account is an alias resource for a User ID and its associated password. 5. In the Mail Session field, 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. This field is not available if there are no mail sessions available. Mail sessions are configured in the WebLogic Server. To learn more, see the WebLogic Server Administration Console Online Help. 6. In the From Name field, enter a display name for the originating email account for this service. 7. In the From Address field, enter the originating email account for this service. 8. In the Reply To Name field, enter a display name for the reply to email account. 9. In the Reply To Address field, enter an email address to reply to. 10. In the Connection timeout (in milliseconds) field, enter the length of time in milliseconds at which a connection times out if no connection is established with the email server. If you enter zero, this means infinite time. 11. In the Request encoding field, accept the default <code>iso-8859-1</code> as the character set encoding for requests in Email transports, or enter a different character set encoding.

Action...	Complete These Steps...
Send an alert to a JMS destination	<ol style="list-style-type: none">1. In the Destination URI field, enter a URI in the format <code>jms://host:port/factoryJndiName/destJndiName</code>. This format is displayed in the tooltip for this field.2. In the Destination Type field, select Queue or Topic. <p>Note: The Message Type field is a read-only field. The message type is always a Bytes Message.</p> <ol style="list-style-type: none">3. In the Request encoding field, accept the default <code>utf-8</code> as the char set encoding for requests in JMS transports, or enter a different char set encoding. <p>Note: You must use the WebLogic Server console to set up a JMS connection factory and queue, and target both the connection factory and queue to the appropriate JMS Server.</p>

3. To add the action, click **Add**.
4. Do one of the following:
 - To return to the **Define Conditions** page, click **Back**.
 - To continue, click **Next**. The **New Alert Rule - [service name]** page is displayed. Continue in [“To Review Configuration” on page 20-40](#).
 - To disregard changes, click **Cancel**.

To Review Configuration

The **New Alert Rule - [service name]** page is displayed when you click **Next** on the **Define Actions** page. This page enables you 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 one of the following:

- To make a change to one of the configuration pages, click **Edit** for the appropriate page.
- To return to the previous page, click **Back**.
- To create the alert, click **Save**. The alert rule is created.

The **Monitoring Configuration - [service name]** page is displayed. The new alert rule is included in the list of alert rules.
- To disregard changes, click **Cancel**.

- Note:** The new alert rule is saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.
- Note:** Suppose a proxy service **ProxyService1** currently exists in your configuration that has monitoring enabled and an alert rule **AlertRule1** configured. The Aggregation Interval for this proxy service is set to 10 minutes. You import a configuration JAR file that includes the same proxy service **ProxyService1**, which does not have monitoring enabled and does not have alert rules associated with it. After the import, monitoring is disabled and the Aggregation Interval is set to zero. However, the Summary of Alerts list still contains **AlertRule1**. Therefore, you must enable monitoring again and reset the aggregation interval for **ProxyService1**, but you do not need to recreate the alert rules associated with this proxy service.

Related Topics

- [“Overview of Monitoring” on page 20-2](#)
- [“Viewing the Dashboard Statistics” on page 20-4](#)
- [“Listing and Locating Alerts” on page 20-27](#)
- [“Viewing a Chart of Alerts” on page 20-30](#)
- [“Customizing Your View of Alerts” on page 20-30](#)
- [“Viewing Alert Details” on page 20-32](#)
- [“Configuring Monitoring for Specific Services” on page 20-10](#)

Listing and Locating Alert Rules

The **Monitoring Configuration - [service name]** page enables you to view a list of alert rules. To learn more about alerts, see [“Alerts” on page 20-3](#).

To List and Locate Alert Rules

1. From the left navigation pane, select **Business Services** or **Proxy Services** from under **Resource Browser**. Depending on what you select, the **Summary of Business Services** or **Summary of Proxy Services** page is displayed.

2. In the **Actions** column, select the **Manage Monitoring** icon for a specific service. The **Monitoring Configuration - [service name]** page is displayed for the service. The page displays the following information for each alert rule. To learn more about the properties, see [“Viewing and Changing Alert Rule Details” on page 20-43](#).

Property	Description
Alert Rule Name	The name assigned to this alert rule. The name is a link to the View Alert Details page. To learn more, see “Viewing and Changing Alert Rule Details” on page 20-43 .
Description	A description of the alert rule.
Expiration Date	The date when this alert rule is no longer in effect.
Status	The status of the alert rule: Enabled or Disabled
Stop Processing	Displays Yes or No
Frequency	The frequency of this alert: <ul style="list-style-type: none">• Every Time• Once Until Conditions Clear
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 Delete icon to delete a specific alert rule. To learn more, see “Deleting an Alert Rule” on page 20-45.

3. To locate a specific alert rule for this service, scroll through the pages. Use the controls in the lower right corner. 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.

The **Monitoring Configuration - [service name]** page also enables you to do the following:

- To configure monitoring for this service, see [“Configuring Monitoring for Specific Services” on page 20-10](#).
- To add a new alert rule, click **Add New**. To learn more, see [“Creating an Alert Rule” on page 20-33](#).

Related Topics

- [“Overview of Monitoring” on page 20-2](#)
- [“Viewing the Dashboard Statistics” on page 20-4](#)
- [“Listing and Locating Alerts” on page 20-27](#)
- [“Viewing a Chart of Alerts” on page 20-30](#)
- [“Customizing Your View of Alerts” on page 20-30](#)
- [“Viewing Alert Details” on page 20-32](#)

Viewing and Changing Alert Rule Details

The **View Alert Rule Details - [service name]** page enables you to view and edit details of a specific alert rule. To learn more about alerts, see [“Alerts” on page 20-3](#).

To View and Change Alert Rule Details

1. Locate the alert rule. To learn more, see [“Listing and Locating Alert Rules” on page 20-41](#).
2. Click the alert rule name.

The **View Alert Rule Details** page displays the following **General Configuration** information:

Property	Description
Rule Name	The name of the alert rule.
Rule Description	A description of the alert rule
Start Time (HH:MM)	The start time for this alert rule
End Time (HH:MM)	The end time for this alert rule
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

Property	Description
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 • Once Until Conditions Clear
Stop Processing More Rules	Whether or not the alert stops processing more rules.
Include Log In Management Data Set	Whether or not the log is included in the management data set.
Include Log In Reporting Data Set	Whether or not the log is included in the reporting data set.

The page displays the following **Conditions** information:

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.

The page displays the following **Action Parameters** information:

Property	Description
Send an alert via email	Displays the email URI if the action that occurs when this alert rule is broken is to send an alert via email.
Send an alert to a JMS destination	Displays the JMS destination URI if the action that occurs when this alert rule is broken is to send an alert to a JMS destination.

3. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
4. To make a change to the fields on the configuration pages, click **Edit** for the appropriate page. See [“Creating an Alert Rule” on page 20-33](#) for a description of the pages and fields.
5. Do one of the following:
 - To return to the previous page, click **Back**.
 - To update the alert rule, click **Finish**. The alert rule is updated.
The **Monitoring Configuration - [service name]** page is displayed.
 - To disregard changes and return to the **Monitoring Configuration - [service name]** page, click **Cancel**.

Note: The alert rule is updated in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Alerts” on page 20-27](#)

[“Viewing Alert Details” on page 20-32](#)

[“Configuring Monitoring for Specific Services” on page 20-10](#)

Deleting an Alert Rule

The **Monitoring Configuration - [service name]** page enables you to delete an alert rule. To learn more about alerts, see [“Alerts” on page 20-3](#).

To Delete an Alert Rule

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. For more information, see [“Using the Change Center” on page 2-3](#).

2. From the left navigation pane, select **Business Services** or **Proxy Services** from under **Resource Browser**. Depending on what you select, the **Summary of Business Services** or **Summary of Proxy Services** page is displayed.
3. In the **Actions** column, select the **Manage Monitoring** icon for a specific service. The **Monitoring Configuration - [service name]** page is displayed for the service.
4. In the **Options** field of the alert rule you want to delete, click the **Delete** icon.

The alert rule is removed from the list.

Note: The alert rule is deleted in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the core configuration is updated. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Overview of Monitoring” on page 20-2](#)

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Listing and Locating Alert Rules” on page 20-41](#)

[“Viewing and Changing Alert Rule Details” on page 20-43](#)

Reporting

This section includes the following topics:

- [Overview of Reporting](#)
- [Listing and Locating Messages](#)
- [Viewing Message Details](#)
- [Purging Messages](#)

Overview of Reporting

Before you can use the **Reporting** module, you must first create a proxy service in the **Project Explorer** module, then use the **Resource Browser** module to add a Report action to the message flow of that proxy service.

To learn more about Reporting, see [Reporting](#) in the *BEA AquaLogic Service Bus User Guide*.

The following table lists the pages you can access from the **Reporting** module. The tasks and help topics associated with each are provided:

Page	Associated Tasks	Help Topics
Summary of Messages	View a list of messages.	Listing and Locating Messages
	Filter the list of messages.	

Page	Associated Tasks	Help Topics
View Message Details	View details of a specific message	Viewing Message Details
Purge Messages	Delete messages	Purging Messages

Listing and Locating Messages

The **Summary of Messages** page enables you to view a list of reporting messages. The page displays up to 100 messages.

Note: Before you can use the **Reporting** module, you must first create a proxy service in the **Project Explorer** module, then use the **Project Explorer** or **Resource Browser** modules to add a Report action to the message flow of that proxy service.

To List and Locate Messages

1. From the left navigation pane, select **Reporting**. The **Summary of Messages** page is displayed, which displays the following information for each message. For a more detailed description of the properties, see [“Viewing Message Details” on page 21-4](#).

Property	Description
Report Index	<p>A link to the View Message Details page. To learn more, see “Viewing Message Details” on page 21-4.</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. To learn more, see “Adding an Action” on page 16-2.</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 Proxy Service Details page. To learn more, see “Viewing and Changing Proxy Services” on page 14-30 .
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. To learn more, see “Error Messages and Handling” on page 18-1 and “Adding Error Handling for the Proxy Service” on page 18-5.</p>

2. To locate specific messages, click **Filter**. Additional fields are displayed.
3. To set the filter parameters, do one or more of the following:

To...	Complete These Steps...
Filter by time parameters	<p>Set a time period:</p> <ol style="list-style-type: none"> 1. Click the Start Date and End Date radio button. 2. In the Start Date field, select a month, day, year, and time. 3. In the End Date field, select a month, day, year, and time. <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 select hours and minutes.
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.

Note: The service name, error code, and report index fields can use wildcard searches.

Note: You can click **Close Filter** at any time to remove the filter fields from the display.

4. Click **Search**. The page displays the messages that fall within the filter parameters you set. The maximum number of messages that can be displayed as a result of a filter is 1000.
5. Do one of the following:
 - To start a new filter, click **Reset**, then click **Filter**.
 - To remove the filter fields from view, click **Close Filter**.

Note: To locate a message, you can also do the following:

- Sort the list of messages. Ascending and descending arrow buttons indicate sortable columns. Click the button to change the sort order.
- Scroll through the pages. Use the controls in the lower right corner. 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.

Related Topics

[“Overview of Reporting” on page 21-1](#)

[“Report” on page 16-25](#)

[“Purging Messages” on page 21-7](#)

[Reporting](#) in the *BEA AquaLogic Service Bus User Guide*.

Viewing Message Details

The **View Message Details** page enables you to view details of a specific message.

To View Details of a Message

1. Locate the message. To learn more, see [“Listing and Locating Messages” on page 21-2](#).
2. Click the report index.

The **View Message Details** page displays the following **General Configuration** information:

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 following **Inbound Service** information:

Property	Description
Name	The inbound proxy service associated with this message. This is a link to the View Proxy Service Details page. To learn more, see “Viewing and Changing Proxy Services” on page 14-30 .
URI	The URI associated with the proxy service.
Operation	The inbound operation associated with this message.

The page displays the following **Outbound Service** information:

Property	Description
Name	The outbound business service associated with this message. This is a link to the View Business Service Details page. To learn more, see “Viewing and Changing Business Services” on page 13-23 .
URI	The URI to the outbound business service end point.
Operation	Name of the operation invoked on the outbound service.

The page displays the following **Report Index** information:

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. To learn more, see “Adding an Action” on page 16-2 .

The page displays the following **Fault** information:

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. To learn more, see “Error Messages and Handling” on page 18-1 and “Adding Error Handling for the Proxy Service” on page 18-5 .
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 following **Report Body** information:

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. To learn more, see the procedure for the Report action in “Adding an Action” on page 16-2 .

3. Click **OK** when you have finished viewing the details of a specific message.

Related Topics

- [“Overview of Reporting” on page 21-1](#)
- [“Listing and Locating Messages” on page 21-2](#)
- [“Purging Messages” on page 21-7](#)
- [Reporting](#) in the *BEA AquaLogic Service Bus User Guide*.

Purging Messages

The **Purge Messages** page enables you to purge selected messages from the reporting datastore.

Message purging occurs in the background so the **Summary of Messages** 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 **Summary of Messages** page may display incorrect data as some of the data hasn't been purged yet.

Note: The Purge Messages feature may be useful during design and test phases of your project. However, in a production environment, BEA recommends that the management of the data in your database (including purging) is handled by the Database Administrator using database management tools.

To learn more about purging, see [Reporting](#) in the *BEA AquaLogic Service Bus User Guide*.

To Purge Messages From the Reporting Datastore

1. From the left navigation pane, select **Purge Messages** from under **Reporting**.
2. Do one of the following:

To...	Complete These Steps...
Purge all messages	<ol style="list-style-type: none"> 1. Select the Purge All Messages radio button. 2. Click Submit.
Purge messages within a specified time frame	<ol style="list-style-type: none"> 1. Click the Purge From and Purge To radio button. 2. In the Purge From field, select a month, day, year, and time. 3. In the Purge To field, select a month, day, year, and time. 4. Click Submit.

Related Topics

[“Overview of Reporting” on page 21-1](#)

[“Listing and Locating Messages” on page 21-2](#)

[“Viewing Message Details” on page 21-4](#)

Reporting

System Administration

This section includes the following topics:

- [Overview of System Administration](#)
- [Enabling Monitoring](#)
- [Resetting Statistics for All Services](#)
- [Importing Configuration Data](#)
- [Exporting Configuration Data](#)
- [Displaying Runtime Tracing Status of Proxy Services](#)
- [Enabling Runtime Tracing Status of Proxy Services](#)
- [Setting the Dashboard Polling Interval Refresh Rate](#)
- [Configuring a UDDI Registry](#)
- [Importing a Business Service from a UDDI Registry](#)
- [Publishing a Proxy Service to a UDDI Registry](#)

Overview of System Administration

The following table lists the pages you can access from the **System Administration** module. The tasks and help topics associated with each are provided.

Page	Associated Tasks	Help Topics
Global Settings	Enable or disable global monitoring of all services	Enabling Monitoring
	Reset statistics for all services	Resetting Statistics for All Services
	Set the polling interval refresh rate for the Dashboard page	Setting the Dashboard Polling Interval Refresh Rate
Import Configuration Data	Import configuration data	Importing Configuration Data
Export Configuration Data	Export configuration data	Exporting Configuration Data
Runtime Tracing Status	Display runtime tracing status of proxy services	Displaying Runtime Tracing Status of Proxy Services
	Enable runtime tracing status of proxy services	Enabling Runtime Tracing Status of Proxy Services
UDDI Configuration	Configure a UDDI registry	Configuring a UDDI Registry
Import UDDI	Import a business service	Importing a Business Service from a UDDI Registry
Publish to UDDI	Publish a proxy service	Publishing a Proxy Service to a UDDI Registry

Enabling Monitoring

The **Global Settings** page enables you to turn on and off global monitoring of business and proxy services at the domain level. You can enable or disable monitoring for all services only when you are in a session.

To Enable Global Monitoring of Services

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Global Settings** from under **System Administration**.
3. Select the **Enable Monitoring** checkbox under **Monitoring Configuration** for the system to start collecting monitoring statistics for all services in your configuration.
4. Click **Save**. The monitoring configuration is updated in the current session.

Note: When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Note: When you enable global monitoring, the aggregator starts to collect monitoring statistics immediately. However, there may be a short delay (approximately a minute) before these statistics become available on the Service Monitoring Summary page. When statistics become available, the Service Monitoring Summary page displays the entire list of services that are being monitored and their latest statistics. To learn more, see “Refresh Rate of Monitored Information” in [Monitoring](#) in the *BEA AquaLogic Service Bus User Guide*.

To Disable 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 delete of the statistics is irreversible.

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Global Settings** from under **System Administration**.

3. Uncheck the **Enable Monitoring** checkbox under **Monitoring Configuration** for the system to stop collecting monitoring statistics for all services in your configuration.
4. Click **Save**. The monitoring configuration is updated in the current session.

Note: When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Note: This option overrides the **Enable Monitoring** option that you can select for specific business and proxy services. To learn more, see [“Configuring Monitoring for Specific Services” on page 20-10](#).

Related Topics

[“Resetting Statistics for All Services” on page 22-4](#)

[“Overview of System Administration” on page 22-2](#)

[“Importing Configuration Data” on page 22-5](#)

[“Exporting Configuration Data” on page 22-8](#)

[“Setting the Dashboard Polling Interval Refresh Rate” on page 22-11](#)

Resetting Statistics for All Services

The **Global Settings** page enables you to reset monitoring statistics for all services in your configuration. You can reset statistics whether or not you are in a session.

To Reset Statistics for All Services

1. From the left navigation pane, select **Global Settings** from under **System Administration**.
2. Click **Reset All Statistics** under **Statistics-Gathering**. When you confirm you want to reset statistics, the system deletes all monitoring statistics that were collected for all services in your configuration since the last time you clicked **Reset All Statistics**.

Note: The system does not delete the statistics being collected during the **Current Aggregation Interval** for any of the services. The length of the aggregation intervals may also be different for each service. Additionally, after you click **Reset All Statistics**, the system immediately starts collecting monitoring statistics for the services again.

Related Topics

[“Enabling Monitoring” on page 22-3](#)

[“Overview of System Administration” on page 22-2](#)

[“Importing Configuration Data” on page 22-5](#)

[“Exporting Configuration Data” on page 22-8](#)

[“Setting the Dashboard Polling Interval Refresh Rate” on page 22-11](#)

Importing Configuration Data

The **Import Configuration Data** page enables you to import objects that contain configuration data that has previously been exported from another AquaLogic Service Bus domain and exported as a JAR file. You first open the JAR file, and then work on the configuration data and customize it. You can choose to import only a subset of the exported data, or change values of certain configuration data.

Note: You cannot export users, groups, roles, credentials, certificates or access control policies when you export a configuration, as these objects are created through the WebLogic Server. Therefore, you must create these objects again when you import an exported configuration.

To Import Configuration Data

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Import Resources** from under **System Administration**. The **Import Configuration Data** page is displayed.
3. Select an exported configuration file:
 - a. In the **File Name** field, click **Browse** to locate the directory where the configuration JAR file is stored.
 - b. Select the configuration JAR file, then click **Open**.
4. Click **Next**. The following information is displayed:

Property	Description
Name	The name of the project.
Type	The resource type, which is Project.
References	The number of project references, if any exist.

5. Select the objects you want to import:

- a. To display each object contained in the configuration JAR file, expand the folder for the file. The checkbox associated with each object is selected. The following information is displayed for each object:

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	Any of the following resource types: <ul style="list-style-type: none"> • Business service • MFL File • Proxy service • Proxy service provider • XML schema • Service Account • WS-Policy • WSDL • XQuery Transformation • XSL Transformation
References	The number of resource references, if any exist. Click the link to view the references. To learn more, see “Viewing References” on page 3-24 .

- b. Uncheck the objects that you do not want to import.

6. Do one of the following:

- To import the configuration JAR file, click **Import**. The **Processing Configuration Data** popup window is displayed. You should wait until this window closes before you do anything else on the console. The window is closed automatically when the system has finished importing the objects. The **Import Configuration Data** page is displayed, which includes a message that you have successfully deployed the data.
 - To disregard changes, click **Cancel**.
7. Review the Import Summary. The following information is displayed:

Property	Description
Status	Whether or not the resource was imported successfully.
Name	The name of the resource. The path is the project name and the name of the folder in which the resource resides.
Path	The path of the resource. The path is the project name and the name of the folder in which the resource resides.
Type	Any of the following resource types: <ul style="list-style-type: none"> • Business service • MFL File • Proxy service • Proxy service provider • XML schema • Service Account • WS-Policy • WSDL • XQuery Transformation • XSL Transformation
Error Message	Displays an error message if one exists for this resource.

8. Click **Import Another**.

You can import another JAR file, or you can click **View Changes** under **Change Center** in the left navigation pane to view import details. If you click View Changes, see [“Viewing Configuration Changes” on page 2-5](#).

Note: The new resources are saved in the current session. When you have finished making changes to this configuration, from the left navigation pane, click **Activate** under **Change Center**. The session ends and the configuration is deployed to run time. Alternatively, click **Discard** at any time during the session to delete the changes you have made so far in the current session.

Related Topics

[“Overview of System Administration” on page 22-2](#)

[“Exporting Configuration Data” on page 22-8](#)

[“Finding and Replacing Environment Values” on page 2-12](#)

Exporting Configuration Data

The **Export Configuration Data** page enables you to export objects. You must be outside a session to use this page.

Note: You cannot export users, groups, roles, credentials, certificates or access control policies when you export a configuration, as these objects are created through WebLogic Server. You must create these objects again when you import the exported configuration into a new AquaLogic Service Bus domain.

To Export Configuration Data

1. From the left navigation pane, select **Export Resources** from under **System Administration**.
The **Export Configuration Data** page displays the list of objects in your configuration. The name, type and references for each object are displayed.
2. Select the object you want to export:
 - a. Select the checkbox associated with the object.
 - b. Expand the folder for the selected object. The name, type, and references for each object contained in the selected object are displayed. Each object is selected.
 - c. Uncheck the objects that you do not want to export.
 - d. Check or uncheck the **Include Dependencies** option. This option enables you to export any other resources that reference this resource.

3. Click **Export** to create a configuration JAR file and export it. When you click Export, the **Processing Configuration Data** popup window is displayed. You should 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.
4. 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.

Note: You can only export a configuration JAR file outside of a session. Therefore, you can only export changes that have been previously activated.

Related Topics

[“Overview of System Administration” on page 22-2](#)

[“Importing Configuration Data” on page 22-5](#)

Displaying Runtime Tracing Status of Proxy Services

The **Runtime Tracing Status** page enables you to view the runtime tracing status of proxy services. To learn more about runtime tracing, and enabling runtime tracing for a proxy service, see [“Enabling Runtime Tracing Status of Proxy Services” on page 22-10](#).

To Display Runtime Tracing Status of a Proxy Service

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).
2. From the left navigation pane, select **Tracing Configuration** from under **System Administration**. The **Runtime Tracing Status** page is displayed. This page displays the following information:

Property	Description
Name	The name of the proxy service. The name is a link to the View Proxy Service Details page. To learn more, see “Viewing and Changing Proxy Services” on page 14-30 .
Path	The path of the proxy service. The path is the project name and the name of the folder in which the proxy service resides. It is a link to the Project Details or Folder Details page. To learn more, see “Viewing Project Details” on page 3-6 or “Viewing Folder Details” on page 3-12 .

3. To locate a specific proxy service, do one of the following:
 - Filter by proxy service name. In the **Name** and **Path** fields, enter the name and path of the search target, then click **Search**. The services matching the search criteria are displayed.
 - Resort the list. Ascending and descending arrow buttons indicate sortable columns—in this case, the **Name** and **Path** columns. Click the button to change the sort order.
 - Scroll through the pages. Use the controls in the lower right corner. 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.
- Note:** Click **View All** to display all proxy services.

Related Topics

[“Overview of System Administration” on page 22-2](#)

[“Importing Configuration Data” on page 22-5](#)

[“Exporting Configuration Data” on page 22-8](#)

[“Enabling Monitoring” on page 22-3](#)

[“Setting the Dashboard Polling Interval Refresh Rate” on page 22-11](#)

Enabling Runtime Tracing Status of Proxy Services

The **Runtime Tracing Status** page allows you to enable the runtime tracing status of proxy services. This causes tracing information to be logged automatically for the proxy services you select, which can help you to diagnose and troubleshoot problems in the Message Flow.

You can enable tracing for a single proxy service or for multiple proxy services. Once you enable 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.

This page also enables you to view the list of proxy services. To learn more, see [“Displaying Runtime Tracing Status of Proxy Services” on page 22-9](#).

To Enable Runtime Tracing of a Proxy Service

1. If you have not already done so, from the left navigation pane, under **Change Center**, click **Create** to create a new session for making changes to the current configuration. To learn more, see [“Using the Change Center” on page 2-3](#).

2. From the left navigation pane, select **Tracing Configuration** from under **System Administration**. The **Runtime Tracing Status** page is displayed.
3. To enable runtime tracing status for a specific proxy service, select the checkbox associated with the proxy service.
4. To update the page, click **Save changes**.

Related Topics

[“Overview of System Administration” on page 22-2](#)

[“Importing Configuration Data” on page 22-5](#)

[“Exporting Configuration Data” on page 22-8](#)

[“Enabling Monitoring” on page 22-3](#)

[“Setting the Dashboard Polling Interval Refresh Rate” on page 22-11](#)

Setting the Dashboard Polling Interval Refresh Rate

The **Global Settings** page enables you to set the polling interval refresh rate for the **Dashboard** page in the Monitoring module. The default refresh rate is 1 minute, but you can also select another predefined range.

To Set the Dashboard Polling Interval Refresh Rate

1. From the left navigation pane, select **Global Settings** from under **System Administration**. The **Global Settings** page is displayed.
2. In the **Interval Refresh Setting** field under **Interval Refresh**, select **1**, **2**, **3**, or **5** as the refresh rate for the **Dashboard** page. For example, if you select 5, the refresh rate for the **Dashboard** page is every 5 minutes.
3. To update the settings, click **Save**.

Related Topics

[“Viewing the Dashboard Statistics” on page 20-4](#)

[“Overview of Monitoring” on page 20-2](#)

[“Overview of System Administration” on page 22-2](#)

[“Enabling Monitoring” on page 22-3](#)

Configuring a UDDI Registry

The **UDDI Configuration** page enables you to configure a UDDI registry and to make it available in AquaLogic Service Bus. Once the registry is configured, you can then publish AquaLogic Service Bus proxy services to it or import business services from the registry to be used in an AquaLogic Service Bus proxy service. You must be in an active session to configure the registry. You can associate a single service account with a registry entry.

You can search for a specific registry that you have previously configured. The search feature allows you to use wild cards to search for all registry entries satisfying the specified pattern. UDDI has two wild cards: use * for multiple characters and ? for single characters. The search returns all records that satisfy any of the search criteria property values.

UDDI Configuration Settings

The following table describes the configuration properties for a UDDI registry. Every registry has a set of properties that must be configured. When configuring a UDDI registry, the following are required:

- When importing from a registry, the **Name** and the **Inquiry URL** are required fields.
- When publishing to a registry, the **Name**, **Inquiry URL**, **Publish URL**, **Security URL**, and **Service Account** are required input fields. The Service account is required to permit access to the registry when publishing a service.

Table 22-1 UDDI Registry Configuration Settings

Name	This is the name of the registry. The name is assigned to a registry when it is first created.You can not edit the name of the registry after the entry is saved.
Inquiry URL	This is the URL to the inquiring API endpoint. It enables you to locate and import a service.
Publish URL	This is the URL to the publication API endpoint. It enables you to publish services.
Security URL	This URL is used to get an authentication token so that you can publish to the registry.

Table 22-1 UDDI Registry Configuration Settings

Service Account	A service account allows you to configure a user name and password to provide authentication when publishing services or when importing services from a UDDI registry. The password is passed to the security URL to obtain an authentication token when publishing or importing services.
Load tModels into registry	Select this option to load the tModels into the selected registry. This option only has to be selected once per registry.

Searching for a UDDI Registry

To Search for a Registry

1. From the left navigation pane, select **UDDI Configuration** from under **System Administration**. The **UDDI Configuration** page is displayed.
2. Enter the name of the registry you want to find in the text box, or enter wild card characters (use * and ? as wildcards) to perform a more general search.
3. Click **Search** to search for the specific entry.

Note: Click **View All** to view all registries that are configured to work with AquaLogic Service Bus.

Adding a UDDI Registry

You must be in an active session to add a registry. Details about the selected registries are added to the **UDDI Configuration** page. See [Table 22-1](#) for a description of the properties that must be set when adding a registry.

To Add a Registry

1. From the left navigation pane, select **UDDI Configuration** from under **System Administration**. The **UDDI Configuration** page is displayed.
2. On the **UDDI Configuration** page, click **Add registry**.

The UDDI Configuration page changes to display the configuration properties that define the registry. The properties are described in [Table 22-1](#).

3. Do the following:

- a. In the **Name** field, enter a name for the registry. This is a required field.
- b. In the **Inquiry URL** field, enter an inquiry URL in the format
`http://host:port/uddi/inquiry`.
This is a required field.
- c. In the **Publish URL** field, enter a publish URL in the format
`http://host:port/uddi/publishing`.
- d. In the **Security URL** field, enter a security URL in the format
`http://host:port/uddi/security`.
- e. Enter the name of a service account or browse to the service account you wish to associate with the registry. To associate a service account with a registry see [“Selecting a Service Account” on page 22-15](#).
- f. Select the **Load tModel into registry** checkbox to publish the AquaLogic Service Bus tModels to this registry.

Note: You must always add a service account if you specify a security URL.

Note: This field is only required when publishing proxy services to this registry.

4. Click **Save** to configure the registry with the settings provided.

Making Configuration Changes to an Existing Registry

To Edit the Registry Details

1. From the left navigation pane, select **UDDI Configuration** from under **System Administration**. The **UDDI Configuration** page is displayed.
2. On the **UDDI Configuration** page, from the list of available registries, select the Registry name. You can also search for a specific registry using the **Search** option.
3. The UDDI Configuration page changes to display the configuration properties that define the registry. The properties are described in [Table 22-1](#)
4. Edit the registry configuration parameters. You cannot edit the name of the registry.
5. Click **Save** to save the configuration changes or cancel to dismiss the changes.

Selecting a Service Account

When publishing services to a UDDI registry you must be authenticated and have a valid user name and password to gain access to the registry. The user name and password is implemented in AquaLogic Service Bus as a service account resource (using credentials).

To create a service account in AquaLogic Service Bus, see [“Overview of Service Accounts” on page 11-1](#).

To learn more about adding a service account, see [“Adding a Service Account” on page 11-4](#).

To associate credentials with the service account, see [“Adding a Credential” on page 19-20](#).

To Select a Service Account for the Registry

1. When adding or updating a registry entry in the UDDI configuration page, click **Browse...** to launch the Select Service Account page.
2. To locate a specific service account do one of the following
 - Click **Search** to filter by service account name.
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 service account resides. The service accounts matching the search criteria are displayed.
 - Click **View all** to display all service accounts
3. The service accounts found resulting from your search are listed on the **Select ServiceAccount** page.
4. Click **Submit** when you have made your selection.

Related Topics

[“Searching for a UDDI Registry” on page 22-13](#)

[“Adding a UDDI Registry” on page 22-13](#)

[“Making Configuration Changes to an Existing Registry” on page 22-14](#)

[“Importing a Business Service from a UDDI Registry” on page 22-16](#)

[“Publishing a Proxy Service to a UDDI Registry” on page 22-18](#)

Importing a Business Service from a UDDI Registry

You can import the following business services types from a UDDI registry into AquaLogic Service Bus:

- WSDL services over HTTP transport.
- AquaLogic Service Bus proxy services that are published to a UDDI registry. This feature is primarily used in multi-domain AquaLogic 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, AquaLogic 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.

If a user needs authentication, then you need a user name/password to access the AquaLogic Service Registry. If you do not have one assigned to you, contact your Systems Administrator.

The inquiry URL is used on import to locate a specific service as a registry has several different types of services.

To Import a Business Service

1. Click **Create** to start your session.
You can only import when you are in a session.
2. From the left navigation pane, select **Import UDDI** from under **System Administration**.
The **Import UDDI** page is displayed.
3. In the **Import Registry Name** drop down, select the name of the registry from which you want to import the service, then click **Next**.
The **Import UDDI page** allows you 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.
Note: When a single registry is configured in AquaLogic Service Bus, then the initial registry selection page is not displayed as this is the default registry. The initial page is only displayed when two or more registries are defined.
4. Select the business entity name (for example, document Services) from the **Entity Name** drop-down menu to search by business entity.
5. Enter the pattern (e.g. a%) you want to search for in the **Service Name** field.

6. A list of business services matching the entered search criteria is displayed. Select the service(s) that you want to import, then click **Next**.

Note: 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** list-box, 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. Uncheck the checkbox 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 2-13](#).
10. Click **Import** to start the import process.
A pop-up 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**.

Related Topics

[“Configuring a UDDI Registry” on page 22-12](#)

[“Publishing a Proxy Service to a UDDI Registry” on page 22-18](#)

Publishing a Proxy Service 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 AquaLogic 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 a BEA AquaLogic Registry account and you must exit your current session. For more information on setting up a user account, see [BEA AquaLogic Service Registry User's Guide](#).

Note: Unpublishing a service from a registry is done from AquaLogic Service Registry.

To Publish a Proxy Service to a UDDI Registry:

1. From the left navigation pane, select **Publish to UDDI** from under **System Administration**. The **Publish to UDDI** page is displayed.

Note: 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. In the **Publish Registry Name** drop down, select the name of the registry to which you want to publish, then click **Next**.

Note: When a single registry is configured in BEA AquaLogic Service Bus, then the initial registry selection page is not displayed as this is the default registry. The initial page is only displayed when two or more registries are defined.

3. The **Publish to UDDI: Select individual Services and Publish** page is displayed showing a list of AquaLogic 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.
4. Select the service(s) that you want to publish
Expand the **Project** folder to see the proxy services defined. By default the folder and it's contents are marked for publishing. You can select individual items to publish.

5. In 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.
6. Select **Publish** to publish the services.
A confirmation message is displayed indicating that the service was published successfully.
Note: When you publish a service, it uses the user name and password that you set up with the service account to get access to the registry. If a service account is required to publish to the registry, but none was specified in the UDDI Configuration, you get an error message and the services are not published. If any services fail to publish, error messages are displayed in the table beside the proxy services being published.
7. Click **Publish Another** to return to the **Publish to UDDI: select registry** page.

Related Topics

[“Configuring a UDDI Registry” on page 22-12](#)

[“Importing a Business Service from a UDDI Registry” on page 22-16](#)

Test Console

This section includes the following topics:

- [Overview of the Test Console](#)
- [Testing Services](#)
- [Testing Transformations](#)
- [Performing Inline XQuery Testing](#)
- [Understanding How the Run Time Uses the Transport Settings in the Test Console](#)

Overview of the Test Console

The BEA AquaLogic 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, 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.

The Test Console can be invoked to test any proxy or business service and certain resources used by these services. You can also do inline XQuery testing. You can invoke the test console in a number of ways in the AquaLogic Service Bus Console depending on what part of your process you want to test. The output from the tests is also displayed in the test console.

You can invoke the test console from:

- The Project Explorer
- The Resource Browser
- The XQuery Editor

Note: Only users in the `IntegrationAdmin` and `IntegrationDeployer` roles are allowed to use the Test Console.

Related Topics

[“Testing Proxy Services” on page 23-3](#)

[“Configuring Proxy Service Test Data” on page 23-4](#)

[“Viewing Proxy Service Test Results” on page 23-11](#)

[“Tracing Proxy Services” on page 23-12](#)

[“Testing Business Services” on page 23-13](#)

[“Configuring Business Service Test Data” on page 23-15](#)

[“Testing Transformations” on page 23-21](#)

[“Performing Inline XQuery Testing” on page 23-28](#)

[“Understanding How the Run Time Uses the Transport Settings in the Test Console” on page 23-32](#)

Testing Services

This section includes the following topics:

- [Testing Proxy Services](#)
- [Configuring Proxy Service Test Data](#)
- [Viewing Proxy Service Test Results](#)
- [Tracing Proxy Services](#)
- [Testing Business Services](#)
- [Configuring Business Service Test Data](#)

Testing Proxy Services


You must have activated a session to test a proxy service. You can test a proxy service from the Resource Browser or Project Explorer. You can test the following types of proxy services:

- any XML
- any SOAP
- Messaging
- XML
- SOAP

Note: You can test SOAP proxy services with Web-Service Security (WSS) policies. See Web-Service Security in [“Configuring Proxy Service Test Data”](#) on page 23-4.

To Test a Proxy Service

1. Log in to the AquaLogic Service Bus Console.
2. Click **Activate** to activate your session. This enables the test feature in the console.
3. Select **Project Explorer** or **Resource Browser** from the left navigation pane. The **Summary of Proxy Services** page is displayed.

4. In Resources, under the Actions column on the page, click the *Launch Test Console* icon  associated with the proxy service you want to test.

The Test Console is opened on the **Proxy Service Testing** page. For example, using the examples provided with the product (see [BEA AquaLogic Service Bus Examples](#)), click the icon associated with the `LoanGateway1` proxy service.

5. For SOAP and XML services, select the WSDL operation you want to test.
6. Configure the test data for the proxy service—note that this must be the data that the proxy service expects from the client.

Note that by default both test Configuration options, **Direct Call** and **Include Tracing** are enabled. You can unselect the **Direct Call** option, which automatically unselects 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** checked) and disable tracing. To disable tracing, simply unselect the associated checkbox.

7. Click **Execute** to run the test. The **Proxy Service Testing** page is refreshed to display the results of running the test. For information about interpreting the test results, see [“Viewing Proxy Service Test Results” on page 23-11](#).
8. To run the test again, click **Back**. Repeat steps 5–8 to test as many times as desired.

Configuring Proxy Service Test Data

The following is a description of the configuration page that appears in the test console when you launch it to test a proxy service.

Note: The fields that appear on the console for accepting input to the request document are based on the service type.

Table 23-1 Description of the Test Console Configuration Page for a Proxy Service

Section	Options/Fields	Description
Name	The name of the proxy service being tested is written on the top of the page	
Available Operations	If there are any operations associated with the proxy service, they are displayed showing the details for the proxy service. An arrow indicates the currently selected operation.	

Table 23-1 Description of the Test Console Configuration Page for a Proxy Service

Section	Options/Fields	Description
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	You can set the testing configuration to execute in a number of ways depending on the options you select in this section.	
	Direct Call	<p>Send a message to the proxy service without using the AquaLogic 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 unselecting 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	
Request Document	<p>The configuration data entered here represents the request message.</p> <p>The list of input fields is used to generate the request message that is sent to the proxy service. Click Execute to run the test with the values entered. The test console displays the request message and the service's response message and metadata.</p> <p>The set of inputs for which you are prompted in the Request Document page are specific to the service type—the service types are listed in the following sections and a description of the input required by each.</p> <p>This section is organized by service type.</p>	

Table 23-1 Description of the Test Console Configuration Page for a Proxy Service

Section	Options/Fields	Description
	any 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.</p> <p>You can browse to a file or you can enter the message content in the text box provided.</p>
	any SOAP	<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 the SOAP envelope.</p> <p>You can browse to a file or you can enter the message content in the text box provided.</p>
	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>It is recommended to enter binary input from a file. Data entered in the text area are converted to binary using the system encoding.</p> <p>Data entered from file 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 23-1 Description of the Test Console Configuration Page for a Proxy Service

Section	Options/Fields	Description
	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.</p> <p>You can browse to a file or you can enter the message content in the text box provided.</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 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. 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.</p> <p>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 SOAP Body field contains the data that is actually sent as part of the message. The content is expected to be an XML document.</p> <p>Both the header and the body are used to generate the SOAP envelope.</p>

Table 23-1 Description of the Test Console Configuration Page for a Proxy Service

Section	Options/Fields	Description
	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).</p> <p>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.</p> <p>The payload (XML input) can be file based or text based. Referencing a file for input takes precedence over textual input. Browse and select a specific file you want to use in your test.</p>
Web-Service Security	This section is available only for SOAP services when the selected operation has a Web-Service Security (WSS) policy.	

Table 23-1 Description of the Test Console Configuration Page for a Proxy Service

Section	Options/Fields	Description
	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>BEA AquaLogic Service Bus User Guide</i> .
	Username	<p>This is the username used in Web Service Security Username tokens generated from the test service. This field is optional. This username 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>Note: This must be a valid username and password in the local security realm. An invalid username or invalid password causes a client-side error on the test service.</p>
	Password	This is the password used in Web Service Security Username tokens generated from the test service.
Transport	The Transport section is collapsed by default as it is an advance option. The fields and value of the fields displayed for the transports depend on the test configuration.	

Table 23-1 Description of the Test Console Configuration Page for a Proxy Service

Section	Options/Fields	Description
Authentication	Username	<p>This username and the associated password are used to set the security context used by the test service when invoking the proxy service.</p> <p>If the proxy servie 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 “SAML Support “ in Securing Inbound and Outbound Messages in the <i>BEA AquaLogic Service Bus User Guide</i>.</p> <p>Do not confuse this field with the Web Service Security (WSS) username field.</p> <p>Note: That this must be a valid username and password in the local security realm. An invalid username or invalid password will cause a client-side error on the test service.</p>
	Password	<p>This is the associated password. For more information, see Username.</p>
Invocation Mode	Request/Response	<p>This option is only displayed when testing on any SOAP or any XML proxy service. Unselect Request/Response for one-way service invocations.</p>
Message Metadata	See “ Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service ” on page 23-33	
Transport Headers	See “ Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service ” on page 23-33	

Note: The *secured* SOAP message is displayed printed with extra whitespaces. Because whitespaces can affect the semantic 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 Service Test Results

The **Results** page displays the results of testing the proxy service. Note that tracing is only enabled if the Direct Call and the Include Tracing options are selected. If they are not enabled, then tracing will not appear as part of your test results. A description of the **Results** page is provides in [Table 23-2](#).

Table 23-2 Description of the Test Console Test 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	This is 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. In the case WS-Security applies, 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	This is the message response. For SOAP service with response WS-Security, 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 and not displayed on the Results page for the proxy service. For more information on tracing, see “ Tracing Proxy Services ” on page 23-12.

Tracing Proxy Services

Tracing is enabled when you test a proxy service using a Direct Call. The Invocation Trace checkbox is automatically selected with the Direct Call option. If you do not want to enable tracing, then you must uncheck the checkbox. When you turn tracing on the test results include the details of the trace. Tracing enables you 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.


For each stage, the trace includes the changes that occurred to the message context and all the services invoked during the stage execution. The following information is available in the trace:

- **New variables**
The trace lists the names of all new variables and their corresponding values. Click + to view this in the trace.
- **Deleted variables**
The trace lists the name of all deleted variables.
- **Changed variables**
The trace lists the name of all variables for which the value changed. Click + to view the new value.
- **Publish**
All Publish calls are listed. For each Publish, the trace includes the name of the service invoked, and the value of the outbound, header, body, and attachment variables.
- **Service Callout**
All Service Callouts are listed. For each service callout, the trace includes the name of the service invoked, the value of the outbound variable, the value of the header, body, and attachment variables for both the request and response message.

The trace contains similar information for the Route Node. In this case, the trace contains four categories:

- The trace for service invocations on the request path.
- The trace for the routed service.
- The trace for the service invocations on the response path.
- Changes made to the message context between the entry point of the route node (on the request path) and the exit point (on the response path).

To Trace a Message

1. Log in to the AquaLogic Service Bus Console.
2. Click **Activate** to activate your session. This enables testing proxy services.
3. Select **Project Explorer** or **Resource Browser** from the left navigation pane. The **Project** page/**Summary of Proxy Services** page is displayed.
4. In Resources, in the Actions column, click the *Launch Test Console* icon  associated with the the service you want to test. The test console is opened on the **Proxy Service Testing** page.
5. Configure the test data for the proxy service. Note that you must have the Direct Call and Include Tracing options selected to enable tracing. See [Configuring Proxy Service Test Data](#).
6. Click **Execute** to run the test. The **Proxy Service Testing** page displays the test results for the service and the tracing information.
7. Scroll down to the **Invocation Trace** section
This section graphically displays 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.
8. Click the + Icon to expand the message flow to view more detail.
While viewing the trace you can also view the message flow itself in the AquaLogic Service Bus Console to relate the trace to the actual stages and actions in the flow. You can modify the message flow and run the trace again to view the output.

Testing Business Services


You must have activated a session to test a business service. You can test the following types of business services:

- any XML
- any SOAP
- Messaging
- XML
- SOAP

Note: 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 *BEA AquaLogic Service Bus User Guide*.

When testing business services you always send the message through the transport layer. The Direct Call option is not available. The configuration data that you provide to the test console to test the service is that which represents the state of the message that is expected to be sent to that business service—for example from a Route Node or a Service Callout action of another proxy service. The test console is in the role of the caller proxy service when you use it to test a business service.

To Test a Business Service

1. Log in to the AquaLogic Service Bus Console.
2. Click **Activate** to activate your session. This enables the test feature in the console.
3. Select **Project Explorer** or **Resource Browser** from the left navigation pane. The **Summary of Business Services** page/**Project** page is displayed.
4. In **Resources**, under the **Actions** column on the page, click the *Launch Test Console* icon  associated with the service you want to test. The Test Console is opened on the **Business Service Testing** page. For Example, using the tutorials provided with the product, click the icon associated with LoanGateway1.
5. For SOAP and XML services, select the WSDL operation you want to test.
6. 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). Note that the Direct Call and Include Tracing options that are available for a Proxy service are not available for a business service. Business services are automatically tested using the in the Direct Call option, meaning that the messages pass through the transport layer.
7. Click **Execute** to run the test. The **Business Service Testing** Page is refreshed to display the results of running the test. For more information, see [“Viewing Business Service Test Results” on page 23-20](#).

Configuring Business Service Test Data

In this section we describe the configuration page that appears in the test console when you select to test a business service. The fields that appear on the test console for accepting input to the request document are based on the service type.

[Table 23-3](#) describes the configuration page for the test Console.

Table 23-3 Description of the Business Service Test Console Configuration.

Section	Options/Fields	Description
Name		The name of the business service being tested is written on the top of the page
Available Operations		If there are any operations associated with the business service they are displayed showing the details for the business service. An arrow indicates the currently selected operation.
Test Console Actions		
	Execute	Run the test.
	Reset	Reset the input values.
	Close	Close the window and do not run the test.
Request Document		<p>The configuration data entered here represents the request message.</p> <p>The list of input fields is used to generate the request message that is sent to the Business Service. Click Execute to run the test with the values entered. The test console page refreshes to display the request message and the service's response.</p> <p>The set of inputs displayed is specific to each service type. The service types are listed in the following sections and a description of the input required by each.</p> <p>This section is organized by service type.</p>
	any 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.</p> <p>You can browse to a file or you can enter the message content in the text box provided.</p>

Table 23-3 Description of the Business Service Test Console Configuration.

Section	Options/Fields	Description
	any SOAP	<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 the SOAP envelope.</p> <p>You can browse to a file or you can enter the message content in the text box provided.</p>
	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>It is recommended to enter binary input from a file. Data entered in the text area are converted to binary using the system encoding.</p> <p>Data entered from file 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.</p> <p>You can browse to a file or you can enter the message content in the text box provided.</p> <p>This is a WSDL based service with multiple operations defined. We provide the 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>

Table 23-3 Description of the Business Service Test Console Configuration.

Section	Options/Fields	Description
	SOAP Document	<p>For 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.</p> <p>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 SOAP Body field contains the data that is actually sent as part of the message. The content is expected to be an XML document.</p> <p>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 23-3 Description of the Business Service Test Console Configuration.

Section	Options/Fields	Description
	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).</p> <p>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.</p> <p>The payload (XML input) can be file based or text based. Referencing a file for input takes precedence over textual input. Browse and select a specific file you want to use in your test.</p>
Web-Service Security	This section is available only for SOAP service when the selected operation has a Web-Service Security policy.	
	Service Provider	<p>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>BEA AquaLogic Service Bus User Guide</i>.</p>

Table 23-3 Description of the Business Service Test Console Configuration.

Section	Options/Fields	Description
	Username	<p>This is the username used in Web Service Security Username tokens generated from the test service. This field is optional. This username 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. NOTE: this must be a valid username and password in the local security realm. An invalid username or invalid password will cause a client-side error on the test service.</p> <p>In some scenarios, this username/password may also be used when the test service generates a SAML assertion.</p>
	Password	This is the password used in Web Service security username tokens generated from the test service.
Transport	The Transport section is collapsed by default as it is an advance option. The fields and value of the fields displayed for the transports depend on the test configuration.	
Authentication		
	Username	This username and the associated password are used to set 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 (link to ALSB SAML identity propagation). NOTE: this must be a valid username/password in the local security realm. An invalid username or invalid password will cause a client-side error on the test service.
	Password	This is the associated password. For more information, see Username .

Table 23-3 Description of the Business Service Test Console Configuration.

Section	Options/Fields	Description
	Service Provider	This field is used when testing an HTTPS business service with CLIENT-CERT authentication, (see {link to outbound HTTPS section in ALSB UG}). 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 checkbox is only displayed when testing an any SOAP or any XML Business Service. Unselect the checkbox for one-way service invocations.
Message Metadata	See “Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service” on page 23-33.	
Transport Headers	See “Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service” on page 23-33.	

Viewing Business Service Test Results

The **Results** page displays the results of testing the business service. A description of the **Business Service Results** page is provided in [Table 23-4](#). :

Table 23-4 Description of the Test Console Test 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	This is 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. In the case WS-Security applies, 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.

Table 23-4 Description of the Test Console Test Results for Business Services

Section	Description
Response Document	<p>This is the message response.</p> <p>For SOAP service with response WS-Security, 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.</p>
Response Metadata	This is the metadata returned with the message response.

Note: The *secured* SOAP message is displayed pretty printed, i.e. with extra whitespaces. This SOAP message cannot always be used as the literal data as whitespaces can affect the semantic of the document. For example, digital signatures are whitespace sensitive and could become invalid.

Related Topics

[“Overview of the Test Console” on page 23-1](#)

[“Testing Transformations” on page 23-21](#)

[“Performing Inline XQuery Testing” on page 23-28](#)

[“Understanding How the Run Time Uses the Transport Settings in the Test Console” on page 23-32](#)

Testing Transformations

You can test transformations after activating a session or during a session to ensure that the resources operate with the expected behavior.

Note: You must activate the session to test the runtime, otherwise your testing is done at design time using your local changes.

You can test the following transformations:

- MFL

A Message Format Language (MFL) document is a specialized XML document used to describe the layout of binary data.

- **XQuery**
XQuery maps can describe XML-to-XML, XML to non-XML, and non-XML to XML mappings.
- **XSLT**
eXtensible Stylesheet Language Transformation (XSLT) describes XML-to-XML mappings in AquaLogic Service Bus.

This topic includes the following sections:

- [MFL](#)
- [XSLT](#)
- [XQuery](#)

MFL

MFL resources support two transformations:

- XML to Binary - there is one required input, XML and one output, Binary.
- Binary to XML - there is one required input, Binary, and one output, XML.

Each transformation only accepts one input and provides a single output.

Configuring the MFL Resource

A description of the Configuration page for the MFL resource is provides in [Table 23-5](#).

Table 23-5 Configuring the MFL Resource

Section		Description
Name	The name of the resource being tested is written on the top of the page.	
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).

Table 23-5 Configuring the MFL Resource


Section	Description
Close	Cancel the current operation.
MFL Transformation Configuration Page Description	
XML Input	<p>This field is displayed when the XML to Binary transformation is selected.</p> <p>The XML schema for the MFL document can be inferred. A sample XML document is automatically entered in the text field.</p> <p>The XML input can be file based or text based. Referencing a file for input takes precedence over textual input. Browse and select a specific file you want to use in your test.</p> <p> indicates a required field. For the MFL XML to Binary transformation, the XML input is required.</p>
Binary Input	<p>Displayed when the Binary to XML transformation is selected.</p> <p>The binary input can be file based or text based. Referencing a file for input takes precedence over textual input. Browse and select a specific file you want to use in your test.</p> <p> indicates a required field. For the MFL Binary to XML transformation, the binary input is required.</p>

To Test an MFL

1. Log in to the AquaLogic Service Bus Console.

Note: You can test the design time or the runtime. Click **Activate** if you want to test the runtime. Do not activate the session to test the design time.

2. Select **Project Explorer** or **Resource Browser** from the left navigation pane. The **Project page/Summary of Proxy Services** page is displayed.

3. In Resources, in the Actions column, click the *Launch Test Console* icon  associated with the resource you want to test. The test console is opened on the **Resource Testing** page.
4. Select the transformation you want to run.
5. Configure the test data for the resource. For more information, see [Configuring the MFL Resource](#).
6. Click **Execute** to run the test. The **Resource Testing** page is refreshed to display the results of running the test.
7. To retest, click **Back**. You can close the test console and immediately modify and retest the resource.

XSLT

To test an XSLT resource you must supply the input XML document and it 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 the values.

Configuring the XSLT Resource

A description of the Configuration page for the XSLT resource is provided in [Table 23-6](#):


Table 23-6 Configuring the XSLT Resource

Section	Description
Name	The name of the resource being tested is written on the top of the page.
Test Console Actions	
Execute	Apply the transformation.
Reset	Reset the input field(s).
Close	Cancel the current operation.
Input and Parameters	This is the document sent to the resource along with the parameters entered.* indicates a required input parameter.

Table 23-6 Configuring the XSLT Resource

Section	Description
*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 a specific file you want to use in your test. XML input is a required input.
<param_name> (<input type="checkbox"/> 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. Check the checkbox associated with the parameter name to identify a parameter of type XML.

To Test an XSLT

1. Log in to the AquaLogic Service Bus Console.
- Note:** You can test the design time or the runtime. Click **Activate** if you want to test the runtime. Do not activate the session to test the design time.
2. Select **Project Explorer** or **Resource Browser** from the left navigation pane. The **Project** page/**Summary of Proxy Services** page is displayed.
3. In Resources, in the Actions column, click the *Launch Test Console* icon  associated with the resource you want to test. The test console is opened on the **Resource Testing** page.
4. Configure the test data for the resource in the **Input and Parameters** section of the page. This is where the resource requirements are specified. For more information, see [Configuring the XSLT Resource](#).
5. Click **Execute** to run the test. The **Resource Testing** Page is refreshed to display the results of running the test.
6. To retest, click **Back**. You can close the test console and immediately modify and retest the resource.

XQuery

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 an sequence of these types. The output value can be 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.

Configuring the XQuery Resource

A description of the configuration page for the XQuery resource is provided in [Table 23-7](#)

Table 23-7 Configuring the XQuery Resource

Section		Description
Name		The name of the resource being tested is written on the top of the page.
Test Console Actions		
Execute		Execute the transformation.
Reset		Reset the input field(s).
Close		Close the test console.


Table 23-7 Configuring the XQuery Resource

Section	Description
Variables	<p>This section contains one input field for each of the XQuery external variables..</p> <hr/> <p><code><param_name></code> <code>([] as XML)</code></p> <p><code>param_name</code> is a XQuery variable name presented 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 using the checkbox. Check the checkbox 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 a specific 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>

To Test an XQuery

1. Log in to the AquaLogic Service Bus Console

Note: You can test the design time or the runtime. Click **Activate** if you want to test the runtime. Do not activate the session to test the design time.

2. Select **Project Explorer** or **Resource Browser** from the left navigation pane. The **Project** page/**Summary of Proxy Services** page is displayed.
3. In Resources, in the Actions column, click the *Launch Test Console* icon  associated with the resource you want to test. The test console is opened on the **Resource Testing** page.

4. Configure the test data for the resource in the **Variables** section of the page. For more information, see [Configuring the XQuery Resource](#).
5. Click **Execute** to run the test. The **Resource Testing** page is refreshed to display the results of running the test.
6. To retest, click **Back**. You can close the test console and immediately modify and retest the resource.

Related Topics

[“Overview of the Test Console” on page 23-1](#)

[“Testing Services” on page 23-3](#)

[“Performing Inline XQuery Testing” on page 23-28](#)

[“Understanding How the Run Time Uses the Transport Settings in the Test Console” on page 23-32](#)

Performing Inline XQuery Testing

Testing takes the same form for both the XQuery Editor and the Condition Editor. However the scenario is different for the XPath Expression Editor because it takes only one input. You can edit and test an action in the message flow using the following editors:

- XQuery Expression Editor
- XQuery Condition Editor
- XPath Expression Editor

Note: You must disable the pop-up blockers in your browser for the inline XQuery testing to work. Note that 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.

Using the XQuery Expression/Condition Editors

In-line XQuery Expressions are used to create the data content for the message context variables (or part of a message context variable) during the execution of the flow. The Test Console can be used directly in the XQuery Expression Editor to test the correct definition of the expression.

Similarly, Inlined XQuery Conditions are used to evaluate boolean conditions used in the flow. The Test Console can be used directly in the XQuery Condition Editor to test the correct definition of the condition.

An Inlined XQuery can take multiple inputs and returns one output. Each input corresponds to an XQuery unbound variable defined in the in-line XQuery. The value of an XQuery input can be a primitive value (string, integer, date...), an XML document, or a sequence of these types. The output value can be primitive value (string, integer, date...), an XML document, or a sequence of these types.

Note: The test console does not support sequences on input.

Configuring the Inlined XQuery

A description of the configuration page for the Inlined XQuery is provided in [Table 23-8](#)

Table 23-8 Configuring the XQuery

Section	Description	
Name	The type of expression being tested is written on the top of the page.	
Test Console Actions		
	Execute	Apply the transformation.
	Reset	Reset the input field(s).
	Close	Cancel the current operation.

Table 23-8 Configuring the XQuery

Section	Description
Variables	<p>This section contains one input field for each of the Inlined XQuery unbound variables.</p> <hr/>
	<p><code><param_name></code> (<code>[]</code> as XML)</p> <p><code>param_name</code> is the name of the corresponding XQuery unbound variable.</p> <p>In the test console, a single-line edit box is displayed if we know that the type is a simple type. A multi-line edit box is displayed if we know that the data is XML. A combination input (<code><param_name></code> (<code>[]</code> as XML)) will be used when the variable is not typed. You must declare the variable type using the checkbox. Check the checkbox 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 a specific 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>

Note: Testing an Inlined XQuery is done in the same way as you test an XQuery resource, except to note that this is an Inline XQuery, not a resource.

To Test an Inlined XQuery

1. Access the test console when editing an action in the message flow of a pipeline.
 - To access the Inline XQuery Expression Editor, see [“Using the Inline XQuery Expression Editor” on page 17-2](#).
 - To access the XQuery Condition Editor, see [Using the XQuery Condition Editor](#).
2. The **XQuery Testing Expression** page is displayed.

All input variables requested are displayed on the page.

3. Configure the test data for the inlined XQuery in the **Variables** section of the page. For more information, see [Configuring the XQuery](#).
4. Click **Execute** to run the test. The testing page is refreshed to display the results of running the test.

Note: When performing Inline XQuery testing with the test console, 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 Inlined XQuery, you must close and reopen the test console for the changes to take effect.

Using the XPath Expression Editor

XPath Expressions are used to select a subset of an XML message context variable. The Test Console can be used directly in the XPath Expression Editor to test the correct definition of the xpath. An XPath expression takes a single XML document as input and generates a sequence of XML documents and/or primitives types for result.

Configuring the Inlined XPath

A description of the configuration page for the Inlined XPath is provided in [Table 23-9](#).

Table 23-9 Configuring the XPath

Section	Description
Name	The type of expression being tested is written on the top of the page.
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 this XPath expression is run against.
	The XML input can be file based or text based. Referencing a file for input takes precedence over textual input. Browse and select a specific file you want to use in your test.

To Test an XPath

1. Access the test console when editing an action in the message flow of a pipeline. To access the **XPath Expression Editor**, see [“Using the XPath Expression Editor” on page 17-7](#).
2. Configure the test data for the XPath expression in the **Variables** section of the page. For more information, see [“Configuring the Inlined XPath” on page 23-31](#).
3. Click **Execute** to run the test. The testing page is refreshed to display the results of running the test.
4. When performing Inlined XPath testing with the test console, 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.

Related Topics

[“Overview of the Test Console” on page 23-1](#)

[“Testing Services” on page 23-3](#)

[“Testing Transformations” on page 23-21](#)

[“Understanding How the Run Time Uses the Transport Settings in the Test Console” on page 23-32](#)

Understanding How the Run Time Uses the Transport Settings in the Test Console

The preceding topics in this section describe how the values of the transport headers, transport metadata, and transport-related security data for outbound requests can be configured when you run the test console to test a proxy service or a business service.

Warning: 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 AquaLogic Service Bus run time when the test is executed. The headers and metadata for which there are limitations when using the test console are described in [Table 23-10](#).

Table 23-10 Limitations to Transport Header and Metadata Values You Specify in the Test Console When Testing a Service

Transport	Testing this Service Type	Description of Limitation	Transport Headers Affected
HTTP(S)	Proxy Service	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 Service	The AquaLogic 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
JMS	Proxy Service	Direct Call When the Direct Call option is used, all transport headers and other fields you set are preserved at run time	All
		Direct Call When the Direct Call option is not used, the same limitations apply as for a transport header action configuration	See the limitations for JMS transport headers described in Table 16-5
	Business Service	The same limitations apply as for a transport header action configuration	See the limitations for JMS transport headers described in Table 16-5

Transport	Testing this Service Type	Description of Limitation	Transport Headers Affected
EMail	Proxy Service	No limitations. In other words, any transport headers and other fields you set are honored by the run time. This is true whether or not Direct Call is specified.	
	Business Service	The AquaLogic Service Bus run time overrides any values you set for these parameters	<ul style="list-style-type: none">• Content-Type
File	Proxy Service	No limitations. In other words, any transport headers and other fields you set are honored by the run time. ¹	
	Business Service		
FTP	Proxy Service	No limitations. In other words, any transport headers and other fields you set are honored by the run time.	
	Business Service		

1. For example, FileName (Transport metadata)—the value you assign is used to append to the output file name. For example, 1698922710078805308-b3fc544.1073968e0ab.-7e8e-{\$FileName}

Message Context

This section describes the BEA AquaLogic Service Bus message context model and specifically the predefined context variables that are used in the AquaLogic Service Bus message flow. It includes the following topics:

- [The Message Context Model](#)
- [Predefined Context Variables](#)
- [Message-Related Variables](#)
- [Inbound and Outbound Variables](#)
- [Operation Variable](#)
- [Fault Variable](#)
- [Initializing Context Variables](#)
- [Performing Operations on Context Variables](#)
- [Constructing Messages to Dispatch](#)
- [Message Context Schema](#)

The Message Context Model

The BEA AquaLogic Service Bus message context is a set of properties that holds message context as well as information about messages as they are routed through AquaLogic Service Bus. These properties are referred to as context variables—for example, service endpoints are represented by predefined context variables. AquaLogic Service Bus also supports user-defined context variables.

The message context is defined by an XML Schema. You typically use XQuery expressions to manipulate the context variables in the message flow that defines a proxy service.

Predefined Context Variables

The following table describes the predefined context variables. The predefined context variables can be grouped into the following types: the message-related variables, the inbound and outbound variables, the operation variable, the fault variable.

For information about the element types in the message context variables, see [“Message Context Schema” on page A-25](#).

Table A-1 Predefined Context Variables in AquaLogic Service Bus

Context Variable ¹	Description	See Also . . .
header	Contains the SOAP headers for SOAP messages (for SOAP messages that contain a SOAP header). The header variable contains an empty SOAP header element for message types other than SOAP.	“Message-Related Variables” on page A-3
body	For the following cases: <ul style="list-style-type: none">• SOAP messages—contains the <SOAP:Body> part extracted from the SOAP envelope.• Non-SOAP, non-binary messages—contains the entire message content wrapped in a <SOAP:Body> element.• Binary messages—contains a <SOAP:Body> wrapped reference to an in-memory copy of the binary message.	“Message-Related Variables” on page A-3
attachments	Contains the MIME attachments for a given message.	“Message-Related Variables” on page A-3
inbound	Contains the information about the proxy service that received a message, and the inbound transport headers	“Inbound and Outbound Variables” on page A-7

Context Variable ¹	Description	See Also . . .
outbound	Contains the information about the target service to which a message is to be sent, and the outbound transport headers.	“Inbound and Outbound Variables” on page A-7
operation	Identifies the operation that is being invoked on a proxy service.	“Operation Variable” on page A-14
fault	Contains information about errors that have occurred during the processing of a message.	“Fault Variable” on page A-14

1. The [“Message Context Schema” on page A-25](#) specifies the element types for the message context variables.

Message-Related Variables

Together, the message-related variables *header*, *body* and *attachments* represent the canonical format of a message as it flows through AquaLogic Service Bus. These variables are initialized using the message content received by a proxy service and are used to construct the outgoing messages that are routed or published to other services.

If you want to modify a message as part of processing it, you must modify these variables.

A message payload (that is, a message content exclusive of headers or attachments) is contained in the *body* variable. The decision about which variable’s content to include in an outgoing message is made at the point at which a message is dispatched (published or routed) from AquaLogic Service Bus. That determination is dependent upon whether the target endpoint is expecting a SOAP or a non-SOAP message:

- In the case that a SOAP message is required, the *header* and *body* variables are combined in a SOAP envelope to create the message.
- In the case that a non-SOAP message is required, the contents of the *Body* element in the *body* variable constitutes the entire message.
- In either case, if the service expects attachments, then a MIME package is created from the resulting message and the *attachments* variable.

Header Variable

The `header` variable contains SOAP headers associated with a message. The `header` variable points to a `<SOAP:Header>` element with headers as sub-elements. If the case of non-SOAP messages or SOAP messages with no headers, the `<SOAP:Header>` element is empty, and has no sub-elements.

Body Variable

The `body` variable represents the core message payload and always points to a `<SOAP:Body>` element. The core payload for both SOAP and non-SOAP messages is available in the same variable and with the same packaging—that is, wrapped in a `<SOAP:Body>` element:

- In the case of SOAP messages, the SOAP body is extracted from the envelope and assigned to the `body` variable.
- In the case of non-SOAP, non-binary, messages, the full message contents are placed within a newly created `<SOAP:Body>` element.
- In the case of binary messages, rather than inserting the message content into the `body` variable, a `<binary-content/>` reference element is created and inserted into the `<SOAP:Body>` element. To learn how binary content is handled, see [“Binary Content in the body and attachments Variables”](#) on page A-6.

Attachments Variable

The `attachments` variable holds the attachments associated with a message. The `attachments` variable is defined by an XML schema. It consists of a single root node: `<ctx:attachments>`, with a `<ctx:attachment>` sub-element for each attachment. The sub-elements contain information about the attachment (derived from MIME headers) as well as the attachment content. As with most of the other message-related variables, `attachments` is always set, but if there are no attachments, the `attachments` variable consists of an empty `<ctx:attachments>` element.

Each attachment element includes a set of sub-elements, as described in the following table.

Table A-2 Sub-Elements of the Attachments Variable

Elements of the Attachments Variable	Description ¹
Content-ID	A globally-unique reference that identifies the attachment. The type is <code>string</code> .
Content-Type	Specifies the media type and sub-type of the attachment. The type is <code>string</code> .
Content-Transfer-Encoding	Specifies how the attachment is encoded. The type is <code>string</code> .
Content-Description	A textual description of the content. The type is <code>string</code> .
Content-Location	A locally-unique URI-based reference that identifies the attachment. The type is <code>string</code> .
Content-Disposition	Specifies how the attachment should be handled by the recipient. The type is <code>string</code> .
body	Holds the attachment data. The type is <code>anyType</code> .

1. The [“Message Context Schema” on page A-25](#) specifies the element types for the message context variables.

With the exception of the untyped `body` element, all other elements contain string values that are interpreted in the same way as they are interpreted in MIME—for example, valid values for the `Content-Type` element include `text/xml` and `text/xml; charset=utf-8`.

The parsing of attachments is not recursive. If an attachment has a `Content-Type` of `multipart/...`, the `body` element holds the original unpacked MIME content as a stream of bytes and does not contain attachment sub-elements. Because the MIME stream may contain binary data, it is represented by a `<binary-content>` reference element.

To learn how binary content is handled, see [“Binary Content in the body and attachments Variables” on page A-6](#).

Binary Content in the body and attachments Variables

In the case of both the `body` and `attachments` variables, `text-`, `XML-` and `MFL-`based content is placed directly inside of an XML element. For binary data, which can contain byte values that are illegal in XML, AquaLogic Service Bus does not place the binary content in the XML element. Consequently, the binary content cannot be manipulated, but it is handled efficiently.

When binary content is received, the AquaLogic Service Bus run time stores it in an in-memory hash table and a reference to that content is inserted into the XML (`body` or `attachments`) element. This reference is represented by the following XML snippet:

```
<binary-content ref="..." />
```

where the `ref` attribute contains a URI or URN that uniquely identifies the binary content. This XML can be manipulated in a AquaLogic Service Bus pipeline, branch, or route node in the same way any other content can be manipulated, but only the reference and not the underlying binary content is affected.

For example:

- Binary content in the `body` variable can be copied to an attachment by copying the reference XML to the `body` sub-element of an attachment element.
- Binary content in two different attachments can be swapped by swapping the snippets of reference XML or by swapping the values of the `ref` attributes.

When messages are dispatched from AquaLogic Service Bus, the URI in the reference XML is used to restore the relevant binary content in the outgoing message. For information about how outbound messages are constructed, see [“Constructing Messages to Dispatch” on page A-22](#).

Clients and certain transports, notably e-mail, file and FTP can use this same reference XML to implement pass-by-reference. In this case, the transport or client creates the reference XML rather than the proxy service run time. Also, the value of the URI in the `ref` attribute is specified by the user that creates the reference XML. For these cases in which the reference XML is not created by the proxy service run time—specifically, when the URI is not recognized as one referring to internally managed binary content—AquaLogic Service Bus does not de-reference the URI, and the content is not substituted into an outgoing message.

Inbound and Outbound Variables

The `inbound` and `outbound` context variables contain information about the inbound and outbound endpoints. The `inbound` variable (`$inbound`) contains information about the proxy service that received the request message; the `outbound` variable (`$outbound`) contains information about the target business service to which a message is sent.

The outbound variable is set in the route action in route nodes and publish actions. You can modify `$outbound` using the request actions you configure in routing nodes and publish actions (also in the response actions in routing nodes).

Warning: Some modifications that you can make for the `inbound` and `outbound` context variables are not honored at run time. That is, the values of certain headers and metadata can be overwritten, or ignored by the AquaLogic Service Bus run time. The same limitations are true when you set the transport headers and metadata using the Transport Headers and Service Callout actions, and when you use the Test Console to test your proxy or business services. For information about the headers and metadata for which there are limitations, see [“Understanding How the Run Time Uses the Transport Settings in the Test Console” on page 23-32](#). Note also that any modifications you make to `$outbound` in the message flow *outside* of the request or response actions in routing nodes and publish actions are ignored. In other words, those modifications are overwritten when `$outbound` is initialized in the routing nodes and publish actions.

You cannot modify the outbound variable in Service Callout actions.

The `inbound` and `outbound` variables have the following characteristics:

- Have the same XML schema—the `inbound` and `outbound` context variables are instances of the `endpoint` element as described in [“Message Context Schema” on page A-25](#).
- Contain a single `name` attribute that identifies the name of the endpoint as it is registered in the service directory. The `name` attribute should be considered read-only for both inbound and outbound.

Warning: The read-only rule is not enforced. Changing read-only elements can result in unpredictable behavior.

- Contain the `service`, `transport` and `security` sub-elements described in the following section.

Sub-Elements of the inbound and outbound Variables

This section describes the sub-elements of the `inbound` and `outbound` context variables, including information about whether a given sub-element is initialized at run time. To learn about how context variables are initialized, see [“Initializing Context Variables” on page A-17](#). The sub-elements include:

- [service](#)
- [transport](#)
- [security](#)

service

The `service` element is read-only for both `inbound` and `outbound`. Sub-elements include `providerName` and `operation`.

Table A-3 Sub-Elements of the service Element

Sub-Elements ¹	Description . . .
<code>providerName</code>	Specifies the name of the proxy service provider. Initialized based on the configuration of publish and routing actions.
<code>operation</code> (outbound only)	Used in the outbound variable, specifies the name of the operation to be invoked on the target business service. Initialized based on the inbound and outbound. Note: This element is used for the <code>outbound</code> variable only. In the case of inbound messages, the name of the operation to be invoked on the proxy service is specified by the <code>operation</code> variable.

1. The [“Message Context Schema” on page A-25](#) specifies the element types for the message context variables.

transport

The `transport` element is read-only on `inbound`, except for the `response` element, which you can modify to set the response transport headers. The sub-elements of the `transport` element are described in the following table.

Table A-4 Sub-Elements of the transport Element

Sub-Elements ¹	Description . . .
<p>uri</p>	<p>Identifies the URI of the endpoint:</p> <ul style="list-style-type: none"> • When used in the <code>inbound</code> variable, this is the URI by which the message arrived. • When used in the <code>outbound</code> variable, this is the URI to use when sending the message—it overrides any URI value registered in the service directory. <p>Initialization</p> <p>The URI element is initialized as follows:</p> <ul style="list-style-type: none"> • Always initialized on the <code>inbound</code> variable • Never initialized on the <code>outbound</code> variable. You can set the URI on <code>outbound</code> when you want to override the set of URIs in the service configuration. URI failover is not supported if this element is set.
<p>request</p> <p>This element is read-only² in the <code>inbound</code> variable. You can modify it for the <code>outbound</code> variable.</p>	<p>Specifies transport-specific metadata about the request (including transport headers). The value for this element is defined by the transport protocol (specifically, the <code>RequestMetaData</code> XML defined by the transport SDK). Therefore, the structure of this element depends on the transport being used.</p> <p>To learn about the transport-specific types for this element, see the appropriate transport schema, which is available in a JAR file at the following location in your AquaLogic Service Bus installation:</p> <p><code>BEA_HOME\weblogic91\servicebus\lib\sb-schemas.jar</code></p> <p>where <code>BEA_HOME</code> represents the directory in which you installed AquaLogic Service Bus.</p> <p>Initialization</p> <p>The URI element is initialized as follows:</p> <ul style="list-style-type: none"> • Initialized on the <code>inbound</code> variable using information from the request message received by AquaLogic Service Bus. • On the <code>outbound</code> variable, the <code>request</code> element is created with the proper typing. The typing is transport-dependent. The <code>request</code> element is typically initialized as an empty element, with the exception of certain important transport headers—for example, <code>content-type</code> and <code>SOAPAction</code>.

Sub-Elements ¹	Description . . .
<div>response</div> <div>This element is read-only in the outbound variable. You can modify it for the inbound variable.</div>	<p>Specifies transport-specific metadata about the response (including transport headers). The value for this element is defined by the transport protocol (specifically, the <code>ResponseMetaData</code> XML defined by the transport SDK). Therefore, the structure of this element depends on the transport being used.</p> <p>To learn about the transport-specific types for this element, see the appropriate transport schema, which is available in a JAR file at the following location in your AquaLogic Service Bus installation:</p> <p><code>BEA_HOME\webllogic91\servicebus\lib\sb-schemas.jar</code></p> <p>where <code>BEA_HOME</code> represents the directory in which you installed AquaLogic Service Bus.</p> <p>Initialization</p> <p>The <code>URI</code> element is initialized as follows:</p> <ul style="list-style-type: none">• Initialized on the <code>outbound</code> variable using information from the response message received by AquaLogic Service Bus.• On the <code>inbound</code> variable, the <code>response</code> element is created with the proper typing. The typing is transport-dependent. The <code>response</code> element is typically initialized as an empty element, with the exception of certain important transport headers—for example, <code>content-type</code> and <code>SOAPAction</code>. <p>For a description of the standard HTTP headers, see http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html</p> <p>For a description of the standard JMS headers, see Value-Added Public JMS API Extensions.</p> <p>Note: The following MQ headers do not have equivalents in BEA JMS: <code>ApplOriginData</code>, <code>ApplIdentityData</code>, <code>Accounting Token</code></p>
<div>mode</div>	<p>Specifies whether the communication style is <code>request</code> (one-way) or <code>request-response</code> (two-way).</p> <p>Initialization</p> <p>Initialized on the <code>inbound</code> and <code>outbound</code> variables using information from the service and its operations (if applicable). For example, if a request-only operation is being invoked, the <code>mode</code> element is set to <code>request</code>, rather than to <code>request-response</code>.</p>

Sub-Elements ¹	Description . . .
<p><code>qualityOfService</code></p> <p>This element is read only for inbound.</p> <p>You can modify it for the outbound case—in the outbound request actions of a publish or routing action.</p>	<p>Specifies the quality of service expected when sending or receiving a message. Valid values include <code>best-effort</code> and <code>exactly-once</code>:</p> <ul style="list-style-type: none"> • <code>best-effort</code> means that each dispatch defines its own transactional context (if the transport is transactional). <p>Best effort means that there is no reliable messaging and no elimination of duplicate messages—however, performance is optimized.</p> <p>For the scenario in which a message is dispatched as a result of a publish action, any dispatch errors are suppressed.</p> <p>For the scenario in which a message is dispatched from a routing node, dispatch errors are not suppressed.</p> <ul style="list-style-type: none"> • <code>exactly-once</code> means that the dispatch is included as part of the inbound transactional context (if one exists and if the outbound transport is transactional) and errors cause processing to abort and trigger the relevant error handler (in the case of both the route and publish scenarios). <p><i>Exactly once</i> reliability means that messages are delivered from inbound to outbound exactly once, assuming a terminating error does not occur before the outbound message send is initiated.</p> <p>Initialization</p> <p>The <code>qualityOfService</code> element is initialized on the inbound and outbound variables as follows:</p> <ul style="list-style-type: none"> • In the inbound case, the quality of service (QoS) is dictated by the transport. For example, for the JMS/XA transport, the QoS is <i>exactly once</i>; for the HTTP transport, the QoS is <i>best effort</i>. • In the outbound case, the QoS is set differently for publishing and for routing, as follows: <p>Routing—When messages are routed to another service from a route node, the QoS is always initialized using the value from the inbound context variable. In other words, the outbound QoS is set to <i>exactly once</i> if (and only if) the inbound QoS is <i>exactly once</i>. Otherwise, the outbound QoS is set to <i>best effort</i>.</p> <p>Publishing—When a message is published to another service as the result of a publish action, the quality of service (QoS) is always initialized to <i>best effort</i> regardless of the inbound setting.</p>

Sub-Elements ¹	Description . . .
retryCount (outbound only)	Specifies the number of retries to attempt when sending a message from AquaLogic Service Bus. If <code>retryCount</code> is set, the setting overrides any retry count value configured in the target service configuration.
retryInterval (outbound only)	Specifies the interval, in seconds, to wait before attempting to resend a message from AquaLogic Service Bus. If <code>retryInterval</code> is set, the setting overrides any retry interval value configured in the target service configuration.

1. The [“Message Context Schema” on page A-25](#) specifies the element types for the message context variables.
2. The read-only rule is not enforced. Changing read-only elements can result in unpredictable behavior.

security

The sub elements of the `security` element are described in the following table.

Table A-5 Sub-Elements of the security Element

Sub-Elements ¹	Description . . .
transportClient (inbound only, read only ²)	Specifies authenticated transport-level user information. Includes the <code>username</code> sub-element. Initialized by AquaLogic Service Bus. The inbound <code>transportClient</code> element is read-only.

Sub-Elements ¹	Description . . .
messageLevelClient (inbound only, read only ²)	<p>Specifies authenticated message-level user information. Includes the username sub-element.</p> <p>Initialized by AquaLogic Service Bus. The inbound messageLevelClient element is read-only.</p>
doOutboundWss (outbound only)	<p>This property controls outbound Web Service Security (WSS). If doOutboundWss is true, the proxy service applies WSS (that is, sign and/or encrypt and/or add security tokens) to the outbound message according to the WS-policy of the target service. If doOutboundWss is false, the proxy service does not apply WSS to the outbound message. This property is used to support WSS pass-through scenarios.</p> <p>In a WSS pass-through scenario, a proxy service receives a request that already has WSS applied to it (by the client) but the proxy service does not process the WSS payload. In other words, the proxy service simply routes this request to the back-end service. This is also called a passive intermediary. When a proxy service is a passive intermediary, an incoming secured message remains signed/encrypted in the AquaLogic Service Bus message flow and therefore, must not be re-signed or re-encrypted at the point of outbound dispatch.</p> <p>The route node automatically initializes this property when a routing destination is set (during routing or publishing). The default value for doOutboundWss depends on the WSS configuration of both proxy and target service:</p> <ul style="list-style-type: none"> • If the target service does not have a WSS policy, doOutboundWss is set to false • If the proxy service has a WSS policy AND the Process WS-Security Header flag is false (that is, the proxy service is a passive intermediary), doOutboundWss is set to false • Otherwise, doOutboundWss is set to true <p>You can modify the value of the doOutboundWss element in a routing (or publish) outbound request action.</p> <p>For more information, see "Message-Level Security" in Securing Inbound and Outbound Messages in the <i>BEA AquaLogic Service Bus User Guide</i>.</p>

1. The "Message Context Schema" on page A-25 specifies the element types for the message context variables.
2. The read-only rule is not enforced. Changing read-only elements can result in unpredictable behavior.

Related Topics

[“Adding an Action” on page 16-2](#)

[“Adding Route Node Actions” on page 15-25](#)

For a description of the standard HTTP headers, see

<http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html>

For a description of the standard JMS headers, see

http://e-docs.bea.com/wls/docs91/jms/fund.html#jms_features

Operation Variable

The `operation` variable is a read-only variable. It contains a string that identifies the operation to be invoked on a proxy service. If no operations are defined for a proxy service, the `operation` variable is not set and returns the equivalent of null.

AquaLogic Service Bus provides the `operation` variable as a stand-alone variable, rather than as a sub-element of the `inbound` variable to optimize performance—the computation of the operation may be deferred until the `operation` variable is explicitly accessed rather than anytime the `inbound` variable is accessed.

Fault Variable

The `fault` variable is used to hold information about any error that has occurred during message processing. When an error occurs, this variable is populated with information before the appropriate error handler is invoked.

Note: This variable is defined only in error handler pipelines and is not set in request and response pipelines, or in route or branch nodes.

The `fault` variable includes the `errorCode`, `reason`, `details`, and `location` sub-elements described in the following table.

Table A-6 Sub-Elements of the Fault Variable

Elements of the Fault Variables	Description ¹ . . .
<code>errorCode</code>	Specifies the error code as a string value
<code>reason</code>	Contains a text description of the error

Elements of the Fault Variables (Continued)	Description ¹ . . .
<code>details</code>	Contains user-defined XML content related to the error
<code>location</code>	<p>Identifies the node, pipeline and stage in which the error occurred. Also identifies if the error occurred in an error handler. The sub-elements include:</p> <ul style="list-style-type: none"> • <code>node</code>—the name of the Pipeline/Branch/Route node where an error occurred; a string. • <code>pipeline</code>—the name of the Pipeline where an error occurred (if applicable); a string. • <code>stage</code>—the name of the stage where an error occurred (if applicable); a string. • <code>error-handler</code>—indicates if an error occurred from inside an error handler; a boolean.

1. The “[Message Context Schema](#)” on page A-25 specifies the element types for the message context variables.

The contents of the `fault` variable are modeled after SOAP faults to facilitate fault generation when replying from a SOAP-based proxy service. The values for error codes generated by AquaLogic Service Bus correspond to system error codes and are prefixed with the `BEA` string.

The error codes associated with the errors surface inside the element of the `fault` context variable. You can access the value using the following XQuery statement:

```
$fault/ctx:errorCode/text()
```

AquaLogic Service Bus defines three generic error codes for the three classes of possible errors. The format of the generic codes is `BEA-xxx000`, where `xxx` represents a generic category as follows:

- 380 Transport
- 382 Proxy
- 386 Security
- 394 UDDI

This yields the generic codes as follows:

- BEA-380000—BEA-380999

Indicates a transport error (for example, failure to dispatch a message).

- BEA-382000—BEA-382499

Indicates a proxy service run-time error (for example, a stage exception).

- BEA-382500—BEA-382999

Indicates an error in a proxy service action.

- BEA-386000—BEA-386999

Indicates a WS-Security error (for example, authorization failure).

- BEA-394500—BEA-394999

Indicates an error in the UDDI sub system.

AquaLogic Service Bus defines unique codes for specific errors. For example:

BEA-382030—Indicates a message parse error (for example, a SOAP proxy service received a non-SOAP message).

BEA-382500—Reserved for the case in which a Service Callout action receives a SOAP Fault response.

For information about these and other specific error codes, see [Appendix B, “Error Codes.”](#)

Related Topics

[“Error Messages and Handling” on page 18-1](#)

Initializing Context Variables

The message context and its variables are initialized in the binding layer when a message is received and before message processing begins. The following table summarizes how context variables are initialized.

Table A-7 Initializing Context Variables

Context Variable	How Initialized
outbound	Initialized to null because no routing or errors have yet occurred.
fault	<p>The outbound variable is initialized in the route action in route nodes and publish actions. You can modify <code>\$outbound</code> through the request actions in routing nodes and publish actions (also in the response actions in routing nodes). For more information, see “Inbound and Outbound Variables” on page A-7.</p> <p>For information about the initialization of sub-elements of <code>outbound</code>, see “Sub-Elements of the inbound and outbound Variables” on page A-8.</p>
inbound	<p>Initialized with service, transport and security information that is obtained from Service Bus metadata about the registered proxy service and transport-level metadata (transport headers, authenticated user information, and so on) about the specific incoming request.</p> <p>For information about the initialization of sub-elements of <code>inbound</code>, see “Sub-Elements of the inbound and outbound Variables” on page A-8.</p>
header	<p>Initialized using the content of the inbound message. How the initialization is performed depends on the type of proxy service, as described in the subsequent topics in this section:</p> <ul style="list-style-type: none"> • “Initializing the attachments Context Variable” on page A-18 • “Initializing the header and body Context Variables” on page A-18
body	
attachments	
operation	<p>The <code>header</code>, <code>body</code>, and <code>attachments</code> variables are re initialized after routing using the content of the response that is received. If no routing is performed or if the communication mode is request-only, then these variables are not re initialized. That is, they are not cleared of any content.</p>

Initializing the attachments Context Variable

The `attachments` context variable is initialized with any MIME attachments that accompany the message, but does not include the part representing the main message (whether it is SOAP, XML, MFL, and so on). Each `<attachment>` element is initialized using the MIME headers that accompany each part in the MIME package.

The contents of the `<body>` element in the `<attachment>` can be one of the following depending on the attachment's `Content-Type`:

- XML
- text
- A snippet of reference XML that refers to the attachment content (see [“Binary Content in the body and attachments Variables”](#) on page A-6)

Initializing the header and body Context Variables

This section describes how the initialization of header and body context variables is performed depending on the type of proxy service: [SOAP Services](#), [XML Services \(Non SOAP\)](#), [Messaging Services](#).

SOAP Services

Messages to SOAP-based services are SOAP messages containing XML that is contained in a `<soap:Envelope>` element. In the case that messages include attachments, the content of the inbound message is a MIME package that includes the SOAP envelope as one of the parts—typically the first part or one identified by the top-level `Content-Type` header. The context variables are initialized as follows:

- `header`—initialized with the `<soap:Header>` element from the SOAP message
- `body`—initialized with the `<soap:Body>` element from the SOAP message

XML Services (Non SOAP)

The messages to XML-based services are XML, but can be of any type allowed by the proxy service configuration. In the case that messages include attachments, the content of the inbound messages is a MIME package that includes the primary XML payload as one of the parts—typically the first part or one identified by the top-level `Content-Type` header.

The context variables are initialized as follows:

- `header`—initialized with an empty `<soap:Header/>` element.
- `body`—initialized with a `<soap:Body>` element that wraps the entire XML payload.

Messaging Services

Messaging services are those that can receive messages of one data type and respond with messages of a different data type. The supported data types include XML, MFL, text, untyped binary. The context variables are initialized as follows:

- `header`—initialized with an empty `<soap:Header/>` element.
- `body`—initialized with a `<soap:Body>` element that wraps the entire payload.
 - In the case of XML, MFL, and text content, it is placed directly within the `<soap:Body>` element.
 - In the case of binary content, a piece of reference XML is created and inserted inside the `<soap:Body>` element (see [“Binary Content in the body and attachments Variables” on page A-6](#)). The binary content cannot be accessed or modified, but the reference XML can be examined, modified, and replaced with inline content.

Performing Operations on Context Variables

You interact with and manipulate the message context through actions in the pipelines, branch, or route nodes that define a proxy service. Most actions expose the XQuery language to do so. Each context variable is represented as an XQuery variable of the same name. For example, the `header` variable is accessible in XQuery as `$header`, the `body` variable is accessible as `$body`, and so on. The examples in this section show the use of XQuery to examine and manipulate context variables.

`$body`

The `$body` variable includes the `<soap-env:Body> . . . </soap-env:Body>` element.

For example, if you assign data to the `body` context variable using the [Assign](#) action, you must wrap it with the `<soap-env:Body>` element. In other words, you build the SOAP package by including the `<soap-env:Body>` element in the context variable.

There is an exception to this behavior in AquaLogic Service Bus—for the case in which you build the Request Document Variable for the Service Callout action. Service Callout actions work with the core payload (RPC parameters, documents, and so on) and AquaLogic Service Bus builds the SOAP package around the core payload. In other words, when you configure the Request Document Variable for a Service Callout action, you do not wrap the input document with `<soap-env:Body> . . . </soap-env:Body>`.

For information about configuring the Service Callout action, see [“Service Callout” on page 16-28](#).

`$header`

The `$header` variable includes the `<soap-env:Header> . . . </soap-env:Header>` element.

For example if you assign data to the `header` context variable using the [Assign](#) action, you must wrap it with the `<soap-env:Header>` element. In other words, you build the SOAP package by including the `<soap-env:Header>` element in the context variable. This is true for all manipulations of `$header`, including the case in which you can set one or more SOAP Headers for a Service Callout request. For information about configuring SOAP Headers for a Service Callout action, see [“Service Callout” on page 16-28](#).

Listing A-1 Extract the WS-Addressing Header—From

```
$header/wsa:From
```

Listing A-2 Extract the Payload From a Non-SOAP Message

```
$body/*
```

Listing A-3 Extract the user-header From an Outbound Response Message

```
$outbound/ctx:transport/ctx:response/tp:user-header[@name='myheader']/@value
```

When creating a `body` input variable that is used for the request parameter in a Service Callout to a SOAP Service, you would define that variable's contents using `body/*` (to remove the wrapper `soap-env:Body`), not `$body` (which results in keeping the `soap-env:Body` wrapper).

Listing A-4 Assign Variable Contents for Request Parameter in a Service Callout

```
$body/*
```

Related Topics

For more information about handling context variables using the XQuery and XPath editors in the AquaLogic Service Bus Console, see the following topics:

“Variables Structures” in [Modeling Message Flow in AquaLogic Service Bus](#) in the *BEA AquaLogic Service Bus User Guide*

“Using the XQuery Condition Editor” on page 17-5

“Using the Inline XQuery Expression Editor” on page 17-2

“Using the XPath Expression Editor” on page 17-7

Constructing Messages to Dispatch

When AquaLogic Service Bus publishes or routes a message, the content of the message is constructed using the values of variables in the Message Context. For example, transport headers and other transport-specific metadata are taken from `$outbound/transport/request`. As is the case with initialization of the context, the message content for outbound messages is handled differently depending upon the type of the target service. How the outbound message content is created depends on the type of the target service, as described in the following topics:

- [SOAP Services](#)
- [XML Services \(Non SOAP\)](#)
- [Messaging Services](#)

SOAP Services

An outgoing SOAP message is constructed by wrapping the contents of the `header` and `body` variables inside a `<soap:Envelope>` element. If the `body` variable contains a piece of reference XML, it is sent as is—in other words, the referenced content is not substituted into the message.

If attachments are defined in the `attachments` variable, a MIME package is created from the main message and the attachment data. The handling of the content for each attachment part is similar to how content is handled for messaging services.

XML Services (Non SOAP)

The messages to XML-based services from AquaLogic Service Bus is constructed from the contents of the `body` variable:

- If the `body` variable is empty, then a zero-size message is sent.
- If the `body` variable contains multiple XML snippets, then only the first snippet is used in the outbound message. For example, if `<soap:Body>` contains `<abc/><xyz/>`, only `<abc/>` is sent.
- If the content of the `body` variable is text and not XML, an error is thrown.
- If the `body` variable contains a piece of reference XML, it is sent as is—in other words, the referenced content is not substituted into the message.
- If attachments are defined in the `attachments` variable, a MIME package is created from the XML message and the attachment data. In the case of a null XML message, the

corresponding MIME body part is empty. The handling of the content for each attachment part is similar to how content is handled for messaging services.

Regardless of any data it contains, the `header` variable does not contribute any content to the outbound message.

For examples of how messages are constructed for Service Callout Actions, see [“Service Callout” on page 16-28](#).

Messaging Services

The messages to messaging services from AquaLogic Service Bus are constructed from the contents of the `body` variable.

- If the `body` variable is empty, then a zero-size message is sent, regardless of the outgoing message type.
- If the outgoing message type is XML, then the message is constructed in the same way as it is for [XML Services \(Non SOAP\)](#).
- If the outgoing message type is MFL, then the behavior is similar to that for XML message types except that the extracted XML is converted to MFL. (An error occurs if the XML→MFL conversion cannot be performed.)
- If the target service requires text messages, the contents of the `body` variable are interpreted as text and sent. In this way, it is possible for AquaLogic Service Bus to handle incoming XML messages that must be delivered to a target service as text. In other words, you do not need to configure the message flow to handle such messages.
- For target services that expect binary messages, the `body` variable must contain a piece of reference XML—the reference URI references the binary data stored in the AquaLogic Service Bus in-memory hash table. The referenced content is sent to the target service.

For cases in which a client, a transport, or the designer of a proxy service specifies the reference URI, the referenced data is not stored in the AquaLogic Service Bus and thus cannot be de referenced to populate the outbound message. Consequently, the reference XML is sent in the message.

If the `body` variable contains a piece of reference XML, and the target service requires a message type other than binary, the reference XML inside the `body` variable is treated as content. In other words, it is sent as XML, converted to text, or converted to MFL. This is true regardless of the URI in the reference XML.

Regardless of any data it contains, the `header` variable does not contribute any content to the outbound message.

For examples of how messages are constructed for Service Callout Actions, see [“Service Callout” on page 16-28](#).

About Sending Binary Content in Email Messages

For binary messages, AquaLogic Service Bus does not insert the message content into the `body` variable. Instead, a `<binary-content />` reference element is created and inserted into the `<SOAP:Body>` element (see [“Message-Related Variables” on page A-3](#)). However, the email standard does not support sending binary content type as the main part of a message. If you want to send binary messages via email to a messaging service that accepts text or XML documents and optional attachments, you can do so as follows:

1. Transfer the binary-content reference XML from `$body` to `$attachments`.
2. Replace the content of `$body` with text or XML wrapped in a `<SOAP:Body>` element.

For the case in which the outgoing message type is MFL, the contents of `$body` is converted from XML to text or binary based on the MFL transformation:

- If the target service expects to receive text message, you can set the `content-type` (the default is binary for MFL message type) as `text/plain` in `$outbound`
- If the target service expects to receive binary messages, it is not possible to send MFL content via the email transport.

To learn more about how binary content is handled, see [“Binary Content in the body and attachments Variables” on page A-6](#).

Related Topics

[“Service Callout” on page 16-28](#)

[“Transport Headers” on page 16-48](#)

[“Message Context Schema” on page A-25](#)

[“Adding a Route Node” on page 15-22](#)

Message Context Schema

[Listing A-5](#) shows the message context schema (`MessageContext.xsd`), which specifies the types for the message context variables.

When working with the message context variables, you need to reference `MessageContext.xsd` and the transport-specific schemas, which are available in a JAR file at the following location in your AquaLogic Service Bus installation:

```
BEA_HOME\weblogic91\servicebus\lib\sb-schemas.jar
```

where `BEA_HOME` represents the directory in which you installed AquaLogic Service Bus. `sb-schemas.jar` includes the following context-related schemas:

- Email Transport Schema (`EmailTransport.xsd`)
- File Transport Schema (`FileTransport.xsd`)
- FTP Transport Schema (`FTPTransport.xsd`)
- HTTP Transport Schema (`HttpTransport.xsd`)
- HTTPS Transport Schema (`HttpsTransport.xsd`)
- Message Context Schema (`MessageContext.xsd`)
- JMS Transport Schema (`JmsTransport.xsd`)
- Reference Schema (`ServiceBusReference.xsd`)
- Common Transport Schema (`TransportCommon.xsd`)

Listing A-5 Message Context.xsd

```
<schema targetNamespace="http://www.bea.com/wli/sb/context"
  xmlns:mc="http://www.bea.com/wli/sb/context"
  xmlns="http://www.w3.org/2001/XMLSchema"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">
  <!--===== -->

  <!-- The context variable 'fault' is an instance of this element -->
  <element name="fault" type="mc:FaultType"/>

  <!-- The context variables 'inbound' and 'outbound' are instances of this
```

Message Context

```
element -->
  <element name="endpoint" type="mc:EndpointType"/>

  <!-- The three sub-elements within the 'inbound' and 'outbound' variables -->
  <element name="service" type="mc:ServiceType"/>
  <element name="transport" type="mc:TransportType"/>
  <element name="security" type="mc:SecurityType"/>

  <!-- The context variable 'attachments' is an instance of this element -->
  <element name="attachments" type="mc:AttachmentsType"/>

  <!-- Each attachment in the 'attachments' variable is represented by an
instance of this element -->
  <element name="attachment" type="mc:AttachmentType"/>

  <!-- Element used to represent binary payloads and pass-by reference content
-->
  <element name="binary-content" type="mc:BinaryContentType"/>

  <!-- ===== -->

  <!-- The schema type for -->
  <complexType name="AttachmentsType">
    <sequence>
      <!-- the 'attachments' variable is just a series of attachment elements
-->
      <element ref="mc:attachment" minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
  </complexType>

  <complexType name="AttachmentType">
    <all>
      <!-- Set of MIME headers associated with attachment -->
      <element name="Content-ID" type="string" minOccurs="0"/>
      <element name="Content-Type" type="string" minOccurs="0"/>
      <element name="Content-Transfer-Encoding" type="string"
minOccurs="0"/>
      <element name="Content-Description" type="string" minOccurs="0"/>
      <element name="Content-Location" type="string" minOccurs="0"/>
      <element name="Content-Disposition" type="string" minOccurs="0"/>

      <!-- Contains the attachment content itself, either in-lined or as
<binary-content/> -->
      <element name="body" type="anyType"/>
    </all>
  </complexType>

  <complexType name="BinaryContentType">
    <!-- URI reference to the binary or pass-by-reference payload -->
```

```

        <attribute name="ref" type="anyURI" use="required"/>
    </complexType>

<!-- ===== -->

    <complexType name="EndpointType">
        <all>
            <!-- Sub-elements holding service, transport, and security details
for the endpoint -->
            <element ref="mc:service" minOccurs="0" />
            <element ref="mc:transport" minOccurs="0" />
            <element ref="mc:security" minOccurs="0" />
        </all>

        <!-- Fully-qualified name of the service represented by this endpoint -->
        <attribute name="name" type="string" use="required"/>
    </complexType>

<!-- ===== -->

    <complexType name="ServiceType">
        <all>
            <!-- name of service provider -->
            <element name="providerName" type="string" minOccurs="0"/>

            <!-- the service operation being invoked -->
            <element name="operation" type="string" minOccurs="0"/>
        </all>
    </complexType>

<!-- ===== -->

    <complexType name="TransportType">
        <all>
            <!-- URI of endpoint -->
            <element name="uri" type="anyURI" minOccurs="0" />

            <!-- Transport-specific metadata for request and response (includes
transport headers) -->
            <element name="request" type="anyType" minOccurs="0"/>
            <element name="response" type="anyType" minOccurs="0" />

            <!-- Indicates one-way (request only) or bi-directional
(request/response) communication -->
            <element name="mode" type="mc:ModeType" minOccurs="0" />

            <!-- Specifies the quality of service -->
            <element name="qualityOfService" type="mc:QoSType" minOccurs="0" />

```

Message Context

```

        <!-- Retry values (outbound only) -->
        <element name="retryInterval" type="integer" minOccurs="0" />
        <element name="retryCount" type="integer" minOccurs="0" />
    </all>
</complexType>

<simpleType name="ModeType">
    <restriction base="string">
        <enumeration value="request"/>
        <enumeration value="request-response"/>
    </restriction>
</simpleType>

<simpleType name="QoSType">
    <restriction base="string">
        <enumeration value="best-effort"/>
        <enumeration value="exactly-once"/>
    </restriction>
</simpleType>

<!-- ===== -->

<complexType name="SecurityType">
    <all>
        <!-- Transport-level client information (inbound only) -->
        <element name="transportClient" type="mc:SubjectType" minOccurs="0"/>

        <!-- Message-level client information (inbound only) -->
        <element name="messageLevelClient" type="mc:SubjectType"
minOccurs="0"/>

        <!-- Boolean flag used to disable outbound WSS processing (outbound
only) -->
        <element name="doOutboundWss" type="boolean" minOccurs="0"/>
    </all>
</complexType>

<complexType name="SubjectType">
    <all>
        <!-- User name associated with this tranport- or message-level subject
-->
        <element name="username" type="string"/>
    </all>
</complexType>

<!-- ===== -->

<complexType name="FaultType">
    <all>
```

```

    <!-- A short string identifying the error (e.g. BEA38229) -->
    <element name="errorCode" type="string"/>

    <!-- Descriptive text explaining the reason for the error -->
    <element name="reason" type="string" minOccurs="0" />

    <!-- Any additional details about the error -->
    <element name="details" type="anyType" minOccurs="0" />

    <!-- Information about where the error occurred in the proxy -->
    <element name="location" type="mc:LocationType" minOccurs="0" />
  </all>
</complexType>

<complexType name="LocationType">
  <all>
    <!-- Name of the Pipeline/Branch/Route node where error occurred -->
    <element name="node" type="string" minOccurs="0" />

    <!-- Name of the Pipeline where error occurred (if applicable) -->
    <element name="pipeline" type="string" minOccurs="0" />

    <!-- Name of the Stage where error occurred (if applicable) -->
    <element name="stage" type="string" minOccurs="0" />

    <!-- Indicates if error occurred from inside an error handler -->
    <element name="error-handler" type="boolean" minOccurs="0" />
  </all>
</complexType>
<!-- Encapsulates any stack-traces that may be added to a fault <details> -->
<element name="stack-trace" type="string"/>
</schema>

```

Related Topics

[“Inbound and Outbound Variables” on page A-7](#)

[“Performing Operations on Context Variables” on page A-20](#)

[“Constructing Messages to Dispatch” on page A-22](#)

Message Context

Error Codes

This section describes the AquaLogic 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 B-1 AquaLogic Service Bus Error Codes

Subsystem	Error Code Range	Details
Transport Run Time	BEA-380000— BEA-380999	<ul style="list-style-type: none">BEA-380000 General transport error

Subsystem	Error Code Range	Details
Proxy Service Run Time	BEA-382000— BEA-382499	<ul style="list-style-type: none"> • 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 • BEA-382032 Message must be a soap:Envelope • 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-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}

Subsystem	Error Code Range	Details
Actions	BEA-382500— BEA-382999	<ul style="list-style-type: none"> • BEA-382500 Service callout action received SOAP Fault response • BEA-382501 Service callout action received an unrecognized response • BEA-382502 Service callout has received an error response from the server • BEA-382505 Validate action validation failed
Security	BEA-386000— BEA-386999	<ul style="list-style-type: none"> • BEA-386000 General security error • BEA-386200 General web service security error • 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

Subsystem	Error Code Range	Details
UDDI	BEA-394500— BEA-394999	<ul style="list-style-type: none">• 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• 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

Subsystem	Error Code Range	Details
		<ul style="list-style-type: none"> • 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 a file endpoint configuration when importing a service

Error Codes