

Oracle® Fusion Middleware

Healthcare Integration User's Guide for Oracle SOA Suite

11g Release 1 (11.1.1.6.0)

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Documentation for developers that describes how to create and configure Oracle SOA Suite integration applications that map and transmit information between disparate healthcare systems. This document also describes how to monitor and manage deployed healthcare integration applications.

Oracle Fusion Middleware Healthcare Integration User's Guide for Oracle SOA Suite, 11g Release 1
(11.1.1.6.0)

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Preface

This guide describes how to use Oracle SOA Suite for healthcare integration.

Audience

Oracle Fusion Middleware Healthcare Integration User's Guide for Oracle SOA Suite is intended for healthcare organizations that need to exchange healthcare data, and want to design, deploy, monitor, and manage healthcare integration applications.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

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Related Documents

For information about Oracle SOA Suite products, see the following:

- *Oracle Fusion Middleware User's Guide for Oracle B2B*
- *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*
- *Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite*
- *Oracle Fusion Middleware Installation Guide for Oracle SOA Suite and Oracle Business Process Management Suite*
- *Oracle Fusion Middleware User's Guide for Technology Adapters*
- *Oracle Fusion Middleware Performance and Tuning Guide*

For information about the Java API documentation (Javadoc), see the following:

- *Oracle Fusion Middleware B2B Callout Java API Reference*
- *Oracle Fusion Middleware B2B Instance Message Java API Reference*

Conventions

The following text conventions are used in this document:

| Convention | Meaning |
|-------------------|--|
| boldface | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary. |
| <i>italic</i> | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values. |
| monospace | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |

What's New in This Guide for Release 11.1.1.6.x

For Release 11.1.1.6.x, this guide has been updated in several ways. The following table lists the sections that have been added or changed. If a feature was not available in the first release of 11.1.1.6.x, the last columns denote which documentation release contains the update.

For a list of known issues (release notes), see the "Known Issues for Oracle SOA Products and Oracle AIA Foundation Pack" at <http://www.oracle.com/technetwork/middleware/docs/soa-aiafp-knownissuesindex-364630.html>.

| Sections | Changes Made | 11.1.1.6.0 | 11.1.1.6.1 |
|--|--|------------|------------|
| Chapter 2 Working with the Oracle Healthcare Adapter | | | |
| Section 2.1.2, "What Happens When You Add a Healthcare Adapter to a SOA Composite" | Section updated to reflect moving endpoint configuration out of the Healthcare Configuration Wizard and using normalized message properties to indicate which endpoint to use. | X | |
| Section 2.2.2, "Add a Healthcare Integration Binding Component" | Section updated to remove endpoint configuration through the wizard. | X | |
| Section 2.2.3, "Add Service Components" | Section updated to include endpoint configuration through normalized message properties. | X | |
| Chapter 3 Working with Document Types and Protocols | | | |
| Section 3.2, "Using the Custom Document Protocol" | Section revised to remove ebXML parameters because they do not pertain to Healthcare | X | |
| Chapter 4 Working with Endpoints | | | |
| Section 4.2, "Creating Endpoints" | Section revised to include how to create endpoints with single-directional transport protocol (FILE). | X | |
| Section 4.2.1, "Configuring Channels in an Endpoint with Single-Directional Protocols" | Section added to describe how to configure multiple communication channels in a single-directional endpoint. | X | |
| Section 4.3, "Associating an Endpoint with a Document" | Section revised to move enabling sequencing in an endpoint to a different section. | X | |

| Sections | Changes Made | 11.1.1.6.0 | 11.1.1.6.1 |
|--|---|-------------------|-------------------|
| Section 4.4, "Enabling Sequencing for an MLLP Endpoint" | Section added by moving enabling sequencing in endpoint from Section 4.3 , "Associating an Endpoint with a Document." | X | |
| Section 4.6, "Working with the Endpoint Window" | Section added to include content on the Endpoint Window | X | |
| Chapter 8 Working with Dashboards | | | |
| Section 8.3.2, "Viewing Detailed Endpoint Information in a Dashboard" | Section updated to include instructions for viewing sequenced message statuses. | X | |
| Section 8.4, "Working with Sequenced Messages" | Section added on how to monitor and manage sequenced messages from an endpoint dashboard. | X | |
| Chapter 9 Working with Reports | | | |
| Section 9.1.1, "About the Business Message Report Filter Editor" | Section updated to describe and illustrate the updated Business Message Report Filter Editor. | X | |
| Chapter 10, "Configuring Alerts and Contacts" | Chapter added to provide instructions on setting up event notifications for SMS (text) and email alerts. | X | |
| Appendix A, "Back-End Applications Interface" | Appendix added to cover the message properties supported by Oracle SOA Suite for healthcare integration. | X | |
| Appendix B, "Creating Endpoints with Different Transport Protocols" | Appendix added to cover the creation of endpoints by using different transport protocols. | X | |
| Appendix C, "Managing Message Sequencing" | Appendix added to cover the commandline tools for message sequencing. | X | |
| Appendix E, "Batching HL7 Messages" | Appendix added to cover batching of HL7 messages. | X | |
| Appendix F, "Configuration for Functional Acknowledgment 999" | Appendix added to cover the required configuration for FA999. | X | |

Getting Started with Oracle SOA Suite for Healthcare Integration

This chapter provides an overview of the Oracle SOA Suite for healthcare integration, which provides a Web-based user interface for creating applications to transmit and transform data between various healthcare systems. The user interface also provides monitoring and management capabilities for the messages shared between those systems.

This chapter contains the following topics:

- [Section 1.2, "What You Need to Get Started with Oracle SOA Suite for Healthcare Integration"](#)
- [Section 1.3, "Logging in to Oracle SOA Suite for Healthcare Integration"](#)
- [Section 1.4, "Using the Oracle SOA Suite for Healthcare Integration User Interface"](#)

1.1 Introduction to Oracle SOA Suite for Healthcare Integration

Oracle SOA Suite for healthcare integration utilizes several features of Oracle SOA Suite to help you design, create, and manage applications that process healthcare data. Oracle SOA Suite for healthcare integration includes a Web-based user interface where you can create and configure healthcare integration applications, as well as monitor and manage the messages processed through those applications. You can also use the Oracle Document Editor to create and configure document definitions, which define message structures. The Oracle SOA Suite for healthcare integration user interface provides additional features, such as support for additional messaging protocols and the ability to create and manage endpoints, manage documents, create mapsets, and create Java callouts.

1.1.1 Oracle SOA Suite for Healthcare Integration Components

A healthcare integration application includes several components that define how messages are received, processed, and transmitted. The components that make up a healthcare integration application include the following. Document definitions and endpoints are required components for a healthcare integration application.

- **Document Definitions:** Use document definitions to define the structure of the messages that are used in a healthcare transaction. Predefined templates are provided for HL7 messages when you install the Oracle Document Editor. Document definitions are categorized by protocol, version, and type.
- **Endpoints:** An endpoint brings together all of the above components for one external system. The endpoint defines whether messages are being sent or

received by Oracle SOA Suite for healthcare integration, the transport protocol, acknowledgment handling, and whether messages are validated or translated. Endpoints are associated with document definitions and, optionally, internal delivery channels, callouts, mapsets, and SOA Suite composite applications.

- **Mapsets:** Use mapsets to define the transformation from one native format to another, bypassing the step of translating to XML and back. For example, a mapset can map fields from a HIPAA 4010 document directly to a HIPAA 5010 document. A mapset includes source and target document definitions, and a file that defines the mapping.
- **Callouts:** Use callouts to incorporate your own Java code into a healthcare integration application.
- **Internal Delivery Channels:** Use internal delivery channels when you want the healthcare integration application to receive messages from or send messages to a JMS topic or queue.

1.1.2 Management and Monitoring Tools

Once you create and deploy a healthcare integration application, you can monitor and manage the messages processed through the application using the Oracle SOA Suite for healthcare integration Web-based user interface. The reporting feature allows you to view a list of messages processed and then to drill deeper into message content, protocol information, and so on. You can also resubmit messages or configure automatic retries, configure partner downtimes, and purge selected messages from the metadata repository.

The dashboard feature allows you to view a summary of messages sent for each running endpoint. You can also drill down deeper to view the volume of messages sent, received and errored for the specified time period. This information is further categorized by document type. You can create custom dashboards and reports based on a variety of criteria. Several default reports are already provided for you.

1.1.3 Oracle SOA Suite and Healthcare Integration

Oracle SOA Suite for healthcare integration provides SOA features and components that extend business processes to healthcare systems. When Oracle SOA Suite for healthcare integration is used in a SOA composite application, you can model an end-to-end business process integration.

Oracle SOA Suite provides a complete set of service infrastructure components for designing, deploying, and managing composite applications. The multiple technology components of a composite application share common capabilities, including a single deployment and management model and tooling, end-to-end security, and unified metadata management.

In a SOA implementation, Oracle SOA Suite for healthcare integration functions as a binding component, with network protocols and services that enable message sending and receiving. As a service (inbound), the SOA composite application receives messages from Oracle SOA Suite for healthcare integration. As a reference (outbound), the SOA composite application passes a message to Oracle SOA Suite for healthcare integration, which in turn sends the message to external systems.

For more information about Oracle SOA Suite, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

1.1.4 Oracle SOA Suite for Healthcare Integration Metadata

Oracle SOA Suite for healthcare integration instance data is stored and managed within the SOAINFRA schema of your database. Metadata for design-time and configuration is stored and managed through Metadata Services (MDS), available in Oracle Fusion Middleware. For more information about MDS, see *Oracle Fusion Middleware Administrator's Guide*.

Due to the storage of healthcare integration data in the metadata repository, it is possible that the tablespace will become full. If this occurs, increase the size of the tablespace. Increasing the size of the redo log file also helps to improve performance when importing large configurations. A larger log file requires more space but reduces the need for applications to retry the operation.

1.1.5 Security

Security for Oracle SOA Suite for healthcare integration is handled through Oracle WebLogic Server. You can create user accounts in WebLogic Server for people who need to view and modify components in Oracle SOA Suite for healthcare integration and then provision those accounts using the Oracle B2B Console. In order to have edit privileges on the healthcare integration user interface, users must be granted either the Administrator or Monitor role in Oracle B2B.

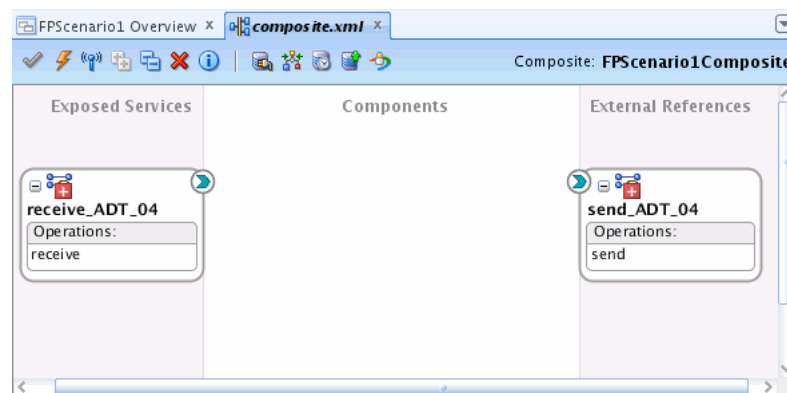
1.2 What You Need to Get Started with Oracle SOA Suite for Healthcare Integration

In addition to installing Oracle SOA Suite, which includes Oracle SOA Suite for healthcare integration, you will need to install:

- Oracle Document Editor
- Oracle JDeveloper

Use the standards-based templates of Oracle Document Editor to create guideline files. Then, use Healthcare Adapter binding component in Oracle JDeveloper to create and then deploy a healthcare composite, as shown in [Figure 1-1](#).

Figure 1-1 Oracle JDeveloper: A SOA Composite Application with a Healthcare Binding Component



See the following for more information:

- *Oracle Fusion Middleware Installation Guide for Oracle SOA Suite and Oracle Business Process Management Suite* for information on installing Oracle SOA Suite for healthcare integration as part of Oracle SOA Suite
- Oracle Document Editor **Help** menu
- Oracle JDeveloper **Help** menu
- [Chapter 2, "Working with the Oracle Healthcare Adapter"](#)

1.3 Logging in to Oracle SOA Suite for Healthcare Integration

These instructions assume that you have installed Oracle SOA Suite, which includes Oracle SOA Suite for healthcare integration. See *Oracle Fusion Middleware Installation Guide for Oracle SOA Suite and Oracle Business Process Management Suite* for more information.

Use a supported Web browser:

- Mozilla Firefox 2.0, 3.0 and 3.5 or later
- Apple Safari 3.2, 4.0, and 5.0
- Google Chrome 1.0 or later
- Microsoft Internet Explorer 8 and 9 (with Compatibility View turned off)

To log on to Oracle SOA Suite for healthcare integration:

1. Open a supported Web browser and go to:

`http://host_name:port_number/healthcare`

where:

- *host_name* is the name of the host on which Oracle SOA Suite is installed. (In a cluster environment, the *host_name* can be the front end load balancer.)
- *port_number* is the port number used by the Managed Server to listen for regular HTTP (non-SSL) or HTTPS (SSL) connections. (In a cluster environment, the *port_number* can be the router port.)

See [Section 1.3.1, "Finding Port Information,"](#) for more information.

- `/healthcare` accesses the healthcare integration user interface.

2. On the log-in page, enter the following:

| For This Field... | Do... |
|-------------------|---|
| Username | Enter the default administrator user name. |
| Password | Use the administrator password from your Oracle Fusion Middleware 11g installation. |

3. Click **Login**.

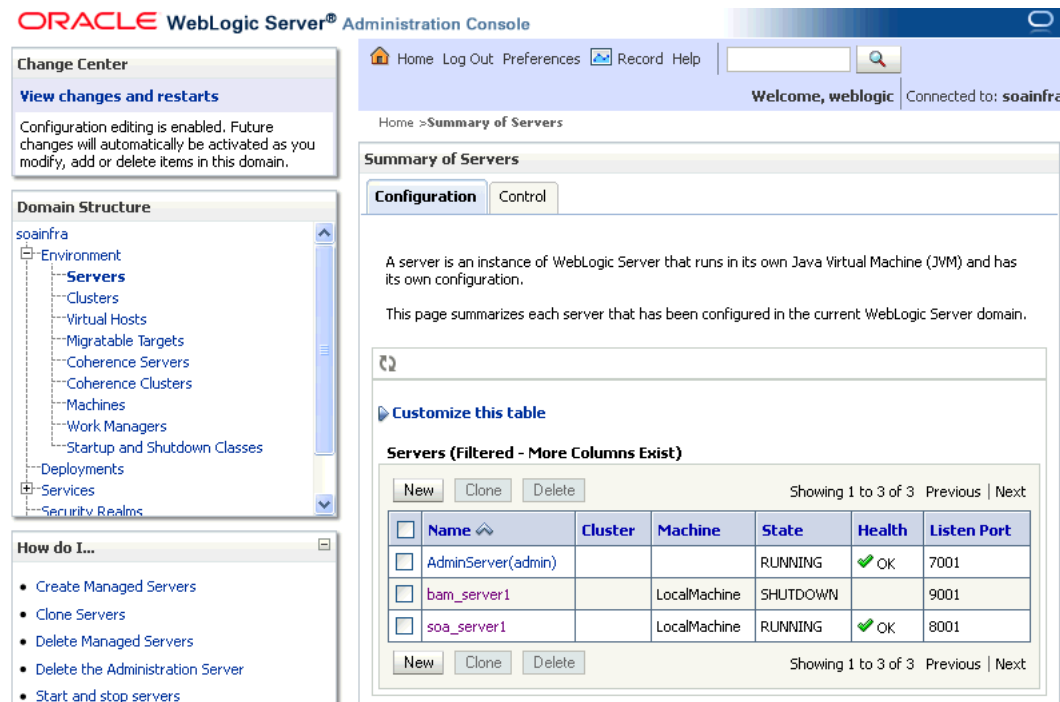
1.3.1 Finding Port Information

You can find port number information in the following ways:

- From Oracle WebLogic Server Administration Console:
 1. Log on to the console.

- In the Domain Structure pane, shown in [Figure 1–2](#), expand **Environment** and click **Servers**.

Figure 1–2 Domain Structure Nodes in Oracle WebLogic Server Administration Console



- Note the **Listen Port** column for your server.

- Or from
`MW_HOME/user_projects/domains/your_domain_name/config/config.xml`

```
<server>
  <name>soa_server1</name>
  <ssl>
    <name>soa_server1</name>
    <listen-port>8002</listen-port>
  </ssl>
  <machine>LocalMachine</machine>
  <listen-port>8001</listen-port>
  <listen-address/>
</server>
```

1.4 Using the Oracle SOA Suite for Healthcare Integration User Interface

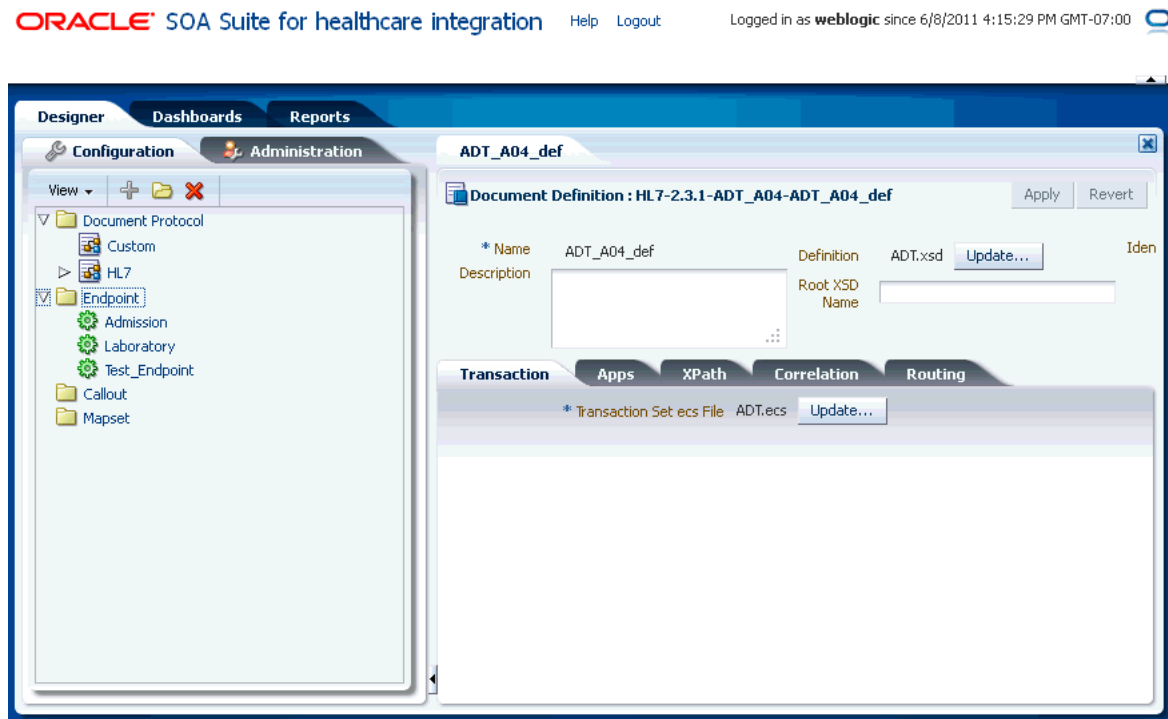
Healthcare activities are grouped as follows:

- [Designer](#)
- [Dashboards](#)
- [Reports](#)

1.4.1 Designer

Use the **Configuration** subtab of the **Designer** tab, shown in [Figure 1-3](#), to configure document protocols, endpoints, callouts, mapsets, and the Administration subtab to modify run-time and user interface settings and internal delivery channel settings, and to import, export, and purge metadata.

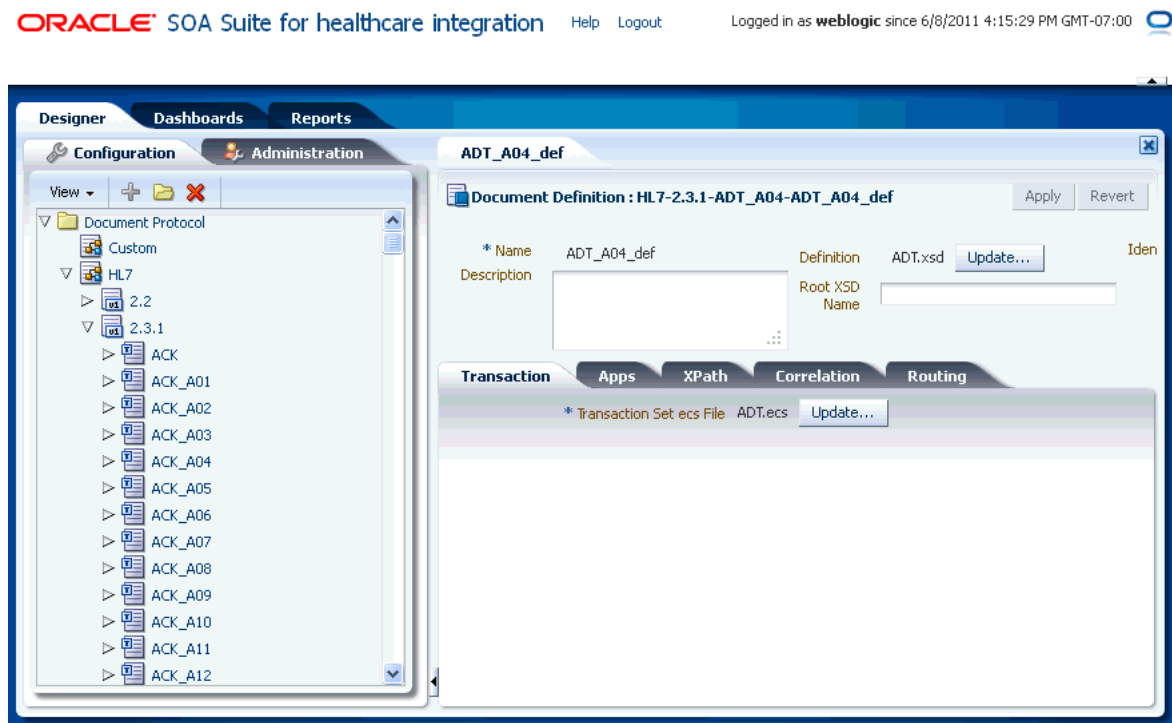
Figure 1-3 Designer Tab



1.4.1.1 Configuring Documents

Using the **Document Protocol** folder in the **Configuration** tab, you can create, modify, or delete document protocols, document protocol version, document type, and document definition as shown in [Figure 1-4](#). These document definitions can later be associated with endpoints.

Figure 1–4 The Document Protocol Folder



Note: You can create documents with Oracle Document Editor, or you can use a pre-seeded export zip file that contains already created document definitions by using the Import/Export feature available in the Administration tab.

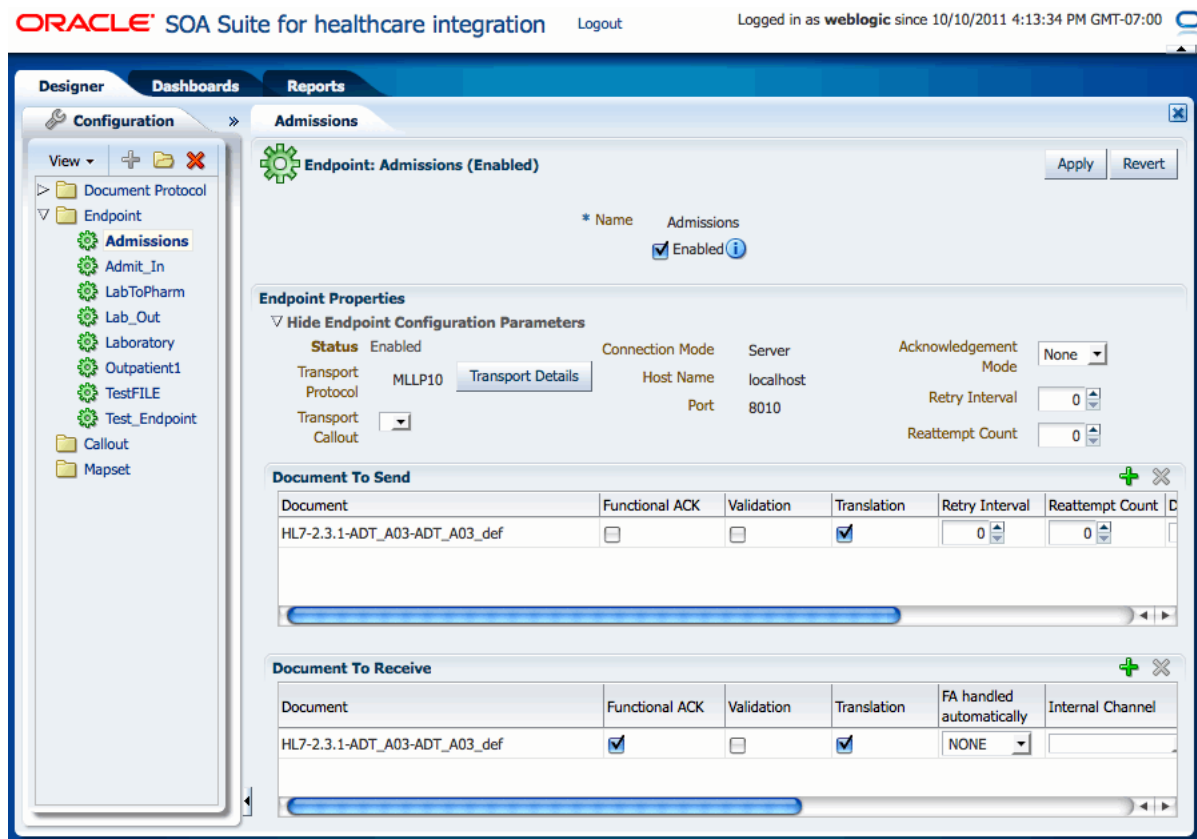
See [Chapter 3, "Working with Document Types and Protocols"](#) for more information on documents and document protocols.

1.4.1.2 Configuring Endpoints

Endpoints are locations from where messages are sent or received. An endpoint can be a URL, folders, or path, among others. You can use the **Endpoints** folder in the **Configuration** tab to create, modify, or delete endpoints, as well as associate an endpoint with document definitions.

[Figure 1–5](#) displays a sample endpoint.

Figure 1–5 Sample Endpoint



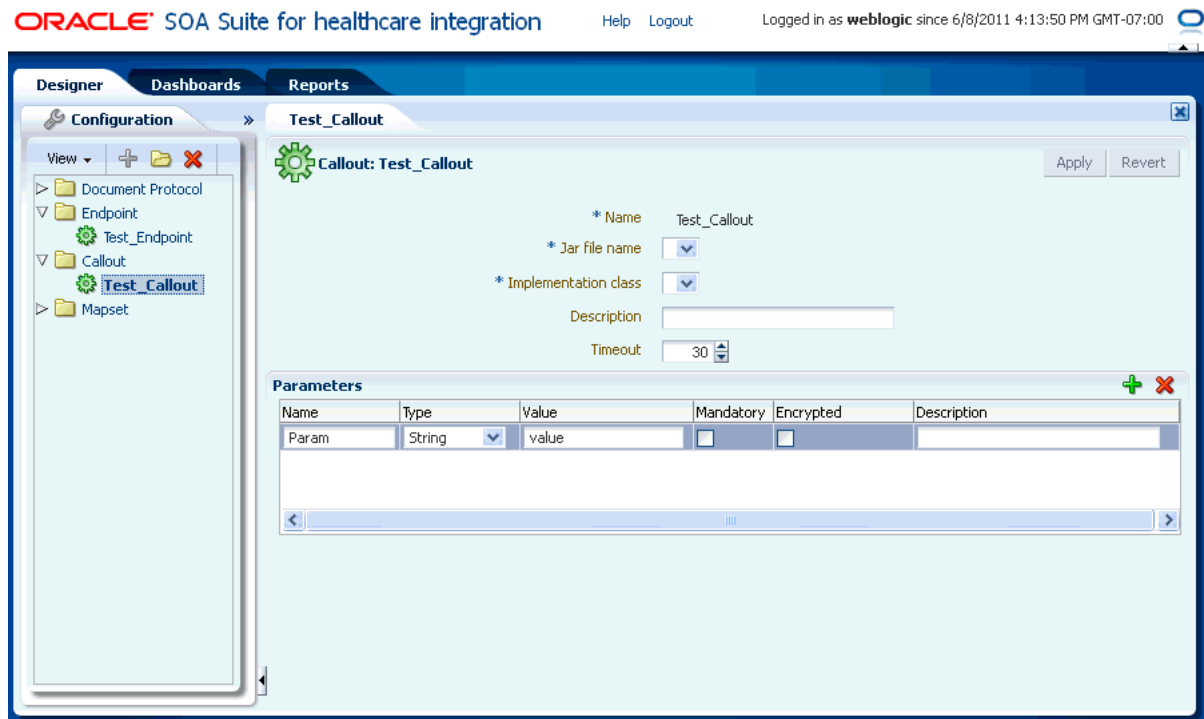
See [Chapter 4, "Working with Endpoints"](#) for more information on endpoints.

1.4.1.3 Configuring Callouts

Callouts are used for customizing message processing. For example, callouts can be used to update a message or convert the message format of a remote endpoint to another format. You can use the **Callout** folder in the **Configuration** tab to create, modify, or delete callouts.

[Figure 1–6](#) displays a sample callout.

Figure 1–6 Sample Callout



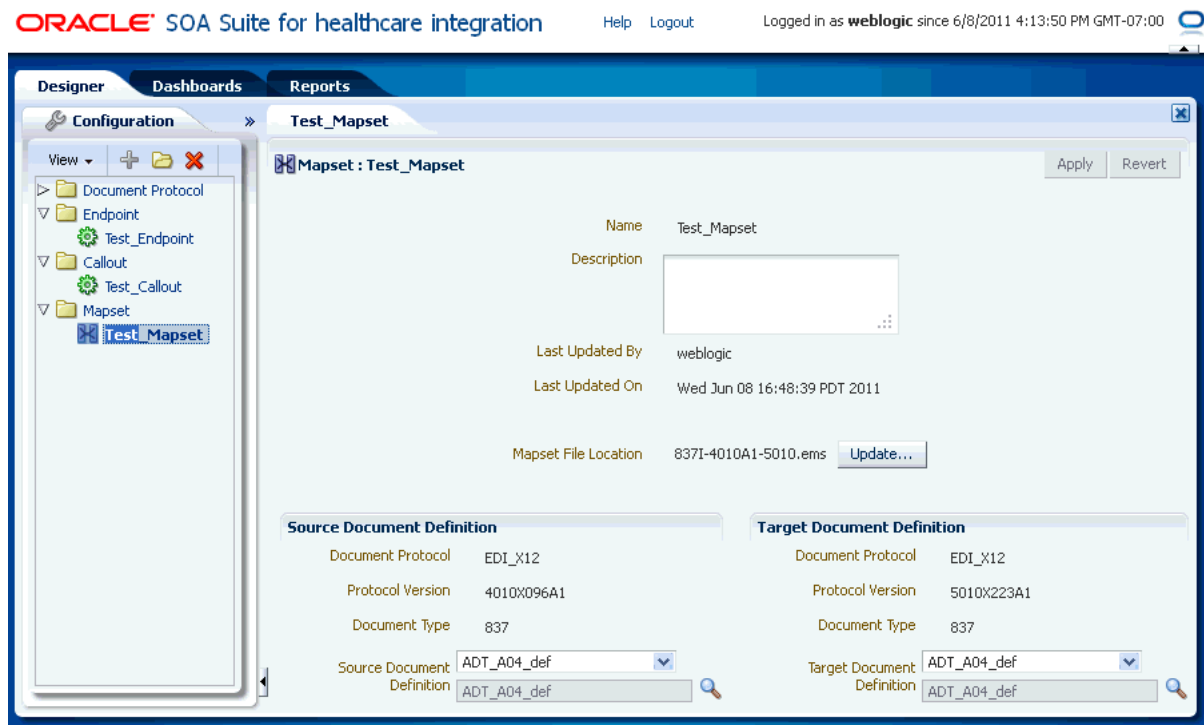
See [Chapter 5, "Working with Callouts"](#) for more information on callouts.

1.4.1.4 Configuring Mapsets

Mapsets enable you to directly transform one native data format to another native format. You can use the **Mapset** folder in the **Configuration** tab to create, modify, or delete mapsets.

[Figure 1–7](#) displays a sample mapset.

Figure 1–7 Sample Mapset



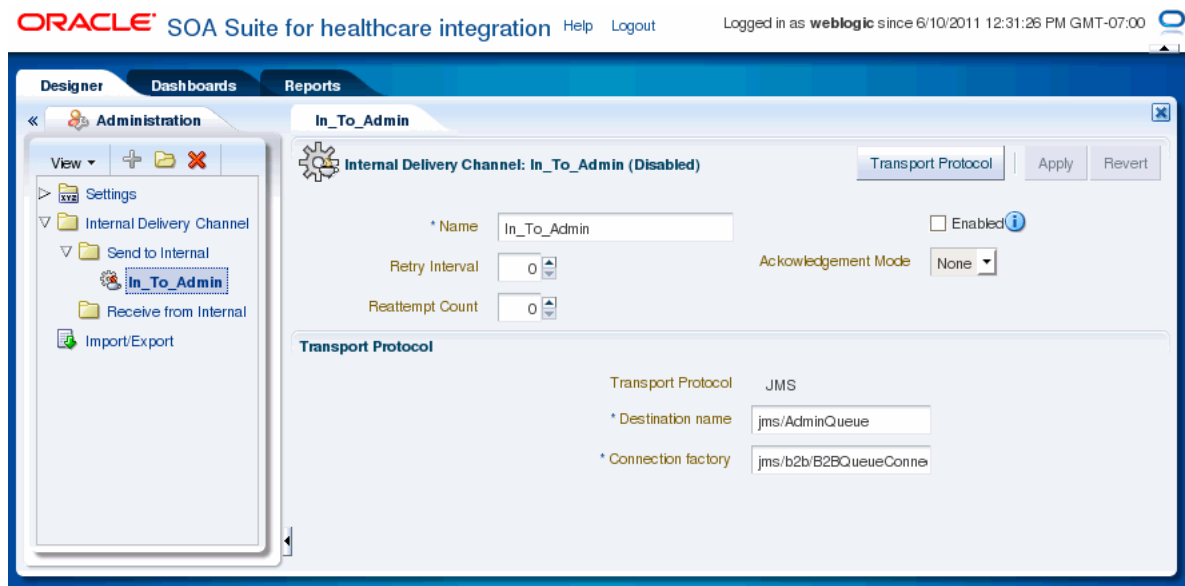
See [Chapter 6, "Working with Mapsets"](#) for more information on mapsets.

1.4.1.5 Configuring Internal Delivery Channels

An internal delivery channel defines how a message is delivered from Oracle SOA Suite for healthcare integration to a JMS topic or queue to make it available to internal healthcare systems, or how a message that was sent to a topic or queue from an external system is delivered to Oracle SOA Suite for healthcare integration. It defines the connection information, the transport protocol, and so on. You can use the **Internal Delivery Channel** on the **Administration** tab to create and configure internal delivery channels.

[Figure 1–8](#) displays a sample internal delivery channel.

Figure 1–8 Sample Internal Delivery Channel



See [Chapter 7, "Working with Internal Delivery Channels"](#) for more information on internal delivery channels.

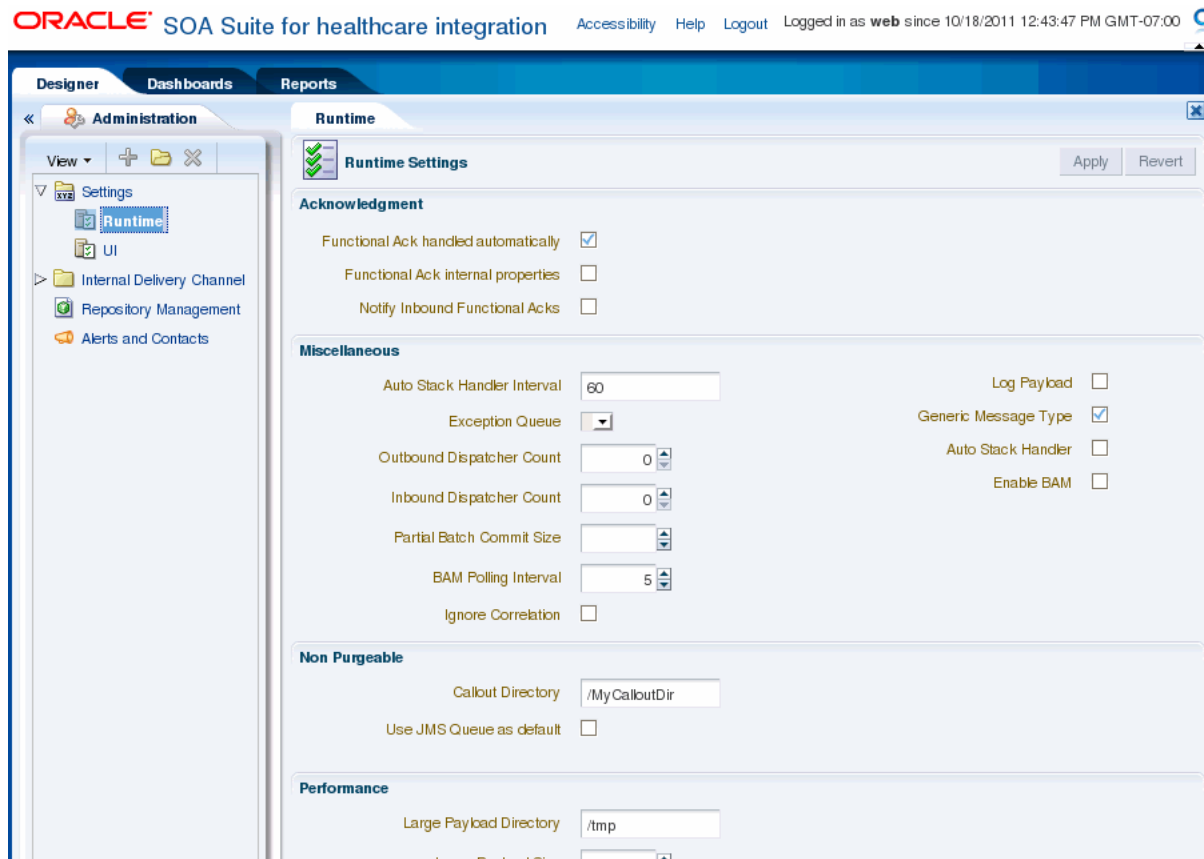
1.4.1.6 Setting Run Time and User Interface Properties

Oracle SOA Suite for healthcare integration enables you to modify run-time and user interface properties. Use the **Runtime** and **UI** icons available under the **Settings** folder in the **Administration** tab for modifying these properties:

- Run-time settings: Double-click the **Runtime** icon to display the **Runtime Settings** page, where you can modify run-time parameters related to functional acknowledgment, large payloads, callout directory names, and dispatcher counts.

[Figure 1–9](#) displays the Runtime Settings page.

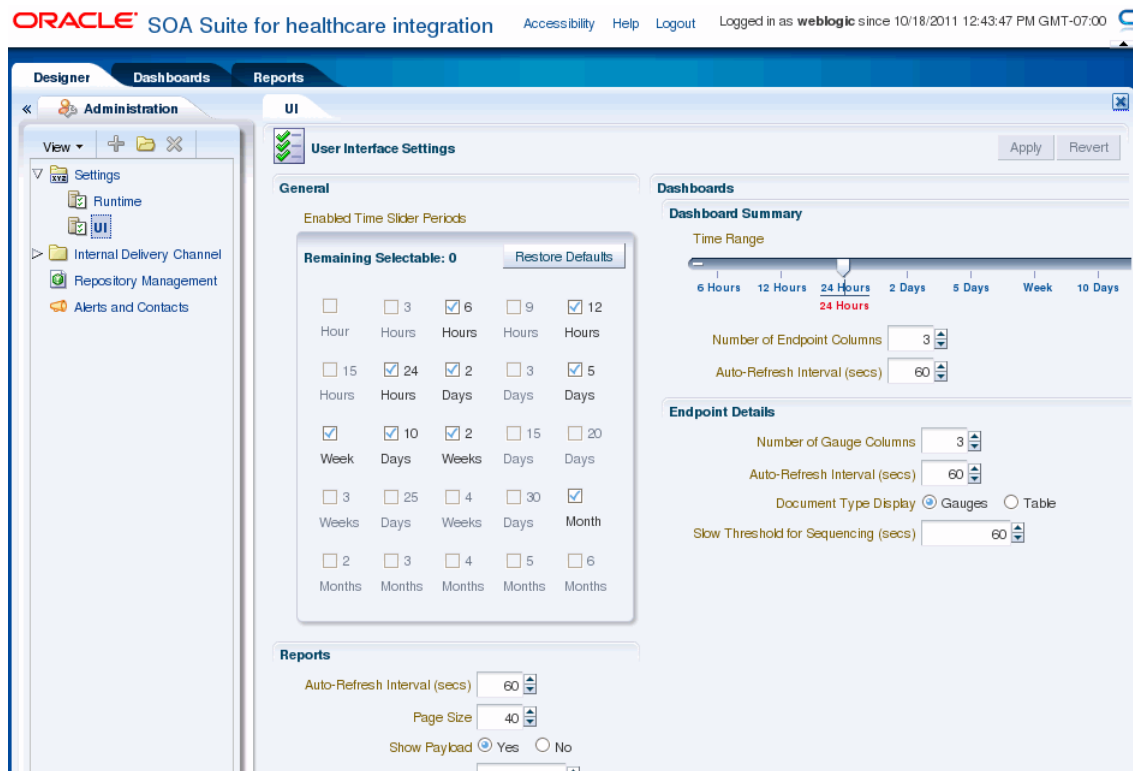
Figure 1–9 The Runtime Settings Page



- User Interface settings: Double-click the **UI** icon to display the **User Interface Settings** page where you can specify the following:
 - Time slider periods: Enables you to select up to nine time slider periods to be made available for Time Range selection in the Dashboard Summary page
 - Dashboard Summary settings: Enables you to specify historical time range to show statistics for Dashboards, number of columns to use in the endpoint status grid, and auto-refresh interval (in seconds) for the Dashboard Summary view
 - Endpoint settings: Enables you to specify display style for Document Type statistics (Gauge or Table), number of columns to use in Gauges grid, and auto-refresh interval (in seconds) for the Endpoint Detailed view of the Dashboard
 - Reports settings: Enables you to specify auto-refresh interval (in seconds) for reports, number of rows per page to be shown in the Reports Result table, and display of message payload

Figure 1–10 displays a sample User Interface Settings page.

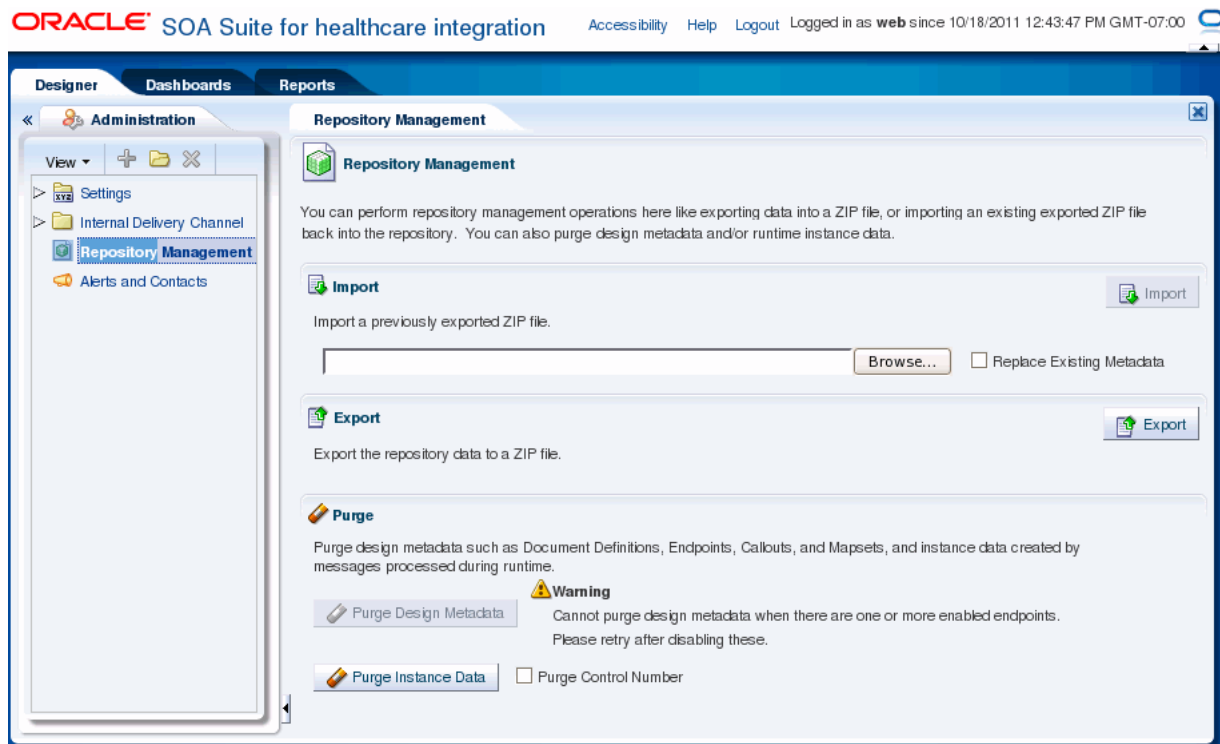
Figure 1–10 The User Interface Settings Page



See [Chapter 13, "Configuring System Settings"](#) for more information on run-time and user-interface settings.

1.4.1.7 Managing Repository Data

The Repository Management page allows you to export Oracle SOA Suite for healthcare integration repository data and to import other exported files, such as document definitions, mapsets, or other healthcare-related repository data. You can also purge design-time and runtime metadata.

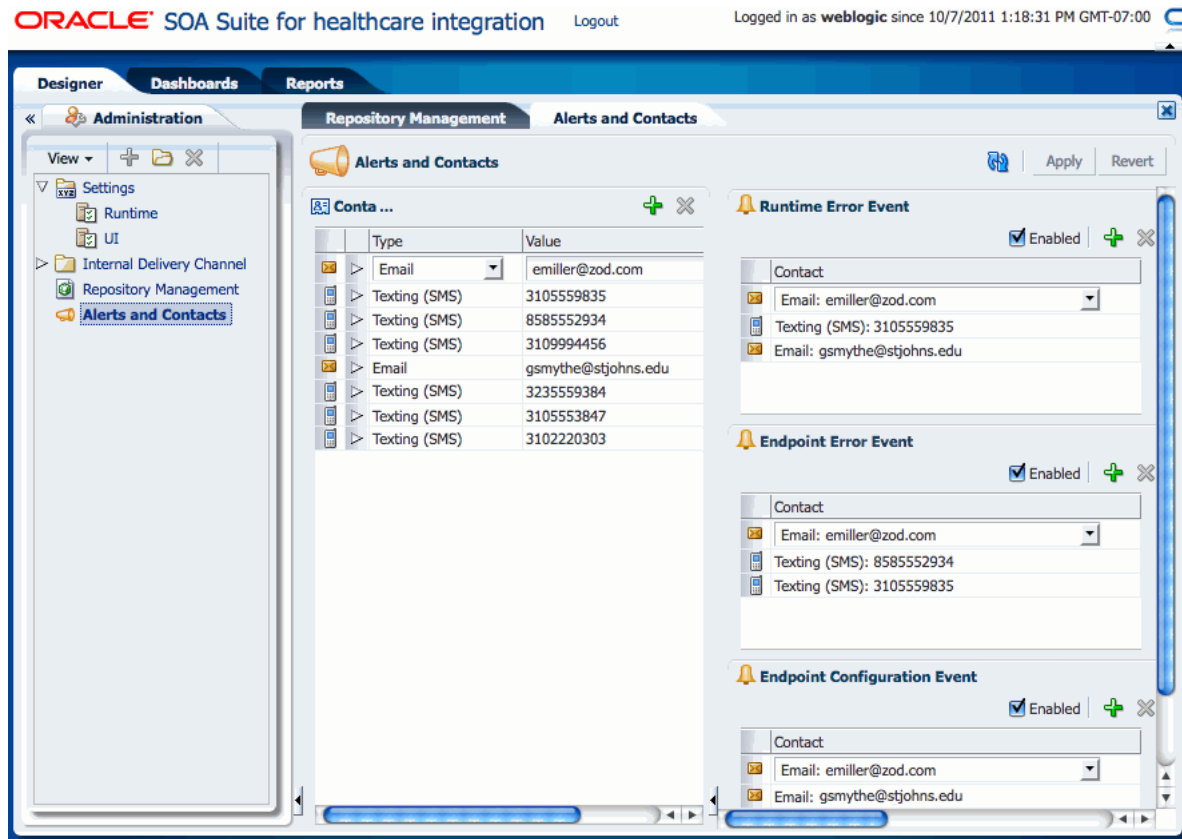
Figure 1–11 Repository Management Page

See [Chapter 12, "Managing the Repository"](#) for more information on managing the Oracle SOA Suite for healthcare integration repository.

1.4.1.8 Configuring Alerts and Contacts

The Alerts and Contacts page allows you to define a list of contacts and then associate each contact with the events of which they should be notified. An alert can be sent for a variety of runtime and design-time events.

Figure 1–12 Alerts and Contacts Page



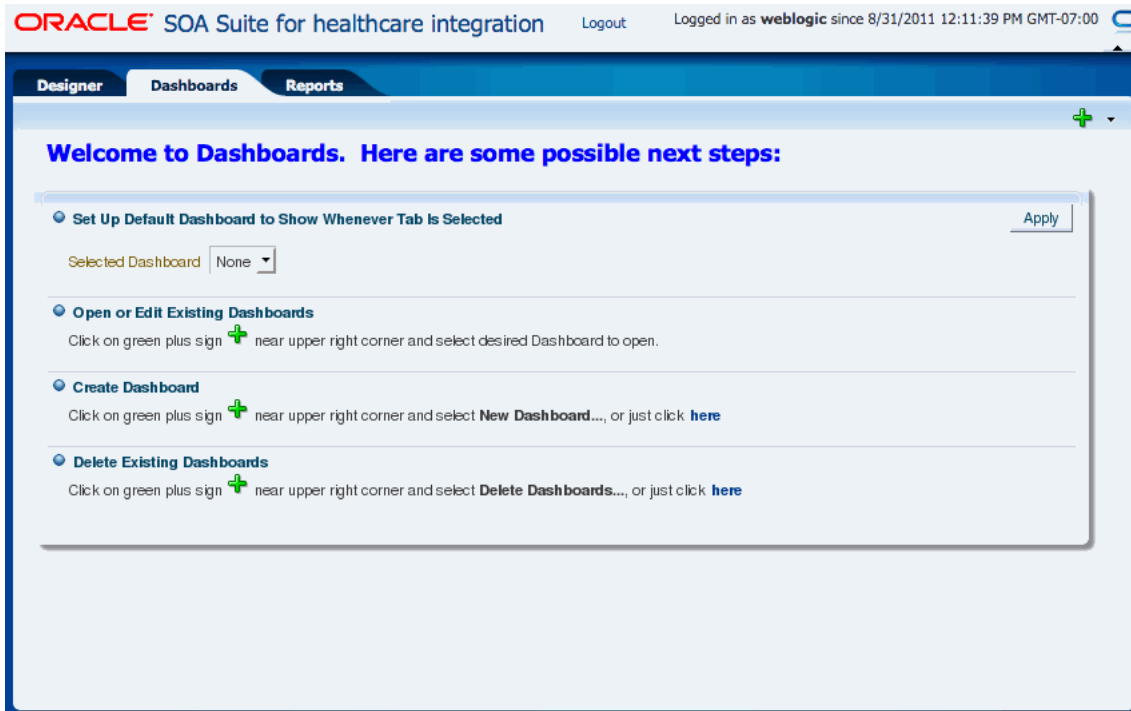
See [Chapter 10, "Configuring Alerts and Contacts"](#) for more information on managing alerts and contacts.

1.4.2 Dashboards

Clicking the **Dashboards** tab displays the Dashboards page. When you open the Dashboards page for the first time, the following options are displayed as shown in [Figure 1–13](#):

- **Set Up Default Dashboard to Show Whenever Tab Is Selected:** Specify the dashboard name that will be displayed as a default when you open the Dashboards page
- **Open or Edit Existing Dashboards:** Open or edit available dashboards
- **Create Dashboard:** Create a new dashboard
- **Delete Existing Dashboards:** Delete a dashboard

Figure 1–13 The Dashboard Page



Subsequent access to the Dashboards page displays the default dashboard page that you have specified earlier. On this page, you can see all the endpoints associated with a particular dashboard. In addition, the page enables you to specify whether to show all endpoints regardless of their state, number of columns in which the endpoints are displayed, and auto-refresh interval for the dashboard. The page also provides a **Dashboard Editor** button that enables you to modify the dashboard name, as well as select the required endpoints for the dashboard from a list of available endpoints.

Each endpoint provides options that enable you to view the endpoint properties and also to configure the endpoint. Moving the mouse cursor over the information icon of a particular endpoint displays the endpoint properties. When you click the **Configure This Endpoint** icon, which is located next to the information icon, you are redirected to the relevant endpoint edit page.

You can click the icon on upper right corner of the endpoint window to view the details.

Figure 1–14 displays a sample Dashboard page.

Figure 1–14 Sample Dashboard

The screenshot shows the Oracle SOA Suite for Healthcare Integration user interface. The top navigation bar includes 'Designer', 'Dashboards', and 'Reports'. The main content area is titled 'AdmitToLab' and features a 'Dashboard 1' with a 'Time Range' selector on the left. Two widgets are displayed: 'Admission' and 'Laboratory'. Both widgets show a 'Running' status and 'Messages During Last 24 Hours' statistics. The 'Admission' widget shows 0 sent, 7 received, and 0 error messages. The 'Laboratory' widget shows 1 sent, 0 received, and 0 error messages. A table of endpoint properties for 'Admission' is also visible, listing keys like Protocol, Connection Mode, Host Name, Port, Permanent Connection, Polling Interval, Timeout, and Sequencing with their respective values.

| Key | Value |
|----------------------|-----------|
| Protocol | MLLP |
| Connection Mode | Server |
| Host Name | localhost |
| Port | 9501 |
| Permanent Connection | true |
| Polling Interval | 10 |
| Timeout | 300 |
| Sequencing | true |

See [Chapter 8, "Working with Dashboards"](#) for more information on dashboards.

1.4.3 Reports

Clicking the **Reports** tab displays the Reports page. The Reports page lists all the different types of inbound and outbound messages (wire, business, and application) pertaining to all the endpoints. In addition, the page enables you to:

- Navigate through the available messages
- Specify the number of messages to be displayed per page
- Open a message filter editor to create business message report filters
- Specify auto-refresh interval

When you click a message from the list the lower pane displays all the different message types for the selected message, which are Wire Message, Business Message, and Application Message. Clicking each of the message type displays the details.

[Figure 1–15](#) displays a sample report containing a list of the messages, message type details, and the Business Message Report Editor.

Figure 1–15 Sample Report

ORACLE SOA Suite for healthcare integration Logout Logged in as **weblogic** since 8/31/2011 12:11:39 PM GMT-07:00

Designer Dashboards Reports

Last Month Found 38 results. Page Size 40 Last Updated: 8/31/2011 12:52:57 PM GMT

| Message ID | Created Date and Time | Direction |
|---|--------------------------------|-----------|
| 1 > [icon] 0AE5BA9E132082BE768000017C2C302 | 8/26/2011 3:18:07 PM GMT-07:00 | OUTBOUND |
| 2 > [icon] 0AE5BA9E132082BE7BF0000017C2C30B | 8/26/2011 3:18:07 PM GMT-07:00 | OUTBOUND |
| 3 > [icon] 0AE5BA9E132082BE6BD0000017C2C2F9 | 8/26/2011 3:18:07 PM GMT-07:00 | OUTBOUND |
| 4 > [icon] 0AE5BA9E132082BE859000017C2C314 | 8/26/2011 3:18:07 PM GMT-07:00 | OUTBOUND |
| 5 > [icon] 0AE5BA9E132082BE859000017C2C314 | 8/26/2011 3:18:07 PM GMT-07:00 | OUTBOUND |

Out_Patient_Laboratory
 Wire Message
 Business Message
 Application Message

Business Message Details

Identification

| | | | |
|--------------|---|--------------------------------|--|
| Endpoint | Out_Patient_Laboratory | Message ID | 0AE5BA9E132082BE768000017C2C302 |
| State | MSG_WAIT_TRANSMIT | Label | soa_b2b_ - Fri Aug 26 15:04:40 PDT 2011 - 3 |
| Direction | OUTBOUND | Interchange Control Number | |
| Message Type | REQ | Group Control Number | |
| ID | 0AE5BA9E132082BE77B0000017C2C306 | Transaction Set Control Number | CTLID_20080910112956 |

Communication and Protocol

Basic
 Message ID (Business)
 Any
 Created Date
 Any
 Last
 6 Hours 12 Hours 24 Hours 2 Days
 Range
 From: [] (UTC-08:00) U
 To: [] (UTC-08:00) U
 Direction: Any
 Endpoint: Any

See Chapter 9, "Working with Reports" for more information on reports.

Working with the Oracle Healthcare Adapter

This chapter describes the Oracle Healthcare Adapter, which enables healthcare integration components to be used in Oracle SOA Suite composites. The adapter is used in an Oracle JDeveloper environment.

This chapter includes the following topics:

- [Section 2.1, "Introduction to the Oracle Healthcare Adapter"](#)
- [Section 2.2, "How to Use Healthcare Adapters in a SOA Composite Application"](#)

2.1 Introduction to the Oracle Healthcare Adapter

The Oracle Healthcare Adapter allows you to add healthcare integration binding components to a SOA composite application to create an end-to-end process, such as sending admissions information generated by a registration application to a laboratory system. The Healthcare Adapter establishes the type of documents transmitted between a SOA composite application and external healthcare applications. You can use other SOA Suite components in your composite application, including BPEL processes, Oracle Mediator components, a variety of adapters, and so on.

2.1.1 The Healthcare Configuration Wizard

Adding a Healthcare Adapter to a composite launches the Healthcare Configuration Wizard in Oracle JDeveloper. The wizard lets you create and configure healthcare integration binding components in a SOA composite application as follows:

- The component is used as a *service* (inbound) to receive messages from external systems and deliver them to SOA composite applications. Oracle SOA Suite for healthcare integration is the entry point to the SOA composite application.
- The component is used as a *reference* (outbound) to send messages from the SOA composite application to external applications.

As you follow the steps in the Healthcare Configuration Wizard, you are prompted to select components, such as document definitions, which were created in Oracle SOA Suite for healthcare integration. You can also launch Oracle SOA Suite for healthcare integration from the wizard to create a document definition if the right one does not already exist.

Note: If SSL is enabled in the middleware (the healthcare integration Web service), then the Healthcare Configuration Wizard detects the SSL port and retrieves the document definitions using the SSL connection.

2.1.2 What Happens When You Add a Healthcare Adapter to a SOA Composite

Completing the Healthcare Configuration Wizard adds a new healthcare integration service or reference to the composite application and generates the corresponding WSDL file. The WSDL file defines the schema, message, document definition, the WebLogic Managed Server, and the connection to the application server. Connecting the service or reference to Oracle BPEL processes or Oracle Mediator component makes the healthcare integration normalized message properties available to that process or component so you can further configure the healthcare application by specifying endpoints, message types, message IDs, document types, protocols, and so on.

Note: In order to connect the composite application to a healthcare integration endpoint, you must specify a value for the **hc.fromEndpoint** normalized message property if a healthcare adapter is defined as a service, and you must specify a value for the **hc.toEndpoint** normalized message property if a healthcare adapter is defined as a reference.

2.2 How to Use Healthcare Adapters in a SOA Composite Application

To create a SOA composite application with a Healthcare Adapter, perform the following steps in the order given:

- Create and enable the healthcare integration endpoints (described in)
- [Section 2.2.1, "Create a SOA Application and Project"](#)
- [Section 2.2.3, "Add Service Components"](#)
- [Section 2.2.2, "Add a Healthcare Integration Binding Component"](#)

2.2.1 Create a SOA Application and Project

You can use the Healthcare Adapter to add a healthcare integration binding component to an existing JDeveloper project to enable communications between the SOA Suite and external healthcare systems. First you need to create the application and the project.

For more information about creating SOA composite applications, see *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite*.

Before You Begin

Before you create the application and project, review the following guidelines:

- Do *not* use spaces in the name of the application.
- Do *not* create applications and projects in directory paths that have spaces (for example, `c:\Program Files`).
- In a UNIX operating system, it is highly recommended that you enable Unicode support by setting the `LANG` and `LC_All` environment variables to a locale with the UTF-8 character set. This enables the operating system to process any character in Unicode. SOA technologies are based on Unicode. If the operating system is configured to use non-UTF-8 encoding, SOA components may function in an unexpected way.

To enable Unicode support in an Oracle JDeveloper design-time environment, select **Tools > Preferences > Environment > Encoding > UTF-8**. This setting is also applicable for run-time environments.

- Composite and component names cannot exceed 500 characters.
- A project deployed to the same infrastructure *must* have a unique name across all SOA composite applications. The uniqueness of a composite is determined by its project name. For example, do *not* create a project named **Project1** in two different applications. During deployment, the second deployed project (composite) overwrites the first deployed project (composite).

To create a SOA application and project

1. Start Oracle JDeveloper Studio Edition.

Note: If you are starting Oracle JDeveloper for the first time, specify the location for the Java JDK.

2. Create a new SOA composite application, as described in [Table 2-1](#).

Table 2-1 SOA Composite Application Creation

| If Oracle JDeveloper... | Then... |
|---|---|
| Has no applications For example, you are opening Oracle JDeveloper for the first time. | In the Application Navigator in the upper left, click New Application . |
| Has existing applications | From the File main menu or the Application menu: <ol style="list-style-type: none"> 1. Select New > Applications. The New Gallery opens, where you can select different application components to create. 2. In the Categories tree, under the General node, select Applications. In the Items pane, select SOA Application and click OK. |

The Create SOA Application wizard appears.

3. On the Name your application page, you can optionally change the name and location for your project. If this is your first application, from **Application Template**, select **SOA Application**. Accept the defaults for the package prefix, and click **Next**.
4. On the Name your project page, you can optionally change the name and location for your SOA project. By default, Oracle JDeveloper adds the SOA project technology, the `composite.xml` that generates, and the necessary libraries to your model project. Click **Next**.

The Project SOA Settings page of the Create SOA Application wizard appears.

5. In the Configure SOA Settings page, click **Empty Composite**, and click **Finish**.
6. Select **Save All** from the **File** main menu.

2.2.2 Add a Healthcare Integration Binding Component

You can add a healthcare integration binding component as an exposed service (inbound) or an external reference (outbound) to define the connection to a healthcare system.

Before you begin:

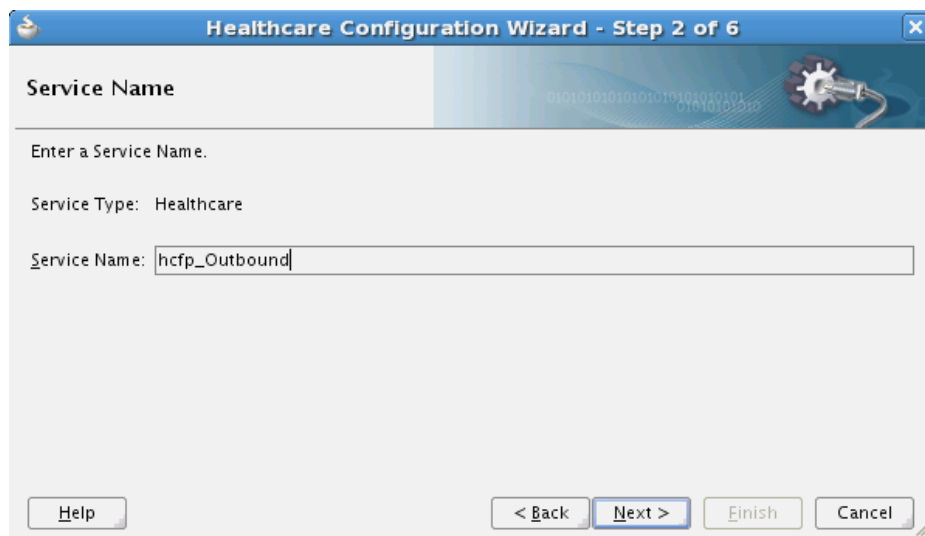
Before you add a healthcare integration binding component to an Oracle SOA project, make sure you have created the necessary components in the healthcare integration user interface. For example, make sure to create and configure any document definitions and endpoints that you will use in the project.

To add a healthcare integration binding component

1. From the Component Palette, select **SOA**.
2. Scroll to **Service Adapters** and drag a **Healthcare Adapter** to either the **Exposed Services** or **External References** swim lane.
 - Drag the adapter to **Exposed Services** for receiving inbound messages.
 - Drag the adapter to **External References** for sending outbound messages.

The Healthcare Configuration Wizard appears.
3. On the Healthcare Configuration Wizard Welcome page, click **Next**.
The Service Name page appears.

Figure 2–1 Healthcare Configuration Wizard - Service Name Page



4. Enter a name for the healthcare service and click **Next**.
The Application Server Connection page appears.
5. Do one of the following:
 - From the **AppServer Connection** list, select an application server connection and click **Next**.
 - Click **New** to create an application server connection. Follow the Create Application Server Connection Wizard.

When the connection is established, the user name and host name appear along with the name of the SOA Server.

Figure 2–2 Healthcare Configuration Wizard - Application Server Connection Page

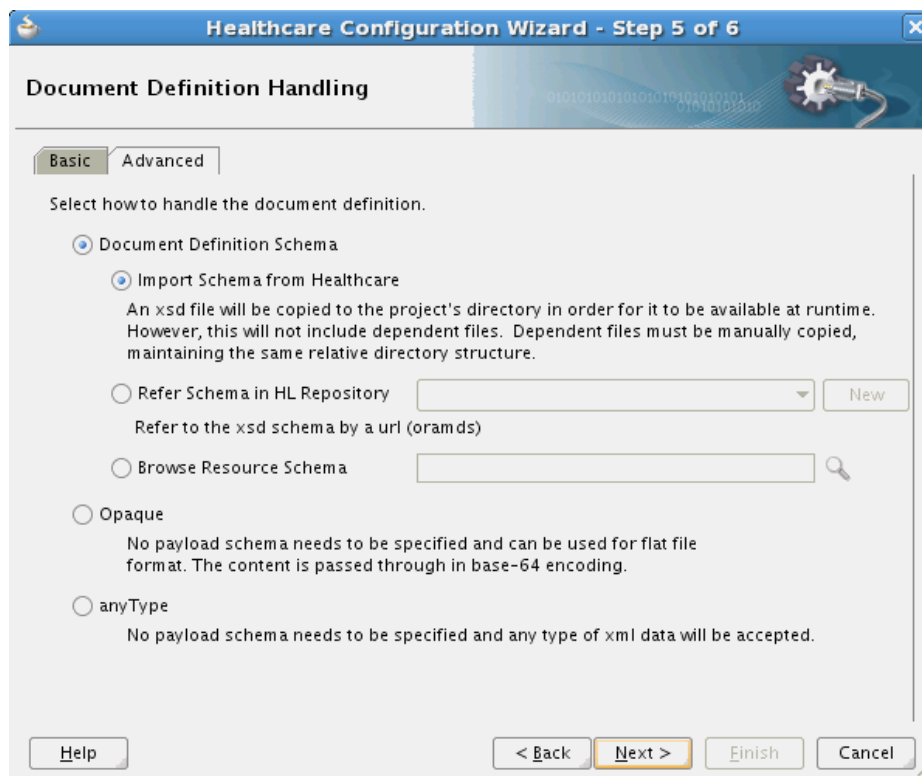
6. To verify the connection to the application server, click **Test Healthcare**, and then click **OK** on the dialog that appears.
7. Click **Next**.
The Operation page appears.

Figure 2–3 Healthcare Configuration Wizard - Operation Page

8. Select **Send** for outbound messages or select **Receive** for inbound messages.
9. Click **Next**.
The Document Definition Handling page appears.

10. Retain the default (to import the schema from Oracle SOA Suite for healthcare integration) or select one of the options on the **Advanced** tab, as described in [Table 2-3](#).

Figure 2-4 Healthcare Configuration Wizard - Document Definition Handling Page



11. Click **Next**.

The Document Definition page appears.

12. Expand the tree to select a document definition.

Figure 2–5 Healthcare Configuration Wizard - Document Definition Page

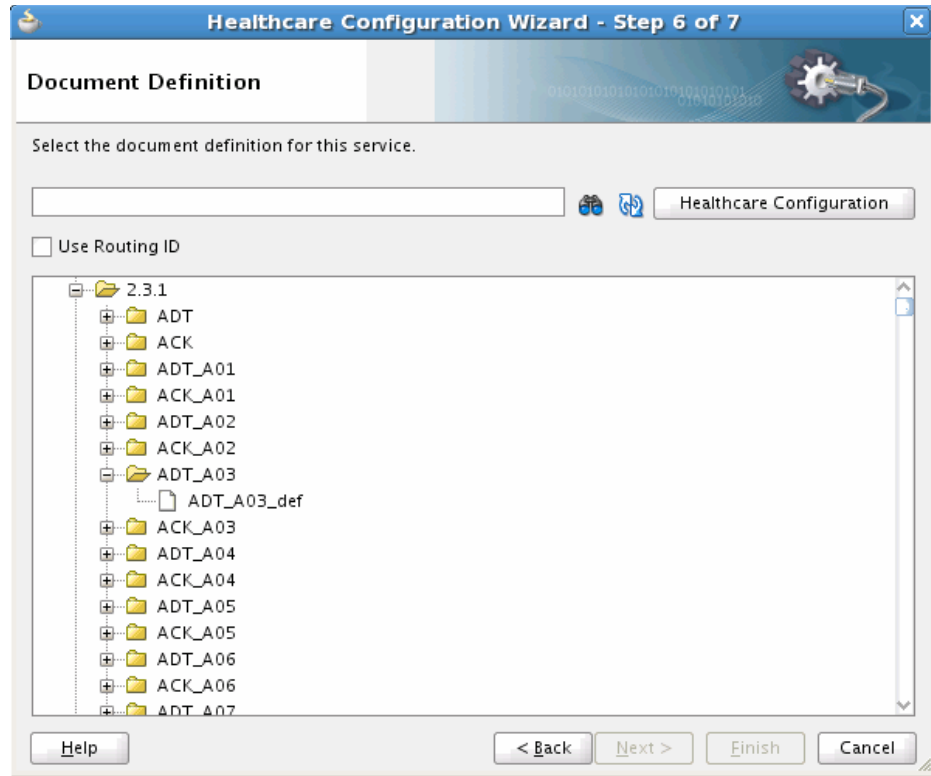


Table 2–2 describes additional options on the page.

Table 2–2 Document Definition Page Options

| Option | Description |
|--------------------------|--|
| Search | Enter a definition name in the empty field and click the Search icon. Partial strings are matched if you type the beginning of the definition name. Partial strings with wildcards cannot be used. |
| Refresh | Retrieves the document definition list from the healthcare integration server. Refresh after a search to see all document definitions. |
| Healthcare Configuration | Opens a browser to the Oracle SOA Suite for healthcare integration user interface, using the connection specified on the Application Server Connection page. In the healthcare integration user interface, you can create or import a document definition. After you finish those steps, return to this dialog, click Refresh , and select the new document definition. |
| Use Routing ID | Selects all document definitions that use a document routing ID. |

13. Click **Next**.

14. If you selected a document definition with multiple root elements, the Root Elements page appears. Select a root element to use and click **OK**.

15. Click **Next** and then click **Finish**.

2.2.2.1 Document Definition Handling in the Healthcare Configuration Wizard

The Healthcare Configuration Wizard lets you associate document definitions from Oracle SOA Suite for healthcare integration with the adapter you are creating. You can

specify how the document definition is associated with the Composite and whether the schema definition (XSD) file is required for validation. [Table 2–3](#) lists and describes the possible options for handling the document definition.

Table 2–3 Advanced Document Definition Handling Options

| Option | Description |
|-------------------------------|--|
| Import Schema from Healthcare | Imports the schema from Oracle SOA Suite for healthcare integration. This option copies the XSD file to the project directory to make it available at runtime. If there are any dependent files, you need to copy them manually to the project, maintaining the same directory structure. |
| Refer Schema in HL Repository | <p>Uses an existing metadata service (MDS) connection or allows you to create a new connection to use. Select an existing service or create a new MDS connection. If you create a new MDS connection, the MDS Connection Wizard appears so you can define a connection. This connection is needed to access the Oracle SOA Suite for healthcare integration repository. When you select a document definition, a URL is generated to link to the MDS.</p> <p>The selected application server connection refers to a specific Oracle SOA Suite for healthcare integration instance. The MDS connection used by the instance must match the selected MDS connection to avoid inconsistent document definitions.</p> <p>When referring to a schema in an Oracle SOA Suite for healthcare integration repository, an MDS connection is required only for referring to a schema in a remote MDS, but not if the schema is referred to within the local shared MDS repository.</p> |
| Browse Resource Schema | Browse for a schema using the SOA Resource Browser. Selecting this option and clicking the Browse Schema icon opens the Type Chooser dialog. Expand the tree, select a type, and return to the Document Definition Handling page. |
| Opaque | Handles any type of data (for example, positional flat file) when the content is passed through in base-64 encoding. You do not need to specify a schema. |
| anyType | Handles any type of XML data. You do not need to specify a schema. |

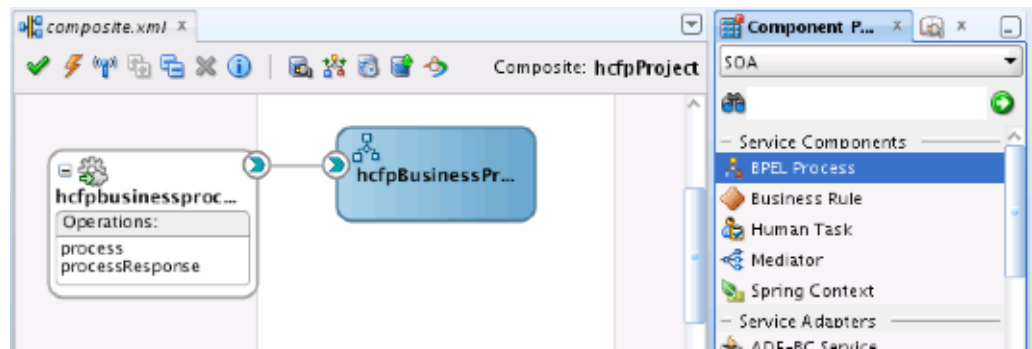
2.2.3 Add Service Components

Once you create the SOA application and project, you can add the service components that implement the business logic and processing rules for the application.

To add service components to a project

1. From the Component Palette, select **SOA**.
2. From the **Service Components** list, drag a component into the designer.

The following figure shows a BPEL process just added to the designer.

Figure 2–6 BPEL Process in a Composite Application

A dialog specific to the selected service component appears. [Table 2–4](#) describes the available dialogs.

Table 2–4 Starting Service Component Editors

| Dragging This Service Component... | Invokes The... |
|------------------------------------|---|
| BPEL Process | Create BPEL Process dialog to create a BPEL process that integrates a series of business activities and services into an end-to-end process flow. |
| Business Rule | Create Business Rules dialog to create a business decision based on rules. |
| Human Task | Create Human Task dialog to create a workflow that describes the tasks for users or groups to perform as part of an end-to-end business process flow. |
| Mediator | Create Mediator dialog to define services that perform message and event routing, filtering, and transformations. |

3. Configure the settings for the service component. For help with a service component dialog, click **Help** or press **F1**.
4. When configuring the component, define any of the normalized message properties listed in [Table 2–5](#). **hc.fromEndpoint** and **hc.toEndpoint** must be defined and must correspond to endpoints defined in the healthcare integration user interface.

Table 2–5 Healthcare Integration Normalized Message Properties

| | |
|----------------------------|--|
| hc.documentDefinitionName | The name of the document definition. For example, ADT_A03_def . |
| hc.documentProtocolName | The name of the protocol associated with the document definition. For example, HL7 . |
| hc.documentProtocolVersion | The version of the above protocol associated with the document definition. For example, 2.3.1 for an HL7 document. |
| hc.documentTypeName | The document type associated with the document definition. For example, ADT_A03 for an HL7 document. |
| hc.fromEndpoint | The name of the endpoint for the sending application. This name is defined in the endpoint configuration in the healthcare integration user interface. |

Table 2–5 (Cont.) Healthcare Integration Normalized Message Properties

| | |
|---------------------|--|
| hc.messageId | A unique message ID. |
| hc.messageType | The message type value can be one of the following options: <ul style="list-style-type: none">■ 1 (indicates a request)■ 2 (indicates a response)■ 9 (indicates a functional acknowledgment) |
| hc.replyToMessageId | The message ID to which the sending message replies. |
| hc.toEndpoint | The name of the endpoint for the receiving application. This name is defined in the endpoint configuration in the healthcare integration user interface. |

5. When you are done configuring the settings, click **OK**.
6. Select **Save All** from the **File** main menu.

See *Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite* for more information about adding service components.

Working with Document Types and Protocols

This chapter provides information about the document protocols and message types supported by Oracle SOA Suite for healthcare integration, and describes how to work with document definitions in the healthcare integration user interface.

This chapter contains the following topics:

- [Section 3.1, "Introduction to Document Protocols"](#)
- [Section 3.2, "Using the Custom Document Protocol"](#)
- [Section 3.3, "Using the HL7 Document Protocol"](#)
- [Section 3.4, "Creating Document Definitions"](#)
- [Section 3.5, "Deleting a Document Definition"](#)

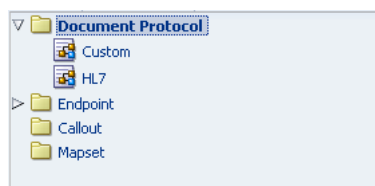
3.1 Introduction to Document Protocols

Oracle SOA Suite for healthcare integration supports the following document protocols:

- Custom
- HL7 V2.x

[Figure 3–1](#) displays the document protocols supported in Oracle SOA Suite for healthcare integration.

Figure 3–1 Oracle SOA Suite for healthcare integration Document Protocols

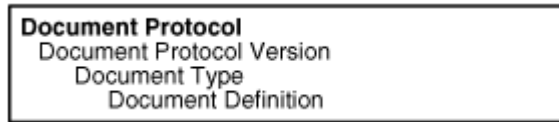


As part of the document definition, you provide the document guideline files, which are typically created in Oracle Document Editor. (For Custom documents, you cannot use Oracle Document Editor and validation of documents is also not possible.) If validation is enabled, then, at run time, the payload must conform to the document definition file type you use.

3.1.1 What You May Need to Know About the Document Hierarchy

You can think of a document protocol as a hierarchy, as shown in [Figure 3–2](#).

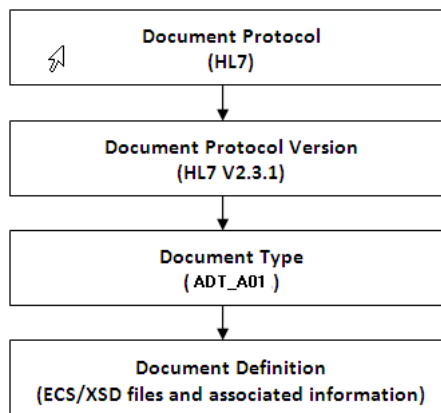
Figure 3–2 Document Hierarchy



A document protocol can consist of multiple document protocol versions. A document protocol version can consist of multiple document types. A document type can consist of multiple document definitions. Typically, you start with one document definition and customize it for different endpoints.

[Figure 3–3](#) shows a document protocol hierarchy as it applies to HL7 V2.3.1.

Figure 3–3 HL7 V2.3.1 Document Hierarchy



In the Oracle SOA Suite for healthcare integration user interface, as you create a document definition, the document protocol hierarchy is reflected in the definition:

DocumentProtocol—Version—DocumentType—DocumentDefinitionName

[Example 3–1](#) shows the hierarchy reflected in the definition for an HL7 document.

Example 3–1 Document Definition Name for an HL7 Document

Document protocol: HL7

Document protocol version: 2 . 3 . 1

Document type: ADT_A01

Document definition: ADT_A01_def

The resulting document definition is:

HL7-2 . 3 . 1-ADT_A01-ADT_A01_def

3.2 Using the Custom Document Protocol

Oracle SOA Suite for healthcare integration supports custom document protocols to create documents needed for proprietary transactions. With XML messages, you have the advantage of schema enforcement (XSDs).

With non-XML messages, you can create endpoints for specific message types.

When creating a Custom document, you specify rules to identify the incoming document. For XML documents, specify an XPath expression or an XPath expression and a value, which is the expected result of the expression.

For non-XML documents such as a flat file, you can specify Identification Start Position, End Position, and Identification Value.

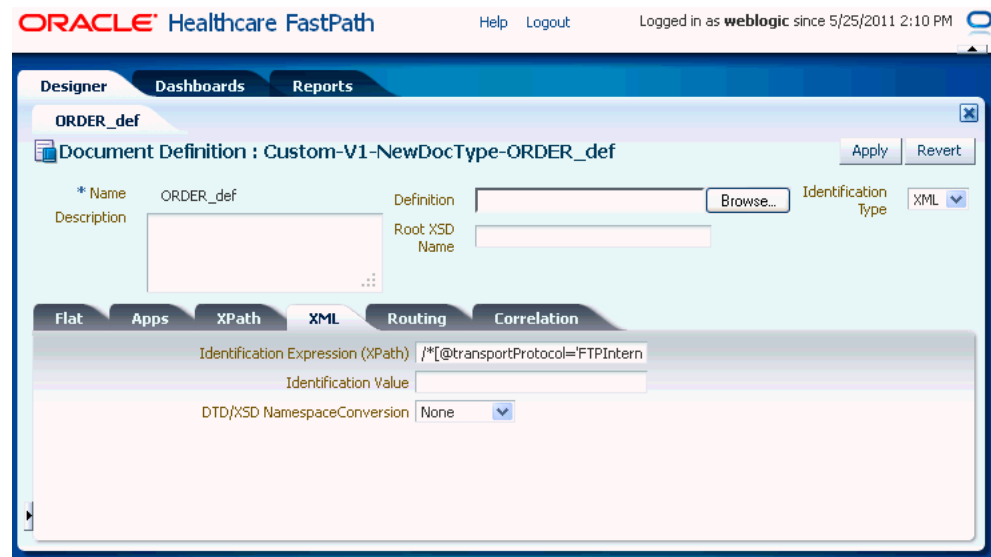
3.2.1 What You May Need to Know About Custom Document Version Parameters

No parameters need to be set when you create the document version for a Custom document.

3.2.2 What You May Need to Know About Custom Document Definition Parameters

When you create a Custom document definition (see [Section 3.4, "Creating Document Definitions"](#) for more information on creating document definitions), select the identification type—XML or Flat, and set parameters in the tabbed areas. [Figure 3-4](#) shows the document definition parameters for an XML-type Custom document.

Figure 3-4 Document Definition Parameters for an XML-Type Custom Document



[Figure 3-5](#) shows the document definition parameters for a flat-file Custom document.

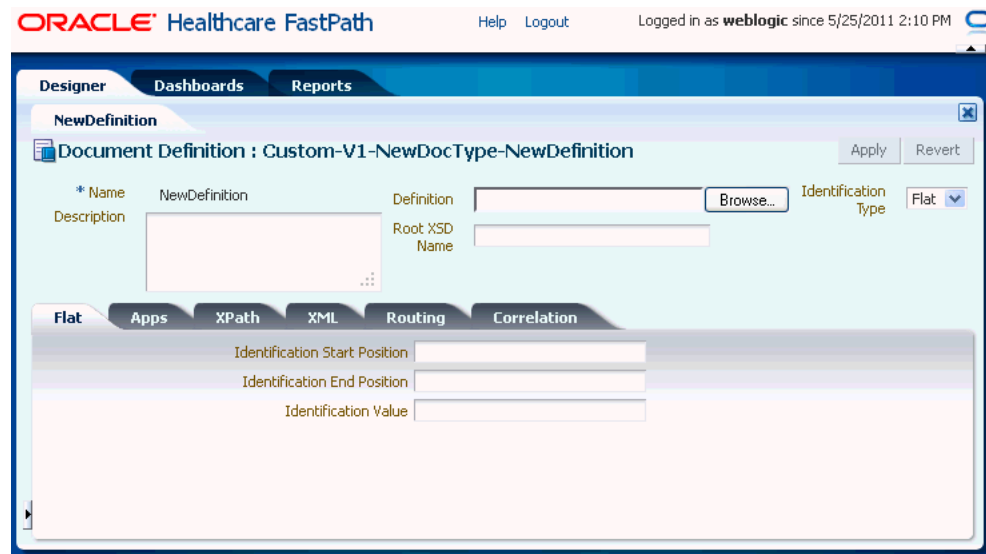
Figure 3–5 Document Definition Parameters for a Flat-File Custom Document

Table 3–1 describes the document definition parameters for a Custom document.

Table 3–1 Document Definition Parameters for a Custom Document

| Parameter | Description |
|-----------------------------------|--|
| XML Tab | (Available if XML is selected from Identification Type) |
| Identification Expression (XPath) | Locates a node in the XML payload |
| Identification Value | Provides the value to match in the node identified by the Identification Expression. If the values match, then the document is successfully identified. If the value is left blank, then Oracle SOA Suite for healthcare integration checks for the existence of the node and the document is successfully identified. |
| DTD/XSD NamespaceConversion | Select from None , Both , Inbound , or Outbound . |
| Routing Tab | - |
| Document Routing ID | Sets the consumer name to the back-end application |
| XPath Tab | See Section 3.2.2.1, "How to Configure the XPath Expression for a Custom XML Document." |
| XPath Name1 | The XML XPath name for retrieving the value from the payload |
| XPath Expression1 | The XML XPath expression for retrieving the value from the payload. |
| XPath Name2 | The XML XPath name for retrieving the value from the payload. |
| XPath Expression2 | The XML XPath expression for retrieving the value from the payload. |
| XPath Name3 | The XML XPath name for retrieving the value from the payload. |
| XPath Expression3 | The XML XPath expression for retrieving the value from the payload. |
| Correlation Tab | - |
| Correlation From XPath Name | The name of the correlation property for initiating the correlation. |
| Correlation From XPath Expression | The XML XPath for retrieving the value from the payload to initiate the correlation. |

Table 3–1 (Cont.) Document Definition Parameters for a Custom Document

| Parameter | Description |
|---------------------------------|--|
| Correlation To XPath Name | The name of the correlation property for the correlation. |
| Correlation To XPath Expression | The XML XPath for retrieving the value from the payload for the correlation. |
| Flat Tab | - |
| Identification Start Position | Used in combination with the end position to retrieve a value from the payload between the start and end positions |
| Identification End Position | Used in combination with the start position to retrieve a value from the payload between the start and end positions |
| Identification Value | A value between the start and end positions |
| Apps Tab | - |
| Document | The name of the internal application document. |
| Action | A sub-classification within the document. |
| XSLTFile | The name of the XSLT file. |

3.2.2.1 How to Configure the XPath Expression for a Custom XML Document

The XPath expression identifies a Custom XML document. You configure the XPath expression when you specify the document type parameters.

The options when configuring an XPath expression are as follows:

- [Option 1: Specify the XPath and the Matching Value](#)
- [Option 2: Check for the Existence of a Node](#)
- [Option 3: Check the Value of an Attribute](#)

3.2.2.1.1 Option 1: Specify the XPath and the Matching Value Assume that the transaction ID is 12345. Set the parameters as follows:

| Field | Value |
|---------------------------|---|
| Identification Value | 12345 |
| Identification Expression | <code>//*[local-name() = 'TransactionID']/text()</code> |

Oracle SOA Suite for healthcare integration compares the value of **Identification Expression** in the payload to the value specified in **Identification Value**. If the values match, then the document is identified successfully and the corresponding document type and document protocol version are used to identify the endpoint. [Example 3–2](#) shows an excerpt of the XML payload for this option.

Example 3–2 Specify the XPath and the Matching Value

```
<?xml version="1.0" encoding="UTF-8" ?>
<Message xmlns:ns1="http://www.example1.org" xmlns:ns2="http://www.example2.org"
  xmlns="http://www.example3.org"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:ns="http://www.example4.org">
  <MessageHeader>
    <Source>201944019</Source>
    <Destination>205704856</Destination>
```

```

    <TransactionID>123456</TransactionID>
    <Version>1-0-0</Version>
  </MessageHeader>
  <Body>
    <ns:Case xsi:schemaLocation="http://www.example4.org" ns1:caseCategoryID="1">
      <ns1:OfficialProvisionNumber>String</ns1:OfficialProvisionNumber>
    </ns:Case>
  </Body>
</Message>

```

3.2.2.1.2 Option 2: Check for the Existence of a Node Assume that you are checking for the existence of a node called `registerCommand`. Set the parameters as follows:

| Field | Value |
|---------------------------|---|
| Identification Value | <i>Leave blank.</i> |
| Identification Expression | <code>/*[local-name()='envelope']/body/transaction/command/*[local-name()='registerCommand']</code> |

When the **Identification Value** field is left blank, Oracle SOA Suite for healthcare integration checks for the node identified in **Identification Expression**. If a node in the payload matches, then the document is identified successfully. [Example 3–3](#) shows an excerpt of the XML payload for this option.

Example 3–3 Check for the Existence of a Node

```

<uccnet:envelope xmlns:eanucc="http://www.ean-ucc.org/schemas/1.3/eanucc"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:uccnet="http://www.uccnet.org/schemas/2.2/uccnet"
  communicationVersion="2.2"
  xsi:schemaLocation="http://www.uccnet.org/schemas/2.2/uccnet
  http://www.testregistry.net/xmlschema/uccnet/2.2/Envelope.xsd">
  <messageHeader>
    <messageIdentifier>
      <value>791:1_EB3CDC749A1F2BABE03014906CC4605A</value>
    </messageIdentifier>
    <userId>oraclesupXSD</userId>
    <representingParty>
      <gin>0060974050142</gin>
    </representingParty>
  </messageHeader>
  <body>
    <transaction>
      <entityIdentification>
        <uniqueCreatorIdentification>856</uniqueCreatorIdentification>
        <globalLocationNumber>
          <gin>0060974050142</gin>
        </globalLocationNumber>
      </entityIdentification>
      <command>
        <uccnet:registerCommand>
          <registerCommandHeader type="ADD" />
        </uccnet:registerCommand>
      </command>
    </transaction>
  </body>
</uccnet:envelope>

```

3.2.2.1.3 Option 3: Check the Value of an Attribute Assume that the value of the country attribute is **US**. Set the parameters as follows:

| Field | Value |
|---------------------------|---------------|
| Identification Value | US |
| Identification Expression | //*[@country] |

Oracle SOA Suite for healthcare integration compares the value of the country attribute to the value set for **Identification Value**. If the values match, then the document is identified successfully. [Example 3–4](#) shows an excerpt of the XML payload for this option.

Example 3–4 Check the Value of an Attribute

```
<?xml version="1.0" encoding="windows-1252" ?>
<MyAddress country="US" xmlns="http://www.example.org"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="PO.xsd">
  <name>B2B Buyer</name>
  <street>100 Oracle Parkway</street>
  <city>Redwood City</city>
  <state>CA</state>
  <zip>94065</zip>
</MyAddress>
```

3.3 Using the HL7 Document Protocol

Oracle SOA Suite for healthcare integration implements the Health Level 7 (HL7) version 2.x to exchange documents containing health care information using the Generic exchange or MLLP exchange. When using HL7, the standard Oracle SOA Suite for healthcare integration features, such as validation, translation, automatic generation of outbound envelope headers, and acknowledgments, are available.

For information about the organization that created and maintains the HL7 standards, go to

<http://www.hl7.org>

3.3.1 What You May Need to Know About HL7 Document Version Parameters

When you create an HL7 document version, you can set various parameters. [Figure 3–6](#) shows document version parameters for an HL7 document.

Figure 3–6 Document Version Parameters for an HL7 Document

The screenshot shows the Oracle SOA Suite for healthcare integration Designer interface. At the top, it says "ORACLE SOA Suite for healthcare integration Logout" and "Logged in as weblogic since 9/5/2011 1:52:43 AM GMT-07:". Below that, there are tabs for "Designer", "Dashboards", and "Reports". The main window is titled "2.3.1" and "Document Version : HL7-2.3.1". There are "Apply" and "Revert" buttons. The "Message Header" tab is selected, showing a form with the following fields:

- * Name: 2.3.1
- Description: (empty text area)
- Security: (empty text field)
- Processing ID: P
- Accept Acknowledgement Type: AL
- Application Acknowledgement Type: AL
- Country Code: US
- Character Set: ASCII
- Internationalization Code Identifier: (empty text field)
- Internationalization Code Text: (empty text field)
- Internationalization Coding System Name: (empty text field)
- Internationalization Code Alternate Identifier: (empty text field)
- Internationalization Code Alternate Text: (empty text field)
- Internationalization Code Alternate Coding System Name: (empty text field)
- International Version Identifier: (empty text field)
- International Version ID Text: (empty text field)
- International Version ID Coding System Name: (empty text field)
- International Version ID Alternate Identifier: (empty text field)
- International Version ID Alternate Text: (empty text field)
- International Version ID Alternate Coding System Name: (empty text field)

Table 3–2 describes the document version parameters for an HL7 document.

Table 3–2 Document Version Parameters for an HL7 Document

| Parameter | Description |
|--------------------------------------|--|
| Message Header Tab | - |
| Security | In some applications of HL7, this field is used to implement security features. |
| Processing ID | MSH.11 - This field is used to decide whether to process the message as defined in HL7 Application (level 7) processing rules. The first component defines whether the message is part of a production, training, or debugging system (refer to HL7 table 0103 - Processing ID for valid values). The second component defines whether the message is part of an archival process or an initial load (refer to HL7 table 0207 - Processing mode for valid values). This allows different priorities to be given to different processing modes. |
| Accept Acknowledgement Type | Sets the conditions under which application acknowledgments are required to be returned in response to the message. The value AL (always) is supplied. Oracle SOA Suite for healthcare integration checks the payload (MSH.15) of an incoming message to see if an ACK has to be generated. In some HL7 Systems, MSH.15 is not sent in the payload at all and it is expected that an ACK is still sent. |
| Application Acknowledgment Type | MSH.16. The value AL (always) is supplied. |
| Country Code | Sets the country of origin for the message. The value US is supplied. |
| Character Set | Sets the character set for the entire message. The value ASCII is supplied. |
| Internationalization Code Identifier | MSH.19 |

Table 3–2 (Cont.) Document Version Parameters for an HL7 Document

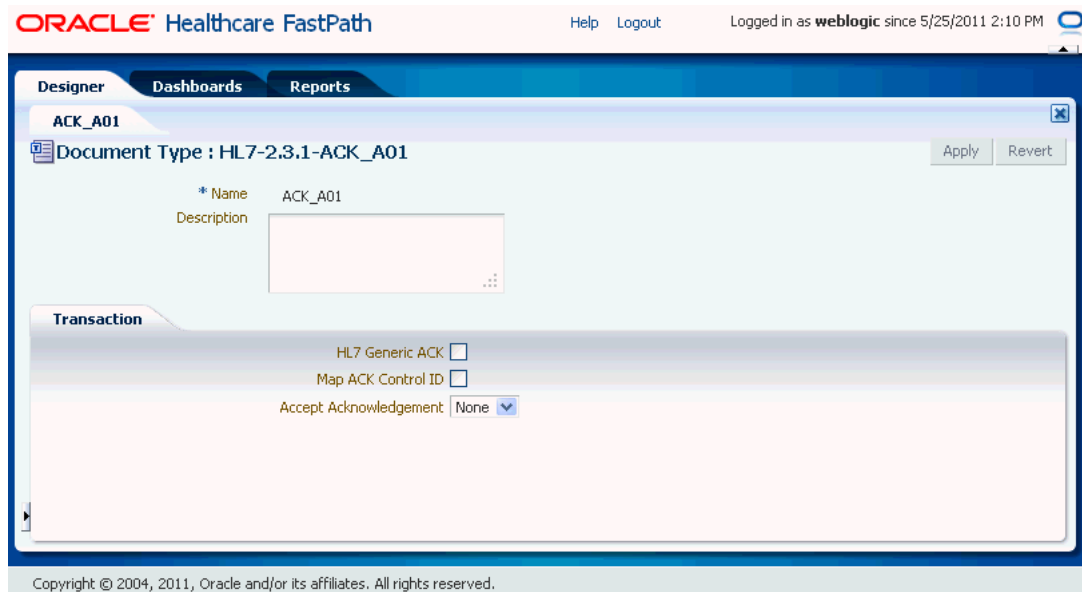
| Parameter | Description |
|--|---|
| Internationalization Code Text | MSH.19 |
| Internationalization Coding System Name | MSH.19 |
| Internationalization Code Alternate Identifier | MSH.19 |
| Internationalization Code Alternate Text | MSH.19 |
| Internationalization Code Alternate Coding System Name | MSH.19 |
| International Version Identifier | MSH.12 |
| International Version ID Text | MSH.12 |
| International Version ID Coding System Name | MSH.12 |
| International Version ID Alternate Identifier | MSH.12 |
| International Version ID Alternate Text | MSH.12 |
| International Version ID Alternate Coding System Name | MSH.12 |
| Batch Header Tab | - |
| Create Batch Header | Select the box to create batch headers. |
| Batch Header Ecs File | Use the Browse button to find an ecs file to override the standard file. If not provided, the provided default file is used. |
| Batch Security | BHS.8 |
| Batch Date | BHS.7. The system date-time stamp is supplied (#SystemDateTime (CCYYMMDDHHMM) #). |
| File Header Tab | - |
| Create File Header | Select the check box to create file headers. |
| File Header Ecs File | Use the Browse button to find an ecs file to override the standard file. If not provided, the provided default file is used. |
| File Security | FHS.8 |
| File Date | FHS.7. The system date-time stamp is supplied (#SystemDateTime (CCYYMMDDHHMM) #). |
| Delimiters Tab | Click Select Hexadecimal Characters next to any of the delimiter fields to provide values. |
| Element Delimiter | A single character that follows the segment identifier and separates each data element in a segment except the last. The value 0x7c is supplied. |
| Escape Character | The value 0x5c is supplied. |
| Repeating Separator | A service character used to separate adjacent occurrences of a repeating data element, or to separate multiple occurrences of a field. The value 0x7e is supplied. |

Table 3–2 (Cont.) Document Version Parameters for an HL7 Document

| Parameter | Description |
|----------------------------|---|
| Segment Delimiter | A syntax character indicating the end of a segment (a logical grouping of data fields) within a message. The value 0x0d is supplied. |
| Subcomponent Delimiter | The value 0x26 is supplied. |
| Subelement Delimiter | The value 0x5e is supplied. |
| Miscellaneous Tab | - |
| Ignore Envelope Parameters | Use this option to provide a list of envelope elements, separated by commas, to be ignored during look-up validation. For an HL7 agreement, the possible values include MessageSendingApp , MessageReceivingApp , MessageSendingFacility , and MessageReceivingFacility . |
| Ack Mode | Select this option to specify whether to send a single acknowledgment or multiple acknowledgments for inbound batched HL7 messages. |

3.3.2 What You May Need to Know About HL7 Document Type Parameters

When you create an HL7 document type, you can set various parameters. [Figure 3–7](#) shows the document type parameters for an HL7 document.

Figure 3–7 Document Type Parameters for an HL7 Document

[Table 3–3](#) describes the document type parameters for an HL7 document.

Table 3–3 Document Type Parameters for an HL7 Document

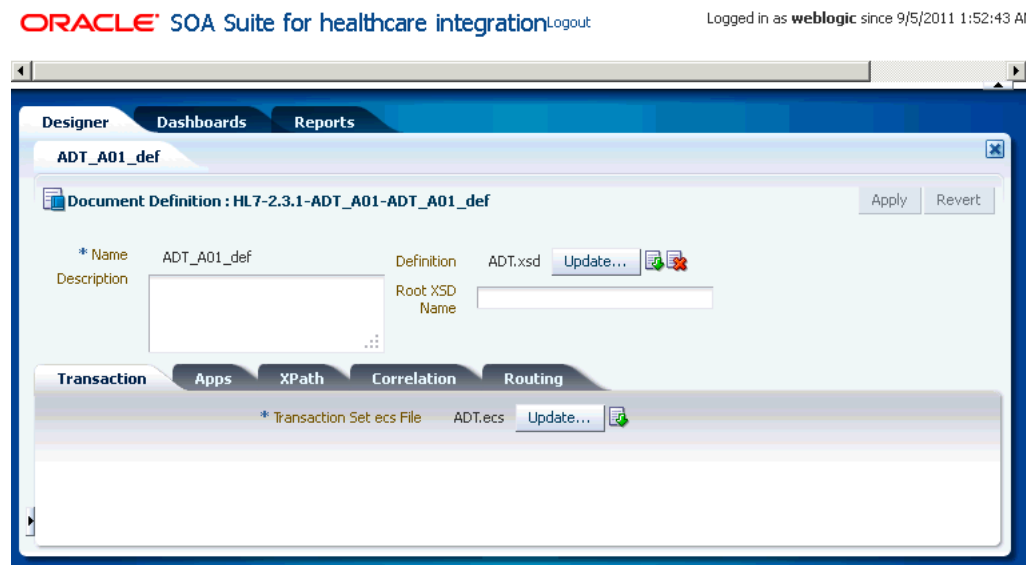
| Parameter | Description |
|------------------------|-------------|
| Transaction Tab | - |

Table 3–3 (Cont.) Document Type Parameters for an HL7 Document

| Parameter | Description |
|------------------------|---|
| HL7 Generic ACK | If selected, Oracle SOA Suite for healthcare integration sends a generic ACK. |
| Map ACK Control ID | Select to enable mapping the MSH.10 of the business message to the MSH.10 of the acknowledgment. Note: This Map ACK Control ID parameter is for the functional ACK. |
| Accept Acknowledgement | A functional acknowledgment is generated when MSH.15 has no value. Select None to take no action. Acknowledgment generation is dependent on the value in MSH.15 of the business message. Select AL (always) to generate the acknowledgment under any conditions. Select ER (error/reject) to generate the acknowledgment when the message errors or is rejected. Select SU (successful completion) to generate the acknowledgment when the message is successfully processed. |

3.3.3 What You May Need to Know About HL7 Document Definition Parameters

When you create an HL7 document definition (see [Section 3.4, "Creating Document Definitions"](#) for more information on creating document definitions), you can set various parameters. [Figure 3–8](#) shows document definition parameters for an HL7 document.

Figure 3–8 Document Definition Parameters for an HL7 Document

[Table 3–4](#) describes the document definition parameters for an HL7 document.

Table 3–4 Document Definition Parameters for an HL7 Document

| Parameter | Description |
|---------------------------|--|
| Transaction Tab | - |
| *Transaction Set ecs File | Use the Browse button to find the ecs file. |
| Routing Tab | - |
| Document Routing ID | Sets the consumer name to the back-end application |
| XPath Tab | -See Section 3.2.2.1, "How to Configure the XPath Expression for a Custom XML Document," for more information. |
| XPath Name1 | The XML XPath name for retrieving the value from the payload |

Table 3–4 (Cont.) Document Definition Parameters for an HL7 Document

| Parameter | Description |
|-----------------------------------|--|
| XPath Expression1 | The XML XPath expression for retrieving the value from the payload |
| XPath Name2 | The XML XPath name for retrieving the value from the payload |
| XPath Expression2 | The XML XPath expression for retrieving the value from the payload |
| XPath Name3 | The XML XPath name for retrieving the value from the payload |
| XPath Expression3 | The XML XPath expression for retrieving the value from the payload |
| Correlation Tab | - |
| Correlation From XPath Name | The name of the correlation property for initiating the correlation. |
| Correlation From XPath Expression | The XML XPath for retrieving the value from the payload to initiate the correlation. |
| Correlation To XPath Name | The name of the correlation property for the correlation. |
| Correlation To XPath Expression | The XML XPath for retrieving the value from the payload for the correlation. |
| Apps Tab | - |
| Document | The name of the internal application document. |
| Action | A sub-classification within the document. |
| XSLTFile | The name of the XSLT file. |

3.3.4 What You May Need to Know About Using HL7

No business message is produced for an HL7 immediate acknowledgment (transport-level acknowledgment).

Negative acknowledgment messages indicating errors in an HL7 exchange may be truncated because of the 80-character length limitation in HL7 versions 2.1 through 2.5.

3.4 Creating Document Definitions

A document definition specifies the document protocol—the document protocol version and document type—that is used to validate the message. The document definition can be an ECS file, in the case of HL7 messages, or an XSD/DTD, in the case of XML messages.

The same document definition is used by participating endpoints in a transaction. It must adhere to the standards for document protocols, protocol versions, and document types.

Note: To ensure that the document definition conforms to standards, you can use Oracle Document Editor to create the document guideline files and then use the Oracle SOA Suite for healthcare integration user interface to import those files when creating the document definition.

After creating transaction set files by using Oracle Document Editor, you use the Oracle SOA Suite for healthcare integration user interface to create the document definition and import the transaction set files.

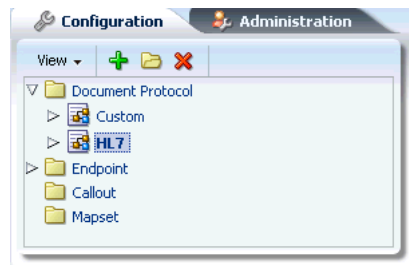
Note: The document version, document type, and document definition are not editable after they are created. You must delete the specific document element (version, type, or definition) and create a new one. Updating the document elements after creation can lead to metadata inconsistency, metadata validation issues, and run-time errors.

To create a document definition:

1. Log on to Oracle SOA Suite for healthcare integration. The Oracle SOA Suite for healthcare integration user interface opens with the Configuration tab selected.
2. In the left-hand navigation panel, expand **Document Protocol**. This displays the list of supported protocols, which are Custom and HL 7 V2.x.
3. Select one of the document protocols, for example HL7, as shown in [Figure 3–9](#), and click the **Create** button. This displays the Create Document Version window.

Note: You can also right-click the document protocol name and select **Create** from the shortcut menu.

Figure 3–9 *Selecting a Document Protocol*

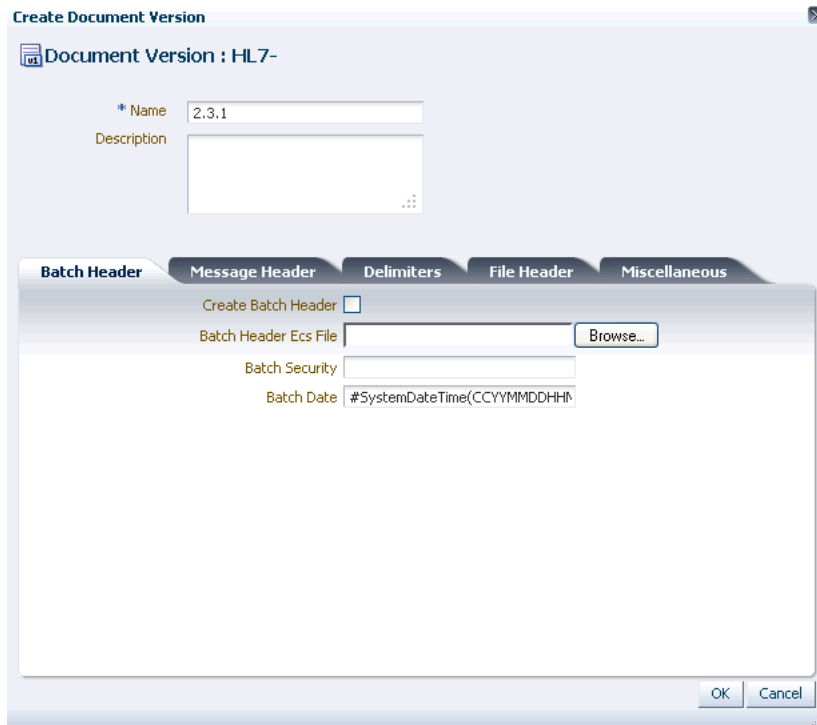


Note: In the Create Document Protocol Version dialog box, enter a protocol version name, for example, 2.3.1.

4. Enter the document protocol version name in the **Name** field.
 5. Specify the document version parameters as applicable, and click **OK**.
- The version is used for document identification and can be case sensitive. Use a fixed syntax that conforms to the protocol standards.

[Figure 3–10](#) shows the document protocol version page for an HL7 V2.3.1 document.

Figure 3–10 Entering Document Protocol Version Information



For parameter descriptions, see [Table 3–2, " Document Version Parameters for an HL7 Document"](#).

6. Click the newly created Version name, and then click the **Create** button to display the Create Document Type window. Alternatively, you can right-click the version name and select **Create** from the shortcut menu.
7. Enter a document type name, specify document type parameters as applicable, and then click **OK**.

[Figure 3–11](#) shows the document type parameters page for an HL7 V2.3.1 document.

Figure 3–11 Entering Document Type Parameter Information

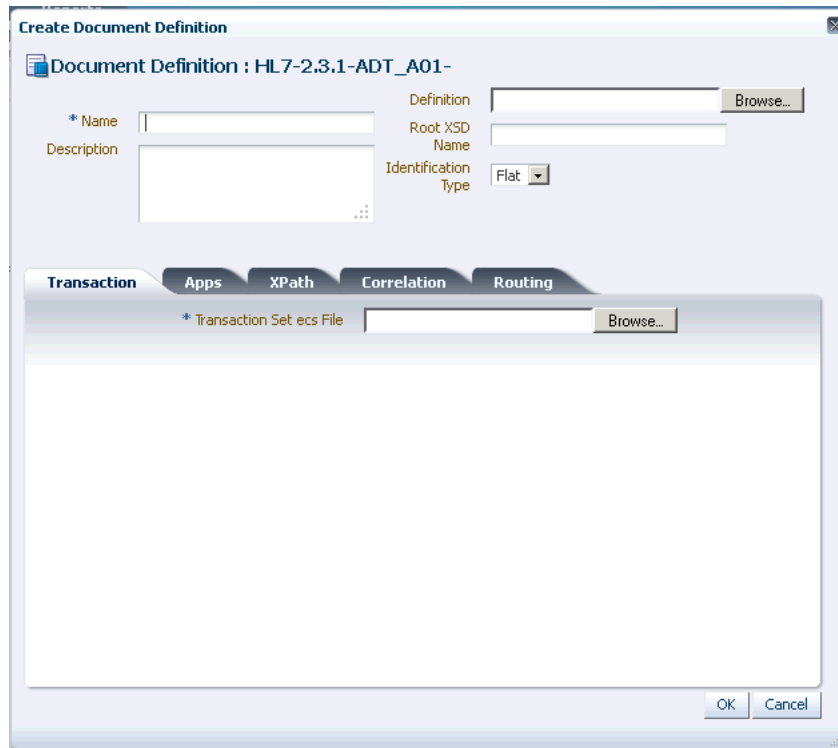
The screenshot shows a dialog box titled "Create Document Type". The main area contains a "Document Type : HL7-2.3.1-" label. Below this, there are two input fields: "* Name" containing "ADT_A01" and "Description" which is empty. A "Transaction" section is visible below, containing three options: "HL7 Generic ACK" with an unchecked checkbox, "Map ACK Control ID" with an unchecked checkbox, and "Accept Acknowledgement" with a dropdown menu set to "None". At the bottom right, there are "OK" and "Cancel" buttons.

For document type parameter descriptions, see [Table 3–3, " Document Type Parameters for an HL7 Document"](#).

8. With the new document type name selected, click **Create** to display the Create Document Definition window.
9. Enter a document definition name and do the following:
 - a. Browse for an optional definition (XSD) file for any of the document protocols.
 - b. Browse for the required transaction set ECS file for HL7 or positional flat file.
 - c. Specify document definition parameters as applicable and click **OK**.

[Figure 3–12](#) shows the document definition parameters page for an HL7 V2.3.1 document.

Figure 3–12 Entering Document Definition Parameter Information



For definition parameter descriptions, see the following:

- [Table 3–1, " Document Definition Parameters for a Custom Document"](#)
- [Table 3–4, " Document Definition Parameters for an HL7 Document"](#)

Note: You can also use the post install script, install the standard library, and import hl7 doctypes file to create a document tree in Healthcare console.

3.5 Deleting a Document Definition

To delete a document definition, select the document definition name and click **Delete**. Alternatively, you can select the definition name, right-click, and select **Delete** from the shortcut menu.

Working with Endpoints

This chapter describes the concept of an endpoint in Oracle SOA Suite for healthcare integration, and provides instructions for creating and configuring endpoints for healthcare integration applications.

This chapter contains the following topics:

- [Section 4.1, "Introduction to Endpoints"](#)
- [Section 4.2, "Creating Endpoints"](#)
- [Section 4.3, "Associating an Endpoint with a Document"](#)
- [Section 4.4, "Enabling Sequencing for an MLLP Endpoint"](#)
- [Section 4.5, "Deleting an Endpoint"](#)
- [Section 4.6, "Working with the Endpoint Window"](#)

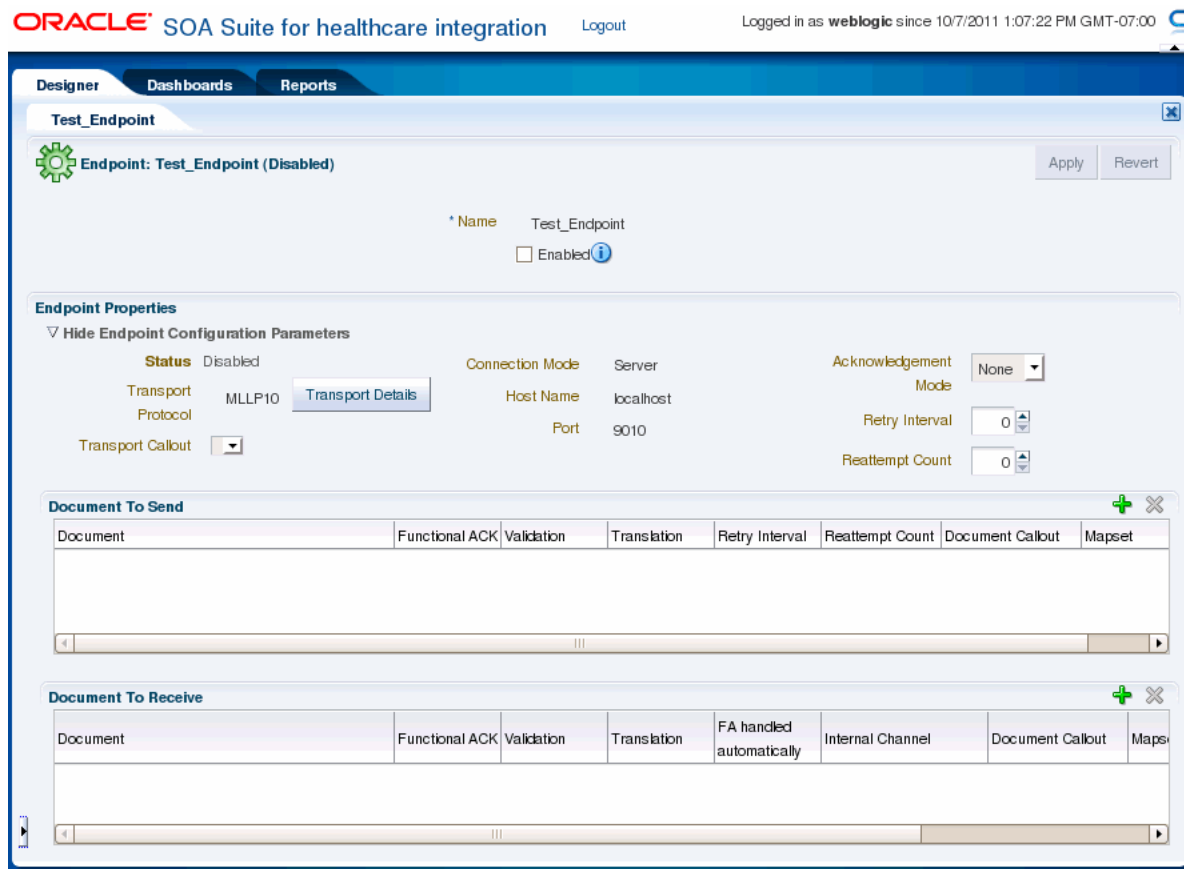
4.1 Introduction to Endpoints

In Oracle SOA Suite for healthcare integration, endpoints are communication channels from where predefined documents are sent or received. Endpoints define how documents are exchanged with an external system, specifying the location, transport protocol, documents to be exchanged, and other configuration parameters. An endpoint can be a URL, folders, or path, among others. Based on the direction of the message, an endpoint can be inbound, outbound, or both. For example, when Oracle SOA Suite for healthcare integration reads from a directory, the directory is the inbound endpoint. Conversely, when Oracle SOA Suite for healthcare integration writes to or sends messages to a directory, the directory is the outbound endpoint. Also, an MLLP endpoint can be used both for receiving and sending messages.

For Oracle SOA Suite for healthcare integration, you need to associate an endpoint with document definitions and enable the endpoint to be able to start sending and receiving messages.

[Figure 4–1](#) displays a sample endpoint, which is yet to be associated with a document definition.

Figure 4-1 Oracle SOA Suite for healthcare integration Sample Endpoint



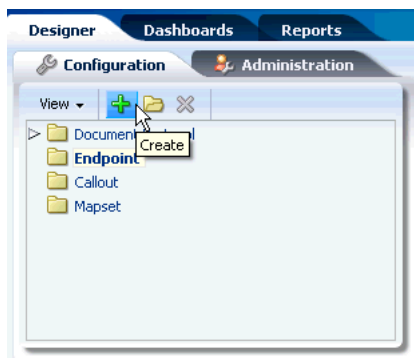
4.2 Creating Endpoints

The Oracle SOA Suite for healthcare integration user interface provides an Endpoints page where you can create and configure endpoints. This procedure describes how to create endpoints using the interface. For information about using the Healthcare Adapter, see [Chapter 2, "Working with the Oracle Healthcare Adapter."](#)

You can create endpoints both for bidirectional (MLLP) and single-directional (FILE, JMS) transport protocols. Bidirectional protocols enables you to send or receive response messages or functional acknowledgements (FAs) by using the same endpoint. However, single-directional protocols need to be configured to send and receive documents; only then you can send or receive messages or FAs per endpoint.

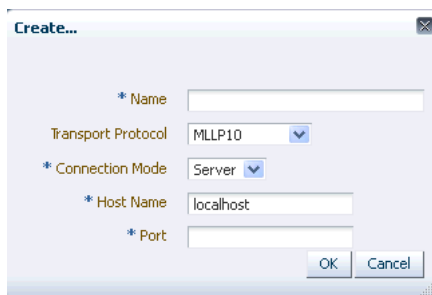
To create endpoints with bidirectional transport protocol (MLLP):

1. Log on to the Oracle SOA Suite for healthcare integration user interface.
2. In the **Configuration** tab under the **Design** tab, click the **Endpoint** folder and then click the **Create** icon as shown in [Figure 4-2](#).

Figure 4–2 Create Endpoint Icon

3. In the **Create** window, enter the following and click **OK**, as shown in [Figure 4–3](#):
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **MLLP10**.
 - **Connection Mode:** Server or Client. If the endpoint is configured as server, Oracle SOA Suite for healthcare integration engine starts listening on a port and waits for a client to connect to it. In general, the server connection mode is for inbound case. When configured as client, the engine connects to hostname and port of a remote computer or device. In general, this is for an outbound case.
 - **Host Name:** In case of an MLLP Server endpoint, it should be name or IP address of the computer hosting Oracle SOA Suite, and in the case of an MLLP Client endpoint, it should be the remote host name or device name. Typically, this should be `localhost`. However, Host name can also be the name of the remote host or device.
 - **Port:** Port number should be more than 500. If the connection mode is set to Server, then the port must be a valid TCP port number. If the connection mode is set to Client, then the port must be the same as the port used on the MLLP server.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure 4–3 Specifying Endpoint Parameters

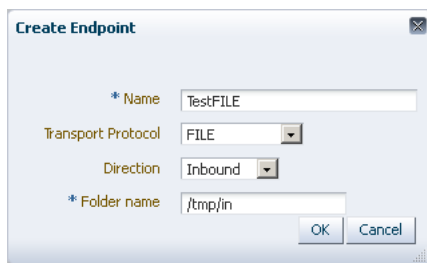
To create endpoints with single-directional transport protocol (FILE):

1. Log on to the Oracle SOA Suite for healthcare integration user interface.

2. In the **Configuration** tab under the **Design** tab, click the **Endpoint** folder and then click the **Create** icon.
3. In the **Create** window, enter the following and click **OK**, as shown in [Figure 4–4](#):
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **FILE**.
 - **Direction:** Inbound or Outbound based on your requirement. If the endpoint is configured as inbound, then it can receive response messages or FAs from other endpoints. Conversely, if the endpoint is configured as outbound, it can send messages or FAs.
 - **Folder Name:** An absolute directory path is recommended and this folder does not contain the inbound or outbound messages or FAs. Inbound messages are expected in this folder, and outbound messages or FAs need to be delivered here.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure 4–4 Specifying Endpoint Parameters



Note: Once a single-directional endpoint (inbound/outbound) is created, then it can be edited later to add inbound or outbound configuration by clicking the **Configure** link.

Note: See [Appendix B, "Creating Endpoints with Different Transport Protocols"](#) for more information on creating endpoints with different transport protocols.

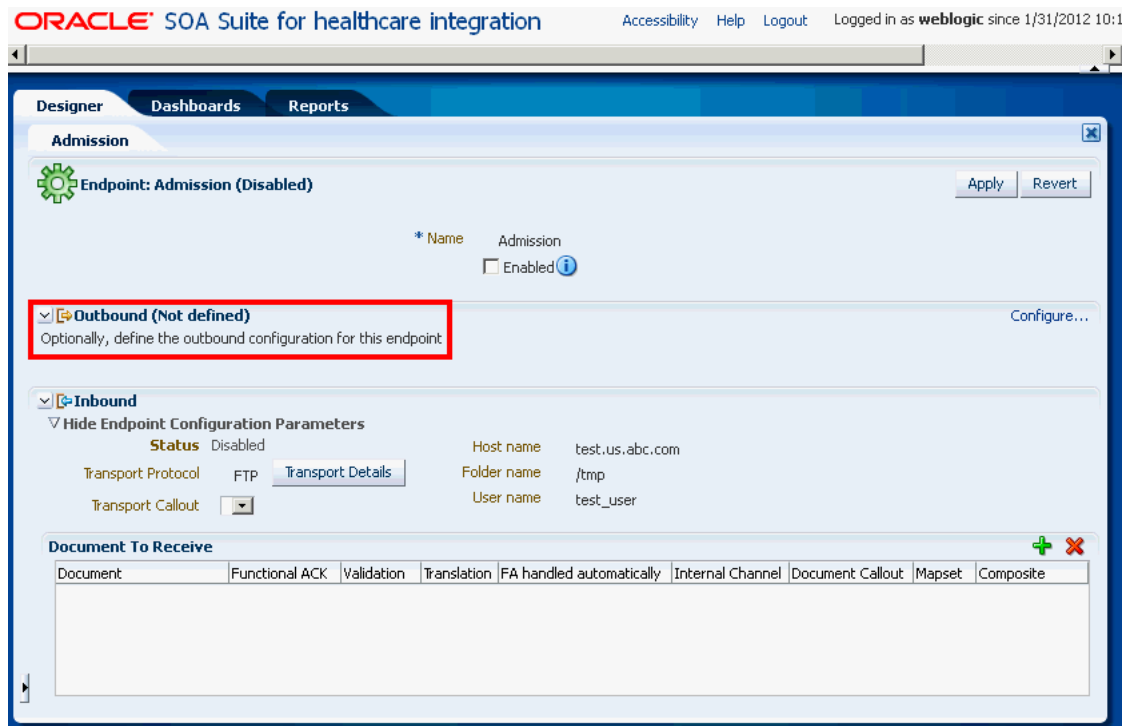
4.2.1 Configuring Channels in an Endpoint with Single-Directional Protocols

When a bidirectional transport protocol (such as MLLP) is used to create an endpoint, the endpoint can handle both request and reply (inbound and outbound) or ACK. However, in the case of a single-directional transport protocol (such as File or FTP), typically, you can only configure either the inbound or the outbound channel, but not both together.

Oracle SOA Suite for healthcare integration, in the case of single-directional protocols, allows you to configure two communication channels (one for sending and one for receiving messages) as a single entity (endpoint) for management and monitoring. This concept allows you to enable or disable, view the supported documents, and display related monitoring data (message counts and actual messages) for the related channels at the same time.

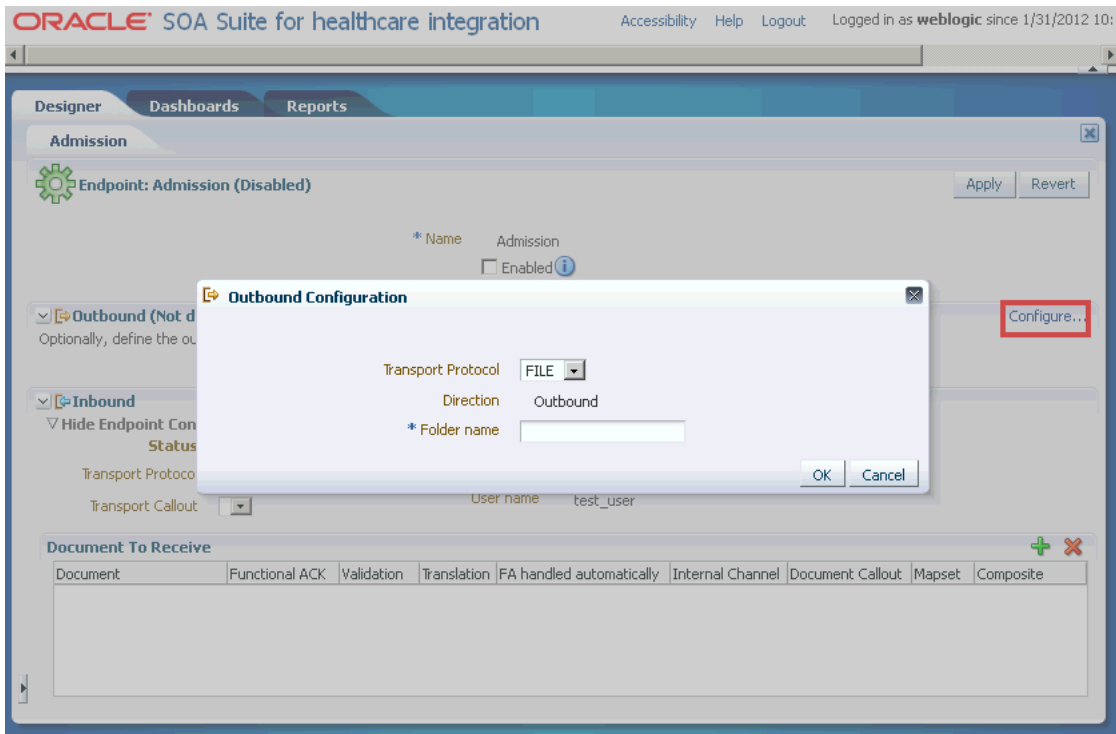
Using this feature, when you use a single-directional transport protocol, you need to configure only one channel. The configuration for the other channel (for the reverse direction) is optional. The Oracle SOA Suite for healthcare integration console, in this case, displays that one channel has been configured to send or receive messages, but the other channel has not been configured yet as shown in [Figure 4-5](#).

Figure 4-5 Undefined Secondary Channel



You can configure the other channel by clicking the **Configure** link in the undefined channel section, as shown in [Figure 4-6](#), and providing the required channel details in the configuration dialog box.

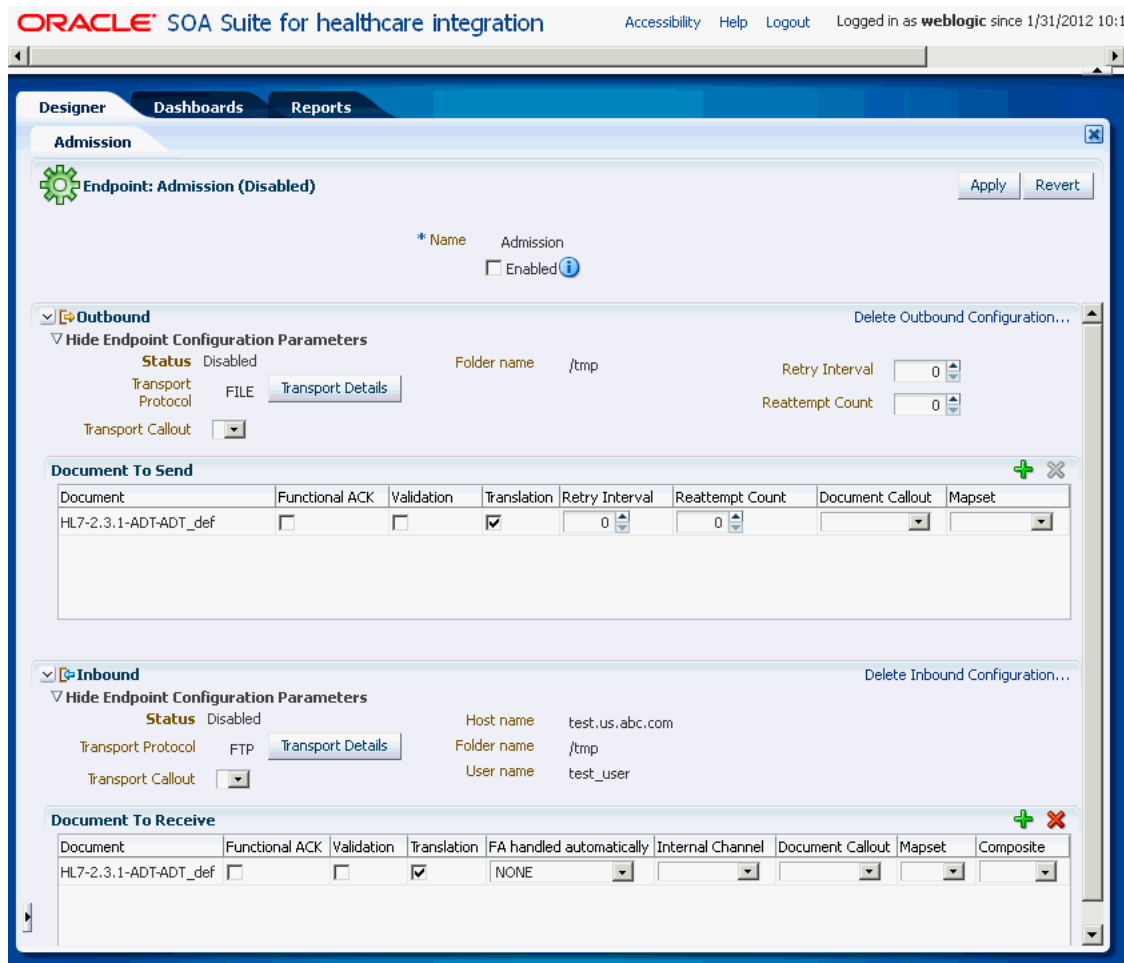
Figure 4-6 Defining the Secondary Channel



The transport protocol and other settings are defined per channel. You can use different single-directional transport protocols for the two channels. For example, the one channel can use FTP, whereas the other channel can use File. The only requirement is that both the protocols used should be single directional.

Once you have defined both the communication channels and associated documents with the channels (see [Section 4.3, "Associating an Endpoint with a Document"](#)), the endpoint appears as [Figure 4-7](#).

Figure 4-7 Single-Directional Endpoint with Both Channels Configured



You can edit the configuration of either of the channels if required. You can also delete the configuration of either of the channels by using the Delete links in the relevant channel section.

4.3 Associating an Endpoint with a Document

Once you have created an endpoint, you need to associate it with a document to enable the endpoint to send or receive messages. You can configure an endpoint to send or receive messages or both.

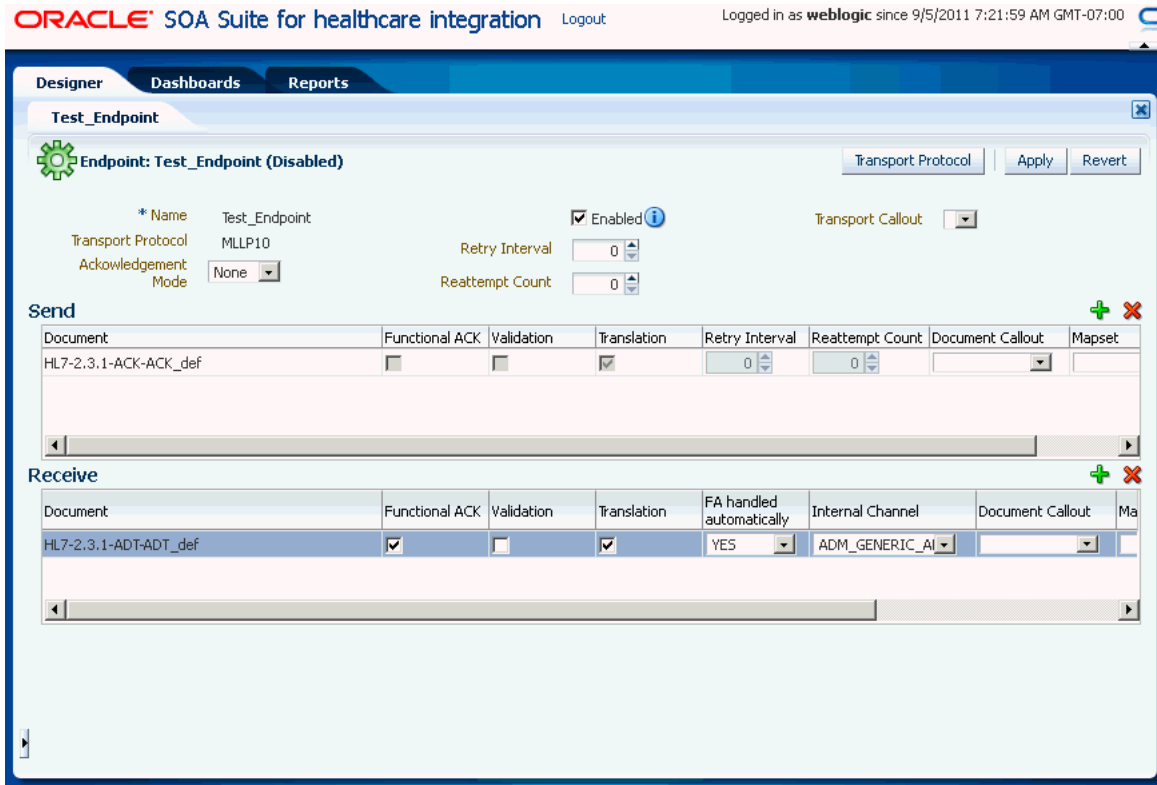
To associate a bidirectional endpoint with a document:

1. Open the required endpoint.
2. Configure the endpoint to send or receive messages:
 - a. In the Send or Receive section of the endpoint, click the + icon to display the Document selection window.
 - b. Select the required document definition from available document hierarchy, for example, ADT_A04_def. The document definition gets associated with the endpoint. You can specify whether you require functional acknowledgment, validation, or translation of the endpoint as well as required internal delivery channel, transport or agreement level callouts, and mapsets.

Note: you can also drag-and-drop the document definition to the Send or Receive section.

Figure 4–8 displays an endpoint associated with a document definition.

Figure 4–8 Associating an Endpoint with Document Definitions



Note: For FA, Functional ACK, Validation, Translation, Retry Interval, and Reattempt Count are disabled.

- c. Select any of the following document configuration options:

| Option | Description |
|----------------|---|
| Functional ACK | Select to enable the functional acknowledgment for success or error criterion |
| Validation | Select to enable validation of the document against the configured ECS file |
| Translation | Select to enable the translation of XML to native format and vice-versa |

- d. If any of the following have been defined for the endpoint, select them from the appropriate field: **Internal Channel**, **Document Callout**, **Mapset**, or **Composite**. For more information, see Chapter 6 Creating and Deploying Trading Partner Agreements in *Oracle Fusion Middleware User's Guide for Oracle B2B*.

3. Select the **Enabled** check box and click **Apply** to enable the endpoint for sending and receiving messages. The Apply operation sometimes could take about 30 to 60 seconds. This is due to the XSD/ECS creation and metadata validation.

Note: After making any changes to an endpoint, you can right-click the endpoint name in the left-side panel and click **Refresh** to update the endpoint.

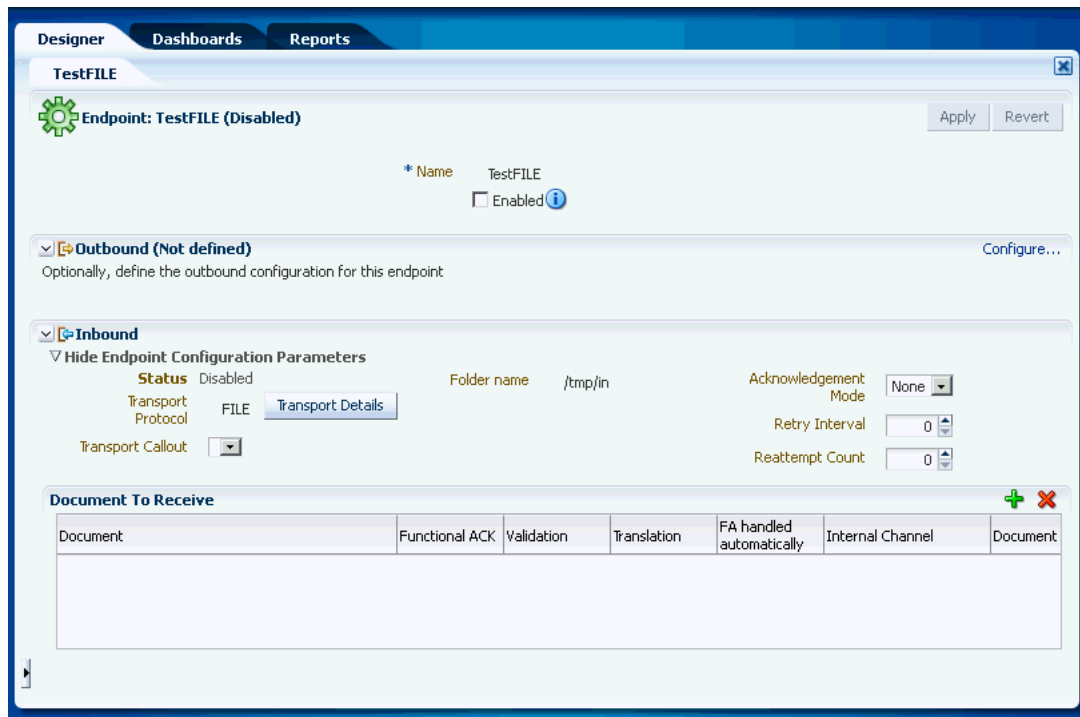
Note: You can enable or disable an endpoint by selecting or deselecting the **Enabled** check box and clicking the **Apply** button.

Associating a single-directional endpoint with a document

To associate a single-directional endpoint, such as File, the procedure is similar to that of a bidirectional endpoint. However, there are a few differences:

- When creating the endpoint, based on the direction that you have selected, the Oracle SOA Suite for healthcare integration console opens the configuration option for that particular direction.
- Once you follow the other steps listed in associating a bidirectional endpoint with a document, the endpoint gets attached to a document as shown in [Figure 4-9](#).

Figure 4-9 Associating a Single-directional Endpoint with a Document



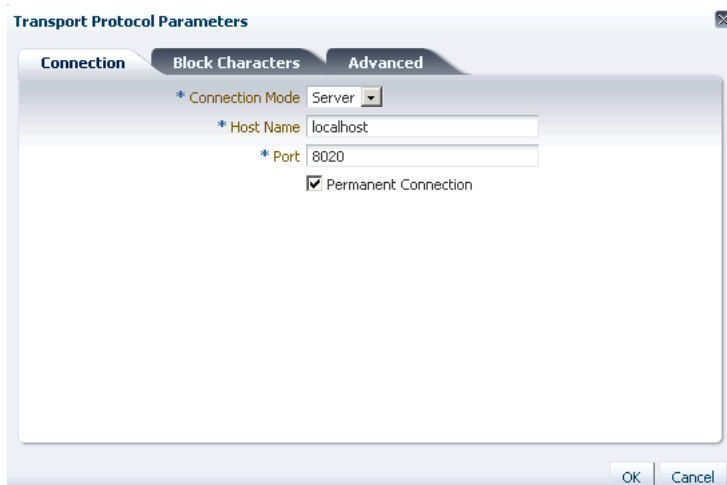
- If when creating the endpoint, you have specified the direction of the endpoint as inbound, you can define the outbound configuration for the endpoint on the same page by using the **Configure** link. This feature helps in tying two related single-directional endpoints (one for sending and one for receiving messages) as a single entity for better management and monitoring.

Note: You can disassociate a document from an endpoint by selecting the specific document entry in the Documents section and then by clicking the **Delete (X)** button.

4.4 Enabling Sequencing for an MLLP Endpoint

The following options are available for sequencing:

- Acknowledgement (ACK) Mode: Select **Sync**, **Async**, or **None** for the mode in which the endpoint receives messages.
- Retry Interval: The interval between each attempt to retry message delivery.
- Reattempt Count: The number of times to retry message delivery.
- Transport Callout: The transport callout to be invoked after receiving or before sending any message. A callout can be selected only after the callout is created.
- Transport Protocol: Click the **Transport Details** button to customize the transport protocol parameters as shown in the following graphic.

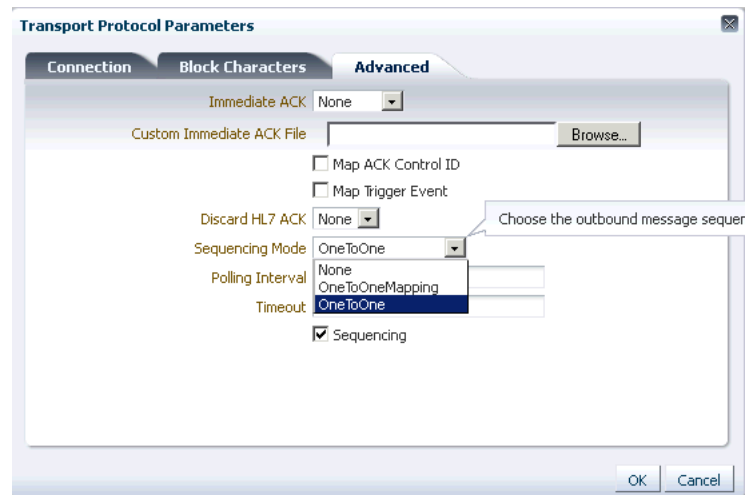


If HL7 messages over MLLP 1.0 are required to be sent in such a way that the next message is sent only after receiving a positive ACK for the current message, then the sequencing mode of MLLP 1.0 can be set to **OneToOne** sequencing.

When associating an MLLP 1.0 endpoint with a document, you can select from the following sequencing modes for outbound messages from the **Advanced** tab of the **Transport Protocol Parameters** dialog box:

- **None:** Messages are dispatched in sequence without waiting for an ACK
- **OneToOne** (Default): Messages are sent in a sequenced manner, but the ACKs are not expected to carry the Control Numbers (the correlation is done without checking the control number in the ACK). In case of a negative ACK, the message sending is retried until either a positive ACK is received or the retry count is exhausted (at which point, the message goes into an error state.)
- **OneToOneMapping:** Messages are sent in a sequenced manner, but the ACKs *must* carry the Control Numbers for proper correlation. Control Number is used to correlate a ACK with the sent message.

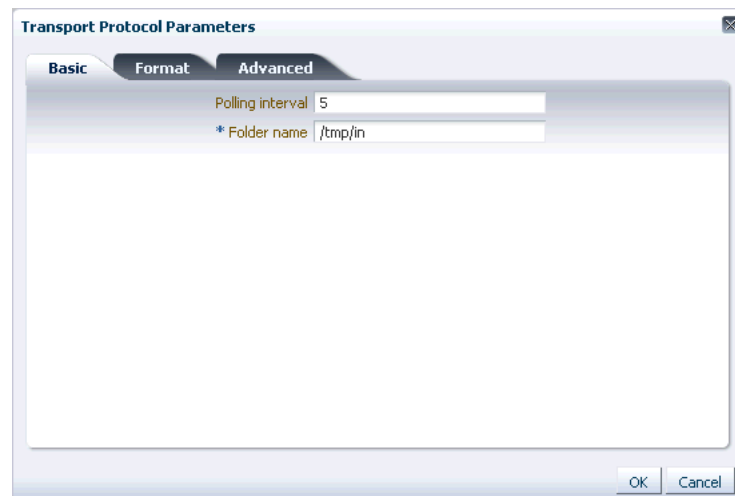
Figure 4–10 displays the available sequencing modes for outbound messages.

Figure 4–10 Outbound Message Sequencing Modes

For more information on transport protocols and their corresponding exchange protocols, see Table 5-3 Transport Protocol Parameters and Table 5-5 Exchange Protocol Parameters in the Chapter 5 Configuring Trading Partners in *Oracle Fusion Middleware User's Guide for Oracle B2B*.

For a single-directional endpoint:

- When you click the **Transport Details** button, the Transport Protocol Parameters dialog box that appears, is prompts for a set of parameters that are different from the bidirectional endpoint. Figure 4–11 displays the Transport Protocol parameters dialog box for a single-directional endpoint.

Figure 4–11 The Transport Protocol Parameters Dialog Box

For more information on transport protocols, see Table 5-3 Transport Protocol Parameters in the Chapter 5 Configuring Trading Partners in *Oracle Fusion Middleware User's Guide for Oracle B2B*.

4.5 Deleting an Endpoint

To delete an endpoint, log on to the Oracle SOA Suite for healthcare integration user interface. In the **Configuration** tab under the **Design** tab, select the endpoint name and click the **Delete** icon. You can also right-click the endpoint name and click **Delete** from the shortcut menu.

Note: An enabled endpoint cannot be deleted. you need to disable the endpoint before deleting it.

4.6 Working with the Endpoint Window

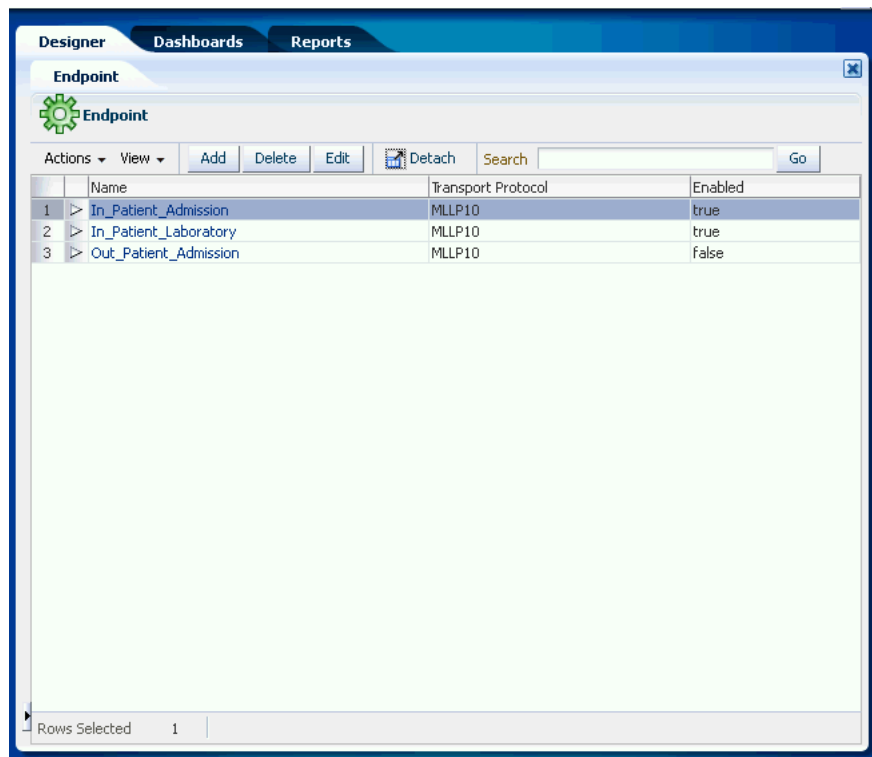
You can use open the Endpoint window to view a list of existing endpoints. In addition, using the endpoint window, you can create, modify or delete endpoints. You can also perform bulk modification or deletion using this window by selecting all or the required endpoints and then performing the operation of your choice.

To access the Endpoint window:

1. Log on to the Oracle SOA Suite for healthcare integration user interface.
2. In the **Configuration** tab under the **Design** tab, double-click the Endpoint folder.

Figure 4–12 displays the Endpoint window.

Figure 4–12 The Endpoint Window



Working with Callouts

This chapter describes how to create and use Java callouts in Oracle SOA Suite for healthcare integration. Java callouts transform the formats of messages exchanged between the host and remote endpoints. You can use callouts to invoke an XSLT style sheet and any Java program in general.

This chapter contains the following topics:

- [Section 5.1, "Introduction to Callouts"](#)
- [Section 5.2, "Types of Callouts"](#)
- [Section 5.3, "Creating a Callout"](#)
- [Section 5.4, "Including a Callout in an Endpoint"](#)

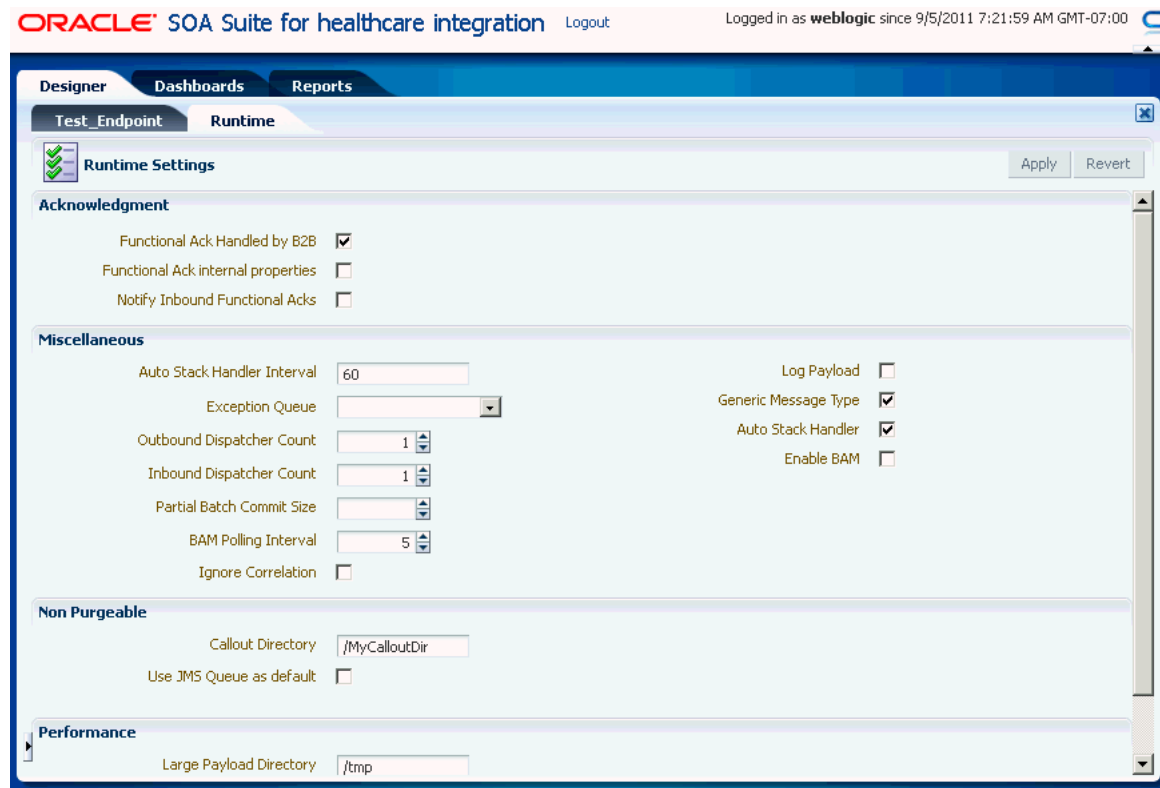
5.1 Introduction to Callouts

Callouts are used in environments in which a host endpoint does not use the same message format as the remote trading partner. In addition, callouts are used to customize header information in messages.

5.1.1 Creating a Callout Library JAR File

If the callout JAR file provided with Oracle SOA Suite for healthcare integration is not sufficient for your needs, you can create your own callout JAR file outside of Oracle SOA Suite for healthcare integration, following the standards described in the *Oracle Fusion Middleware B2B Callout Java API Reference*. You can specify the directory location of this external JAR file in the **Callout Directory** field that you can access from the **Runtime** link under **Settings** in the **Administration** tab of the Oracle SOA Suite for healthcare integration user interface as shown in [Figure 5-1](#). It is recommended that you create an external JAR file for your callouts; do not bundle your callouts with `b2b.jar`.

Figure 5–1 Specifying the Callout Directory



Note: MySampleCallout is a restricted keyword and should not be used. It is already packaged into b2b.jar.

5.2 Types of Callouts

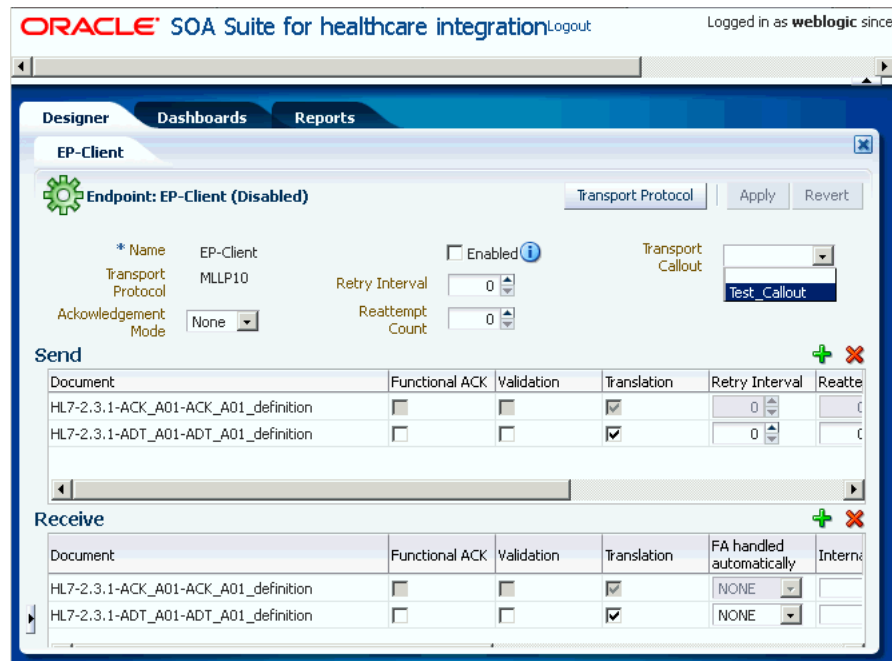
Oracle SOA Suite for healthcare integration provides two types of callouts:

- [Transport Callouts](#)
- [Document Callouts](#)

5.2.1 Transport Callouts

A transport callout is associated with an endpoint. For the inbound message, Oracle SOA Suite for healthcare integration invokes the transport callout immediately after it receives a message from the remote endpoint. For the outbound message, Oracle SOA Suite for healthcare integration invokes the transport callout immediately before it sends a message to the remote endpoint. Transport callouts can be selected in the endpoint configuration, as shown in [Figure 5–2](#), and can be used with any supported protocol such as generic TCP and MLLP 1.0.

Figure 5–2 Transport Callouts



You can use transport callouts to extract transport custom headers for inbound messages and set transport headers for outbound messages. [Example 5–1](#) shows how to set and get the CUSTOM_HEADER property in the callout.

Example 5–1 Setting and Getting the CUSTOM_HEADER Property

```
import java.util.*;
import oracle.tip.b2b.callout.*;
import oracle.tip.b2b.callout.exception.*;

public class SampleCallout implements Callout {
    public void execute(CalloutContext context, List input, List output)
        throws CalloutDomainException, CalloutSystemException {
        try {
            CalloutMessage cmIn = (CalloutMessage)input.get(0);
            String s =cmIn.getBodyAsString();

            //for getting the CUSTOM_HEADER
            Properties params = (Properties)cmIn.getParameters();
            String customHeader = (String)params.get("CUSTOM_HEADER");

            //for setting the CUSTOM_HEADER
            CalloutMessage cmOut = new CalloutMessage(s);
            cmOut.setParameter("CUSTOM_HEADER", "your_value");
            output.add(cmOut);

        } catch (Exception e) {
            throw new CalloutDomainException(e);
        }
    }
}
```

See "Using a Transport Callout to Extract Custom Headers" in *Oracle Fusion Middleware User's Guide for Oracle B2B* for more information.

Transport callouts are created from the **Configuration** tab under **Designer**, as described in [Section 5.3, "Creating a Callout."](#) All transport callouts appear both in the **Transport Callout** list and in the **Document Callout** list in an endpoint page; therefore, it is available for selection. To avoid confusion, when you create a transport callout, provide a name that indicates its type so that you do not select it from the **Document Callout** list.

5.2.2 Document Callouts

Document callouts are used to enable communication between endpoints that do not use the same message format. For example, a remote endpoint sends a HL7 2.3.1 XML-formatted message to a host endpoint. The host endpoint uses HL7 2.5 XML-formatted messages.

To enable communication between these two different formats, you create two callouts, as follows:

- One callout, `callout_inbound`, for example, transforms the remote message into a format understood by the host endpoint. The host endpoint, in turn, responds to the request message with a order acceptance message in HL7 2.5 XML format.
- The other callout, `callout_outbound`, for example, transforms the HL7 2.5 XML format back into an HL7 2.3.1 XML-formatted message for the remote endpoint.

These two callouts are then associated with the two endpoints, as follows:

- Associate `callout_outbound` in the endpoint for the outbound message, which is, the endpoint for the initiating message request.
- Associate `callout_inbound` in the endpoint for the inbound message, which is, the endpoint for the responding message acceptance.

Because a document definition is a component of an endpoint, a callout is associated with a specific document definition.

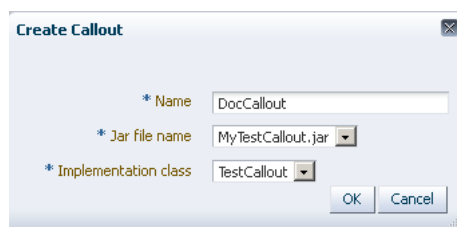
This example depicts a simple association of one callout to one endpoint. In reality, however, the same callout can be included in many different endpoints by changing the value of one or more callout parameters. See [Figure 5-4](#) for where you add parameters and see [Table 5-2](#) for a list of parameter attributes.

5.3 Creating a Callout

To create a callout, provide callout details—the library name and the implementation class name—and callout parameters, as shown in [Figure 5-4](#).

Note: To create a callout from an external callout library JAR file, see [Section 5.1.1, "Creating a Callout Library JAR File."](#)

Figure 5-3 *Creating a Callout*



To create a callout:

1. Log on to the Oracle SOA Suite for healthcare integration user interface.
2. Click the **Designer** tab, **Configuration**, and then **Callout**.
3. Click the **Create** icon (the plus sign) to display the Create Callout dialog box.
4. Enter a name for the callout.
(You may want to indicate if you are creating a transport callout in the name.)
5. Enter callout details, as described in [Table 5-1](#).
6. Click **OK**.

[Table 5-1](#) lists the callout details that you provide.

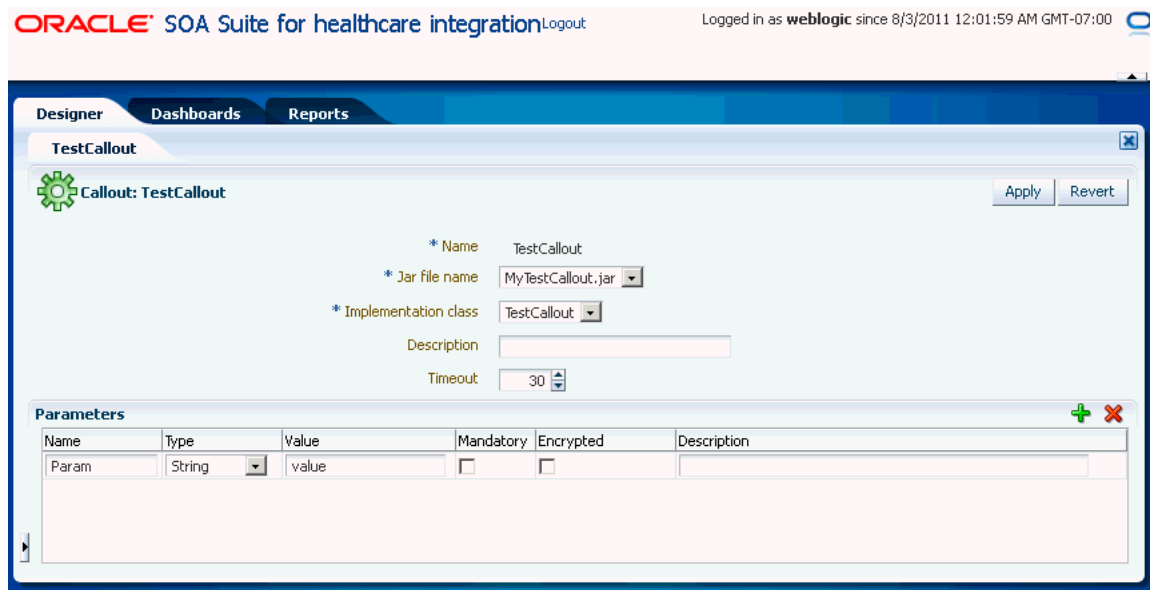
Table 5-1 Callout Details

| Field | Description |
|----------------------|--|
| JAR file name | Select the library name that contains the callout implementation classes. Note: If you specify one or more of your own callout JAR files, you must specify the directory location. Use the Runtime link under Settings from the Administration link. The directory location for the default <code>b2b.jar</code> file included with Oracle B2B does not need to be specified. The callout library must be manually migrated from one environment to another. The Oracle SOA Suite for healthcare integration export/import feature does not migrate the callout library JAR. |
| Implementation Class | Select the implementation class name. Note: Oracle SOA Suite for healthcare integration includes a predefined class file named <code>XSLTCalloutImpl</code> that you can use for XML-to-XML transformations. |

Note: You cannot delete a callout that is included in an endpoint.

After creating the callout, you can configure it by specifying the timeout value and optional parameters as shown in [Figure 5-4](#).

Figure 5–4 Configuring Callouts



Callout parameters are similar in concept to global variables to which you can assign local values that are applicable only to a specific callout use. Or, you can create a callout parameter and assign it a default value that is applicable to all callout uses. Changes to callout parameters for an existing callout affect all endpoints that use that callout.

Table 5–2 lists the optional callout parameter attributes.

Table 5–2 Callout Parameter Attributes

| Field | Description |
|-------------|---|
| Name | Enter a parameter name. |
| Type | Select from Integer , Float , String , Boolean , or Date types. The format for the Date type is MM/DD/YYYY. Note: Changing a type can invalidate the parameter default value. |
| Value | Enter a value. If Encrypted is set to True , then this value is encrypted. |
| Mandatory | Select True or False . |
| Encrypted | Select True or False . |
| Description | Enter an optional description. |

After you create a callout, it is available to include in an endpoint. See [Section 5.4, "Including a Callout in an Endpoint,"](#) for more information. If you change a callout after it is deployed with an endpoint, a server restart is required.

5.4 Including a Callout in an Endpoint

After you create a callout, it is available to include in an endpoint.

To include a callout in an endpoint:

1. From the Configuration tab, double-click an endpoint to open it.

- Depending on the type of message (inbound or outbound), select the callout name from the **Document Callout** list under the **Send** or **Receive** section, as shown in Figure 5-5.

Figure 5-5 Associating a Callout with an Endpoint

ORACLE SOA Suite for healthcare integration Logout Logged in as **weblogic** since 8/3/2011 4:04:42 AM GMT-07:00

Designer Dashboards Reports

Admission

Endpoint: Admission (Disabled) Transport Protocol Apply Revert

* Name: Admission Enabled ⓘ Transport Callout: []

Transport Protocol: MLLP10 Retry Interval: 0

Acknowledgement Mode: None Reattempt Count: 0

Send + X

| Document | Functional ACK | Validation | Translation | Retry Interval | Reattempt Count | Document Callout | Mapset |
|------------------------|--------------------------|--------------------------|-------------------------------------|----------------|-----------------|------------------|--------|
| HL7-2.3-ACK-GenericAck | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 0 | 0 | [] | [] |

Receive + X

| Document | Functional ACK | Validation | Translation | FA Handled by B2B | Internal Channel | Document Callout | Mapset |
|---------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------|------------------|------------------|--------|
| HL7-2.3-ADT-ADT_Def | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | NONE | AdmissionQueue | [] | [] |

TestCallout

- Click **Apply**.

Working with Mapsets

This chapter describes how to work with mapsets in Oracle SOA Suite for healthcare integration. When the messages in your source and target systems are defined by different document definitions and you need to map the data from one message to another, you can use a mapset to define the mapping logic.

This chapter includes the following topics:

- [Section 6.1, "Introduction to Mapsets"](#)
- [Section 6.2, "Creating a Map File"](#)
- [Section 6.3, "Using Mapsets in the Oracle B2B Console"](#)
- [Section 6.4, "Using Mapsets in Oracle SOA Suite for Healthcare Integration"](#)

6.1 Introduction to Mapsets

Mapsets provide data transformation for cases where it is better to map a native data format to a native data format instead of the standard translation of mapping native formatting to XML, XML to XML, and then XML back to native formatting. You can use mapsets when you need to map data between messages that are defined by different document definitions. For example, you might have a system that sends messages in HL7 2.3.1 format, but a receiving system needs the data in HL7 2.5 format. Or you might need to transform HIPAA 4010 messages to HIPAA 5010 and back again.

A mapset includes a predefined or user-defined map file and two document definitions. The map file defines how data is converted from one format to the other. Currently, the Oracle SOA Suite healthcare integration user interface supports mapping different versions of HL7 messages to each other. The Oracle B2B Console supports mappings for different HIPAA X12 messages to each other, as well as different versions of HL7 to each other.

Note: Currently, using mapsets to transform HL7 2.x messages to HL7 v3.0 is not supported, but this can be achieved using the XSLT mapper in Oracle JDeveloper.

6.1.1 About Mapsets

When you create a mapset, you associate a map file, a source document definition, and target document definition within one mapset. A mapset groups the definitions and mapping together into one unit that can be reused in multiple Oracle B2B or healthcare integration applications. Each mapset uses two different document definitions, and

these definitions need to be created in the design-time repository in order to create the mapset. Mapsets give you the option of using the default document definitions provided for each protocol or customized definitions that you have created or modified.

When you create a mapset in Oracle SOA Suite for healthcare integration, you associate it with the appropriate endpoints to incorporate the mapping logic into healthcare integration projects. When you create a mapset in Oracle B2B, you associate it with trading partner agreements. When you associate a mapset with an endpoint or agreement, you can only select a mapset whose document definitions and message flow match that of the endpoint or agreement.

6.1.2 Predefined and Custom Mapsets

In Oracle SOA Suite for healthcare integration, you have the option of creating your own custom mapsets using the MapBuilder feature of the Oracle Document Editor or purchasing predefined map files provided by Edifecs. The prebuilt maps include maps for the Health Insurance Portability and Accountability Act (HIPAA); for example, to transform HIPAA 4010 messages to HIPAA 5010 messages.

6.2 Creating a Map File

Before you can create a mapset in either the Oracle SOA Suite for healthcare integration user interface or the Oracle B2B Console, you need to have a map file that defines the mapping between the two types of document definitions. Edifecs provides some predefined map files that you can use, or you can create the files using the MapBuilder component of the Oracle Document Editor.

Note: You can download the Oracle Document Editor from the installation package for Oracle SOA Suite for healthcare integration.

For more information, see "Creating Guideline Files" in *Oracle Fusion Middleware User's Guide for Oracle B2B*.

6.3 Using Mapsets in the Oracle B2B Console

Use the Oracle B2B Console to create mapsets when you are mapping a data standard other than HL7 or when you want to use the features of Oracle B2B instead of the healthcare integration features. You can use this feature to map HIPAA 4010 message types to HIPAA 5010, for example. You can use Oracle B2B for mapping HL7 messages, but it is recommended you use Oracle SOA Suite for healthcare integration instead.

Perform the following steps to incorporate a mapset into an Oracle B2B trading partner agreement:

- [6.3.1 , "Creating a Mapset in the Oracle B2B Console"](#)
- [6.3.2 , "Associating a Mapset with a Trading Partner Agreement"](#)
- [6.3.3 , "Deleting a Mapset in the Oracle B2B Console"](#)

6.3.1 Creating a Mapset in the Oracle B2B Console

Before you begin this step, make sure the map file is available on the computer from which you are accessing the Oracle B2B Console, and that the required document

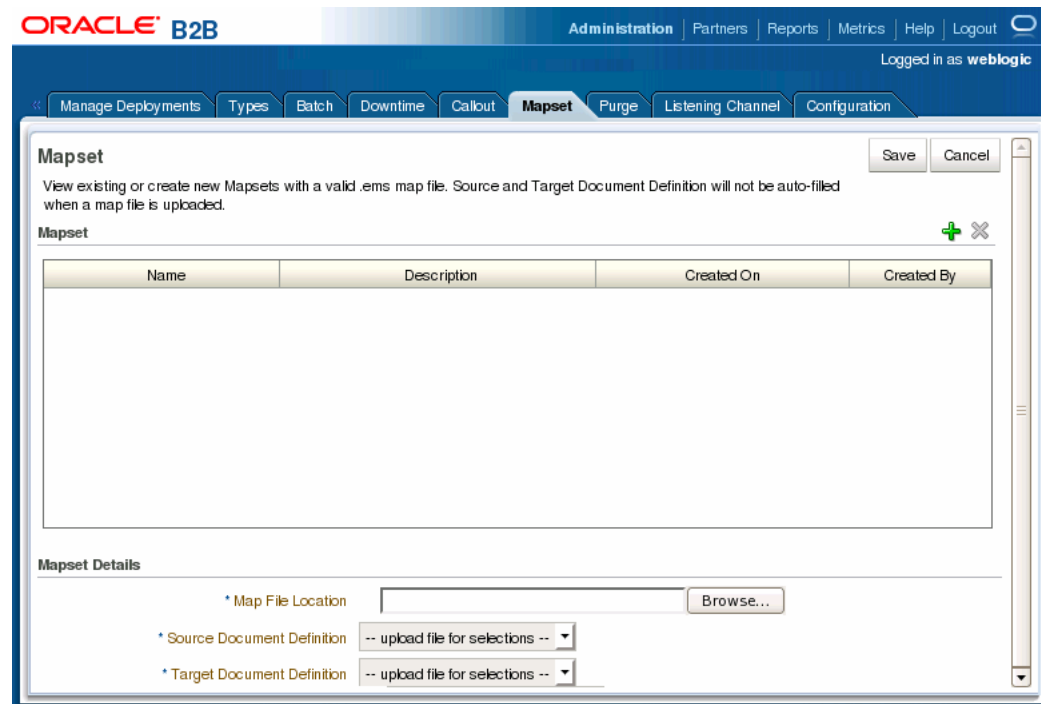
definitions are already created in Oracle B2B for both of the standards you are mapping. The mapset cannot be created without these three components.

For more information about working with document definitions in Oracle B2B, see "Using Document Protocols" in *Oracle Fusion Middleware User's Guide for Oracle B2B*.

To create a mapset

1. On the Oracle B2B Console, click **Administration** and then click the **Mapset** tab.

Figure 6–1 Mapset Page of the Oracle B2B Console



2. On the Mapset page, click **Add Mapset** (the plus icon).
A new row appears in the Mapset list.
3. In the new row, enter a name and a brief description of the new mapset.
4. Next to the **Map File Location** field, click **Browse**.
5. Browse to the location of your map file, select the file, and then click **Open**.
The map file you selected is loaded, and the Source Document Definition and Target Document Definition fields are populated with the appropriate document definitions for the mapping.

Figure 6–2 Mapset Defined in the Oracle B2B Console

Mapset

View existing or create new Mapsets with a valid .ems map file. Source and Target Document Definition will not be auto-filled when a map file is uploaded.

Mapset

| Name | Description | Created On | Created By |
|------------------|-----------------------------|------------------------------|------------|
| Mapset_4010_5010 | To map 4010 837 to 5010 837 | Mon Jun 13 14:44:52 PDT 2011 | weblogic |

Mapset Details

* Map File Location: 8371-4010A1-5010.ems

* Source Document Definition: 8371_4010_Def

* Target Document Definition: 8371_5010_Def

Note: If the document definitions do not already exist in Oracle B2B, this step will fail.

- Click **Save** and then click **OK** on the confirmation dialog that appears.

6.3.2 Associating a Mapset with a Trading Partner Agreement

You associate a mapset with a trading partner agreement in order to incorporate the mapping into the B2B processing logic. For information and instructions on working with trading partner agreements, see "Creating and Deploying Trading Partner Agreements" in *Oracle Fusion Middleware User's Guide for Oracle B2B*.

Before You Begin:

Make sure all required B2B components have been created and configured as described in *Oracle Fusion Middleware User's Guide for Oracle B2B*. At a minimum, this includes document definitions, trading partners, and the mapset.

To associate a mapset with a trading partner agreement

- On the Oracle B2B Console, select **Partners** in the upper right.
The Partner page appears.
- In the Partner panel on the left, select the name of the remote trading partner, and then click the **Create New Agreement** icon in the Agreement panel.
The Agreement page appears.
- Deselect **Translate**.

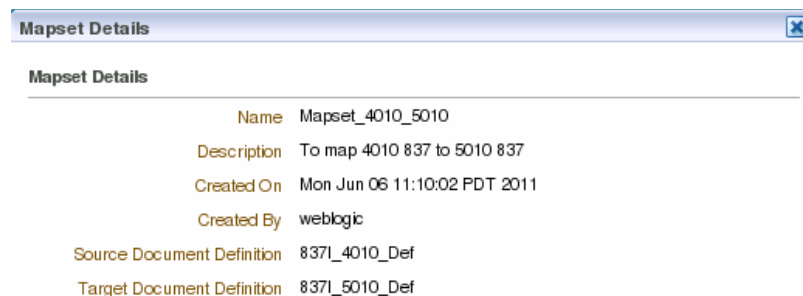
Note: If Translation is selected, it is ignored when used in conjunction with a mapset in the endpoint. The mapset performs the data transformation and translation is not needed.

4. Select the trading partner and document definition for the agreement. For the document definition, select the native format that will be exchanged with the trading partner.
5. Click in the **Mapset** field and select the mapset you created for this agreement.

Figure 6–3 Mapset Page in Oracle B2B

Note: When using mapsets, whether the selected document definition is the source or target in the mapset depends on the direction of the message flow in the agreement. The above image shows an outbound message, so the selected document definition (HIPAA 5010 837) is the target document definition in the mapset, which maps HIPAA 4010 837 message to HIPAA 5010 837 messages.

6. To view information about the selected mapset, click **Mapset Details**. A dialog appears with summary information for the mapset.

Figure 6–4 Mapset Details Dialog

7. Configure the agreement as described in "Creating and Deploying Trading Partner Agreements" in *Oracle Fusion Middleware User's Guide for Oracle B2B*.
8. When you are done configuring the agreement, click **Save** and then click **OK** on the confirmation dialog that appears.
9. To validate the agreement, click **Validate**.
10. When you are ready to deploy the agreement to the application server, click **Deploy**.

6.3.3 Deleting a Mapset in the Oracle B2B Console

Only mapsets that are not currently being used in an agreement can be deleted.

To delete a mapset in the Oracle B2B Console

1. On the Oracle B2B Console, click **Administration** and then click the **Mapset** tab.
2. On the Mapset page, select the row containing the mapset to delete.
3. Click **Delete Mapset** (the X icon) above the Mapset table and then click **Yes** on the Confirm Delete dialog.
4. Click **OK** on the confirmation dialog.

6.4 Using Mapsets in Oracle SOA Suite for Healthcare Integration

Use the Oracle SOA Suite for healthcare integration user interface when you want to map different HL7 standards to one another in a healthcare integration project.

Perform the following steps to incorporate a mapset into an Oracle B2B trading partner agreement:

- [6.4.1 , "Creating a Mapset in the Healthcare Integration User Interface"](#)
- [6.4.2 , "Associating a Mapset with an Endpoint"](#)
- [6.4.3 , "Deleting a Mapset in the Healthcare Integration User Interface"](#)

6.4.1 Creating a Mapset in the Healthcare Integration User Interface

Before you begin, make sure the map file is available on the computer from which you are accessing the healthcare integration user interface, and that the required document definitions are already created in Oracle SOA Suite for healthcare integration for both of the standards you are mapping. The mapset cannot be created without these three components.

For information about creating document definitions in Oracle SOA Suite for healthcare integration, see [Chapter 3, "Working with Document Types and Protocols."](#)

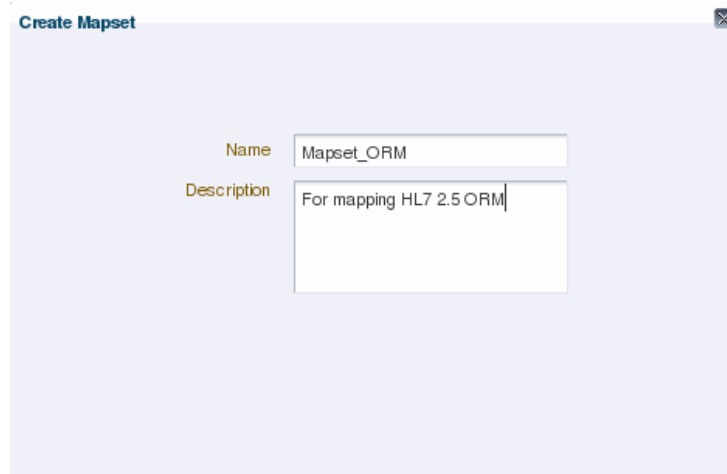
To create a mapset

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Designer** tab and then click the **Configuration** tab.
2. In the navigation panel on the left, select **Mapset** and then click **Create Mapset** (the plus icon).

The Create Mapset dialog appears.

3. Enter a unique name and a brief description of the mapset, and then click **OK**.

Figure 6–5 Create Mapset Dialog



The screenshot shows a dialog box titled "Create Mapset". It has a light blue background and a close button in the top right corner. There are two input fields: "Name" with the text "Mapset_ORM" and "Description" with the text "For mapping HL7 2.5 ORM".

The Mapset page appears.

4. Click **Browse** next to the **Mapset File Location** field, and then browse to and select the map file to use.

The file is validated and if the corresponding document definitions are found, information about the document protocols, versions, and types are populated in the lower portion of the page. The default source and target definition files are automatically populated for you.

Figure 6–6 Mapset Page on the Healthcare Integration User Interface

The screenshot shows a 'Mapset' configuration window. At the top, there are 'Apply' and 'Revert' buttons. The main area contains the following fields:

- Name:** Mapset_ORM
- Description:** For mapping HL7 2.5 ORM
- Last Updated By:** weblogic
- Last Updated On:** Wed Jun 01 16:41:11 PDT 2011
- Mapset File Location:** MyPracticeORM2ProvationORM.ems (with an 'Update...' button)

Below these fields are two panels for document definitions:

- Source Document Definition:**
 - Document Protocol: HL7
 - Protocol Version: 2.4
 - Document Type: ORM
 - Source Document Definition: ORM_Def (with a dropdown arrow)
- Target Document Definition:**
 - Document Protocol: HL7
 - Protocol Version: 2.4
 - Document Type: ORM
 - Target Document Definition: ORM_Def (with a dropdown arrow)

5. If you do not want to use the default version of the document definition files, do the following to override the default file selection:
 - a. Next to the **Document Definition** field you want to override (Source or Target), click **Browse**.
 - b. On the Document dialog, expand the Document Protocol tree until you see the document definition to use.
 - c. Select the overriding document definition, and then click **OK**.
6. On the Mapset page, click **Apply** and then click **OK** on the confirmation dialog that appears.

6.4.2 Associating a Mapset with an Endpoint

Once you create a mapset, you need to associate it with an endpoint to include the mapping logic in the process.

To associate a mapset with an endpoint

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Designer** tab and then click the **Configuration** tab.
2. In the navigation panel on the left, expand **Endpoint** and double-click the endpoint you want to associate with the mapset.
3. In the row of the document type you want to map, deselect **Translation**.

Note: If Translation is selected, it is ignored when used in conjunction with a mapset in the endpoint. The mapset performs the data transformation and translation is not needed.

- In the same row, click in the **Mapset** field to the far right of the table, and select the mapset to use.

Figure 6–7 Mapset Selected for an Endpoint

Laboratory

Endpoint: **Laboratory (Enabled)** Transport Protocol Apply Revert

* Name: Laboratory Enabled ⓘ Transport Callout

Transport Protocol: MLLP10 Retry Interval: 0

Acknowledgement Mode: None Reattempt Count: 0

Send + ×

| Document | Functional ACK | Validation | Translation | Retry Interval | Reattempt Count | Document Callout | Mapset |
|---------------------|-------------------------------------|--------------------------|-------------------------------------|----------------|-----------------|------------------|------------|
| HL7-2.4-ORM-ORM_Def | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 0 | 0 | | Mapset ORM |

- Click **Apply**, and then click **OK** on the confirmation dialog that appears.

6.4.3 Deleting a Mapset in the Healthcare Integration User Interface

To delete a mapset, select the mapset in the Configuration tree and click **Delete** in the toolbar. You can also right-click the mapset and then select **Delete**.

Working with Internal Delivery Channels

This chapter describes how to use internal delivery channels in Oracle SOA Suite for healthcare integration. Internal delivery channels are used for communicating with backend applications, such as receiving messages from or sending them to a JMS topic or queue in a healthcare integration application.

This chapter includes the following topics:

- [Section 7.1, "Introduction to Internal Delivery Channels"](#)
- [Section 7.2, "Creating Internal Delivery Channels"](#)
- [Section 7.3, "Enabling an Internal Delivery Channel"](#)
- [Section 7.4, "Deleting an Internal Delivery Channel"](#)
- [Section 7.5, "Correlating Messages Using JMS Queues"](#)

7.1 Introduction to Internal Delivery Channels

An internal delivery channel defines how a message received from an external system (endpoint) is delivered from Oracle SOA Suite for healthcare integration to backend applications, such as JMS topics and queues, or how a message that was sent from a backend system is received by Oracle SOA Suite for healthcare integration for delivery to an external system. It defines the connection information, the transport protocol, acknowledgments, and so on. When you create an internal delivery channel, that channel is available to all endpoints. This avoids having to create a unique internal delivery channel for each endpoint.

7.2 Creating Internal Delivery Channels

If you need to send messages to an internal delivery channel, create a "send to" internal delivery channel to associate with the endpoint. If you need to receive messages from an internal delivery channel, create a "receive from" internal delivery channel.

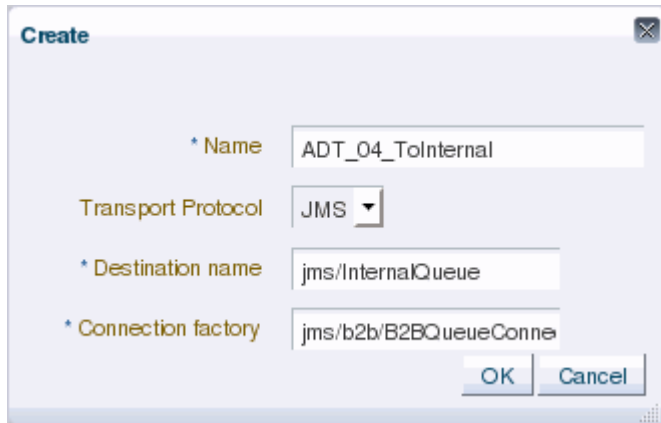
To create an internal delivery channel

1. On the Oracle SOA Suite for healthcare integration user interface, select the Designer tab and then the Administration tab.
2. Do one of the following:
 - To create an internal delivery channel for sending messages to a JMS or queue, right-click **Send to Internal** and then click **Create**.

- To create an internal delivery channel for receiving messages from a JMS or queue, right-click **Receive From Internal** and then click **Create**.

The Create dialog appears.

Figure 7-1 Create Dialog for Internal Delivery Channel (Send to)



3. On the Create dialog, fill in the following fields:

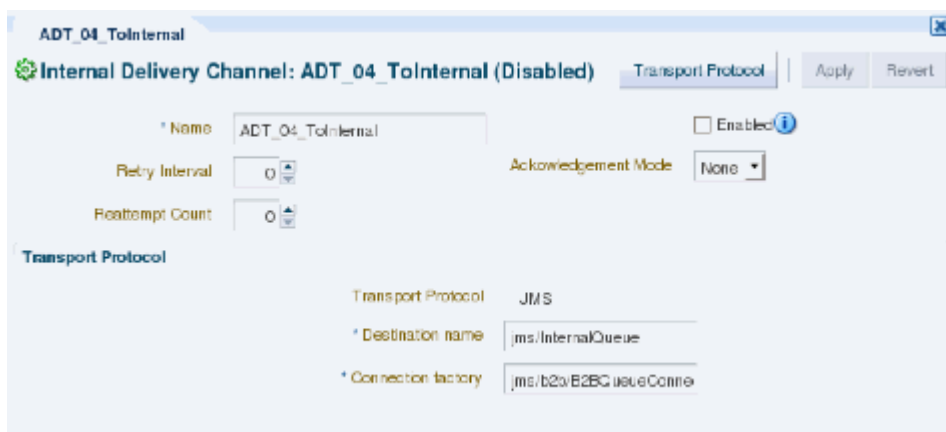
Table 7-1 New Internal Delivery Channel Properties (Send to)

| Property | Description |
|--------------------|---|
| Name | A unique name for the delivery channel. |
| Transport Protocol | The connection protocol for the internal delivery channel. JMS is the supported protocol |
| Destination Name | The JNDI name of the topic or queue to which Oracle SOA Suite for healthcare integration will send messages. |
| Connection Factory | The JNDI location or Java class name for the connection factory, such as <code>jms/b2b/B2BQueueConnectionFactory</code> . |

4. Click **OK**.

The new internal delivery channel is added to the Administration tree under Send to Internal, and the new channel appears on the Internal Delivery Channel page.

Figure 7-2 Internal Delivery Channel Page



5. On the main Internal Delivery Channel page, you can modify any of the fields listed in [Table 7-1](#) (except Transport Protocol).

Note: The fields in the upper portion of the Internal Delivery Channel page (**Acknowledgement Mode**, **Retry Interval**, and **Reattempt Count**), are not currently used for internal delivery channels.

6. To modify the transport protocol connection settings, do the following:
 1. On the main Internal Channel Delivery page, click **Transport Protocol**.
 2. On the Transport Protocol Parameters dialog, click the Basic tab, and modify any of the properties listed in [Table 7-2](#).

Table 7-2 Internal Delivery Channel Transport Protocol Basic Parameters

| Parameter | Description |
|--------------------|---|
| Destination name | The JNDI name of the topic or queue to which Oracle SOA Suite for healthcare integration will send messages. |
| Connection Factory | The JNDI location or Java class name for the connection factory, such as <code>jms/b2b/B2BQueueConnectionFactory</code> . |
| Is Topic | An indicator of whether the destination is a topic or a queue. Select this option if the destination is a topic. |
| Polling Interval | The length of time in minutes between polling attempts for messages. |

3. On the Transport Protocol Parameters dialog, click the Advanced tab, and modify any of the properties listed in [Table 7-3](#).

Table 7-3 Internal Delivery Channel Transport Protocol Advanced Parameters

| Parameter | Description |
|--------------------------------|---|
| Message Type | Select one of the following JMS message type options: BYTES , TEXT , or MAP . |
| Is Map Payload Alone | An indicator of whether the payload is sent alone as part of a JMS message of the type <code>javax.jms.MapMessage</code> . |
| Use JMS id | An indicator of whether to use the JMS message ID as the healthcare integration message ID. This facilitates correlation at the JMS level. |
| Destination Provider | JNDI properties that are required to connect to the target server. Use a semicolon (;) as the separator for key/value pairs. This is for enabling Oracle SOA Suite for healthcare integration to connect to JMS queues or topics available on remote servers. |
| User name | The user name to connect to the target server. This value is optional for JMS because Oracle SOA Suite for healthcare integration can use the configured JNDI data sources to connect to queues. |
| Password (and Retype Password) | The password for the above user name. |
| Subscriber id | An indicator of whether the JMS subscriber ID is required when JMS is communicating with a topic. |

Table 7-3 (Cont.) Internal Delivery Channel Transport Protocol Advanced Parameters

| Parameter | Description |
|------------|---|
| Sequencing | An indicator of whether messages need to be delivered in sequence. Select this check box for sequential delivery. This option only applies to WebLogic Server JMS (it uses the Unit-of-Order feature of WebLogic Server JMS). |

7. When you are done making changes to the transport protocol, click **OK** on the Transport Protocol Parameters dialog.
8. When you are done making changes to the internal delivery channel, click **Apply** on the Internal Delivery Channel page.

7.3 Enabling an Internal Delivery Channel

Before you can use an internal delivery channel in an Oracle SOA Suite for healthcare integration project, you need to enable it. To enable it, double-click the internal delivery channel to open the Internal Delivery Channel page, and then select the Enabled option.

7.4 Deleting an Internal Delivery Channel

To delete an internal delivery channel, select the channel in the Administration tree and click **Delete** in the toolbar. You can also right-click the internal delivery channel and then select **Delete**.

7.5 Correlating Messages Using JMS Queues

You can correlate inbound and outbound messages using JMS queues, by setting `A2A=true` in the JMS header.

If the message ID (`MSG_ID`) is provided from a back end application, then `MSG_ID` is set to JMS Correlation ID in the healthcare integration output, otherwise the JMS Message ID is set to JMS Correlation ID in the healthcare integration output.

Working with Dashboards

This chapter describes Oracle SOA Suite for healthcare integration dashboards, which display endpoint-level status and volume metrics on instance data. This includes endpoint status, message counts, sequencing information, and error messages.

This chapter includes the following topics:

- [Section 8.1, "Introduction to Dashboards"](#)
- [Section 8.2, "Creating and Configuring Dashboards"](#)
- [Section 8.3, "Viewing Information in Dashboards"](#)
- [Section 8.4, "Working with Sequenced Messages"](#)
- [Section 8.5, "Viewing Endpoint Error Messages"](#)

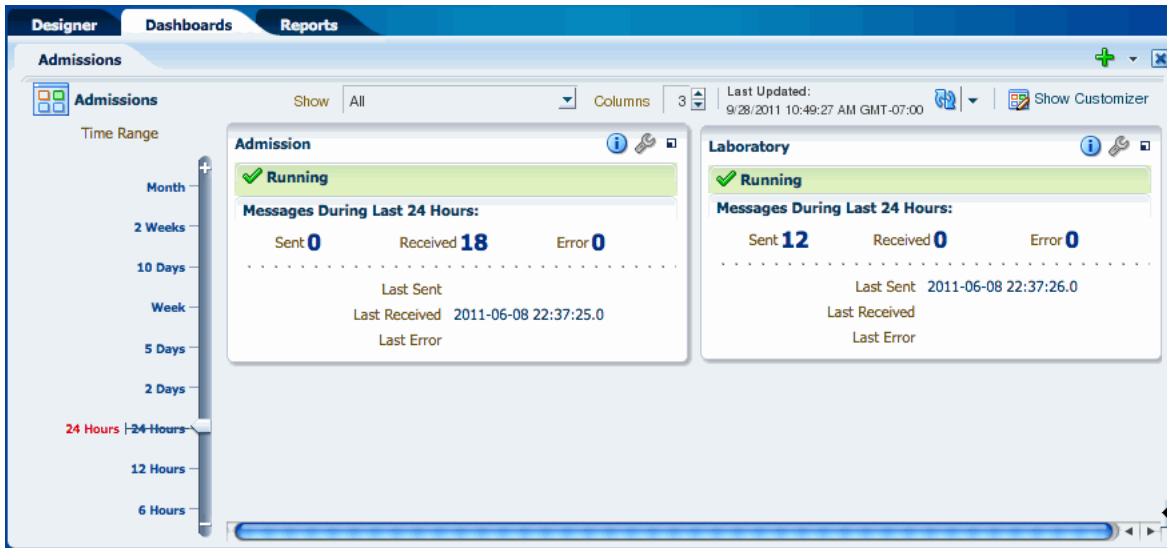
8.1 Introduction to Dashboards

Oracle SOA Suite for healthcare integration dashboards display information about the current health of the endpoints in a healthcare integration application. You can create and configure multiple dashboards as needed to monitor the status and volume metrics for the endpoints you have defined.

The Dashboards tab reflects changes that occur in the runtime repository, such as purging runtime instance data, new messages processed, and new error messages. You can display data for various time periods, and you can manually refresh the data in real time or set the dashboard to automatically refresh at set intervals. The available time periods are configurable in the UI settings on the Administration tab.

When you first open a dashboard, a summary of all the endpoints included in the dashboard appears. For each endpoint, you can view more detailed information about not only the status and message volume but also about the endpoint's configuration. [Figure 8–1](#) shows endpoint summaries on the Dashboard page.

Figure 8–1 Endpoint Summaries on the Dashboard



8.2 Creating and Configuring Dashboards

Using the Dashboards tools, you can create dashboards for any combination of endpoints you have defined. You can configure the layout of the Dashboard page, specify a refresh rate, and change the endpoints for an existing dashboard.

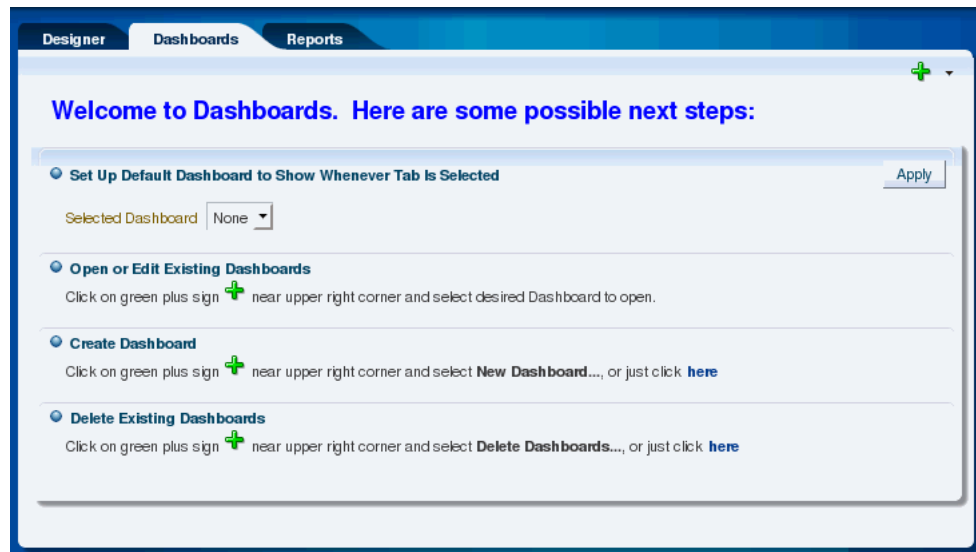
8.2.1 Creating a Dashboard

You can create multiple dashboards in Oracle SOA Suite for healthcare integration for a single endpoint or combinations of multiple endpoints.

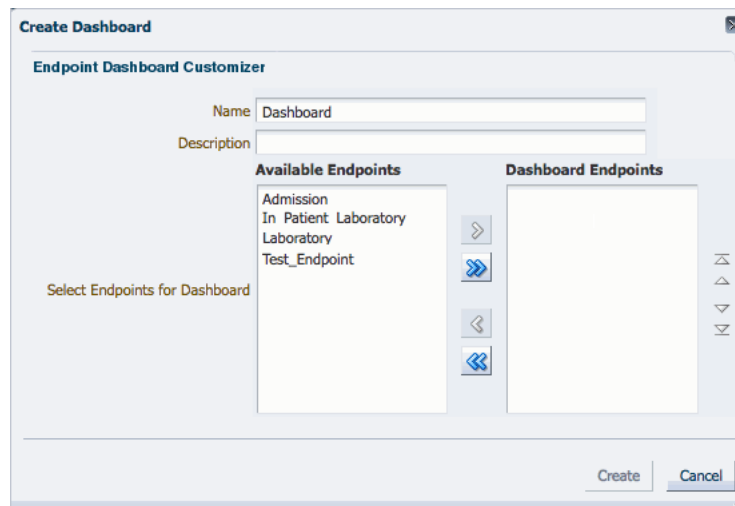
To create a dashboard

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Dashboards** tab.

The main Dashboards page appears.

Figure 8–2 Main Dashboards Page

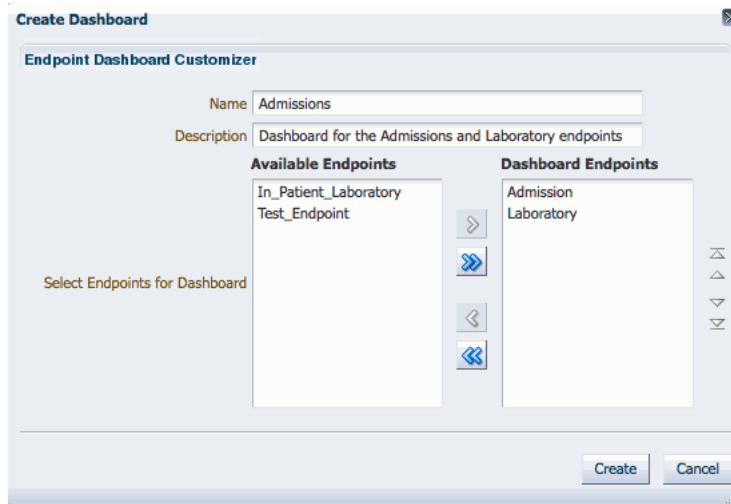
2. Click the plus icon in the upper right, and select **New Dashboard**.
The Create Dashboard dialog appears.

Figure 8–3 Create Dashboard Dialog

3. Enter a unique name and a description for the dashboard.
4. Under Available Endpoints, select the endpoints you want to include on the dashboard and then click the right arrow icon.

The selected endpoints appear in the Dashboard Endpoints list.

Figure 8–4 Create Dashboard Dialog with Endpoints Selected



5. Click **Create**.

The new dashboard appears with summary information displayed for each endpoint about the messages processed in the past 24 hours.

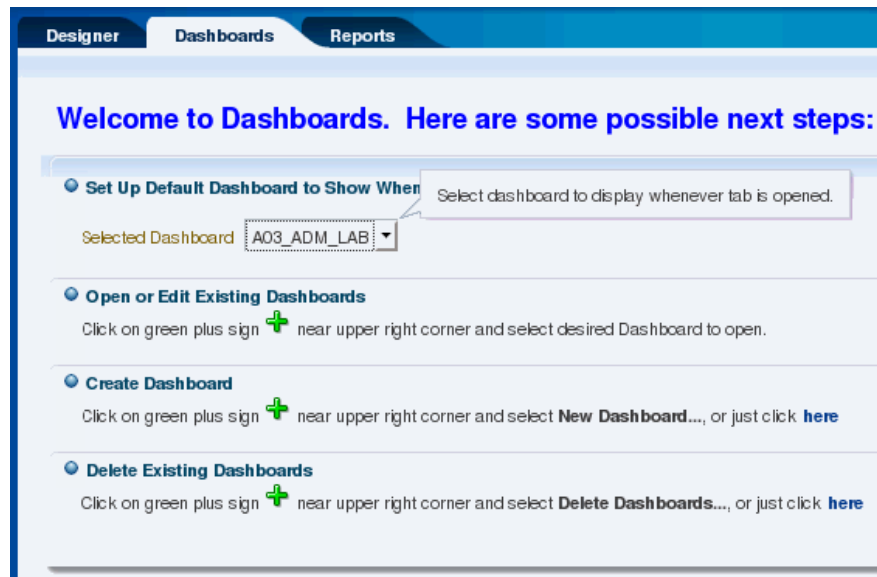
8.2.2 Selecting a Default Dashboard

Once you create dashboards you can select one that automatically appears when you click the Dashboards tab. This is the default dashboard. If you do not specify a default dashboard, you can select from the list of existing dashboards when you open the Dashboards page. If you do select a default dashboard, this dashboard appears every time you open the Dashboards page.

To select a default dashboard

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Dashboards** tab.
2. Click the down arrow next to the **Selected Dashboard** field, and select the dashboard that you want to make default.

Figure 8–5 Default Dashboard Selected on the Main Dashboards Page



3. Click **Apply**.

The selected dashboard appears. The next time you log in and select the Dashboards tab, this dashboard will automatically appear.

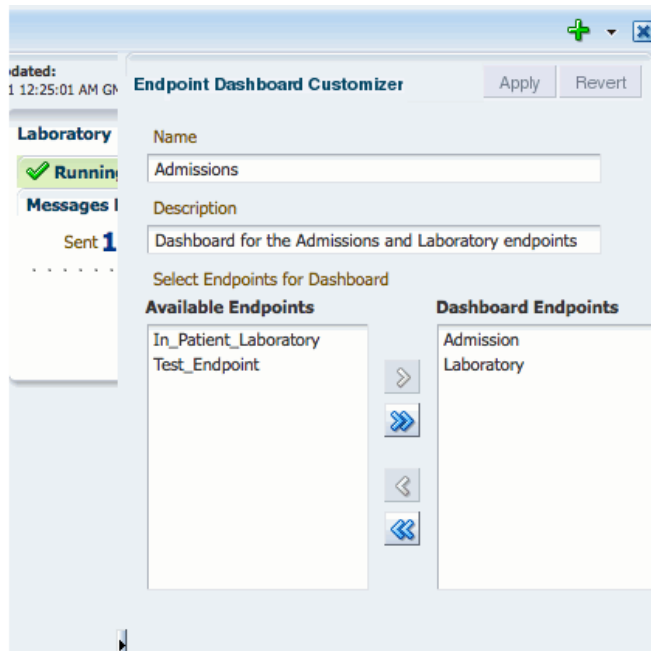
8.2.3 Configuring an Existing Dashboard

Once you create a dashboard, you can change the endpoints for which information is displayed, how the information appears on the dashboard, and the type of information that appears.

To configure an existing dashboard

1. If the dashboard you want to modify is not already displayed, click the plus icon in the upper right of the main Dashboards page and select the dashboard to configure.
2. When the dashboard displays, click **Show Customizer**.
The customizer appears on the right side of the dashboard.

Figure 8–6 Endpoint Dashboard Customizer

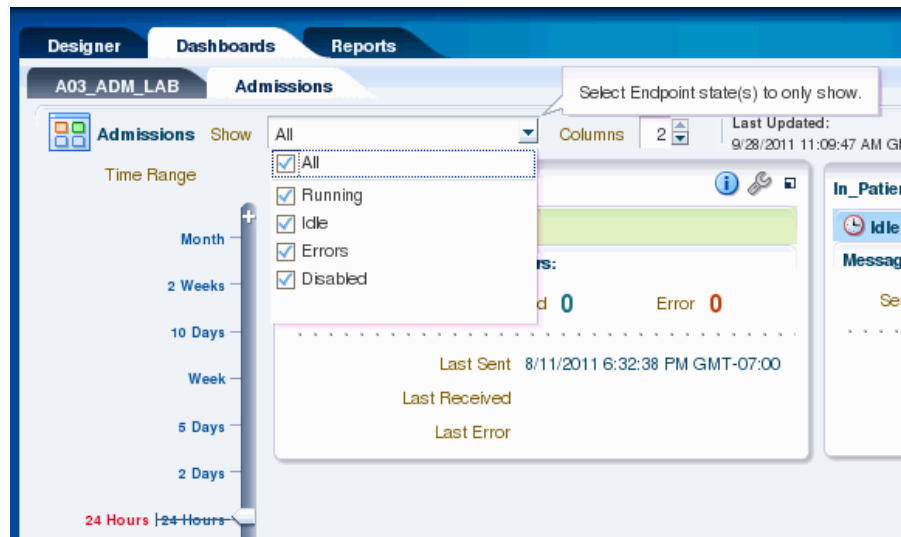


3. Do any of the following:
 - Change the name or description of the dashboard.
 - Add an endpoint by selecting it in the Available Endpoint section and clicking the right-facing arrow.
 - Remove an endpoint by selecting it in the Dashboard Endpoints section and clicking the left-facing arrow.
 - Reorder the endpoints by selecting an endpoint to move and clicking the up and down arrows to the right of the customizer.
4. When you are done with your changes, click **Apply** and then click **Hide** to close the customizer.

Tip: If you do not see your changes in the dashboard after you close the customizer, click the **Refresh** icon.

5. To undo the changes you made, click **Revert**.
6. To limit the types of messages displayed on the dashboard, click the down arrow next to the **Show** field, and select one of the following options:
 - **All:** Shows all types of messages.
 - **Running:** Shows all running endpoints. Idle, disabled, and errored endpoints are not shown.
 - **Errors:** Shows only error messages.
 - **Disabled:** Shows only disabled endpoints.

Figure 8-7 Show Field on the Dashboards Page



- To change the layout of the endpoints on the dashboard, change the number of columns displayed in the **Columns** field.

Note: If you change the number of columns to display for a dashboard, the new value is not persisted when you log out and log back in again.

8.2.4 Refreshing a Dashboard and Setting the Auto-Refresh Rate

You can manually refresh the dashboard at any time, but you can also specify that the dashboard be automatically updated at set intervals.

To refresh a dashboard and set the auto-refresh rate

- If the dashboard you want to modify is not already displayed, click the plus icon in the upper right of the main Dashboards page and select the dashboard to configure.
- To refresh the dashboard, click the **Refresh** icon in the upper right.
- To enable the auto-refresh option, do the following:
 - Click the down arrow to the right of the **Refresh** icon.
 - Specify the time interval in seconds to wait between automatically refreshing the dashboard, and then select **Auto-Refresh**.
 - To disable automatic refreshing, deselect the **Auto-Refresh** check box.

8.2.5 Deleting a Dashboard

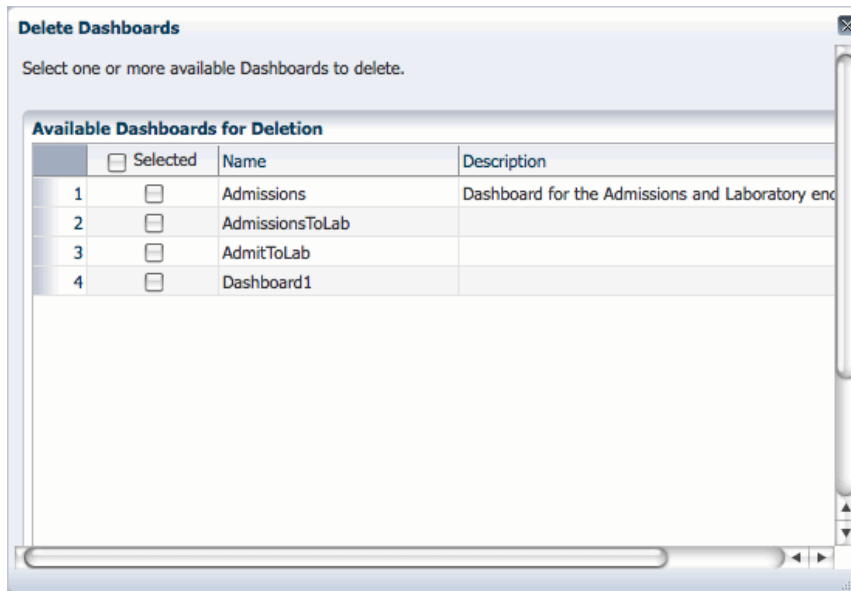
You can delete any of the dashboards you create. Use caution when deleting dashboards. This action is irreversible.

To delete a dashboard

- From the main Dashboards page, click the plus icon in the upper right and select **Delete Dashboards**.

The Delete Dashboard dialog appears.

Figure 8–8 Delete Dashboards Dialog



2. In the dashboards list, select the check box next to the dashboards you want to delete.
3. Click **Delete Selected Dashboards**.

The selected dashboards are deleted immediately.

8.3 Viewing Information in Dashboards

Dashboards display a variety of information. You start out viewing a summary of all the endpoints in the dashboard. This view gives you a quick picture of the status of each endpoint, the number of messages they are processing, and whether there were any errors. It also shows you when the last messages were sent or received, and when the last error occurred. This information can provide clues about which endpoints might require more detailed monitoring.

You can also view more detailed information for each endpoint, including the rate at which messages are being processed, the average message size, the number of messages sent or received, the number of errors, and any error messages. You can also access the Endpoints page directly from the dashboard so you can modify the configuration of an endpoint if needed.

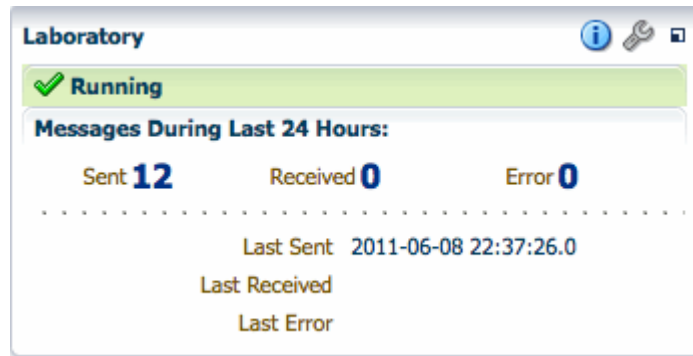
8.3.1 Viewing Endpoint Summary Information in a Dashboard

A dashboard has multiple views and you can drill down from each view to get a higher level of detail about a specific endpoint, error, or message.

To view endpoint summary information

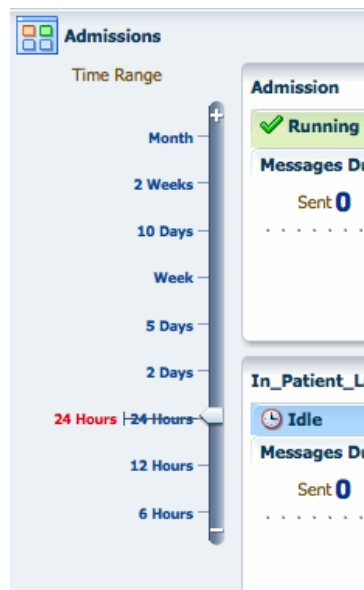
1. On the main Dashboards page, click the plus icon and then select the dashboard to view. For each endpoint, you can view the following information:

Figure 8–9 Endpoint Summary on a Dashboard



- **Status:** The current status of the endpoint, such as Running, Idle, Disabled, or Errors.
 - **Messages Sent:** The number of messages sent by the endpoint in the specified time period.
 - **Messages Received:** The number of messages received by the endpoint in the specified time period.
 - **Errors:** The number of messages with errors for the endpoint in the given time period.
 - **Last Sent:** The date and time the last message was sent from the endpoint.
 - **Last Received:** The date and time the last message was received from the endpoint.
 - **Last Error:** The date and time of the last error for the endpoint.
2. To change the time period for which the dashboard displays information, slide the pointer up or down on the time scale on the left of the page.

Figure 8–10 Sliding Timescale for Dashboard Information

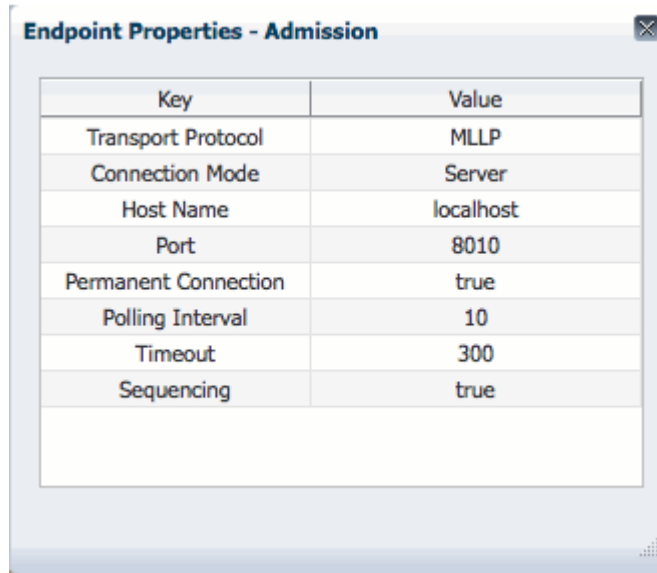


3. To view the properties for a specific endpoint, click or hover over the information icon for that endpoint. (Clicking opens a pop-up window with the information;

hovering only shows the information while the cursor is over the information icon.)

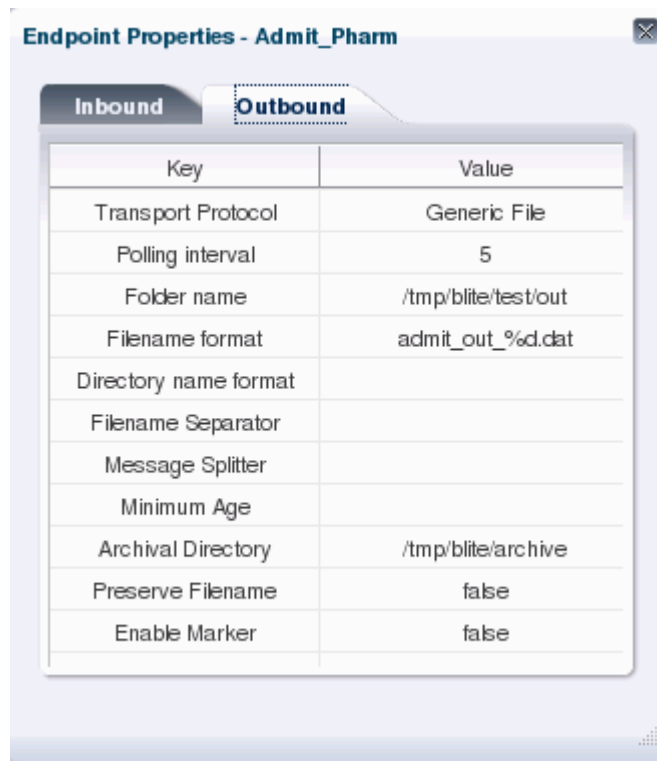
The Endpoint Properties dialog appears, where you can view the endpoints protocol, connection, polling, timeout, and sequencing properties.

Figure 8–11 *Endpoint Properties Dialog, Accessed from a Dashboard*



| Key | Value |
|----------------------|-----------|
| Transport Protocol | MLLP |
| Connection Mode | Server |
| Host Name | localhost |
| Port | 8010 |
| Permanent Connection | true |
| Polling Interval | 10 |
| Timeout | 300 |
| Sequencing | true |

If the endpoint defines both inbound and outbound processing, the properties dialog has two tabs, one that displays properties for inbound and one that displays properties for outbound. If the statuses of the inbound and outbound are different, additional information about the status appears on the properties dialog.

Figure 8–12 Endpoint Properties Dialog for a Bidirectional Endpoint

For more information about endpoint properties, see [Chapter 4, "Working with Endpoints."](#)

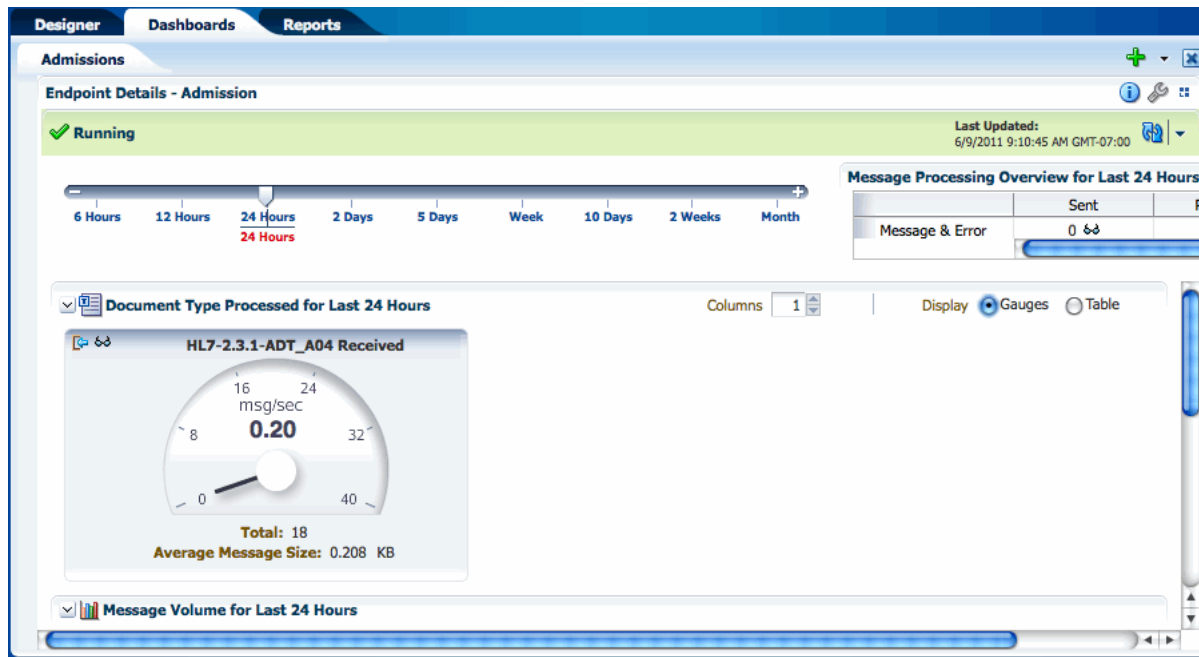
8.3.2 Viewing Detailed Endpoint Information in a Dashboard

From any endpoint summary view, you can drill down into more information for a specific endpoint, such as the message processing rate, the message volume broken down by message type (sent, received, or error), and the average message size. Additional information is available for errors.

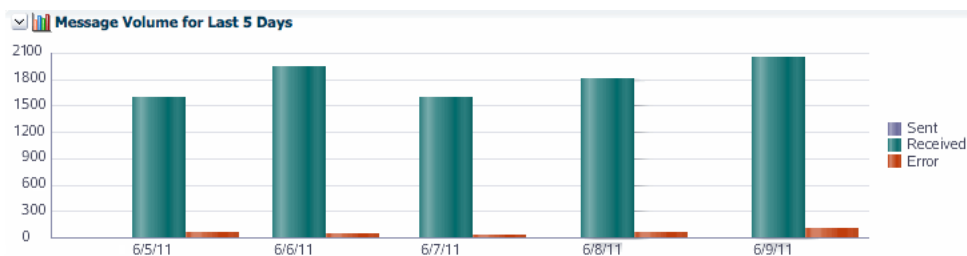
To view detailed endpoint information

1. Display the dashboard you want to view on the Dashboards page.
2. For a specific endpoint, click **Show More Endpoint Details** (the icon on the far right in the endpoint box).

The Endpoint Details page appears.

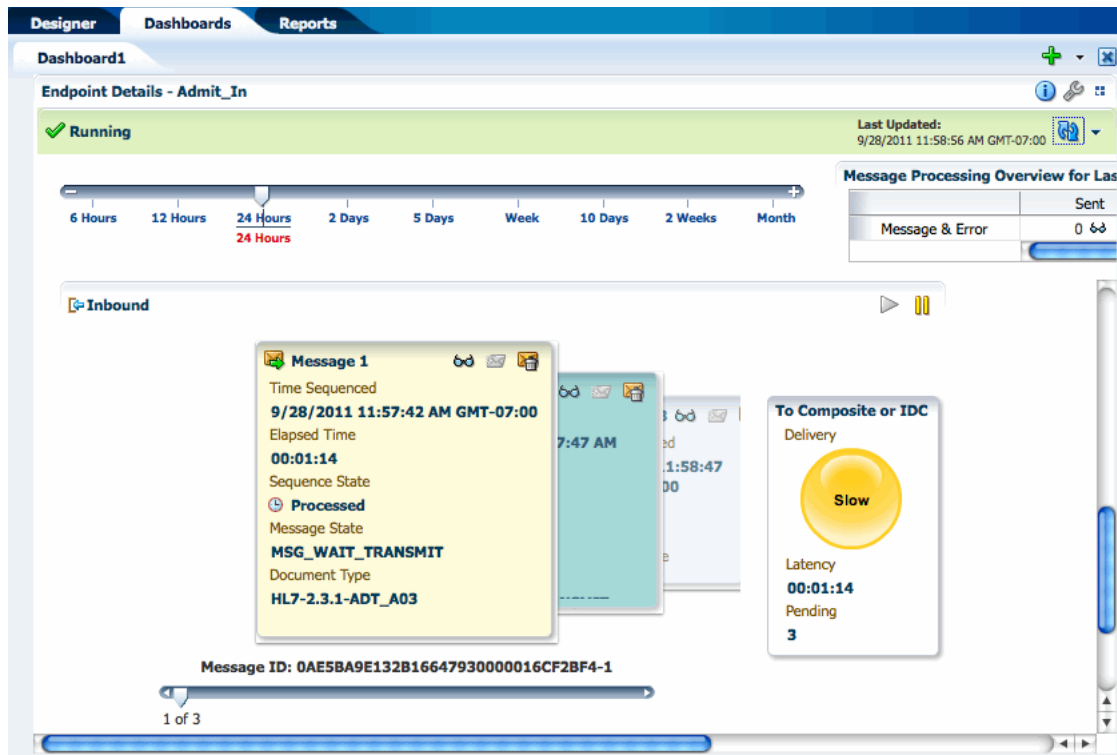
Figure 8–13 Endpoint Details Page on a Dashboard

3. To change the time period for the displayed data, move the slider to the left or right on the timescale at the top of the page.
4. You can view the volume metrics for the endpoint as a gauge (shown above) or in tabular format. Select either **Gauge** or **Table** next to **Display**.
Both the gauge and the table show the following information:
 - The document type.
 - The number of messages received per second.
 - The total number of message processed in the specified time period.
 - The average size of each message.
5. Scroll down to view a graph showing the volume of sent, received, and error messages.

Figure 8–14 Graphical Representation of Message Volume

6. Scroll below the graph to view information about sequenced message processing.

Figure 8–15 Sequenced Messages Section of the Dashboard



Tip: If you do not have the sequencing targets configured, you cannot view information about sequencing on the dashboard. For information on configuring sequencing, see [Section 4.4, "Enabling Sequencing for an MLLP Endpoint."](#)

7. Scroll to the bottom of the page to view error messages for the displayed endpoint.
8. To view a report of the messages processed, click the eyeglass icon either in the gauge or on the table. You can also view a report by clicking the eyeglass icon in the **Message Processing Overview for Last 24 Hours** box. Both actions open a new tab showing the report.

Figure 8–16 Endpoint Report Accessed from a Dashboard

| Message ID | Created Date and Time | Direction | Endpoint | State |
|--|--------------------------------|-----------|-----------|--------------|
| 1 > [icon] 0AE5BA9E13072E7B25200000146716FA-1 | 6/8/2011 10:37:25 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 2 > [icon] 0AE5BA9E13072E799CE00000146716DC-1 | 6/8/2011 10:37:18 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 3 > [icon] 0AE5BA9E13072E77D8500000146716BE-1 | 6/8/2011 10:37:11 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 4 > [icon] 0AE5BA9E13072E7615300000146716A0-1 | 6/8/2011 10:37:04 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 5 > [icon] 0AE5BA9E13072E74CEE0000014671682-1 | 6/8/2011 10:36:59 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 6 > [icon] 0AE5BA9E13072E738710000014671664-1 | 6/8/2011 10:36:47 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 7 > [icon] 0AE5BA9E13072DE09980000014671645-1 | 6/8/2011 10:26:52 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 8 > [icon] 0AE5BA9E13072DDF56A0000014671627-1 | 6/8/2011 10:26:46 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 9 > [icon] 0AE5BA9E13072DDDD010000014671609-1 | 6/8/2011 10:26:40 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 10 > [icon] 0AE5BA9E13072DDCCA700000146715EB-1 | 6/8/2011 10:26:36 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 11 > [icon] 0AE5BA9E13072DD5ED300000146715CB-1 | 6/8/2011 10:26:01 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |

Bottom navigation bar: Admission (gear icon), Wire Message (envelope icon), **Business Message** (envelope icon), Application Message (envelope icon), Composite (block diagram icon).

For more information about reports and the information displayed, see [Chapter 9, "Working with Reports."](#)

8.3.3 Configuring an Endpoint from a Dashboard

The dashboard lets you access the endpoint configuration pages directly so you can view and edit the endpoint properties.

To configure an endpoint from a dashboard

1. Display the dashboard you want to view on the Dashboards page.
2. In the box for the endpoint you want to configure, click **Configure This Endpoint** (the wrench icon).

The Endpoint page appears.

3. Modify any of the endpoint values, as described in "Working with Endpoints."

Note: This takes you out of the dashboard pages. To return to the dashboard you were viewing, click the Dashboards tab.

8.4 Working with Sequenced Messages

The Sequenced Messages section of an endpoint dashboard provides information about the health of the sequenced message queue. In this section, you can view information about the messages that are pending in the sequenced message queue. If there is no information in this section, then sequenced messages are processing successfully. If messages are backed up, you can view the necessary information and take steps to unblock the queue.

The information you can view for the queue includes the number of messages in the queue, the time a message was sequenced, the time elapsed since sequencing was initiated for the message, the sequence state, the message processing state, and the document type. There is also an indicator of the overall delivery status for the queue. Possible statuses are:

- **Stopped:** Indicated by a red traffic light, this means that sequencing has been manually paused or the message at the front of the queue has encountered a transport error.
- **Slow:** Indicated by a yellow traffic light, this means that the elapsed time for the message at the front of the queue has exceeded the `Slow Threshold for Sequencing` property in the UI Settings.
- **Running:** Indicated by a green traffic light, this indicates that sequenced messages are being processed normally.

Messages can get backed up in the queue due to sequencing errors, message errors, or message processing delays. The Sequenced Messages section gives you the information you need to correct these problems. You can view information about messages in the queue to determine the cause of the stoppage. Once you find the source, you can reprocess errored messages or discard messages from the queue.

To work with sequenced messages

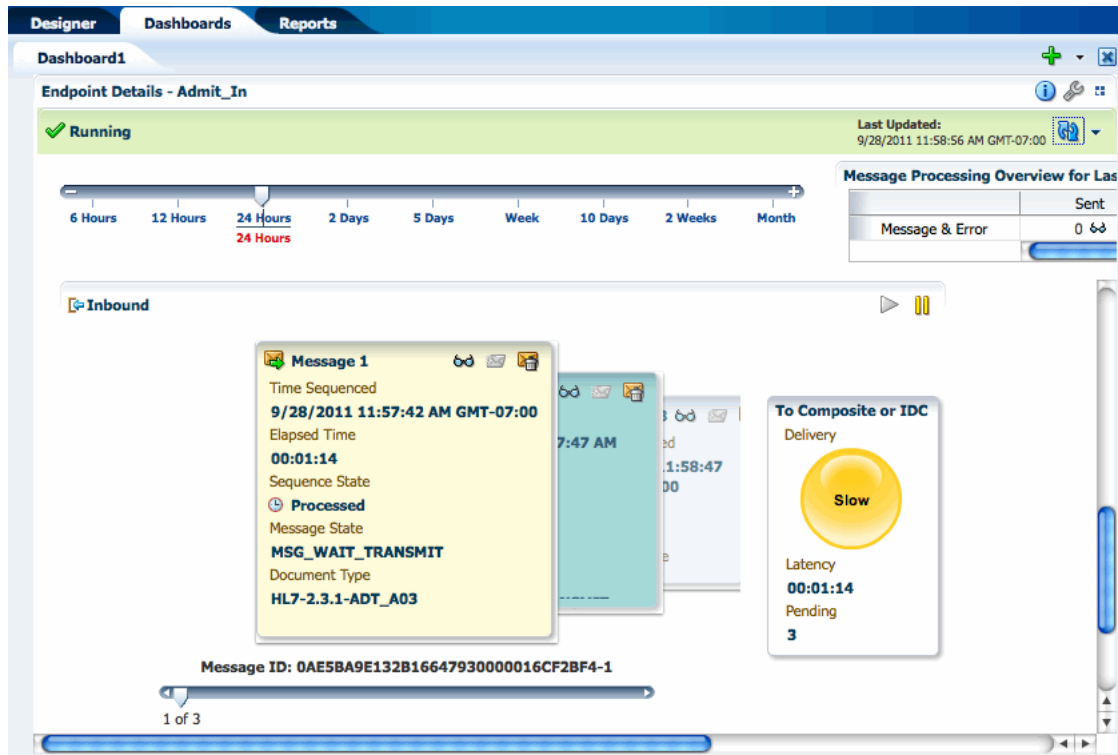
1. Display the dashboard you want to view on the Dashboards page.
2. For a specific endpoint, click **Show More Endpoint Details** (the icon on the far right in the endpoint box).

The Endpoint Details page appears.

3. Scroll down to the Sequenced Messages section.

If there are messages waiting in the sequencing queue, you can view them here.

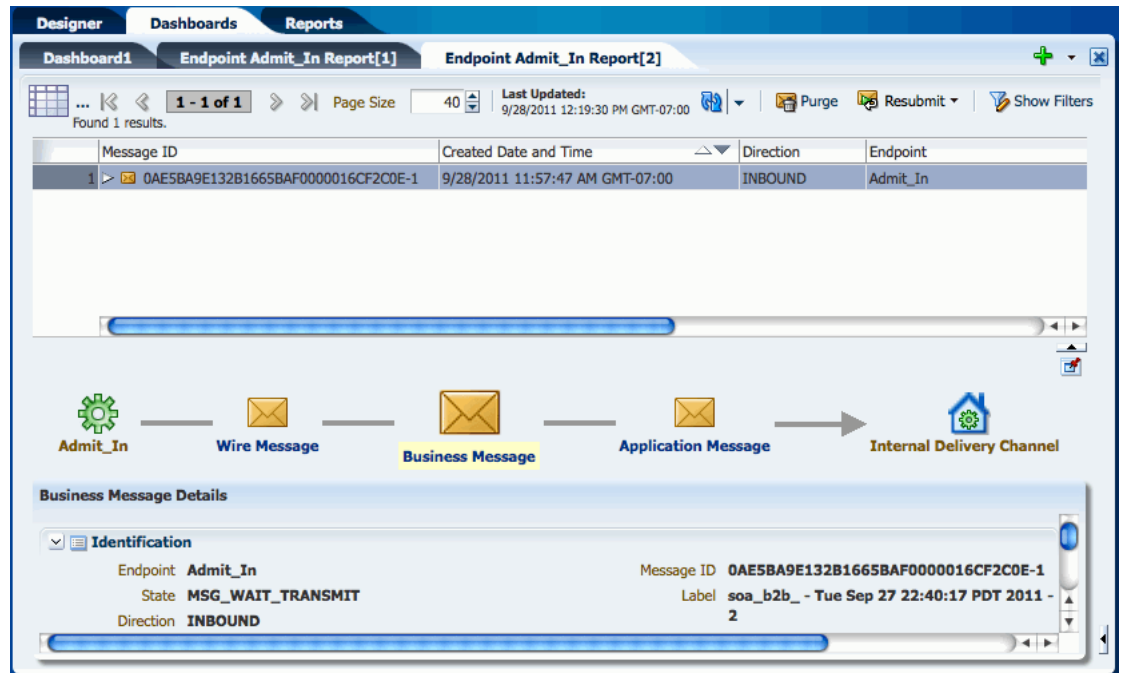
Figure 8–17 Sequenced Messages Section of the Endpoint Dashboard



4. The waiting messages appear as a carousel of note boxes. Click through the boxes or use the slider underneath the messages to view information about each message.
5. To view a report of any of the messages, click the eyeglass icon in the upper right of that message's box.

The report page appears for the selected message.

Figure 8–18 Message Report Accessed from the Sequenced Messages Section

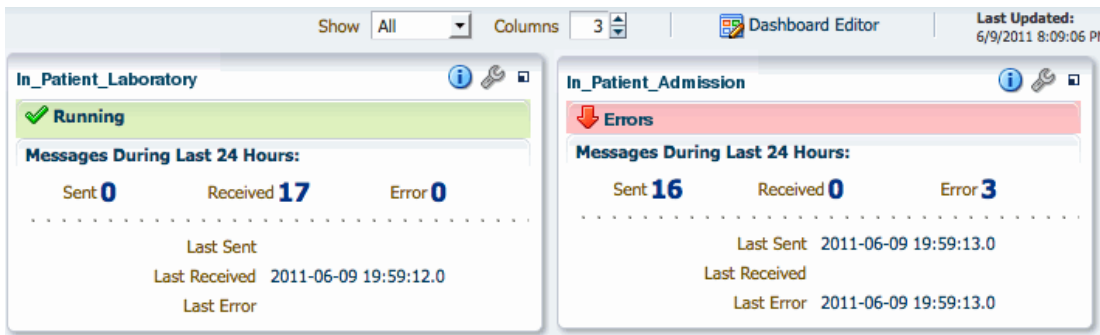


6. When sequencing is blocked by a message, you can do any of the following:
 - View the message report, as shown above, and use the Purge or Resubmit functions of the reports page to handle the message.
 - In the Sequenced Message section, reprocess an errored message by clicking the **Reprocess an Errored Message** icon in the upper right of the message box.
 - In the Sequenced Messages section, discard the blocked message by clicking the **Discard Message** icon in the upper right of the message box. Discarding a message only removes it from the sequenced message queue, and does not remove it from the instance data shown in the reports.
7. To pause sequenced message processing, click the **Pause** button in the upper right of the Sequenced Messages section.
8. To resume sequenced message processing, click the **Resume** button in the upper right of the Sequenced Messages section.

8.5 Viewing Endpoint Error Messages

When a message for a specific endpoint generates an error, you can access information about the error from the Dashboards page.

Note: When a transport error occurs in an endpoint, the status bar for the endpoint changes to red and the status changes to **Errors**. This does not indicate an error in the business message processing, which is described in the following procedure, though message processing errors can include transport errors as well. Message processing errors are indicated by the number in the **Error** field of the endpoint summary.

Figure 8–19 Endpoint Summary with Errors**To view endpoint error messages**

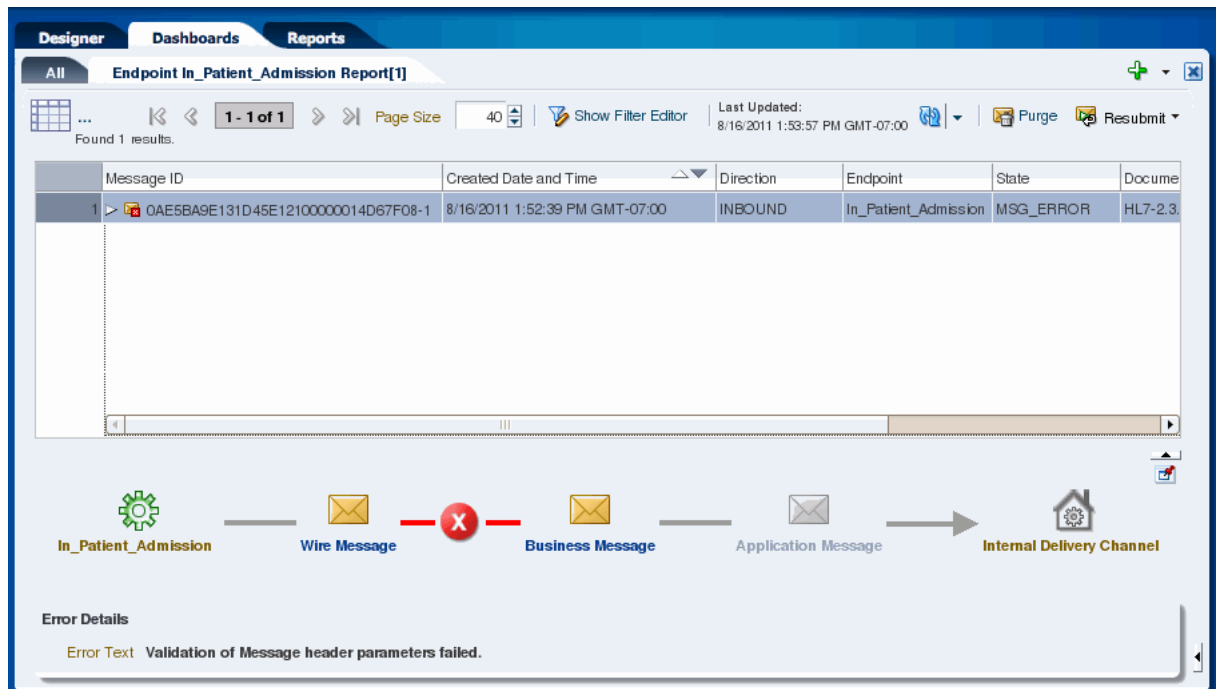
1. On the endpoint summary dashboard page, click **Show More Endpoint Details** for the endpoint that shows messages with errors.
2. On the endpoint details page, scroll to the bottom of the page to view the list of error messages.

Figure 8–20 Endpoint Error Messages List

| Error Code | Error Text | Document Type | Timestamp | Message ID |
|------------|---|---------------|-----------------------|------------------------------------|
| B2B-51512 | Validation of Message header parameters failed. | ADT_A03 | 2011-08-16 13:52:39.0 | 0AE5BA9E131D45E12100000014D67F08-1 |
| B2B-51512 | Validation of Message header parameters failed. | ADT_A03 | 2011-08-16 13:52:36.0 | 0AE5BA9E131D45E0F2E0000014D67EFF-1 |
| B2B-51512 | Validation of Message header parameters failed. | ADT_A03 | 2011-08-15 16:13:39.0 | 0AE5BA9E131CFB8CA400000014D67CB4-1 |

3. To view a report of the error, click the eyeglass icon to the right of the message ID. The Reports page appears, as shown below.

Figure 8–21 Endpoint Error Message Report



The screenshot displays a report window titled "Endpoint In_Patient_Admission Report[1]". At the top, there are navigation tabs for "Designer", "Dashboards", and "Reports". Below the tabs, there are controls for "Page Size" (set to 40), "Show Filter Editor", and "Last Updated" (8/16/2011 1:53:57 PM GMT-07:00). A table below shows one result:

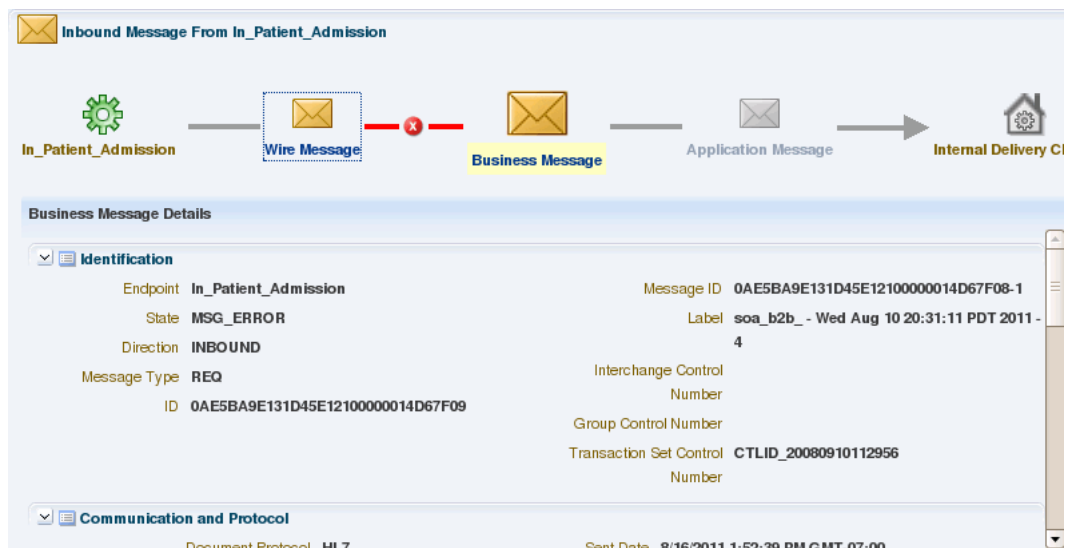
| Message ID | Created Date and Time | Direction | Endpoint | State | Docume |
|--|--------------------------------|-----------|----------------------|-----------|---------|
| 1 > OAE5BA9E131D45E12100000014D67F08-1 | 8/16/2011 1:52:39 PM GMT-07:00 | INBOUND | In_Patient_Admission | MSG_ERROR | HL7-2.3 |

Below the table is a flow diagram with steps: In_Patient_Admission, Wire Message, Business Message, Application Message, and Internal Delivery Channel. A red X icon is placed over the Business Message step. Below the diagram, the "Error Details" section shows: "Error Text Validation of Message header parameters failed."

- To view more details about the error, collapse the upper portion of the window by clicking the up arrow beneath the message list or click **Pin Current Message Details Into a New Tab** to open the details in a new tab.

The business message details appear.

Figure 8–22 Business Message Details



The screenshot shows the "Business Message Details" view. At the top, it says "Inbound Message From In_Patient_Admission". Below this is a flow diagram with steps: In_Patient_Admission, Wire Message, Business Message, Application Message, and Internal Delivery Channel. The Business Message step is highlighted in yellow. Below the diagram, the "Business Message Details" section is expanded to show "Identification" information:

| | | | |
|--------------|----------------------------------|----------------------------|---|
| Endpoint | In_Patient_Admission | Message ID | OAE5BA9E131D45E12100000014D67F08-1 |
| State | MSG_ERROR | Label | soa_b2b_ - Wed Aug 10 20:31:11 PDT 2011 - 4 |
| Direction | INBOUND | Interchange Control Number | |
| Message Type | REQ | Group Control Number | |
| ID | OAE5BA9E131D45E12100000014D67F09 | Transaction Set Control | CTLID_20080910112956 |
| | | Number | |

At the bottom, the "Communication and Protocol" section is partially visible, showing "Document Protocol HL7" and "Sent Date: 8/16/2011 1:52:39 PM GMT-07:00".

For more information about reports and the information displayed, see [Chapter 9, "Working with Reports."](#)

- In the flow diagram, click the red X icon that indicates where the error occurred. The Error Details appear below the diagram.

Figure 8–23 Endpoint Transport Error Details

Inbound Message From In_Patient_Admission

In_Patient_Admission — Wire Message — Business Message — Application Message — Internal Delivery Ct

Error Details

Error Text: Validation of Message header parameters failed.

Error Code: B2B-51512

Error: ERROR

Severity: Error

Error Level: ERROR_LEVEL_COLLABORATION

Error: Machine Info: (Host100123) Validation of Message header parameters failed. Please verify all the Message header parameters in the configured parameters in B2B. key = [MessageReceivingFacility] value = [MDM] param = [null] key = [MessageSendingFacility] value = [HosA] param = [null] key = [MessageSendingApp] value = [SystemA] param = [null] key = [MessageReceivingApp] value = [PI] param = [null]

Description: B2B configuration match the Message header parameters in the message. Following parameters are not matching with the configured parameters in B2B. key = [MessageReceivingFacility] value = [MDM] param = [null] key = [MessageSendingFacility] value = [HosA] param = [null] key = [MessageSendingApp] value = [SystemA] param = [null] key = [MessageReceivingApp] value = [PI] param = [null]

Working with Reports

This chapter describes the reporting features of Oracle SOA Suite for healthcare integration. The configurable reports display the real-time status of message processing through the healthcare integration application based on the criteria you specify.

This chapter includes the following topics:

- [Section 9.1, "Introduction to Reports"](#)
- [Section 9.2, "Creating and Configuring Reports"](#)
- [Section 9.3, "Viewing Reports and Report Information"](#)
- [Section 9.4, "Working with Error Messages"](#)
- [Section 9.5, "Purging Messages from the Repository"](#)

9.1 Introduction to Reports

The Reports page of the Oracle SOA Suite for healthcare integration user interface lets you view the status of the messages being processing through healthcare integration components in real-time. You can view all messages, or you can narrow down the messages displayed by a variety of criteria, including endpoints, date ranges, document information, and payload fields.

Several reports are predefined on the healthcare integration user interface. These are based on recent time ranges, such as the past 24 hours, the past week, and so on, and display all messages processed within those time periods. You can create additional reports based on more specific criteria to narrow down the types of messages displayed.

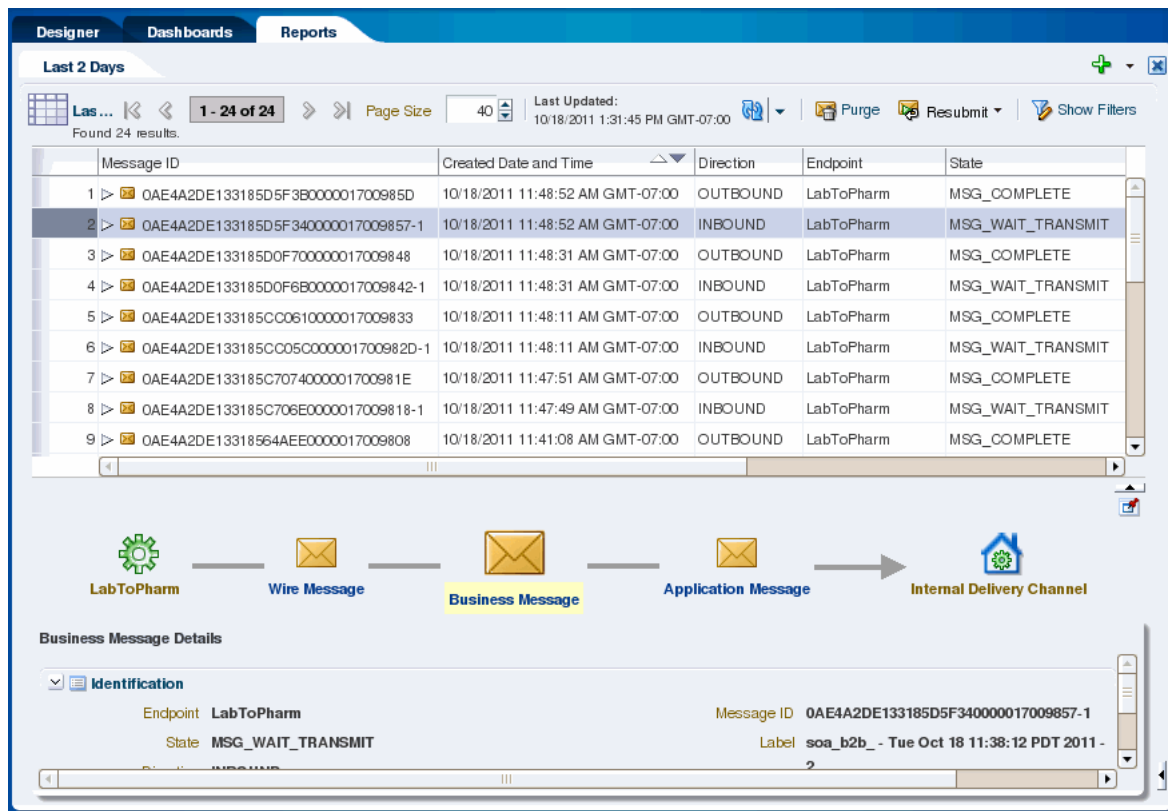
Each report is divided into four sections:

- A report configuration bar
- The message list
- A graphical depiction of the message flow
- Message details for the selected message.

If you select multiple messages from the report, a summary of information for the selected messages appears in place of the flow diagram.

[Figure 9–1](#) shows an example of a report as displayed on the Reports tab.

Figure 9–1 Reports Page Showing a Predefined Report



The screenshot shows the Oracle SOA Suite Reports page. At the top, there are tabs for 'Designer', 'Dashboards', and 'Reports'. The 'Reports' tab is active, and the report is titled 'Last 2 Days'. Below the title, there is a search bar with 'Las...' and a page size of 40. The report displays a table of messages with the following columns: Message ID, Created Date and Time, Direction, Endpoint, and State. The table contains 9 rows of data. Below the table, there is a flow diagram showing the message path: LabToPharm -> Wire Message -> Business Message -> Application Message -> Internal Delivery Channel. The 'Business Message' step is highlighted. Below the flow diagram, there is a 'Business Message Details' section with the following information:

| Identification | |
|----------------|---|
| Endpoint | LabToPharm |
| State | MSG_WAIT_TRANSMIT |
| Message ID | OAE4A2DE133185D5F340000017009857-1 |
| Label | soa_b2b_ - Tue Oct 18 11:38:12 PDT 2011 - 2 |

In the message list, each message is marked with an icon that provides processing information about the message. An envelope icon indicates normal processing; a green arrow over the envelope indicates the message was resubmitted; and a red square with an "X" over the envelope indicates an error.

9.1.1 About the Business Message Report Filter Editor

You use the Business Message Report Filter Editor to create new reports and to edit existing reports. The report editor allows you to define a wide variety of criteria for the messages that are displayed on the report, including a time range, an endpoint, the message status, and document definition information. You can also use advanced options, which include correlation fields, SOA composite fields, message IDs and so on.

Figure 9–2 Business Message Report Filter Editor

For most filters, you need to select an operator that specifies how to evaluate the value you specify for the filter. You can also specify whether or not the search is case-sensitive. Most filters support the following operators to act against the value you specify: **Any**, **Equals**, **Like**, **Not Equal**, or **Not like**. For the **Like** and **Not Like** operators, you can use SQL wildcard characters in the value. SQL wildcard characters include:

- % (percent): Represents zero or more unknown characters
- _ (underscore): Represents a single character
- [charlist]: A list of characters; the unknown value is any character in the list
- [^charlist] or [!charlist]: A list of characters; the unknown value is *not* a character in the list

For most string-based criteria, you can specify whether or not the search should be case sensitive by selecting or deselecting **Ignore case** next to the field. Use the links next to **Filter Conditions** to move between sections in the filter conditions list.

9.1.1.1 About Correlation and Payload Key Fields

When you create your document definitions, you can specify up to three fields in the message as payload key fields. These fields are defined by a unique name and an XPath expression that locates the field in the message. For example, you might name a

field **LastName** and specify the XPath expression for the last name field in the PID segment of an HL7 A03 message. You can similarly define correlation fields for a document definition.

If you have defined either correlation fields or payload key fields for a document definition, then you can use these fields as filters for business message reports. In the filter editor, these filters are defined by name and value pairs. You use the unique name you gave the field when you created the document definition, and then specify what the value should be for that field in the messages you want to include on the report.

9.1.2 About Resubmitting Messages

When messaging errors are internal to Oracle SOA Suite for healthcare integration, you can correct the problem and resend the message. For example, if a message is sent to an endpoint that is not configured correctly, correct the error and use the resubmit feature for application messages or wire messages.

Resubmitting an application message for an outbound message clones the message, assigns the new message a state of **RESUBMITTED**, and attempts to deliver the clone. If the resubmitted application message is part of the batch message, the state of the associated wire message is set to **RESUBMITTED** as well. Resubmitting this type of message is helpful when the document configuration is not as required and the message must be restructured with updated settings.

Resubmitting an application message for an inbound message sets the state of the message to **RESUBMITTED** and attempts to deliver the message again to the back-end application. Resubmitting this type of message is useful when the back-end application is down and the delivery must be retried.

Resubmitting a wire message for an outbound message sets the state of the message to **RESUBMITTED** and attempts to redeliver only the previously processed message. There is no repackaging or other message transformation. This is helpful when the problem was with the delivery endpoint (for example, the receiver's server is down and unable to receive the message).

Resubmitting a wire message for an inbound message clones the wire message, assigns the new message a state of **RESUBMITTED**, and attempts to deliver the message. The message states of the business and application messages are also set to **RESUBMITTED**. The functional acknowledgment is not returned to the remote endpoint even though the endpoint expects it. This is useful when the document settings are not correct and the message must be translated and validated again.

9.1.3 Important Note About Clustered Environments

In a cluster environment, if system time stamps are not synchronized for all nodes in the cluster, you might see message time stamps that look incorrect, but are not. For example, given an unsynchronized, multi-node cluster, if an outbound message is received on one node, but the reply is sent from another node, it is possible for a report to show message receipt at 4 a.m., but an acknowledgment sent at 3:55 a.m.

9.2 Creating and Configuring Reports

Oracle SOA Suite for healthcare integration provides several predefined reports for you to get started with. These reports are filtered only by a time range. You can create additional reports that further filter messages by criteria such as endpoint, message

ID, document properties, and key payload fields. You can also use the predefined reports as a basis, and either modify them or save them as new reports.

9.2.1 Creating Reports

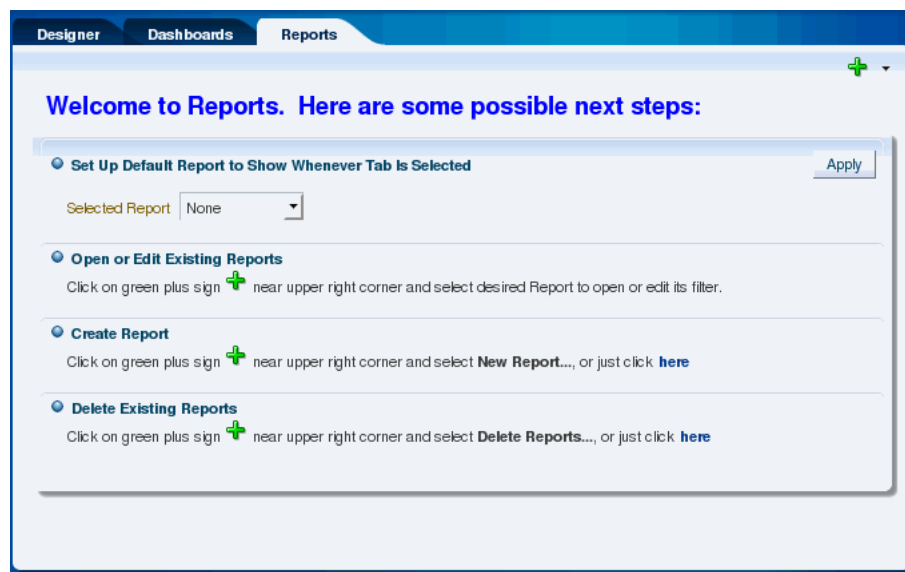
Although several time-based reports are predefined, you can create additional reports to meet your specific requirements.

To create a report

1. On the Oracle SOA Suite for healthcare integration user interface, click the Reports tab.

The main Reports page appears.

Figure 9–3 Reports Welcome Page

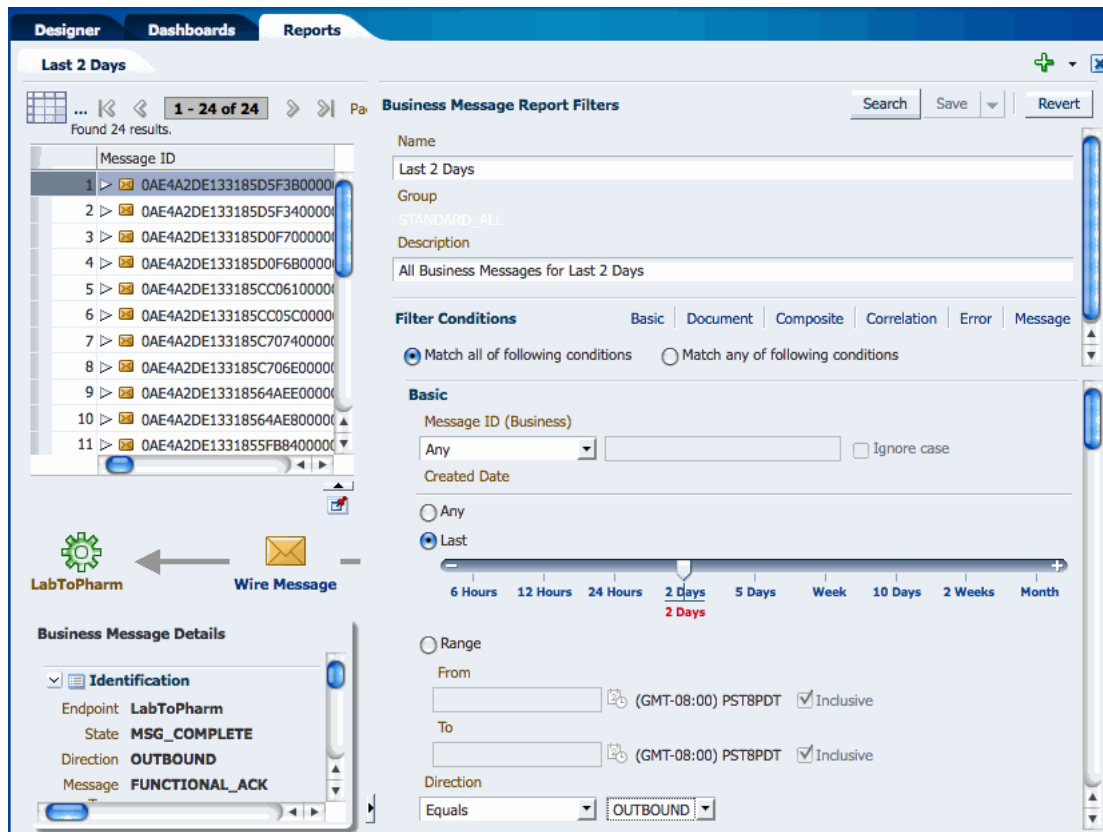


Note: If you have already defined a default report, that report will automatically appear. You can perform the following steps from the default report page.

2. Click the plus icon in the upper right, and select **New Report**.
3. On the Create Business Message Report dialog, enter a name for the report and click **Create**.

The report appears with the Business Message Report Filter Editor displayed.

Figure 9–4 Business Message Report Filter Editor



- On the Business Message Report Filter Editor, enter any of the filter criteria described in the following table.
Use the links next to **Filter Conditions** to quickly move between the different sections in the filter conditions list.

Note: Multiple conditional operators are supported for most string criteria. For more information about using **Any**, **Equals**, **Like**, **Not Equal**, or **Not Like**, see [Section 9.1.1, "About the Business Message Report Filter Editor."](#)

Table 9–1 Business Message Report Filters

| Filter | Description |
|-----------------------|--|
| Name | The name of the report. |
| Description | A brief description of the report. |
| Match | An indicator of whether the search criteria are joined by an AND or OR operator. Select Match all of the following conditions to use AND; select Match any of the following condition to use OR. |
| Message ID (Business) | The business message ID of the message to display. Select the operator and the enter all or part of a message ID. |
| Created Date | The following three options specify a date range. |

Table 9–1 (Cont.) Business Message Report Filters

| Filter | Description |
|--|---|
| <ul style="list-style-type: none"> ■ Any | Does not narrow the report by any date range, and displays messages from all dates and times. |
| <ul style="list-style-type: none"> ■ Last | Narrows the report down to a range of most recent dates or times. For example, you can select the past 12 hours, past five days, or past two weeks. Slide the pointer on the sliding scale to select a time range. |
| <ul style="list-style-type: none"> ■ Range | <p>Narrows the report down to the range of dates you specify. In the From or To field, or in both fields, provide a date and time in the format shown (MM/DD/YYYY HH:MM:SS AM/PM) or click the Select Date and Time icon to select a date and specify the time.</p> <p>To search for all messages after a specific date, only enter a date for the From field. To search for all messages earlier than a specific date, only enter a date in the To field. To search for all messages within a range of dates, enter dates in both the From and To fields. To exclude a specific time range, enter the first date in the range to exclude in the To field and enter the last date in the range to exclude in the From field. The search returns all messages received.</p> <p>For both the from and to dates, select Inclusive to include the specified dates in the search, or deselect Exclusive to exclude those dates from the search.</p> |
| Direction | The direction of the messages to display. Select from Any , Equals , or Not Equals , and then click in the field on the right to select a direction (inbound or outbound) from the list |
| Endpoint | The endpoint of the messages to display. Select the operator and then enter the name of a defined endpoint. |
| State | The state of the messages to display. Select from Any , Equals , or Not Equals , and then click in the field on the right to select one or more message states from the list. |
| Document | The following three fields specify document properties. For any of these fields, select Ignore case if you do not want the search to be case sensitive. |
| <ul style="list-style-type: none"> ■ Protocol | The document protocol of the messages to display. Select the operator and then enter the document protocol. For HL7 messages, enter HL7 . |
| <ul style="list-style-type: none"> ■ Version | The document protocol version of the messages to display. Select the operator and then enter the version. For example, for HL7 2.6 messages, enter 2.6 . |
| <ul style="list-style-type: none"> ■ Type | The document protocol type of the messages to display. Select the operator and then enter the version. For example, for HL7 ADT_A04 messages, enter ADT_A04 . |
| Payload Key Fields | <p>Name and value pairs that narrow the search down by the contents of a field in a message. For each field name you enter, enter a corresponding value for the field. For any of the names or values, select the operator.</p> <p>These fields can only be used if they are defined on the XPath page for the document definition. For Name fields, enter the name specified on the XPath page, which represents a field in the message. For Value fields, enter the expected value of the corresponding field.</p> <p>For more information about key fields, see Section 9.1.1.1, "About Correlation and Payload Key Fields."</p> |

Table 9–1 (Cont.) Business Message Report Filters

| Filter | Description |
|--|---|
| Document | |
| <ul style="list-style-type: none"> ■ Document Definition | The document definition used by the messages to display. Select the operator and then enter the name of a defined document definition. |
| <ul style="list-style-type: none"> ■ Interchange Control Number | A unique identifier for the interchange. This number is used to track messages, to find duplicate or missing transmissions, or to find messages that are out of sequence. |
| <ul style="list-style-type: none"> ■ Group Control Number | A unique identifier for the group. This number is used for auditing, to find duplicate or missing groups, or to find groups that are out of sequence. This number is referenced by the functional acknowledgment. |
| <ul style="list-style-type: none"> ■ Transaction Set Control Number | A unique identifier for the transaction set. The functional acknowledgment references this number for transaction set acknowledgment. |
| Composite | |
| <ul style="list-style-type: none"> ■ Transport Protocol Name | The name of the transport protocol used by the Oracle SOA composite application. |
| <ul style="list-style-type: none"> ■ Transport Protocol Version | The version of the transport protocol used by the Oracle SOA composite application |
| <ul style="list-style-type: none"> ■ ECID | The execution context ID. The ECID enables end-to-end message tracking. |
| <ul style="list-style-type: none"> ■ Composite Instance ID | The Oracle SOA composite instance ID. |
| <ul style="list-style-type: none"> ■ Composite Name | The name of the Oracle SOA composite application in Oracle JDeveloper. |
| <ul style="list-style-type: none"> ■ Service Name | The name of the healthcare integration service binding component in the Oracle SOA composite application. |
| <ul style="list-style-type: none"> ■ Reference Name | The name of the healthcare integration reference binding component in the Oracle SOA composite application. |
| <ul style="list-style-type: none"> ■ Domain Name | The name of the WebLogic domain on which the Oracle SOA composite application is deployed. |
| <ul style="list-style-type: none"> ■ Composite Version | The version of the Oracle SOA composite application in Oracle JDeveloper. |
| Correlation | |
| <ul style="list-style-type: none"> ■ Correlation From XPath Name | The name of the correlation field for initiating the correlation. This and the remaining correlation fields can only be used if they are defined on the Correlation page for the document definition. For usage information, see Payload Key Fields in Table 9–1 . |
| <ul style="list-style-type: none"> ■ Correlation From XPath Value | The value of the above field. |
| <ul style="list-style-type: none"> ■ Correlation To XPath Name | The name of the second field for the correlation. |
| <ul style="list-style-type: none"> ■ Correlation To XPath Value | The value of the above field. |
| Error | |
| <ul style="list-style-type: none"> ■ Error Code | The error code for error message to display on the report. |
| <ul style="list-style-type: none"> ■ Error Text | The text of an error message to display on the report. |

Table 9–1 (Cont.) Business Message Report Filters

| Filter | Description |
|---------------------------|---|
| Message | |
| ■ Application Message ID | The unique identifier for the application message to display in the report. |
| ■ Protocol Message ID | The unique protocol message identifier for messages displayed in the report. |
| ■ Native Message Size | The size of the original message prior to being translated. Select from Any , Equals , Not Equal , Less than , Less than or equals , Greater than , or Greater than or equals , and provide a numerical value. |
| ■ Translated Message Size | The size of the message after it is translated. Select from Any , Equals , Not Equal , Less than , Less than or equals , Greater than , or Greater than or equals , and provide a numerical value. |

5. To revert any unsaved changes you made to the report filters, click **Revert**.
6. When you are done specifying report filters, do any of the following:
 - To test your filter criteria, click **Search**, and then click the **Collapse Pane** icon at the bottom left of the Business Message Report Filter Editor.
 - To save the changes you made to the filter criteria for the report, click **Save**.
 - To save a new report based on your changes, enter the new report name in the **Name** field, click the down arrow next to **Save** and then select **Save as New**.

9.2.2 Specifying a Default Report

You can select one report that automatically appears when you click the Reports tab. This is the default report.

To specify a default report

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Reports** tab.
2. Click the down arrow next to the **Selected Report** field, and select the report that you want to make default.
3. Click **Apply**.

The selected report appears. The next time you select the Reports tab, this report will automatically appear.

9.2.3 Configuring Reports

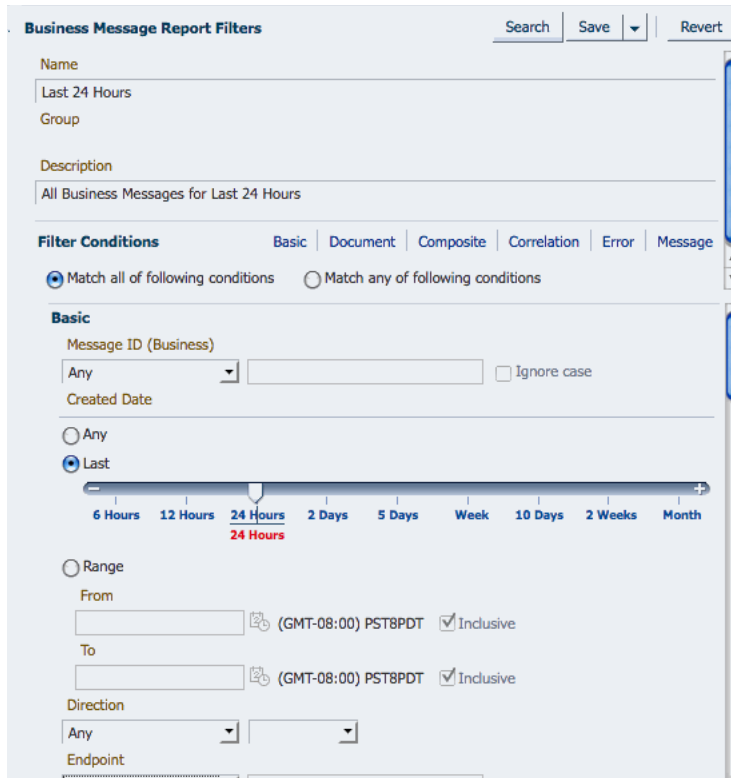
Once you create a report, you can use the Business Message Filter Editor to modify the filter criteria for the report. You can also create a new report using an existing report as a template.

To configure a report

1. With the report you want to configure displayed on the Reports tab, click **Show Filters**.

The Business Message Report Filter Editor appears.

Figure 9–5 Business Message Report Filter Editor



2. Modify any of the filters described in [Table 9–1](#).
3. To revert any unsaved changes you made to the report filters, click **Revert**.
4. When you are done specifying report filters, do any of the following:
 - To test your filter criteria, click **Search**, and then click the **Collapse Pane** icon at the bottom left of the editor to view the report.
 - To save the changes you made to the filter criteria for the report, click **Save**.
 - To save the configuration as a new report based on your changes, enter the new report name in the **Name** field, click the down arrow next to **Save** and then select **Save as New**.

9.2.4 Refreshing a Report and Setting the Auto-Refresh Rate

You can manually refresh the displayed report at any time, but you can also specify that the report be automatically updated at set intervals. Note that the auto-refresh rate is only activated and configured for the current session. If you close and then re-open a report, the auto-refresh option is disabled.

To refresh a reports and set the auto-refresh rate

1. If the report you want to monitor is not already displayed, click the plus icon in the upper right of the main Reports page and select the report to configure.
2. To refresh the report, click the **Refresh** icon in the upper right.
3. To enable the auto-refresh option, do the following:
 - a. Click the down arrow to the right of the **Refresh** icon in the report toolbar.

- b. Specify the time interval in seconds to wait between automatically refreshing the report, and then select **Auto-Refresh**.
- c. To disable automatic refreshing, deselect the **Auto-Refresh** check box.

9.2.5 Deleting Reports

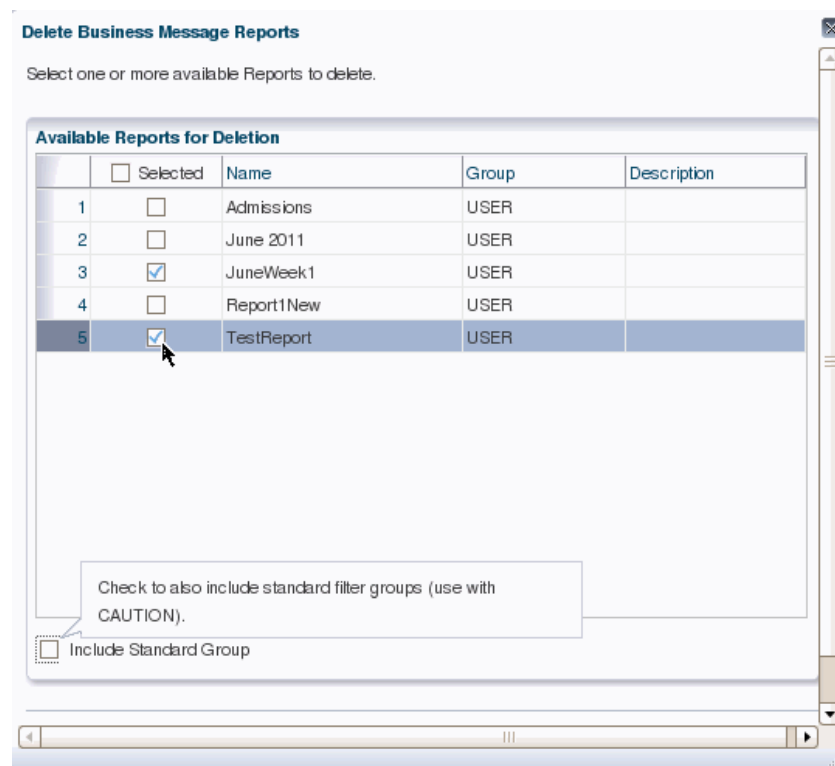
You can delete any of the reports you create. You can also delete any of the predefined reports, but use caution when doing this because this action is irreversible.

To delete a report

1. From the main Reports page, click the plus icon in the upper right and select **Delete Reports**.

The Delete Business Message Reports dialog appears.

Figure 9-6 Delete Business Message Reports Dialog



2. By default, only the reports you created appear in the list. To include predefined reports, select **Include Standard Group**.
3. In the reports list, select the check box next to the reports you want to delete.
4. Click **Delete Selected Reports** or click **Cancel** to close the dialog box without deleting any reports.

9.3 Viewing Reports and Report Information

When you first open a report, a list of messages matching the report criteria appears on the Reports tab. This list shows summary information for each message including the following:

- Message ID
- Created Date and Time
- Direction
- Endpoint
- State
- Document Type

You can select any of the messages in the list to view more detailed information and you can view a summary of multiple messages, as described in the following topics:

- [Section 9.3.1, "Viewing a Business Message Instance"](#)
- [Section 9.3.2, "Viewing a Wire Message"](#)
- [Section 9.3.3, "Viewing an Application Message"](#)
- [Section 9.3.4, "Viewing the Flow Trace in Oracle Enterprise Manager"](#)
- [Section 9.3.5, "Viewing Overview Information for Multiple Messages"](#)

If you do not have permissions to view the document type of a message, certain details are hidden from view. The option to download information is disabled unless you have the required permissions.

9.3.1 Viewing a Business Message Instance

Business messages include instance information for a document protocol, including the endpoint name, the message direction, the message ID, the state, the transport protocol and document protocol, and message details.

To view a business message instance

1. Display a report on the Reports page.
2. In the messages list, select the message for which you want to view instance data.

The message flow diagram appears below the message list.

Figure 9–7 Healthcare Integration Message Flow



3. To view the message details in a larger area, click **Business Message** in the message flow diagram and then click the **Collapse Pane** icon beneath the message list. You can also click **Pin Current Message Details Into a New Tab** to open a new page containing the detailed information.

The message details appear.

Figure 9–8 Business Message Details

The screenshot displays the 'Business Message Details' window, which is organized into three main sections:

- Identification:**
 - Endpoint: Laboratory
 - State: MSG_COMPLETE
 - Direction: OUTBOUND
 - Message Type: REQ
 - ID: 0AE5BA9E1307B25D74000001467AC89
 - Message ID: 0AE5BA9E130777D36370000014671813
 - Label: soa_b2b_ - Fri Jun 10 09:53:26 PDT 2011 - 10
 - Interchange Control Number
 - Group Control Number
 - Transaction Set Control Number: 801675871352137
- Communication and Protocol:**
 - Document Protocol: HL7
 - Protocol Version: 2.3.1
 - Document Type: ADT_A04
 - Document Definition: ADT_A04_def
 - Document Retry Interval: 0
 - Document Remaining Retry: 0
 - Sent Date: 6/10/2011 1:02:15 PM GMT-07:00
 - Received Date: 6/10/2011 1:02:08 PM GMT-07:00
 - Acknowledgement Mode: NONE
 - Response Mode: NONE
 - Transport Protocol Name: MLLP
 - Transport Protocol Version: 1.0
- Content:**
 - Native Message Size: 213
 - Translated Message Size: 8090

At the bottom, there is a 'Payload Key Fields' table:

| Name | Value |
|--------------|-------|
| 1 XPathName1 | |
| 2 XPathName2 | |

- Expand or collapse sections of the business message by clicking the arrow icon next to the section you want to expand or collapse.
- To download information, click **Download As XML** or **Download as Text** in the section you want to download.

Note: This option is not available in all sections.

- If you collapsed the message list pane, click **Restore Pane** above the message flow diagram to return to the message list.

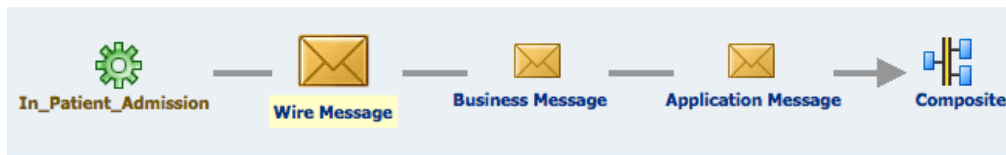
9.3.2 Viewing a Wire Message

Wire messages are the native format of data sent into or out from an endpoint. Wire message details include message IDs, communication and protocol information (such as the transport binding and header details), payload message content, packed message content, and security information.

To view a wire message

- Display a report on the Reports page.
- In the messages list, select the message for which you want to view instance data.

The message flow diagram appears below the message list.

Figure 9–9 Healthcare Integration Message Flow

- To view the message details in a larger area, click **Wire Message** in the message flow diagram and then click the **Collapse Pane** icon beneath the message list. You can also click **Pin Current Message Details Into a New Tab** to open a new page containing the detailed information.

The message details appear.

Figure 9–10 Wire Message Details

Wire Message Details

Identification

ID **0AE5BA9E1320829BE370000017C2C297** Refer to Protocol Message ID
 Message ID **0AE5BA9E1320829BE370000017C2C297** Protocol Collaboration ID
 Protocol Message ID **1314396945974-174467244**

Communication and Protocol

Transport Protocol **TCP** Transport Retry Interval **0**
 Transport Protocol Version **1.0** Transport Remaining Retry **0**
 URL **TCP://127.0.0.1:8010** Resubmit Count **0**
 State **COMPLETE**

Protocol Transport Binding

| Key | Value |
|-------------------|------------------------------|
| From | localhost.localdomain |
| FromIP | 127.0.0.1 |
| tpName | In_Patient_Admission |
| MSG_RECEIVED_TIME | Fri Aug 26 15:15:45 PDT 2011 |

Transport Headers

| Key | Value |
|--------------------|-------------------------|
| InitiatingIP | 127.0.0.1 |
| AckMode | None |
| MSG_RECEIVED_TIME | Fri Aug 26 15:15:45 PDT |
| TransportMessageID | 1314396945974-1744672 |

Content

Message Size **452**

Packed Message

Data Download As Text

```
MSH|^~\&|SystemA|HosA|PI|MDM|20110826151545||ADT^A03|CTLID_20080910112956|P|2.3.1|||AL|NE|EVN|A03|20080910112956||JavaCAPS6^^
^^^^^USERSPID|1||A000010^^^HosA^MR^HosA||Kessel^Abigail^^^^||19460101123045|M|||7 South 3rd Circle^^Downham Market^England -
Norfolk^30828^UK^|||||A2008090801529PV1|1|I|^^^I|||FUL^Fulde^Gordian^^^^^^^^^^MAIN||EMR|||||V2008090801529^^^VISIT|||
|||||DISH DISP|disch loc|||||2008090801529|20080910112956|
```

Payload

- Expand or collapse sections of the wire message by clicking the arrow icon next to the section you want to expand or collapse.
- To download information, click **Download As XML** or **Download as Text** in the section you want to download.

Note: This option is not available in all sections.

- If you collapsed the message list pane, click **Restore Pane** above the message flow diagram to return to the message list.

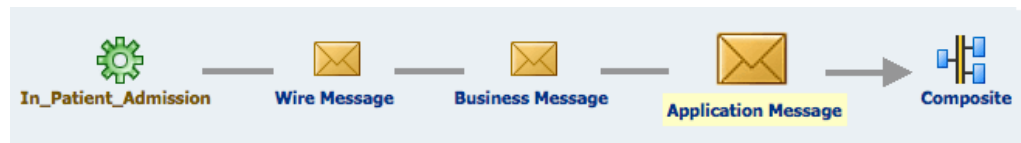
9.3.3 Viewing an Application Message

Application messages provide information related to the SOA composite if a back-end composite application sent or received the message, including the composite name, version, instance ID, and so on.

To view an application message

1. Display a report on the Reports page.
2. In the messages list, select the message for which you want to view instance data.
The message flow diagram appears below the message list.

Figure 9–11 Healthcare Integration Message Flow



3. To view the message details in a larger area, click **Application Message** in the message flow diagram and then click the **Collapse Pane** icon beneath the message list. You can also click **Pin Current Message Details Into a New Tab** to open a new page containing the detailed information.

The message details appear.

Figure 9–12 Application Message Details

Application Message Details

General

| | | | |
|---------------------------|----------------------------------|-------------------------------------|--------------|
| ID | 0AE5BA9E1320829C1C60000017C2C2A4 | Document Type | ADT_A03 |
| Internal Delivery Channel | FPScenario1_composite[1.0] | Direction | INBOUND |
| Created Date and Time | 8/26/2011 3:15:46 PM GMT-07:00 | State | MSG_COMPLETE |
| Modified Date | 8/26/2011 3:15:47 PM GMT-07:00 | Resubmit Count | 0 |
| Document Protocol | HL7 | Application Conversation ID | |
| Protocol Version | 2.3.1 | Reference to Application Message ID | |

Content

Message Size 11417

| Key | Value |
|-----------------------------|----------------------------------|
| tracking.conversationId | 0AE5BA9E1320829C26C0000017C2C2A7 |
| hc.messageType | 1 |
| hc.fromTradingPartnerIdType | Name |
| hc.conversationId | 0AE5BA9E1320829C1A60000017C2C29E |
| hc.documentDefinitionName | ADT_A03_146 |

Composite

| | | | |
|------------------------------|----------------------------------|-------------------|-----------------------|
| Retry Interval | 0 | Domain Name | default |
| Remaining Retry | 0 | Composite Name | FPScenario1_composite |
| ECID | 0AE5BA9E1320829C26C0000017C2C2A8 | Composite Version | 1.0 |
| Composite Instance ID | 17 | Reference Name | |
| Parent Composite Instance ID | | Service Name | receive_ADT_A03 |
| Conversation ID | 0AE5BA9E1320829C26C0000017C2C2A7 | URL | |

4. Expand or collapse sections of the application message by clicking the arrow icon next to the section you want to expand or collapse.

5. To download information, click **Download As XML** or **Download as Text** in the section you want to download.

Note: This option is not available in all sections.

6. If you collapsed the message list pane, click **Restore Pane** above the message flow diagram to return to the message list.

9.3.4 Viewing the Flow Trace in Oracle Enterprise Manager

Healthcare integration reports provide links for each message to the flow trace of the composite in Oracle Enterprise Manager. Clicking the link automatically opens Oracle Enterprise Manager to the correct Flow Trace page.

To view the flow trace in Oracle Enterprise Manager

1. Display a report on the Reports page.
2. In the messages list, select the message for which you want to view the flow trace.
The message flow diagram appears below the message list.

Figure 9–13 Healthcare Integration Message Flow



3. Click **Composite** in the message flow diagram.
The Login page of Oracle Enterprise Manager opens in a separate browser tab or window.
4. Enter your login information for Oracle Enterprise Manager and then click **Login**.
The flow trace appears for the selected message.

Figure 9–14 Message Flow Trace in Oracle Enterprise Manager

Flow Trace ^④

This page shows the flow of the message through various composite and component instances. ^②

Data Refreshed Sep 1, 2011 4:26:00 PM PDT

ECID **0AE5BA9E132274EB3490000177F6B4E**

Started **Sep 1, 2011 4:24:21 PM**

Faults (0)

Faults

Select a fault to locate it in the trace view.

| Error Message | Recovery | Fault Time | Fault Location | Composite Instance |
|-----------------|----------|------------|----------------|--------------------|
| No faults found | | | | |

Sensors (0)

Trace

Click a component instance to see its detailed audit trail.

Show Instance IDs

| Instance | Type | Usage | State | Time | Composite Instance |
|-----------------|--------------------|-----------|-------------|------------------------|----------------------|
| receive_ADT_A03 | Service | Service | ✔ Completed | Sep 1, 2011 4:24:21 PM | AdminToLab_comp of 6 |
| Mediator1 | Mediator Component | | ✔ Completed | Sep 1, 2011 4:24:22 PM | AdminToLab_comp of 6 |
| send_ADT_A03 | Reference | Reference | ✔ Completed | Sep 1, 2011 4:24:22 PM | AdminToLab_comp of 6 |

9.3.5 Viewing Overview Information for Multiple Messages

You can view a summary of information for multiple selected messages in the messages list of a report. This gives you a quick view of all selected messages, including the number of messages processed, the number of endpoints and document types used, the number of errors, the number of processed messages, and so on.

To see an overview of multiple messages

1. Display a report on the Reports page.
2. In the messages list, select the messages for which you want to view summary data.

An overview of the selected messages appears beneath the list.

Figure 9–15 Multiple Messages Selected for a Report

The screenshot shows a web-based interface for managing messages. At the top, it says "Last 24 Hours" and "Found 38 results." Below this is a table with columns: Message ID, Created Date and Time, Direction, Endpoint, and State. The first 10 rows of the table are visible, with rows 3, 4, 5, and 6 highlighted in blue, indicating they are selected. Below the table, a yellow banner reads "4 Business Messages Selected" with "Purge" and "Resubmit" buttons. Underneath is a "Selection Overview" section with the following statistics:

| Statistic | Value |
|--|-------|
| Number of Existing Messages | 4 |
| Number of Already Purged Messages (Refresh Results to clear) | 0 |
| Number with Associated Wire Message | 4 |
| Number with Associated Application Message | 4 |
| Number of Endpoints | 1 |
| Number of Document Types | 1 |

- From here you can purge or resubmit the selected messages.

For more information, see ["To resubmit multiple messages"](#) on page 9-20 or ["To purge messages from the repository"](#) on page 9-21.

9.4 Working with Error Messages

If processing for a message results in an error, the message appears in the message list with a red box over the icon. You can select error message to view additional information about the error.

9.4.1 Viewing an Error Message

This report provides information related to errors in message processing, including the error message, code, severity, level, and description.

To view an error message

- Review the messages list to find messages with errors, as indicated by an error icon or a state of MSG_ERROR.

Figure 9–16 Error Message in Messages List

| Message ID | Created Date and Time | Direction | Endpoint | State |
|------------|--------------------------------|-----------|------------|--------------|
| 2531 | 6/10/2011 9:49:49 AM GMT-07:00 | OUTBOUND | Laboratory | MSG_COMPLETE |
| 2532 | 6/10/2011 9:49:49 AM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 2533 | 6/10/2011 9:49:47 AM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 2534 | 6/9/2011 7:59:13 PM GMT-07:00 | OUTBOUND | Laboratory | MSG_ERROR |
| 2535 | 6/9/2011 7:59:12 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 2536 | 6/9/2011 7:58:56 PM GMT-07:00 | OUTBOUND | Laboratory | MSG_ERROR |
| 2537 | 6/9/2011 7:58:55 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |
| 2538 | 6/9/2011 7:55:56 PM GMT-07:00 | OUTBOUND | Laboratory | MSG_ERROR |
| 2539 | 6/9/2011 7:55:54 PM GMT-07:00 | INBOUND | Admission | MSG_COMPLETE |

- When you find an error message to view, select the message.
The message flow diagram changes to display where the error occurred.

Figure 9–17 Message Flow Diagram With an Error

- Click the error icon in the message flow diagram.
The error message details appear beneath the diagram.

Figure 9–18 Error Message Details

Error Details

Error Text Transport error: Message was not sent - error

Error Code HC-50079

Error Severity ERROR

Error Level ERROR_LEVEL_COLLABORATION

Error Description Machine Info: (100dc-554a) Transport error: Message was not sent - error

9.4.2 Resubmitting Messages

You can resubmit wire and application messages from the Reports tab. When a message transaction contains an error, use the reporting features to determine the nature of the error and correct it. Once the issue is fixed, resubmit the message. You can resubmit messages one at a time or in a group.

To resubmit a message

- In the messages list for the displayed report, select the message you want to resubmit.
- Do one of the following:
 - Select **Resubmit**, and then select **Associated Application Message** or **Associated Wire Message**.

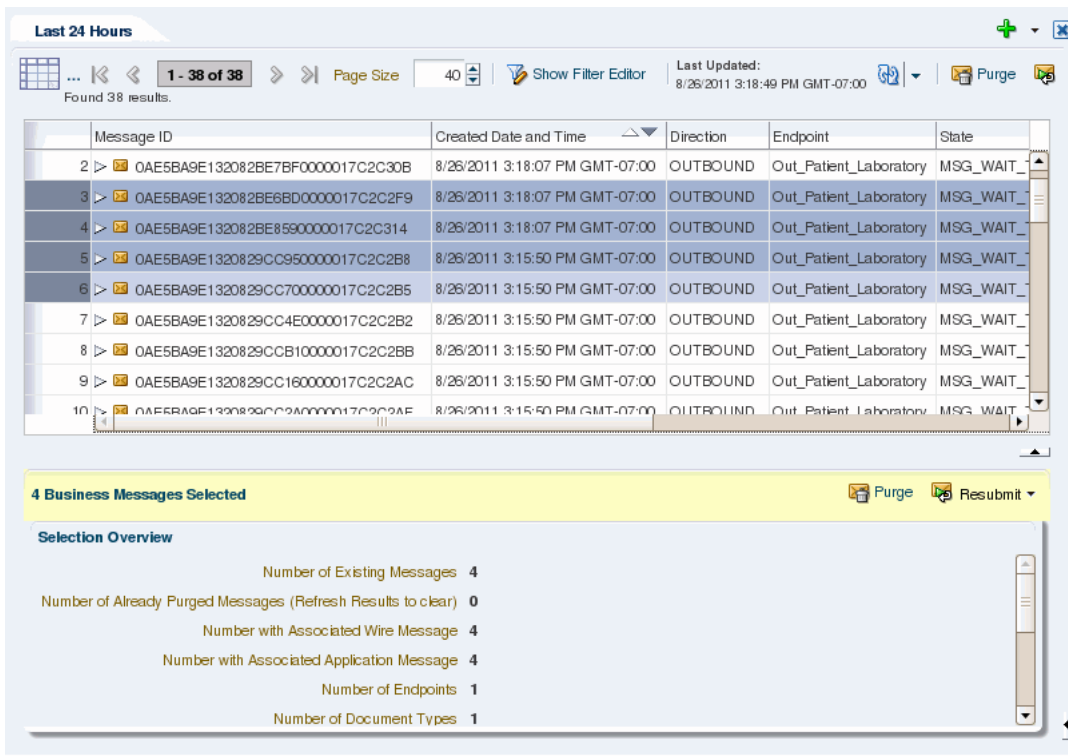
- In the message flow diagram, right-click either **Wire Message** or **Application Message**, and then select **Resubmit Wire Message** or **Resubmit Application Message**.
- 3. On the confirmation dialog that appears, click **OK**.
The error icon on the message in the messages list changes to a green arrow to indicate the message was resubmitted.

To resubmit multiple messages

1. In the messages list for the displayed report, select the messages you want to resubmit.

A summary of information about the selected messages appears beneath the messages list.

Figure 9–19 Multiple Messages Selected on the Reports Page



2. In the yellow bar above the Selection Overview, click **Resubmit**, and then select **Associated Application Message** or **Associated Wire Message**.
3. On the confirmation dialog that appears, click **OK**.

9.5 Purging Messages from the Repository

You can purge messages that you no longer want to store in the healthcare integration repository. If a message you purge is part of a batch process, all messages in the batch are also deleted.

You can purge messages one at a time or as a group.

To purge messages from the repository

1. In the messages list of the displayed report, select the message or messages you want to remove.
2. Click **Purge**.
3. On the confirmation dialog that appears, click **Yes**.

Configuring Alerts and Contacts

This chapter describes how to define alert notifications and contacts in Oracle SOA Suite for healthcare integration. You can specify that certain people are alerted by email or text (SMS) when certain healthcare-related runtime or design-time events occur.

This chapter includes the following topics:

- [Section 10.1, "Overview of Alerts and Contacts"](#)
- [Section 10.2, "Configuring Contacts and Alerts"](#)
- [Section 10.3, "Viewing the Alerts Assigned to a Contact"](#)
- [Section 10.4, "Removing Contacts"](#)

10.1 Overview of Alerts and Contacts

In healthcare integration, administrators and support personnel need to know when certain events occur, such as changes to the healthcare configuration or errors that affect processing. Oracle SOA Suite for healthcare integration addresses this by allowing you to define contact information and associate each contact with specific events for which alerts are generated. For example, if an error occurs during message processing or delivery, an email or text alert can be sent to the appropriate people so the issue can be handled immediately.

The alert notification feature for healthcare integration works in conjunction with the built-in notification framework of Oracle User Messaging Service (UMS) and Oracle SOA Suite human workflow services.

10.2 Configuring Contacts and Alerts

Contacts and alerts are configured using the Oracle WebLogic Administration Console, Oracle Enterprise Manager, and the healthcare integration user interface. You configure the email server and sender address information, as well as enable all notifications, from Oracle Enterprise Manager. You define the individual contacts and subscribe them to alerts using the healthcare integration user interface.

Configuring contacts and alerts involves the following steps:

- [Section 10.2.1, "Deploying the SMPP Driver for SMS Notifications"](#)
- [Section 10.2.2, "Configuring Workflow Notification Properties"](#)
- [Section 10.2.3, "Configuring Oracle User Messaging Service"](#)
- [Section 10.2.4, "Defining Alerts and Contacts"](#)

For information about configuring User Messaging Service, see "[Configuring Oracle User Messaging Service](#)" in the *Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite*.

10.2.1 Deploying the SMPP Driver for SMS Notifications

If you are using SMS (text) notifications, you need to specify the target servers for the SMPP driver for the User Messaging Service. Perform this task on the Oracle WebLogic Administration Console.

To deploy the SMPP driver

1. In a web browser, launch Oracle WebLogic Administration Console and log in. The URL is:

```
http://hostname:port_number/console
```

The hostname is the name of the computer on which WebLogic Server resides, and the port number is the port on which WebLogic Server listens (by default, 7001).

2. In the Domain Structure navigator, click Deployments.
3. In the Deployments list that appears, select **usermessagingdriver-smpp**. The Settings for usermessagingdriver-smpp page appears.
4. Click the **Targets** tab. The Target Assignments list appears.

Figure 10–1 Targets Tab for usermessagingdriver-smpp Settings

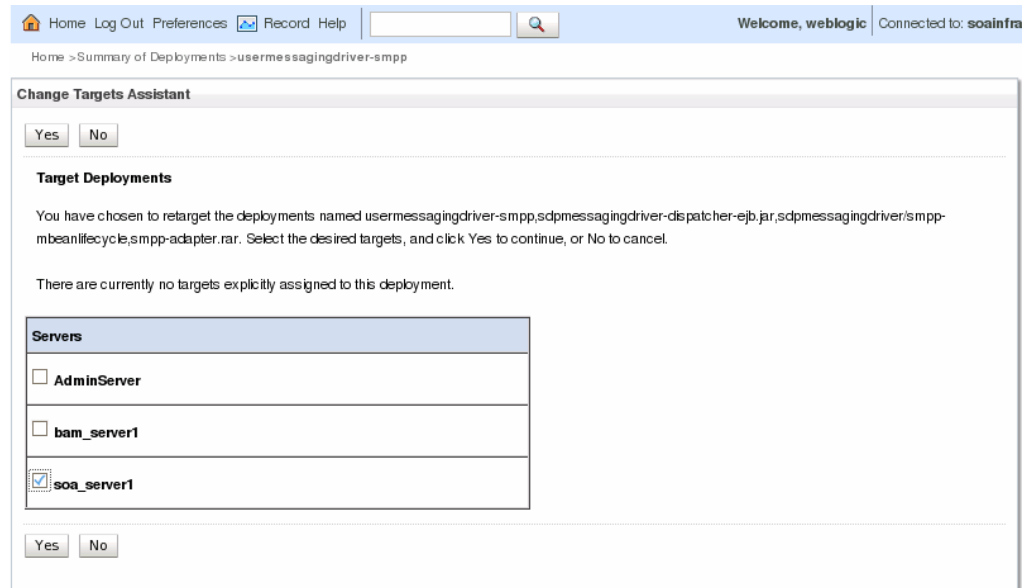
Use this page to specify the WebLogic Server instances and clusters to which you want to deploy this Enterprise application. These settings determine where the application is deployed at server startup time.

Target Assignments

| <input type="checkbox"/> Component ↕ | Type | Current Targets |
|--|------------------------|------------------|
| <input type="checkbox"/> <input type="checkbox"/> usermessagingdriver-smpp | Enterprise Application | (None specified) |
| <input type="checkbox"/> sdpmessagingdriver-dispatcher-ejb.jar | EJB | (None specified) |
| <input type="checkbox"/> sdpmessagingdriver/smpp-mbeanlifecycle | WEBAPP | (None specified) |
| <input type="checkbox"/> smpp-adapter.rar | CONNECTOR | (None specified) |

5. In the Target Assignments table, click the check box next to **Component** to select all driver components, and then click **Change Targets**.

The Change Targets Assistant appears.

Figure 10–2 Target Deployments for usermessagingdriver-smpp

6. Select the SOA Manager Server you are using for healthcare integration, and then click **Yes**.

Confirmation messages appear at the top of the page letting you know whether the targets were changed successfully.

10.2.2 Configuring Workflow Notification Properties

Workflow notification properties enable the notification feature for all notification types, and also define email addresses for the sending email account for the notifications.

To configure the workflow notification properties

1. In a web browser, launch Oracle Enterprise Manager and log in. The URL is:

`http://hostname:port_number/em`

The hostname is the name of the computer on which WebLogic Server resides, and the port number is the port on which WebLogic Server listens (by default, 7001).

2. In the left navigation panel, expand **SOA** and select **soa-infra**.
3. On the soa-infra page, click the **SOA Infrastructure** menu, point to **SOA Administration**, and select **Workflow Config**.
4. On the Workflow Notification Properties page, set the **Notification Mode** to **All**.
5. In the Notification Service section, configure the following email addresses:
 - **Email: From Address** -- The email address from which you want to send email notifications.
 - **Email: Actionable Address** -- The email address for actionable incoming messages. This is not required.
 - **Email: Reply To Address** -- The email address to include in the Reply To field of the outgoing email notification header.

Figure 10–3 SOA Infrastructure Workflow Notification Properties

soa-infra | Logged in as weblogic | Host ged100.adc.com
 SOA Infrastructure | Page Refreshed Sep 29, 2011 10:39:13 AM PDT

SOA Infrastructure Home > Workflow Notification Properties

Mailer | Task

Information
 All changes made in this page require a server restart to take effect.

Workflow Notification Properties | Related Links | Apply | Revert

Before configuring the Workflow Notification, configure the Messaging Service Driver. [Go to the Messaging Driver page](#)

* Notification Mode: All

Notification Service

* Email : From Address: liz.warren@mycompany.edu
 * Email : Actionable Address: liz.warren@mycompany.edu
 * Email : Reply To Address: no.reply@mycompany.edu

[More Workflow Notification Configuration Properties...](#)

6. Click **Apply**, and then click **Yes** on the confirmation dialog.

Note: Whenever you add a document definition to an endpoint, the backend process of Oracle SOA Suite for healthcare integration deploys the document. So, an email is sent for the document deployment, and no notification is sent for the document addition.

10.2.3 Configuring Oracle User Messaging Service

Oracle UMS provides the underlying infrastructure for notifications. In order to use email notifications, you need to configure email driver information for the UMS; in order to use SMS (text) notifications, you need to configure SMPP driver information.

To configure Oracle User Messaging Service

Note: For more information about this task and the properties you can configure, see "[Configuring Oracle User Messaging Service](#)" in the *Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite*.

1. In the left navigation panel of Oracle Enterprise Manager, expand **User Messaging Service**.
2. Right-click **usermessagingdriver-email** and select **Email Driver Properties**.

Figure 10–4 Email Driver Properties Page for UMS

usermessagingdriver-email Logged in as weblogic | Host ged100.adc.com
User Messaging Email Driver Page Refreshed Sep 29, 2011 10:47:22 AM PDT

Information
All changes made in this page require a server restart to take effect.

Email Driver Properties Related Links Apply Revert

For detailed description of the driver properties, refer to the Administrator's Guide for Oracle SOA Suite.

Common Configuration

Supported Delivery Types: EMAIL
Capability: SEND, RECEIVE
Cost: 2
Speed: 4
Sender Addresses: liz.warren@mycompany.edu
Default Sender Address:

Supported Protocols:
Supported Carriers:
Supported Content Types: text/plain, text/html, multipart/mixed, multipart/alternative, multipart/related
Supported Status Types: DELIVERY_TO_GATEWAY_SUCCESS, DELIVERY_TO_GATEWAY_FAILURE, USER_REPLY_ACKNOWLEDGEMENT_SUCCESS
Sending Queues Info: OraSDPM/QueueConnectionFactory:OraSDPM/Queue/OraSDPMDriverDefSndQ1

Driver-Specific Configuration

| Name | Description | Mandatory | Encoded Credential | Value |
|--------------------|---|-----------|--------------------|-------|
| MailAccessProtocol | E-mail receiving protocol. The possible values are IMAP and POP3. Required only if e-mail receiving is supported on the driver instance | | | IMAP |
| | This value specifies the number of times to retry connecting to the incoming mail | | | |

3. Configure the email driver properties for your email server.
4. After you configure the email properties, right-click **usermessagingdriver-smpp** under **User Messaging Service** in the left navigation pane
5. Select **SMPP Driver Properties**.
6. Configure the SMPP driver properties.
7. After you configure all the workflow and email driver properties, restart the server to load all the changes.

10.2.4 Defining Alerts and Contacts

In the healthcare integration user interface, you can define contacts and then subscribe each contact to multiple alerts for different types of events. The events that can generate an alert are listed in [Table 10–1](#).

To define alerts and contacts

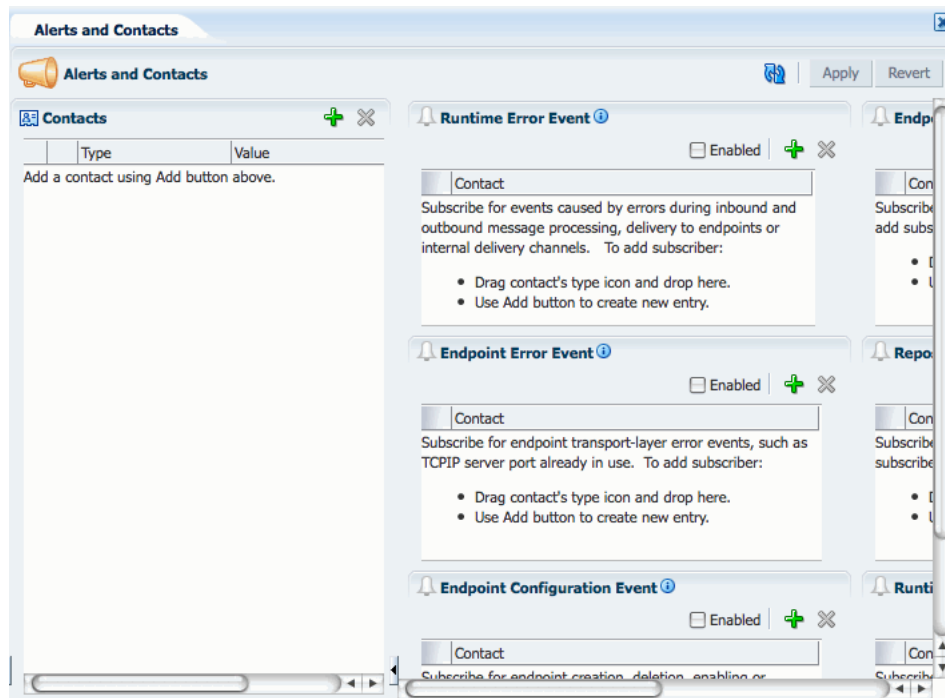
1. In a web browser, launch the Oracle SOA Suite for healthcare integration user interface. The URL is:

```
http://host_name:port_number/healthcare
```

The hostname is the name of the computer on which the WebLogic Managed Server resides; and port number is the port number on which the Managed Server listens.

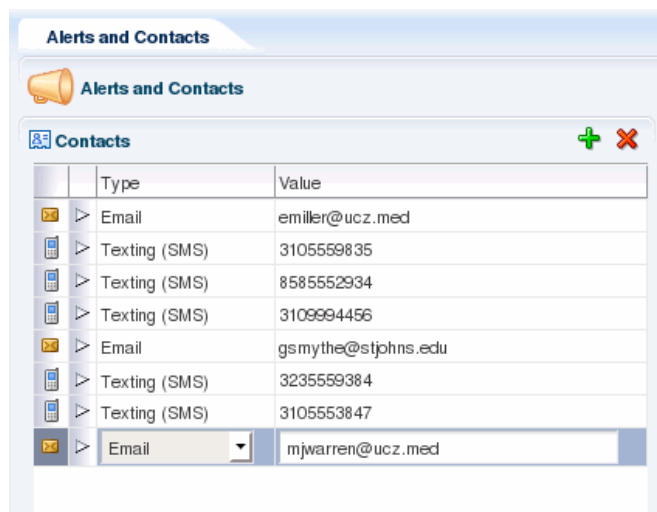
- Under the **Designer** tab, click the **Administration** tab and then double-click **Alerts and Contacts**.

Figure 10–5 Alerts and Contacts Page



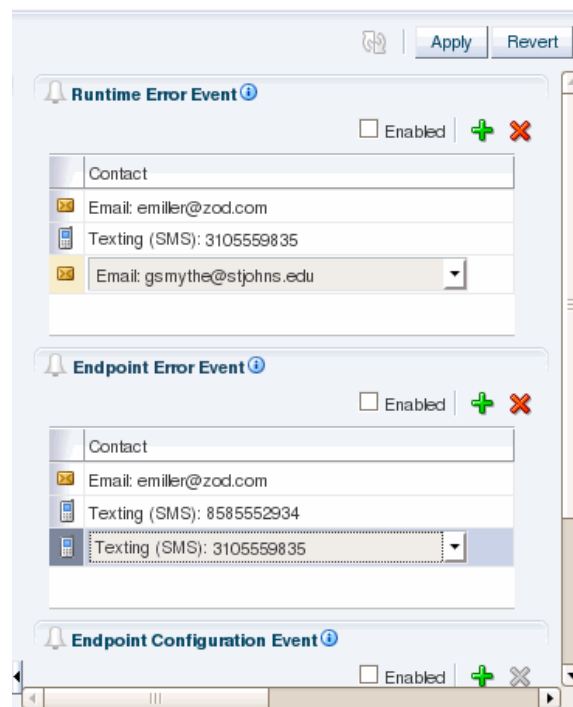
- In the **Contacts** section, click **Add a Contact** (the plus icon in the upper right).
- Enter the following information:
 - Type:** Select the type of alert to send. Choose from **Email** or **Texting (SMS)**.
 - Value:** The email address or text number to which alerts should be sent. Make sure the type of value you enter here corresponds to the type you selected.
- Repeat the previous two steps for each contact your need to add.

Figure 10–6 Texting and email Contacts



6. Click **Apply** to save the contact information.
7. In the Events section on the right, select the **Enabled** check box for all events for which you want to send alerts.
8. To subscribe contacts to events, do one of the following:
 - For each contact you create, drag and drop the contact from the contacts list into one or more of the enabled events listed on the right side. [Table 10-1](#) lists and describes each event for which you can configure alerts.
 - Click **Add an Alert for this Event** next to the event name, and then select a contact from the drop down list that appears in the event section.

Figure 10-7 Alert Events With Contacts Assigned



Each time an event occurs, the specified message type (email or text) is sent to the contacts listed for that event.

Tip: Due to the length of some runtime error messages, you might want to avoid subscribing text (SMS) contacts to runtime events.

Table 10-1 Healthcare Integration Alert Events

| Event | Description |
|--------------------------------|---|
| Runtime Error | Triggers an alert when an error occurs during inbound or outbound message processing, delivery to endpoints, or delivery to internal delivery channels. |
| Endpoint Error | Triggers an alert when an error occurs in the endpoint transport layer; for example, the TCP/IP server port is already in use. |
| Endpoint Configuration | Triggers an alert when changes are made to an endpoint's configuration, including enabling and disabling an endpoint. |
| Endpoint Document Usage Change | Triggers an alert when changes are made for a document definition associated with an endpoint. |

Table 10–1 (Cont.) Healthcare Integration Alert Events

| Event | Description |
|-------------------------------|---|
| Repository Import and Export | Triggers an alert when data is imported into or exported from the healthcare integration repository. |
| Runtime Settings Modification | Triggers an alert when changes are made to the any of the runtime properties listed on the Runtime Settings page. |

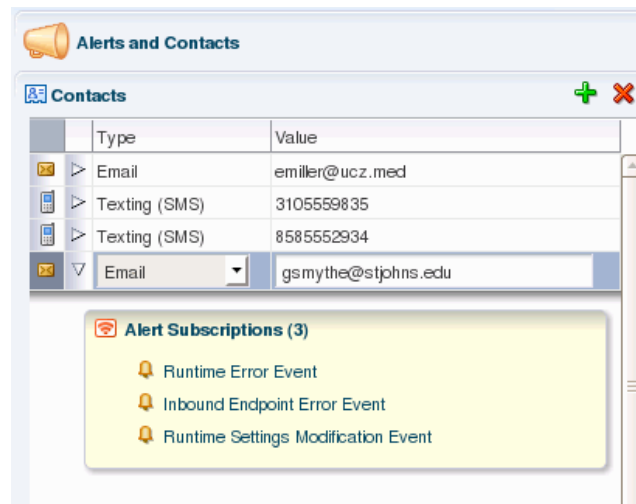
10.3 Viewing the Alerts Assigned to a Contact

You can view all of the alerts that are assigned to a specific contact from the Contacts list on the Alerts and Contacts page.

To view alerts for a contact

1. Under the **Designer** tab of the healthcare integration user interface, click the **Administration** tab and then double-click **Alerts and Contacts**.
2. In the Contacts list, click the arrowhead icon to the left of the contact whose alert information you want to view.

A list of alert subscriptions appears.

Figure 10–8 Alert Subscriptions for a Contact

3. When you are done viewing the alerts, click the contact's arrowhead again to close the alert subscriptions list.

10.4 Removing Contacts

Once you create a contact, you can remove it from the contact list if it is no longer needed. If a contact no longer needs to receive alerts for an event, you can unsubscribe the contact from that event.

To Remove a Contact

1. Under the **Designer** tab of the healthcare integration user interface, click the **Administration** tab and then double-click **Alerts and Contacts**.
2. In the Contacts list, select the contact to delete, and then click **Delete Currently Selected Contact** (the red X in the upper right of the Contacts list).

3. If the contact is subscribed to any alerts, a confirmation dialog appears. Click **OK** to remove the contact.

The contact is removed from the Contacts list and is also removed from any events to which it was subscribed.

To Unsubscribe a Contact from an Alert

1. Under the **Designer** tab of the healthcare integration user interface, click the **Administration** tab and then double-click **Alerts and Contacts**.
2. Select the contact in the event list from which you want to remove the contact.
3. Click **Delete Currently Selected Alert** (the red X in the upper right of the event list.).

The contact is removed from the list.

10.5 Viewing a History of Alerts Sent

You can view a history of the alerts that have been sent to each contact from the Oracle Enterprise Manager Human Workflow Engine pages.

To view a history of alerts sent

1. In a web browser, launch Oracle Enterprise Manager and log in. The URL is:

`http://hostname:port_number/em`

The hostname is the name of the computer on which WebLogic Server resides, and the port number is the port on which WebLogic Server listens (by default, 7001).

2. In the left navigation panel, expand **SOA** and select **soa-infra**.
3. On the soa-infra page, click the **SOA Infrastructure** menu, point to **Service Engines**, and select **Human Workflow**.
4. On the Human Workflow Engine page, click the **Notification Management** tab.

Viewing the Healthcare User Audit Trail

This chapter describes how to enable and configure an audit trail of user activity for healthcare integration components and applications. Oracle SOA Suite for healthcare integration uses Oracle's Common Audit Framework to log user activity against healthcare integration components.

This chapter contains the following topics:

- [Section 11.1, "Introduction to the Audit Trail"](#)
- [Section 11.2, "Configuring the Healthcare Integration Audit Trail"](#)
- [Section 11.3, "Viewing User Audit Logs"](#)

11.1 Introduction to the Audit Trail

The Oracle auditing framework collects and stores information about events affecting configured components, providing an audit log of activity for those components to help support your compliance requirements. Auditing for each SOA Suite component is defined by an *audit policy* that defines which components and which activities are captured in the audit log. You can configure the audit policy to only capture the information you need and ignore the rest. This is done on the Audit Policy page of Oracle Enterprise Manager.

The set of auditable events for each application and component is defined by the audit policy and differs between each application. When you expand the list of events for a component, only those events that can be audited for that component appear in the list. For each event, you can further specify whether to only log successful attempts or failed attempts (currently Oracle SOA Suite for healthcare integration only logs successful attempts).

When you configure auditing, you can select from the following audit levels:

- **Low:** This option selects a subset of events from all auditable components in the audit policy list, including a subset of Oracle SOA Suite for healthcare integration events. It does not allow custom filters to be created.
- **Medium:** This option selects a larger subset of events from all auditable components in the audit policy list, including all Oracle SOA Suite for healthcare integration events. It does not allow custom filters to be created.
- **Custom:** This options lets you select only those components, events, and conditions that you want to audit. This is the recommended level for Oracle SOA Suite for healthcare integration.

You can also specify a list of users whose activity is audited regardless of the actions performed or the component used. Auditing occurs for these users no matter what audit level or filters are defined.

For more information about audit policies, see [Configuring and Managing Auditing](#) in the *Oracle Fusion Middleware Application Security Guide*.

11.1.1 Oracle SOA Suite for Healthcare Integration Auditing Options

The components and events available for auditing are listed on the Audit Policy page of Oracle Enterprise Manager. To view or configure these options, expand the nodes under **Oracle SOA Suite for healthcare integration**.

Figure 11–1 Healthcare Integration Components on the Audit Policy Page

The screenshot shows the Oracle Enterprise Manager interface for configuring audit policies. At the top, it indicates the user is logged in as 'weblogic' and the page was refreshed on Feb 14, 2012. An information banner states that all changes require a server restart. The main section is titled 'Audit Policy' and includes 'Apply' and 'Revert' buttons. A descriptive text explains that this page is used to set audit policies for Java EE applications. Below this is a table with columns for 'Name', 'Enable Audit', 'Filter', and 'Edit Filter'. The table lists various components, with 'Oracle SOA Suite for healthcare integration' selected and expanded to show sub-components like 'User Session', 'User Login', 'User Logout', 'Endpoint Management', 'Document Management', 'Configuration', and 'Directory Integration Platform Server'. Each component has an 'Enable Audit' checkbox. Below the table is a section for 'Users to Always Audit' with a text input field for entering a comma-delimited list of user accounts.

| Name | Enable Audit | Filter | Edit Filter |
|---|--------------------------|--------|-------------|
| BI Publisher Server | <input type="checkbox"/> | | |
| Oracle Web Services | <input type="checkbox"/> | | |
| Oracle SOA Suite for healthcare integration | <input type="checkbox"/> | | |
| User Session | <input type="checkbox"/> | | |
| User Login | <input type="checkbox"/> | | |
| User Logout | <input type="checkbox"/> | | |
| Endpoint Management | <input type="checkbox"/> | | |
| Document Management | <input type="checkbox"/> | | |
| Configuration | <input type="checkbox"/> | | |
| Directory Integration Platform Server | <input type="checkbox"/> | | |

Users to Always Audit

Enter a comma-delimited list of user accounts that will always be audited. This ensures audit of specified user accounts, regardless of the policy settings.

Users

Currently, the following components and events are supported for audit in Oracle SOA Suite for healthcare integration (note that additional events appear in the list, but they are not currently logged):

- User Session
 - User Login
 - User Logout
- Endpoint Management
 - Enable Endpoint
 - Disable Endpoint
- Document Management
 - Read Payload

Note: Currently only the SUCCESS events are audited. You should not select FAILURE events.

11.1.2 Using Filter Conditions for Auditing

For each event, you can define filters for the success condition. Filters use rule-based expressions that are based on the attributes of the event. For most Oracle SOA Suite for healthcare integration user access auditing, you can use the following attributes in your filter expressions:

- Host ID
- Host Network Address
- Initiator
- Client IP Address
- Resource
- Domain Name

Expressions can include AND and OR operators, as well as a variety of comparison functions, such as equals, starts with, contains, does not equal, and so on.

11.2 Configuring the Healthcare Integration Audit Trail

You configure audit policies in Oracle Enterprise Manager by selecting the events or components to include in the audit log. Currently, Oracle B2B components and events are not included in the audit trail.

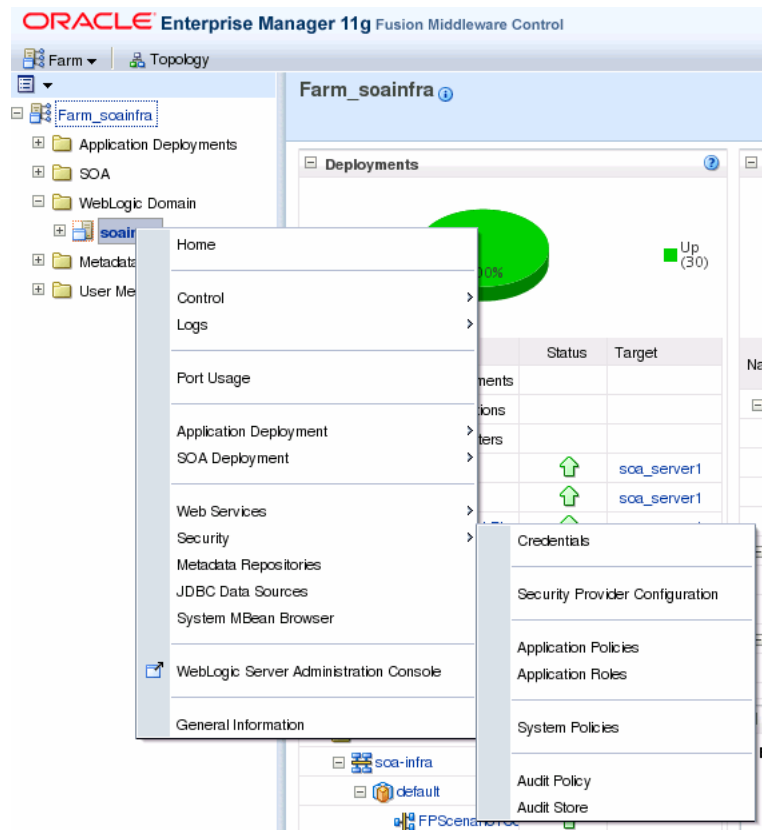
There are two default configurations, Low and Medium audit levels, that select a predefined subset of components or events. These are not recommended for Oracle SOA Suite for healthcare integration because they affect all auditable components, not just the components of Oracle SOA Suite for healthcare integration. Selecting either of these options can result in extraneous audit entries and unnecessarily large audit logs. Additionally, these two options do not allow you to define any filters.

The following instructions apply to custom-level audit policy configuration.

To configure auditing for healthcare integration

1. Login to Oracle Enterprise Manager.
2. In the navigation panel on the left, expand **WebLogic Domain** and then right-click the name of the domain for which you want to enable user auditing.
3. In the context menu that appears, point to **Security** and then select **Audit Policy**.

Figure 11–2 Security Context Menu for a WebLogic Domain



4. In the **Audit Level** field, select **Custom**.
Check boxes appear in the **Enable Audit** column so you can select which healthcare integration components and events to audit.
5. Expand the nodes under **Oracle SOA Suite for healthcare integration** in the audit list.
6. Do any of the following:
 - To enable auditing for all Oracle SOA Suite for healthcare integration components and events, select the check box in the **Enable Audit** column next to **Oracle SOA Suite for healthcare integration**.
 - To enable auditing for all events for a specific component, select the check box in the **Enable Audit** column next to the component name.
For example, to audit all actions taken against endpoints, select the check box for **Endpoints**.

Figure 11–3 Endpoint Management Component With All Events Selected

| Name | <input type="checkbox"/> Enable Audit | Filter |
|---|---------------------------------------|--------|
| <input type="checkbox"/> Orade SOA Suite for healthcare integration | <input type="checkbox"/> | |
| <input type="checkbox"/> User Session | <input checked="" type="checkbox"/> | |
| <input type="checkbox"/> User Login | <input checked="" type="checkbox"/> | |
| <input type="checkbox"/> User Logout | <input checked="" type="checkbox"/> | |
| <input type="checkbox"/> Endpoint Management | <input type="checkbox"/> | |
| <input type="checkbox"/> Create Endpoint | <input type="checkbox"/> | |
| <input type="checkbox"/> Enable Endpoint | <input checked="" type="checkbox"/> | |
| <input type="checkbox"/> Disable Endpoint | <input checked="" type="checkbox"/> | |
| <input type="checkbox"/> Delete Endpoint | <input type="checkbox"/> | |
| <input type="checkbox"/> Document Management | <input type="checkbox"/> | |

- To enable auditing of a specific event for a component, expand the component and select the check box in the **Enable Audit** column next to the event name under that component.
- 7. To define a filter for a success condition, select **Enable Audit** for the success condition, and then click its **Edit Filter** icon. Define the filter on the dialog that appears, and then click **OK**.
For more information about filters, see [Section 11.1.2, "Using Filter Conditions for Auditing"](#) and the online help available from the Edit Filter dialog. Note that filters can only be defined for success conditions at this time.
- 8. To specify a list of users whose activity is always audited regardless of the component configuration, enter a list of user accounts in the **Users to Always Audit** section. Separate the account names with commas.
- 9. When you are done configuring auditing, click **Apply**.
- 10. Restart the server in order for the changes to take effect.

11.3 Viewing User Audit Logs

When an event triggers an audit log entry, the event information is written to the audit log file. The audit log captures the following information. Depending on the type of event that triggered the entry, several of these fields might be empty.

- Date and time
- Initiator of the event
- Event type
- Event status
- Message text (indicating what occurred)
- ECID
- RID
- Context fields
- Session ID
- Target component type
- Application name
- Event category

- Thread ID
- Failure code
- Remote IP address
- Target
- Resource
- Roles
- Authentication method
- Reason

You can view the audit log file directly. It is written to the following location:

```
fmw_home/user_projects/domains/domain_name/servers/managed_server_name/logs/auditlogs/SOA-HCFP/audit.log
```

Managing the Repository

This chapter describes the healthcare integration metadata repository and provides instructions for managing the stored data. Design-time and instance data for the Oracle SOA Suite for healthcare integration are stored in a metadata repository, and you can import data, export data, and purge metadata or instance data.

This chapter includes the following topics:

- [Section 12.1, "Introduction to the Oracle SOA Suite for Healthcare Integration Repository"](#)
- [Section 12.2, "Importing and Exporting the Design-Time Repository"](#)
- [Section 12.3, "Purging Repository Data"](#)

12.1 Introduction to the Oracle SOA Suite for Healthcare Integration Repository

Oracle SOA Suite for healthcare integration instance data is stored and managed within the SOAINFRA schema of your database. Metadata for design-time and configuration is stored and managed through Metadata Services (MDS), available in Oracle Fusion Middleware. For more information about MDS, see the *Oracle Fusion Middleware Administrator's Guide*.

12.1.1 Repository Maintenance

The healthcare integration user interface provides features to help you manage the repository data, which include importing repository data, exporting the full repository, purging design-time metadata, and purging instance data. You can import objects such as document definitions, map files, endpoints, an exported repository, and so on.

Design-time metadata includes endpoints, document definitions, internal delivery channels, and mapsets. Instance metadata is the information that is created during runtime when messages are processed. In addition to being able to purge these two types of data on the Repository Management page, you can also purge messages on the Reports page.

Use caution when using the import and purge features. During an import, you might overwrite existing data, and purging data removes the data permanently.

12.1.2 What Occurs During the Import or Export Process

Exporting a file exports the full healthcare integration metadata repository and creates a ZIP file containing the exported data. When you import a file, all of the objects in the

export file is copied, which can include documents, endpoints, callouts, mapsets, and so on. If you choose to replace existing metadata during an import procedure, any existing metadata with the same name as metadata in the export file will be overwritten by the information being imported.

Note that library JAR files used by Java callouts are not copied during an import or export procedure.

When you export the design-time repository, continue to make changes to the repository contents in the healthcare integration user interface, and later import the exported file (the contents of which are now older), then updates occur as follows:

- If **Replace Existing Metadata** is *not* checked during import, then any new data that was created or modified in the healthcare integration user interface after the file was exported is left untouched.
- If **Replace Existing Metadata** is checked during import, then the existing metadata is replaced with the ZIP file metadata.

If an import fails, then the changes are rolled back and the design-time repository remains unchanged. A message appears indicating that the import was unsuccessful.

12.1.3 About the Exported File

Design-time repository contents that are exported to a file represent a copy of the current data. This file is no longer accessible for changes from the healthcare integration user interface until it is imported back into Oracle SOA Suite for healthcare integration. Do not manually edit exported files.

12.1.4 What Occurs During the Purging Process

You can purge both design-time metadata and instance data. Design-time metadata includes document definitions, endpoints, callouts, mapsets, and internal delivery channels. When you purge this data, predefined data that is part of the installation is not purged. After you perform a successful purge of design-time metadata, you are logged out of the healthcare integration user interface so you need to log back in. You cannot purge design-time metadata if there are active endpoints.

Instance data is generated during runtime when messages are processed. Instance, or runtime, data contains the business messages and message-related data. Specific instance data can be purged from the Reports page. See "Working with Reports" for more information.

Purging is useful for:

- Managing disk space and improving performance
- Removing repositories on a test system

12.1.5 Purging Control Numbers

When you purge instance data, you can optionally purge control number information. Control numbers are used in HL7 message standards. Oracle SOA Suite for healthcare integration keeps track of control numbers for inbound and outbound messages. For outbound messages, the control numbers are generated in a sequence from an internal control number table. Because purging instance data and control numbers resets the sequence (the control number table is reset), an outbound message after a purge may have the same control number as a message before the purge. If this is undesirable, do not purge control numbers.

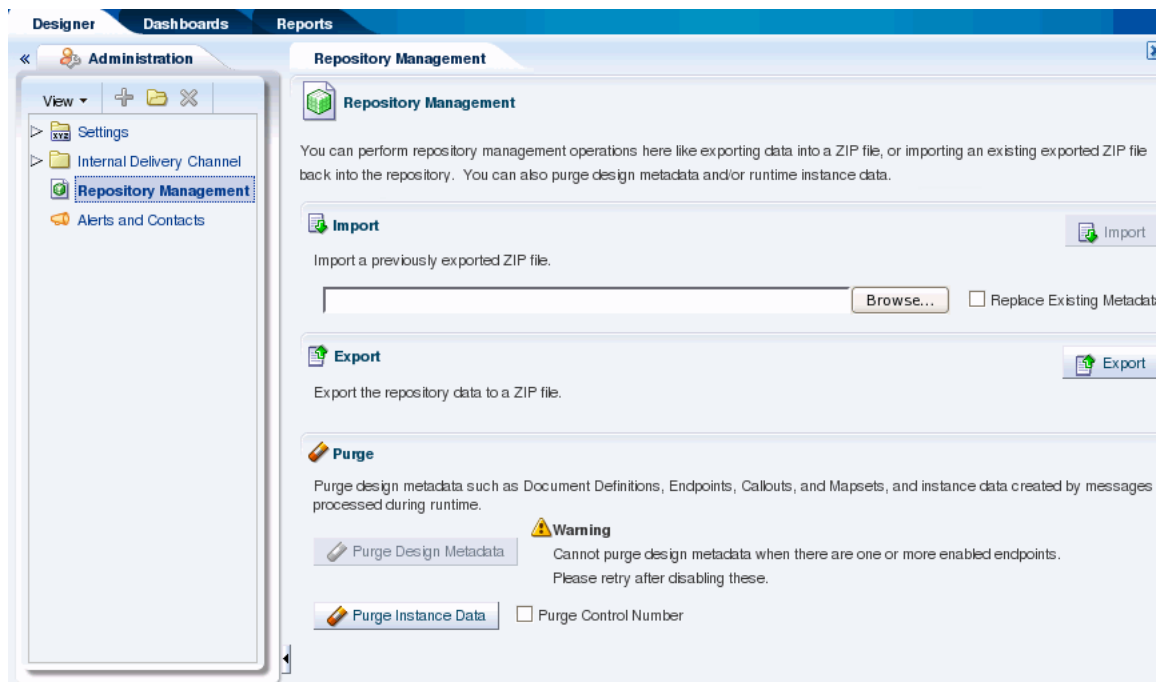
12.2 Importing and Exporting the Design-Time Repository

Oracle SOA Suite for healthcare integration design-time data can be exported and saved to a ZIP file. The ZIP file can be imported back into Oracle SOA Suite for healthcare integration so the data is available in the healthcare integration user interface. This is useful when migrating data from a test environment to a production environment.

Caution: Do *not* manually edit exported files. This could make the data unstable once it is imported back in.

Figure 12–1 shows the Repository Management tab, where you import and export design-time data.

Figure 12–1 Repository Management Page



When you import metadata, the updates to your existing repository are incremental unless you select the **Replace Existing Metadata** option. To delete all existing data before importing metadata, use the **Purge Design Metadata** button.

Caution: Complete export operations without interruption or idle time. Leaving the browser idle for more than a few minutes during export operations can cause file corruption.

To import repository metadata

1. Make sure the metadata repository ZIP file you want to import is available to your local system.
2. On the healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.

3. Click **Repository Management**.
4. In the Import section, click **Browse** to find the metadata repository ZIP file.
If you are importing a ZIP file that contains multiple ZIP files within it, you must unzip the containing file and import each ZIP file separately.
5. To overwrite the current metadata in the Metadata Service (MDS) repository, select **Replace Existing Metadata**
If this option is not selected, only new data is copied to the MDS repository.
6. Click **Import**.
Depending on the size of the design-time repository contents, this process might take some time.

To export repository metadata

Caution: Do *not* manually edit exported files.

1. On the healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.
2. Click **Repository Management**.
3. Click **Export**.
A dialog appears giving you the status of the export file generation.
4. Click **Continue**.
5. On the dialog that appears, select **Save File** and then click **OK**.
The default file name is `MDS_EXPORT_DD_MM_YYYY.zip`.
6. Specify a name for the export file or accept the default name, browse to and select the a folder for the file, and then click **Save**.

Note: Design time import and export can also be done using a commandline tool.

12.3 Purging Repository Data

Use the purge function to manage disk space and improve performance, and to remove test data from the repository.

To purge repository data

1. On the healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.
2. Click **Repository Management**.
3. Do one of the following:
 - To purge design-time metadata, such as endpoints, internal delivery channels, mapsets, callouts, and document definitions, click **Purge Design Metadata**.

Note: This button is disabled if there are active endpoints in the healthcare integration repository. In this case, you need to disable any active endpoints and return to this page to purge design-time data.

- To purge all runtime instance data (that is, all messages), click **Purge Instance Data**. If you want to remove control numbers with this data, select **Purge Control Number** before clicking **Purge Instance Data**.
4. Click **OK** on the confirmation dialog.

Note: Purging repository data can also be done using a commandline tool.

Configuring System Settings

This chapter describes how to configure the appearance of the healthcare integration user interface and how to configure runtime processing for healthcare integration applications.

This chapter includes the following topics:

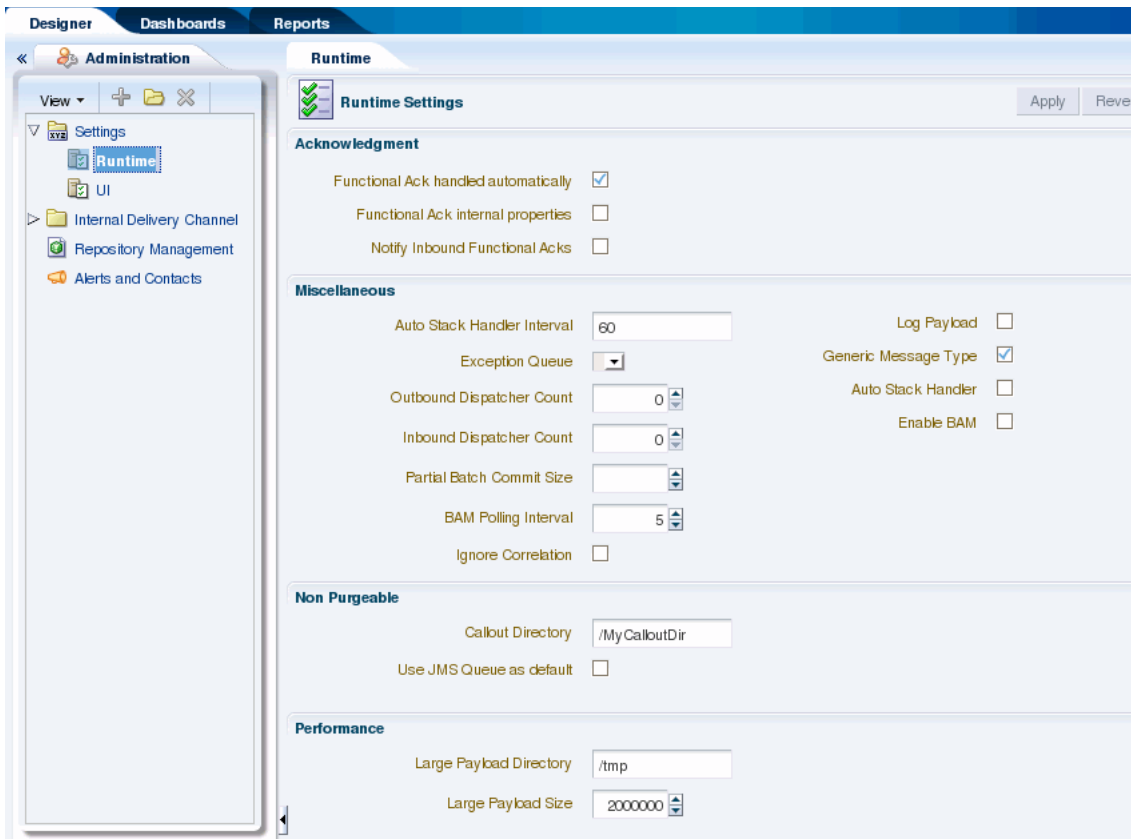
- [Section 13.1, "Configuring the Runtime Settings"](#)
- [Section 13.2, "Configuring the User Interface Settings"](#)

13.1 Configuring the Runtime Settings

Runtime settings control how Oracle SOA Suite for healthcare integration handles certain functions, like sequencing, functional acknowledgments, batch processing, Oracle BAM enablement, default queues, and so on.

Runtime settings are shared between Oracle SOA Suite for healthcare integration and Oracle B2B; changing the settings for one also changes the settings for the other. Oracle B2B settings in Oracle Enterprise Manager also apply to Oracle SOA Suite for healthcare integration. For more information about Oracle B2B settings in Oracle Enterprise Manager, see ["Configuring Oracle B2B"](#) in *Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite*.

Figure 13–1 Runtime Settings



To configure the runtime settings

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.
2. Expand **Settings** and then select **Runtime**.
3. Modify the value of any of the properties listed in [Table 13–1](#).
4. Do one of the following:
 - To save your changes, click **Apply**.
 - To change the settings back to their previous values, click **Revert**.

Table 13–1 Runtime Configuration Settings

| Field | Description |
|--------------------------------------|---|
| Acknowledgment | |
| Functional Ack Handled Automatically | <p>An indicator of whether Oracle SOA Suite for healthcare integration automatically generates the functional acknowledgment (FA) for inbound HL7 messages. Select this option to automatically generate the FA; inbound FA messages are consumed when this option is selected.</p> <p>Deselect this property if you do not want to automatically generate the FA document. The backend application (middleware) must generate the FA and provide it to Oracle SOA Suite for healthcare integration as an outbound message. When this property is deselected, inbound FA documents are passed back to the backend application.</p> <p>If the document does not require an FA (as indicated by the endpoint-level setting), then this property is ignored. This property is selected by default.</p> <p>If the FA is marked as expected in an endpoint, then the message is placed into the MSG_WAIT_FA state and the backend application is expected to generate the FA and push it to Oracle SOA Suite for healthcare integration as an outbound message back to the partner.</p> <p>When Functional Ack Handled Automatically is not selected, Notify Inbound Functional Acks must also be deselected in order for the inbound FA to be sent to the backend application. If Notify Inbound Functional Acks is selected and Functional Ack Handled Automatically is deselected, the incoming functional acknowledgment generates only a notification and the FA document itself is <i>not</i> sent back to the backend application.</p> <p>The following limitations apply when generating the FA from the backend application:</p> <ul style="list-style-type: none"> ■ The FA is correlated with the original message based on the ReferToMsgID value set in the enqueue properties. The FA is correlated based on control numbers also. ■ If the FA indicates that there was an error in the received message, the status of the correlated message is not updated to indicate an error. The correlated message is updated to MSG_COMPLETE. <p>These limitations are not present when the FA is generated by Oracle SOA Suite for healthcare integration (that is, when this property is selected).</p> |
| Functional Ack Internal Properties | <p>An indicator of whether to generate the internal properties structure in the functional acknowledgment using the original message internal properties.</p> <p>By default, this property is deselected, which means that the functional acknowledgment uses the original message-internal properties.</p> |

Table 13–1 (Cont.) Runtime Configuration Settings

| Field | Description |
|--------------------------------|---|
| Notify Inbound Functional Acks | <p>An indicator of whether Oracle SOA Suite for healthcare integration sends an acknowledgment notification to the application when a functional acknowledgment is received. Select this property to send the acknowledgment notification.</p> <p>When Functional Ack Handled Automatically is not selected, Notify Inbound Functional Acks must also not be selected in order for the inbound FA to be sent to the backend application. If Notify Inbound Functional Acks is selected and Functional Ack Handled Automatically is not selected, the incoming functional acknowledgment generates only a notification and the FA document itself is <i>not</i> sent back to the back-end application.</p> |
| Miscellaneous | |
| Auto Stack Handler | An indicator of whether the stack handler for MLLP processes the stacked messages in automatic mode. Select this property to process in automatic mode. By default, this property is selected. |
| Log Payload | <p>An indicator of whether to log the payload in a diagnostic log. When this property is selected, the payload is logged, but this also depends on the log level setting. Error messages are logged by default. Payload logging is useful for diagnostic purposes, but may be undesirable for security reasons. By default, this property is not selected.</p> <p>Note: You need to set the log-level setting in the Enterprise Management console to TRACE to be able to log payloads. The available log-level settings are TRACE, NOTIFICATION, INCIDENT_ERROR, ERROR, and WARNING.</p> |
| Exception Queue | <p>A JMS internal delivery channel for the host to use as the exception queue. Exception notifications are sent to the queue name you specify here. A null value for this parameter means that exceptions are sent to the default JMS queue (B2B_IN_QUEUE) if Use JMS Queue as default is selected or to the AQ queue (IP_IN_QUEUE) if Use JMS Queue as default is not selected.</p> <p>AQ queues are not supported for use as custom exception queues.</p> |
| Generic Message Type | An indicator of whether Oracle SOA Suite for healthcare integration should ignore the HL7 trigger event. By default, this property is not selected. |
| Outbound Dispatcher Count | The number of dispatchers used for handling the outbound messages. This is used in message sequencing. |
| Inbound Dispatcher Count | The number of dispatchers used for handling the inbound messages. This is used in message sequencing. |
| Auto Stack Handler Interval | The time interval in seconds for the stack handler to process the stacked messages. Enter comma-separated values for the intervals. |
| Partial Batch Commit Size | The number of records to be committed when there is a large number of business messages for a message exchange. |
| Enable BAM | An indicator of whether to send runtime information to Oracle BAM. For more information, see "Monitoring Instance Message Data With Oracle BAM" in the <i>Oracle Fusion Middleware User's Guide for Oracle B2B</i> . |
| BAM Polling Interval | The polling interval in minutes for Oracle BAM. This is ignored if Oracle BAM is not enabled. |

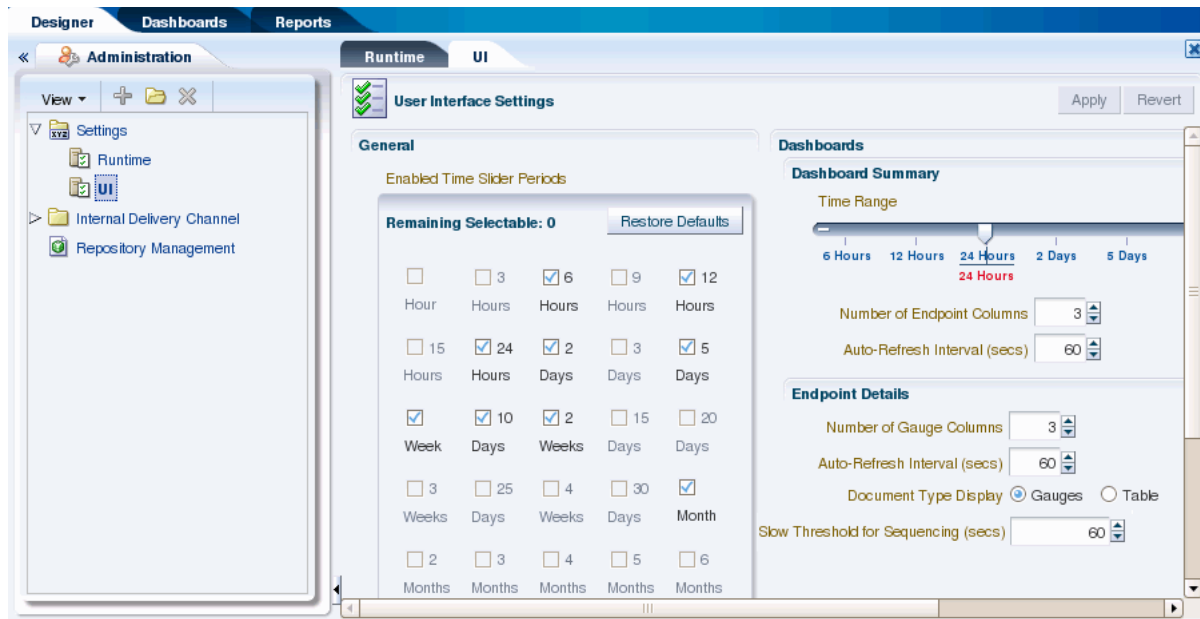
Table 13–1 (Cont.) Runtime Configuration Settings

| Field | Description |
|--|--|
| Ignore Correlation | An indicator of whether to ignore correlation errors when an acknowledgment is received and correlation fails. Acknowledgments are correlated to the actual business message of the sender. If the correlation fails, an exception is generated and the acknowledgment processing stops. To ignore the correlation in this case and continue processing the acknowledgment, select this property. By default, this property is not selected. |
| Non Purgeable | |
| Note: The nonpurgeable parameters retain their values even after metadata repository is purged. | |
| Callout Directory | The directory for the callout JAR file location (if you do not use the default callout). The callout directory path cannot end with a forward or backward slash (/ or \). The default file location, /MyCalloutDir, is retained after purging the metadata repository. |
| Use JMS Queue as default | An indicator of whether to use the default JMS queues. If this selected, Oracle SOA Suite for healthcare integration starts to poll on the JMS queue B2B_OUT_QUEUE for outbound messages, and delivers all inbound messages to B2B_IN_QUEUE. Polling on IP_OUT_QUEUE is stopped. If this option is not selected (the default), Oracle SOA Suite for healthcare integration starts to poll on the AQ queue IP_OUT_QUEUE for outbound messages, and delivers all inbound messages to IP_IN_QUEUE. Polling on B2B_OUT_QUEUE is stopped. When a non-Oracle database is used and therefore no AQ queues are available, the JMS queues are used no matter how this option is set. |
| Performance | |
| Large Payload Size | The large payload size, in bytes. The default value is 2,000,000 (2MG). |
| Large Payload Directory | The directory to store large payloads. The default directory is /tmp. For Windows-based systems, change the directory to an appropriate directory, such as C:\temp. |

13.2 Configuring the User Interface Settings

User interface settings control the appearance of the reports and dashboards on the healthcare integration user interface.

Figure 13–2 User Interface Settings



To configure the time slider periods for reports and dashboards

This procedure changes the values listed on the time sliders that are used on the Reports and Dashboard pages. You can select up to nine different time periods for the sliders.

Figure 13–3 Time Slider in the Reports Filter Panel



1. On the Oracle SOA Suite for healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.
2. Expand **Settings** and then select **UI**.
3. In the **Enabled Time Slider Periods** section, select the time periods you want the sliders to display.
 You can select up to nine periods, so be sure to deselect time periods you do not need to make room for the ones you want to display. As you change your selections, you can see the changes to the dashboard summary slider on the right.
4. To restore the time period selections to the default, click **Restore Defaults**.
5. When you are done making changes, click **Apply** to save your changes.

To configure reports

You can configure certain display attributes for the Reports page, such as how many records to display, how often to auto-refresh, and payload display.

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.
2. Expand **Settings** and then select **UI**.
3. Change the value of any of the properties described in [Table 13–2](#).

Table 13–2 Configuration Properties for Reports

| Property | Description |
|------------------------------|---|
| Auto-Refresh Interval (secs) | The length of time (in seconds) the browser should wait between automatically refreshing information in a report. |
| Page Size | The number of messages to display on each page of a report. |
| Show Payload | An indicator of whether to display the message payload regardless of user permissions. Select Yes to display the payload; otherwise select No . |
| Payload Display Size (bytes) | The maximum number of bytes of each message payload to display. If a payload is larger than the number of bytes specified, none of the payload is shown. |

4. When you are done making changes, click **Apply** to save your changes.

To configure the default time period for the dashboard summary

This procedure changes the default time period for the information shown on the Dashboard Summary pages. For example, if you select **5 Days**, when you open a dashboard you will see a summary of the past five days for the selected endpoints; if you select **Week**, you will see a summary of the past week.

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.
2. Expand **Settings** and then select **UI**.
3. In the Dashboard Summary section, move the pointer on the slider to the time period you want to use as the default for the Dashboard Summary pages.
4. When you are done making changes, click **Apply** to save your changes.

To configure endpoint details on the dashboard

You can configure the appearance of the Endpoint Details page of a dashboard. This is the page that appears when you click the Endpoint Details icon for an endpoint on the Dashboard Summary page.

1. On the Oracle SOA Suite for healthcare integration user interface, click the **Designer** tab and then click the **Administration** tab.
2. Expand **Settings** and then select **UI**.
3. Change the value of any of the properties described in [Table 13–3](#).

Table 13–3 Configuration Properties for Endpoint Details

| Property | Description |
|--------------------------------------|---|
| Number of Gauge Columns | The number of message type gauges to display in each row of the Document Type Processed section. |
| Auto-Refresh Interval (secs) | The length of time (in seconds) the browser should wait between automatically refreshing endpoint details in a dashboard. |
| Document Type Display | An indicator of whether to display document type information in gauge format or in table format. Examples of each format are shown in Figure 13–4 and Figure 13–5 . |
| Slow Threshold for Sequencing (secs) | The number of seconds that a sequence message can wait in the queue before processing is considered slow. Once processing is considered slow, the status appears as yellow on the Endpoint Details page of a dashboard. |

Figure 13–4 Document Type Information in Gauge Format



Figure 13–5 Document Type Information in Table Format

| Document Type | | Number of Messages Processed | | Processing Rate (msg/sec) | | Average Message Size (KB) | |
|---------------|-------------------|------------------------------|----------|---------------------------|----------|---------------------------|----------|
| | | Sent | Received | Sent | Received | Sent | Received |
| 1 | HL7-2.3.1-ADT_A03 | 0 | 2 | 0 | 43.4783 | 0 | 0.4414 |

- When you are done making changes, click **Apply** to save your changes.

Back-End Applications Interface

This appendix lists the message properties supported by Oracle SOA Suite for healthcare integration.

The appendix contains the following topics:

- [Section A.1, "Mapping Healthcare IP_MESSAGE_TYPE to SCA Normalized Message Properties"](#)
- [Section A.2, "Normalized Message Properties"](#)

A.1 Mapping Healthcare IP_MESSAGE_TYPE to SCA Normalized Message Properties

[Table A-1](#) maps the Healthcare IP_MESSAGE_TYPE to SCA normalized message properties.

Table A-1 Healthcare IP_MESSAGE_TYPE to AS11 SCA Normalized Message Property Mapping

| SCA | JMS |
|----------------------------|------------------|
| hc.messageId | MSG_ID |
| hc.replyToMessageId | INREPLYTO_MSG_ID |
| hc.fromEndpoint | FROM_ENDPOINT |
| hc.toEndpoint | TO_ENDPOINT |
| hc.action | ACTION_NAME |
| hc.documentTypeName | DOCTYPE_NAME |
| hc.documentProtocolVersion | DOCTYPE_REVISION |
| hc.documentProtocolName | - |
| hc.documentDefinitionName | - |
| hc.messageType | MSG_TYPE |
| hc.conversationId | - |

A.2 Normalized Message Properties

Header manipulation and propagation are key business integration messaging requirements. Like other SOA components such as Oracle BPEL Process Manager, Oracle Mediator, and Oracle JCA, Oracle SOA Suite for healthcare integration relies on header support to solve integration needs. For example, you can preserve a file name

from the source directory to the target directory by propagating it through message headers.

Normalized messages have two parts, properties and payload. Typically, properties are name-value pairs of scalar types. To fit the existing complex headers into properties, properties are flattened into scalar types.

[Table A-2](#) lists the predetermined properties of a normalized message for Oracle SOA Suite for healthcare integration.

Table A-2 Properties for Oracle SOA Suite for healthcare integration

| Property Name | Propagable (Yes/No) | Direction (Inbound /Outbound) | Data Type | Range of Valid Values | Description |
|----------------------------|---------------------|-------------------------------|-----------|-----------------------|--|
| hc.conversationId | No | Both | String | - | The ID used to relate the message to the message response |
| hc.documentDefinitionName | No | Both | String | - | The document definition |
| hc.documentProtocolName | No | Both | String | - | The document protocol |
| hc.documentProtocolVersion | No | Both | String | - | The document version |
| hc.documentTypeName | No | Both | String | - | The document type, for example, 850 for an EDI X12 document |
| hc.fromEndpoint | No | Both | String | - | The trading partner identifier of the sender, for example, the name, such as Acme, or a DUNS number |
| hc.messageId | No | Both | String | - | A unique message ID, not directly related to ECID. (ECID information is stored in the B2B AppMessage table.) |
| hc.messageType | No | Both | String | - | Message type values are: <ul style="list-style-type: none"> ■ Request = 1 ■ Response = 2 ■ Functional Ack = 9 |
| hc.replyToMessageId | No | Both | String | - | The message ID to which the sending message is replying |
| hc.toEndpoint | No | Both | String | - | The trading partner identifier of the receiver, for example, the name, such as Acme, or a DUNS number. |

B

Creating Endpoints with Different Transport Protocols

The appendix covers how to create endpoints with different bidirectional and single-directional transport protocols.

Oracle SOA Suite for healthcare integration enables you to create endpoints with different bidirectional and single-directional transport protocols.

B.1 Creating Bidirectional Endpoints

The supported bidirectional protocols are MLLP 1.0 and Generic TCP.

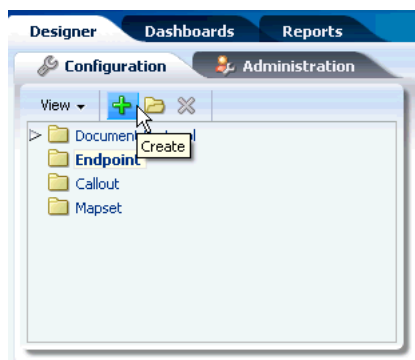
B.1.1 Creating an MLLP Endpoint

This section covers how to create a bidirectional endpoint with the MLLP 1.0 transport protocol.

To create an endpoint with the MLLP 1.0 transport protocol:

1. Log on to the Oracle SOA Suite for healthcare integration user interface.
2. In the **Configuration** tab under the **Design** tab, click the **Endpoint** folder and then click the **Create** icon as shown in [Figure B-1](#).

Figure B-1 Create Endpoint Icon

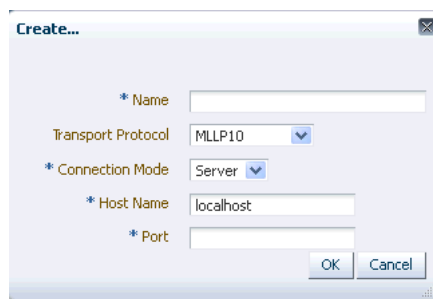


3. In the **Create** window, enter the following and click **OK**, as shown in [Figure B-2](#):
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **MLLP10**.

- **Connection Mode:** Server or Client. If the endpoint is configured as server, Oracle SOA Suite for healthcare integration engine starts listening on a port and waits for a client to connect to it. In general, the server connection mode is for inbound case. When configured as client, the engine connects to hostname and port of a remote computer or device. In general, this is for an outbound case.
- **Host Name:** In case of an MLLP Server endpoint, it should be name or IP address of the computer hosting Oracle SOA Suite, and in the case of an MLLP Client endpoint, it should be the remote host name or device name. Typically, this should be localhost. However, Host name can also be the name of the remote host or device.
- **Port:** port number should be more than 500. If the connection mode is set to Server, then the port must be a valid TCP port number. If the connection mode is set to Client, then the port must be the same as the port used on the MLLP server.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure B–2 Specifying MLLP 1.0 Endpoint Parameters



B.1.2 Creating a Generic TCP Endpoint

This section covers how to create a bidirectional endpoint with the Generic TCP transport protocol.

To create an endpoint with the Generic TCP transport protocol:

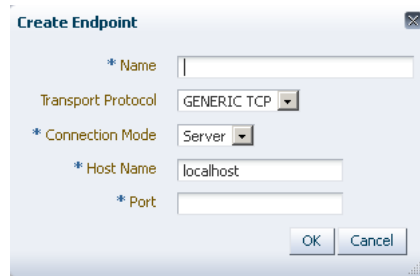
1. Repeat Steps 1 and 2 from [Section B.1.1, "Creating an MLLP Endpoint."](#)
2. In the **Create** window, enter the following and click **OK**, as shown in [Figure B–3](#):
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **GENERIC TCP**.
 - **Connection Mode:** Server or Client. If the endpoint is configured as server, Oracle SOA Suite for healthcare integration engine starts listening on a port and waits for a client to connect to it. In general, the server connection mode is for inbound case. When configured as client, the engine connects to hostname and port of a remote computer or device. In general, this is for an outbound case.
 - **Host Name:** In case of an Generic TCP Server endpoint, it should be name or IP address of the computer hosting Oracle SOA Suite, and in the case of an Generic TCP Client endpoint, it should be the remote host name or device

name. Typically, this should be `localhost`. However, Host name can also be the name of the remote host or device.

- **Port:** A valid TCP port number ranging between 1 and 999999.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure B–3 Specifying Generic TCP Endpoint Parameters



B.2 Creating Single-Directional Endpoints

The supported single-directional protocols are File, FTP, JMS, and SFTP.

B.2.1 Creating a File Endpoint

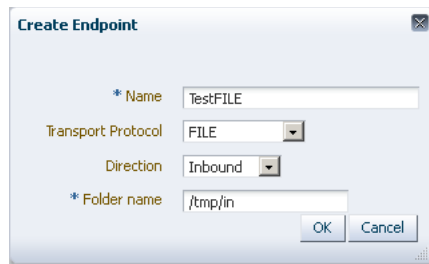
This section covers how to create a single-directional endpoint with the File transport protocol.

The File transport enables files to be picked up from a shared file directory.

To create an endpoint with the FILE protocol:

1. Repeat Steps 1 and 2 from [Section B.1.1, "Creating an MLLP Endpoint."](#)
2. In the **Create** window, enter the following and click **OK**, as shown in [Figure B–4](#):
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **FILE**.
 - **Direction:** Inbound or Outbound based on your requirement. If the endpoint is configured as inbound, then it can receive response messages or FAs from other endpoints. Conversely, if the endpoint is configured as outbound, it can send messages or FAs.
 - **Folder Name:** An absolute directory path is recommended. Inbound messages are expected in this folder and outbound messages or FAs need to be delivered here.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure B–4 Specifying File Endpoint Parameters

Note: Once a single-directional transport endpoint (inbound/outbound) is created, then it can be edited later to add inbound or outbound configuration by clicking the **Configure** link.

B.2.2 Creating an FTP Endpoint

This section covers how to create a single-directional endpoint with the FTP transport protocol.

FTP enables files to be passed with FTP between applications. FTP runs on default port 21.

To create an endpoint with the FTP protocol:

1. Repeat Steps 1 and 2 from [Section B.1.1, "Creating an MLLP Endpoint."](#)
2. In the **Create** window, enter the following and click **OK**, as shown in [Figure B–5](#).
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **FTP**.
 - **Direction:** Inbound or Outbound based on your requirement. If the endpoint is configured as inbound, then it can receive response messages or FAs from other endpoints. Conversely, if the endpoint is configured as outbound, it can send messages or FAs.
 - **Host name:** The name of the host computer.
 - **Folder Name:** An absolute directory path is recommended. Inbound messages are expected in this folder and outbound messages or FAs need to be delivered here.
 - **User name:** The user name (login name) to connect to the target server.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure B–5 Specifying FTP Endpoint Parameters

B.2.3 Creating an JMS Endpoint

This section covers how to create a single-directional endpoint with the JMS transport protocol.

JMS enables applications to send and receive messages to and from the queues and topics administered by any Java Message Service (JMS) provider, including Oracle WebLogic JMS and non-Oracle providers such as MQSeries JMS (IBM). If a user name and password are not provided, the local JNDI is used, including in a clustered environment, provided that the destinations are distributed.

To create an endpoint with the JMS protocol:

1. Repeat Steps 1 and 2 from [Section B.1.1, "Creating an MLLP Endpoint."](#)
2. In the **Create** window, enter the following and click **OK**, as shown in [Figure B–6](#).
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **JMS**.
 - **Direction:** Inbound or Outbound based on your requirement. If the endpoint is configured as inbound, then it can receive response messages or FAs from other endpoints. Conversely, if the endpoint is configured as outbound, it can send messages or FAs.
 - **Destination name:** The JNDI name of the JMS queue or topic.
 - **Connection factory:** The JNDI name of the connection factory such as `jms/b2b/B2BQueueConnectionFactory`.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure B–6 Specifying JMS Endpoint Parameters

B.2.4 Creating an SFTP Endpoint

This section covers how to create a single-directional endpoint with the SFTP transport protocol.

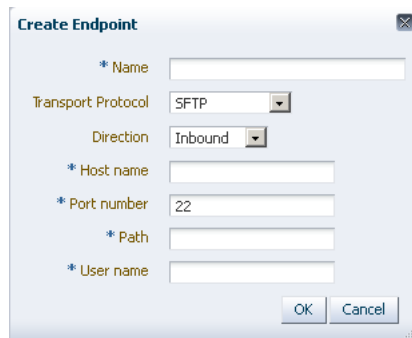
SFTP enables files to be passed using SSH FTP. SFTP runs on default port 22, which can be changed to another port.

To create an endpoint with the SFTP protocol:

1. Repeat Steps 1 and 2 from [Section B.1.1, "Creating an MLLP Endpoint."](#)
2. In the **Create** window, enter the following and click **OK**, as shown in [Figure B-7](#).
 - **Name:** Name of the endpoint.
 - **Transport Protocol:** Transport protocol for the sending or receiving messages. In this case, select **SFTP**.
 - **Direction:** Inbound or Outbound based on your requirement. If the endpoint is configured as inbound, then it can receive response messages or FAs from other endpoints. Conversely, if the endpoint is configured as outbound, it can send messages or FAs.
 - **Host name:** The name of the host computer.
 - **Port number:** A valid SFTP port number within the range of 1 to 999999. The default value is 22.
 - **Path:** The absolute directory path where messages are sent from or received.
 - **User name:** The user name (login name) to connect to the target server.

This creates the endpoint and the endpoint is displayed in the right panel of the Oracle SOA Suite for healthcare integration user interface.

Figure B-7 Specifying SFTP Endpoint Parameters



The screenshot shows a 'Create Endpoint' dialog box with the following fields and values:

- Name:** (empty text field)
- Transport Protocol:** SFTP
- Direction:** Inbound
- Host name:** (empty text field)
- Port number:** 22
- Path:** (empty text field)
- User name:** (empty text field)

Buttons: OK, Cancel

Managing Message Sequencing

This appendix provides information about the command-line and Java-based tools provided by Oracle SOA Suite for healthcare integration to monitor and manage message sequencing. You can use these functions in custom clients.

This appendix includes the following topics:

- [Section C.1, "Overview of Sequenced Message Management"](#)
- [Section C.2, "Java Methods for Managing Sequenced Messages"](#)
- [Section C.3, "Command-Line Tools for Managing Sequenced Messages"](#)

C.1 Overview of Sequenced Message Management

Messages processed through Oracle SOA Suite for healthcare integration are sequenced through the B2B sequence manager. The message sequencing information is stored in the B2B_SEQUENCE_MANAGER database table in order to preserve the correct order of messages. At times, the process of sequencing messages needs to be managed. For example, if a message in an endpoint becomes stacked and cannot be processed, it can block all other messages for that endpoint from being processed. In this case, manual intervention is needed in order to remove or resubmit the message and restart sequencing.

Using the tools provided with Oracle SOA Suite for healthcare integration to monitor and manage message sequencing, you can do the following:

- View all endpoints along with their current state
- View messages by state, endpoint, or a combination of both
- Discard messages by state, endpoint, message ID, or state and endpoint
- Resubmit messages that had errors
- Pause and resume message sequencing for an endpoint.

Note: You can view the sequenced messages in the Oracle SOA Suite for healthcare integration console. See [Section 8.4, "Working with Sequenced Messages"](#) for more details.

C.2 Java Methods for Managing Sequenced Messages

You can use the Java methods provided for sequence message management to create your own clients to monitor and manage the messages in the B2B_SEQUENCE_MANAGER table.

To use the Java methods, create an instance of `SequenceManagerUtility` using the `jndi.properties` file as a parameter. For example:

```
private static Properties getProperties(String s) throws IOException {
    Properties properties;
    FileInputStream fileInputStream = new FileInputStream(s);
    properties = new Properties();
    properties.load(fileInputStream);
    return properties;
}

SequenceManagerUtility seqUtil = new
SequenceManagerUtility(getProperties("/tmp/jndi.properties"));

seqUtil.listSequenceTargets();
```

For information on creating the `jndi.properties` file, see [Section C.3.1, "Prerequisites for Running Command-Line Tools."](#)

C.2.1 Listing Endpoints With States

You can generate a report that lists the messages that are pending in the sequence table with a specific state and for a specific endpoint. The resulting report includes the message IDs and the corresponding state for each.

The syntax of this method is:

```
public java.util.List<java.lang.String> listSequenceTargets()
    throws java.lang.Exception
```

C.2.2 Listing Pending Sequenced Messages

You can generate a report of pending sequenced messages based on the state and endpoint of the messages, based solely on the state, or based solely on the endpoint. This command lists the messages that are pending in the sequence table based on the options you specify. The resulting report includes the message IDs and the corresponding state for each. There are four methods you can use to list sequenced messages, depending on the criteria you want to use.

Listing Pending Sequenced Messages Based on State and Endpoint

The syntax of this method is:

```
public java.util.List<java.lang.String>
getSequenceMessagesByTargetAndState(java.lang.String target, java.lang.String
state)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|--|
| target | The name (or the IP address and port number) for the endpoint for which you want to list messages. For example: <pre>seqUtil.getSequenceMessagesByTargetAndState("TCP://111.34.121.22:2025", "STACKED")</pre> |

| Parameter | Description |
|-----------|---|
| state | The state of the messages to include in the report. Specify one of the following states: <ul style="list-style-type: none"> ■ PROCESSED: Message processing is complete and is pending for delivery. ■ STACKED: An error has occurred preventing the message from processing. ■ PAUSED: The endpoint is paused. |

Listing Pending Sequenced Messages Based on State

The syntax of this method is:

```
public java.util.List<java.lang.String>
getSequenceMessagesByTarget(java.lang.String state)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|---|
| state | The state of the messages to include in the report. Specify one of the following states: <ul style="list-style-type: none"> ■ PROCESSED: Message processing is complete and is pending for delivery. ■ STACKED: An error has occurred preventing the message from processing. ■ PAUSED: The endpoint is paused. |

Listing Pending Sequenced Messages Based on Endpoint

The syntax of this method is:

```
public java.util.List<java.lang.String>
getSequenceMessagesByTarget(java.lang.String target)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|--|
| target | The name (or IP address and port number) for the endpoint for which you want to list messages. |

C.2.3 Discarding Messages

You can delete sequenced messages from the B2B_SEQUENCE_MANAGER table based on the following criteria combinations:

- State and endpoint of the messages
- State of the messages
- Endpoint of the messages
- Endpoint direction (for endpoint pairs with both inbound and outbound)
- Message ID
- First message only for an endpoint

The discard methods let you manage the messages in the B2B_SEQUENCE_MANAGER table. This is useful in cases where a message is stacked

and is blocking other messages from being processed or when there is an issue with a specific message that means it should not be processed sequentially.

Note: Discarding messages from the sequence manager table does not delete any of the business messages.

Discarding Sequenced Messages Based on State and Endpoint

The syntax of this method is:

```
public java.util.List<java.lang.String>
discardSequencedMessageByStateAndTarget(java.lang.String target, java.lang.String
state) throws java.lang.Exception
```

Or:

```
public java.util.List<java.lang.String>
discardSequencedMessageByStateAndTarget(java.lang.String target, java.lang.String
state, java.lang.String direction) throws java.lang.Exception
```

| Parameter | Description |
|-----------|--|
| target | The name (or IP address and port number) for the endpoint associated with the messages to delete. |
| state | The state of the messages to delete. Specify one of the following states: <ul style="list-style-type: none"> ▪ PROCESSED: Message processing is complete and is pending for delivery. ▪ STACKED: An error has occurred preventing the message from processing. ▪ PAUSED: The endpoint is paused. |
| direction | The direction of the messages in the endpoint pair for which you want to discard messages. Specify INBOUND or OUTBOUND . Only use this option if you are deleting messages for one direction of an endpoint pair. |

Discarding Sequenced Messages Based on State

The syntax of this method is:

```
public java.util.List<java.lang.String>
discardSequencedMessageByState(java.lang.String state)
throws java.lang.Exception
```

| Parameter | Description |
|-----------|---|
| state | The state of the messages to discard. Specify one of the following states: <ul style="list-style-type: none"> ▪ PROCESSED: Message processing is complete and is pending for delivery. ▪ STACKED: An error has occurred preventing the message from processing. ▪ PAUSED: The endpoint is paused. |

Discarding Sequenced Messages Based on Endpoint

The syntax of this method is:

```
public java.util.List<java.lang.String>
```

```
discardSequencedMessageByTarget(java.lang.String target)
    throws java.lang.Exception
```

Or:

```
public java.util.List<java.lang.String>
discardSequencedMessageByTarget(java.lang.String target, java.lang.String
direction)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|---|
| target | The name (or IP address and port number) of the endpoint for which you want to discard messages. |
| direction | The direction of the messages in the endpoint pair for which you want to discard messages. Specify INBOUND or OUTBOUND . Only use this option if you are deleting messages for one direction of an endpoint pair. |

Discarding Sequenced Messages Based on Message ID

The syntax of this method is:

```
public java.util.List<java.lang.String>
discardSequencedMessageById(java.lang.String msgId)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|--|
| msgId | The message ID of the message you want to discard. |

Discarding the First Message for an Endpoint

The syntax of this method is:

```
public java.util.List<java.lang.String>
discardFirstSequencedMessageByTarget(java.lang.String target)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|---|
| target | The name (or IP address and port number) of the endpoint for which you want to discard the first message. |

C.2.4 Reprocessing a Message

Reprocessing messages is a useful option to make sure messages are processed in sequence after there is an issue with an endpoint (for example, if the endpoint goes down and then resumes processing).

The syntax of this method is:

```
public boolean processSequenceMessageById(java.lang.String messageId)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|---|
| messageId | The message ID of the message to reprocess. |

C.2.5 Pausing and Resuming and Endpoint

There may be times when sequence message processing needs to be paused for a specific endpoint, such as when an external system fails. In this case, the endpoint can be paused until the system is restored. Once the system is restored, you can resume processing for the endpoint. For endpoint pairs, you can pause or resume the endpoint for both inbound and outbound, only for inbound, or only for outbound.

Pausing an Endpoint

The syntax of this method is:

```
public boolean pauseSequenceTarget(java.lang.String target)
    throws java.lang.Exception
```

Or:

```
public boolean pauseSequenceTarget(java.lang.String target, java.lang.String
direction)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|--|
| target | The name (or IP address and port number) for the endpoint you want to pause. |
| direction | The direction of the messages in the endpoint pair you want to pause. Specify INBOUND or OUTBOUND . Only use this option if you are pausing one direction of an endpoint pair. |

Resuming an Endpoint

The syntax of this method is:

```
public boolean resumeSequenceTarget(java.lang.String target)
    throws java.lang.Exception
```

Or:

```
public boolean resumeSequenceTarget(java.lang.String target, java.lang.String
direction)
    throws java.lang.Exception
```

| Parameter | Description |
|-----------|--|
| target | The name (or IP address and port number) for the endpoint you want to resume |
| direction | The direction of the messages in the endpoint pair you want to resume. Specify INBOUND or OUTBOUND . Only use this option if you are resuming one direction of an endpoint pair. |

C.3 Command-Line Tools for Managing Sequenced Messages

The command-line tools are run using Apache ant. These tools are for administrator use only. No security or permission checks are performed to prevent the logged-in user from viewing or discarding data.

C.3.1 Prerequisites for Running Command-Line Tools

Before you can run the command-line tools, you need to make sure your environment is configured correctly. Do the following before running any commands:

1. Set the `ORACLE_HOME`, `ANT_HOME`, and `JAVA_HOME` environment variables.

ORACLE_HOME is your Oracle Fusion Middleware installation directory. For example:

```
set ORACLE_HOME=C:\oracle\Middleware
set ANT_HOME=%ORACLE_HOME%\modules\org.apache.ant_1.7.1
set JAVA_HOME=%ORACLE_HOME%\jdk160_18
```

2. Create the `jndi.properties` file.

```
cd $ORACLE_HOME\Oracle_SOA\bin
ant -f ant-b2b-util.xml b2bcreate-prop
```

3. Edit the `jndi.properties` file to include the `weblogic` password.

Notes:

- After running any command-line tool, restart the healthcare integration user interface or B2B Console. They cache some metadata and any command-line action that updated the metadata could lead to invalid cached data.
- All of the command-line tools can be run without any JNDI credentials. To restrict the command-line tools from anonymous use, enter the following information in the `jndi.properties` file:

```
java.naming.security.principal=weblogic
java.naming.security.credentials=weblogic_password
```

C.3.2 Listing Endpoints With States

You can generate a report that lists all the endpoints and their respective states to help you determine the health of each endpoint.

The syntax of this command is:

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=listTargets
```

| Option | Description |
|--------|---|
| -Dmode | The mode in which to run the command. For this purpose, set this option to listTargets . |

C.3.3 Listing Pending Sequenced Messages

You can generate a report of pending sequenced messages based on the state and endpoint of the messages, based solely on the state, or based solely on the endpoint. This command lists the messages that are pending in the sequence table based on the options you specify. The resulting report includes the message IDs and the corresponding state for each.

The syntax of this command is:

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=command_mode
-Dstate=message_state -Dtarget=endpoint_name
```

| Option | Description |
|--------|--|
| -Dmode | The mode in which to run the command. For this purpose, set this option to report . |

| Option | Description |
|----------|---|
| -Dstate | <p>The state of the message to include in the report. Specify one of the following states:</p> <ul style="list-style-type: none"> ▪ PROCESSED: Message processing is complete and is pending for delivery. ▪ STACKED: An error has occurred preventing the message from processing. ▪ PAUSED: The endpoint is paused. <p>To generate a report with all states, do not use this option when running the command.</p> |
| -Dtarget | <p>The name (or IP address and port number) of the endpoint for which you want to list messages. To generate a report for all targets, do not use this option when running the command.</p> |

Example C-1 Listing Sequenced Messages Based on State and Endpoint

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=report -Dstate=STACKED
-Dtarget=Pharmacy01
```

Example C-2 Listing Sequenced Messages Based on State Only

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=report -Dstate=PROCESSED
```

Example C-3 Listing Sequenced Messages Based on Endpoint Only

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=report -Dtarget=Pharmacy01
```

C.3.4 Discarding Messages

You can delete sequenced messages from the B2B_SEQUENCE_MANAGER database table based on the following criteria combinations:

- State and endpoint of the messages
- State of the messages
- Endpoint of the messages
- Message ID
- First message only for an endpoint

Discard mode lets you manage the messages in the B2B_SEQUENCE_MANAGER table. This is useful in cases where a message is stacked and is blocking other messages from being processed or when there is an issue with a specific message that means it should not be processed sequentially.

Note: Discarding messages from the sequence manager table does not delete any of the business messages.

The syntax of this command is:

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=command_mode
-Dstate=message_state -Dtarget=endpoint_name -Dmsgid=message_id
```

| Option | Description |
|----------|---|
| -Dmode | The mode in which to run the command. For discarding messages, set this option to discard . If you are discarding only the first message in an endpoint, set this option to discardFirst and only specify the endpoint. |
| -Dstate | The state of the messages to discard. Specify one of the following states: <ul style="list-style-type: none"> ■ PROCESSED: Message processing is complete and is pending for delivery. ■ STACKED: An error has occurred preventing the message from processing. ■ PAUSED: The endpoint is paused. To discard messages of all states, do not use this option when running the command. |
| -Dtarget | The name (or IP address and port number) of the endpoint for which you want to list messages. To discard messages for all targets, do not use this option when running the command. |
| -Dmsgid | The message ID of a specific message to delete. When you use this option, you only need to specify the mode and not the target or state. |

Example C-4 Discarding Sequenced Messages Based on State and Endpoint

This example deletes all messages from the sequence manager for the Pharmacy01 endpoint with a state of PROCESSED.

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=discard -Dtarget=Pharmacy01
-Dstate=PROCESSED
```

Example C-5 Discarding Sequenced Messages Based on State

This example deletes all messages from the sequence manager with a state of PROCESSED.

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=discard -Dstate=PROCESSED
```

Example C-6 Discarding Sequenced Messages Based on Endpoint

This example deletes all messages from the sequence manager for the Pharmacy01 endpoint.

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=discard -Dtarget=Pharmacy01
```

Example C-7 Discarding the First Sequence Message of an Endpoint

This example deletes the first message for the Pharmacy 01 endpoint from the sequence manager.

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=discardFirst -Dtarget=Pharmacy01
```

Example C-8 Discarding Sequenced Messages Based on Message ID

This example deletes a single message from the sequence manager, as specified by the message ID.

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=discard
-Dmsgid=0AE851ED131B3D6103A00000152F97E9
```

C.3.5 Pausing and Resuming and Endpoint

There may be times when sequence message processing needs to be paused for a specific endpoint, such as when an external system fails. In this case, the endpoint can be paused until the system is restored. Once the system is restored, you can resume processing for the endpoint.

The syntax of this command is:

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=command_mode
-Dtarget=endpoint_name
```

| Option | Description |
|----------|--|
| -Dmode | The mode in which to run the command. For this purpose, set this option to pause or resume . |
| -Dtarget | The name (or IP address and port number) for the endpoint you want to pause. |

Example C–9 Pausing an Endpoint

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=pause -Dtarget=Pharmacy01
```

Example C–10 Resuming an Endpoint

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=resume -Dtarget=Pharmacy01
```

Implementing MLLP with High Availability

This appendix describes how to implement Oracle SOA Suite for healthcare integration applications when using the Minimal Lower Layer Protocol (MLLP) in a high availability environment.

This appendix contains the following topics:

- [Section D.1, "Introduction to Healthcare Integration High Availability"](#)
- [Section D.2, "Enabling MLLP High Availability in Oracle SOA Suite for Healthcare Integration"](#)

D.1 Introduction to Healthcare Integration High Availability

High availability for Oracle SOA Suite for healthcare integration is handled through the high availability features of WebLogic Server, Oracle database, and Oracle SOA Suite. You can configure Oracle SOA Suite for healthcare integration for high availability by adding Oracle B2B properties in Oracle Enterprise Manager. These properties enable high availability for healthcare integration projects and specify timeout and heartbeat intervals for the servers in the cluster.

All features currently supported for MLLP in Oracle SOA Suite for healthcare integration are also supported in a high availability environment, including message sequencing.

D.1.1 High Availability Processing

In a clustered environment, the first healthcare integration instance to start up and initialize is the instance that handles MLLP traffic. When the instance handling MLLP traffic fails, an inactive instance in the cluster becomes active and takes over the responsibility of handling MLLP traffic within the configured timeout period. All in-flight messages from the failed instance are recovered since message processing is transactional for healthcare integration. This ensures that no messages are lost during failover.

If the instance that fails becomes completely disabled, the second and now active instance continues to pick up messages from and send messages to an outbound distributed queue created specifically for high availability processing. If the initial instance becomes available again, the second instance continues to handle MLLP traffic.

D.1.2 Front-End Failover

A load balancer is used as a failover device in case the active node in the cluster fails. This is required for inbound MLLP traffic when Oracle SOA Suite for healthcare

integration is implemented in a clustered environment. The endpoints and external systems use the IP address of the load balancer as the destination connection. This means that all the connections are established in one active node, and message processing is performed across all nodes in the cluster. The load balancer can be configured to distribute the messages evenly among the healthcare integration instances, but only the designated active instance will establish connections. Using cookie-based or active-persistent connections in the load balancer might cause unexpected behavior in the MLLP server. Oracle recommends defaulting to non-persistent connections and verifying the load balancer documentation for persistence settings to eliminate connection losses. An alternative to using a load balancer is to use the WebLogic cluster IP address.

D.1.3 External Dependencies

Oracle SOA Suite for healthcare integration relies on the following components:

- Oracle SOA database for messages and message state persistence
- Metadata Services (MDS) repository for instance metadata

D.1.4 Additional Resources

For more information about configuring Oracle SOA Suite for high availability, see the following:

- ["Enterprise Deployment Overview"](#) in *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle SOA Suite*
- [Oracle Fusion Middleware High Availability Guide](#)

D.2 Enabling MLLP High Availability in Oracle SOA Suite for Healthcare Integration

To enable Oracle SOA Suite for healthcare integration, you need to define certain B2B properties in Oracle Enterprise Manager. These properties enable high availability for healthcare integration and define timeout and ping intervals for the servers.

To enable MLLP high availability for healthcare integration

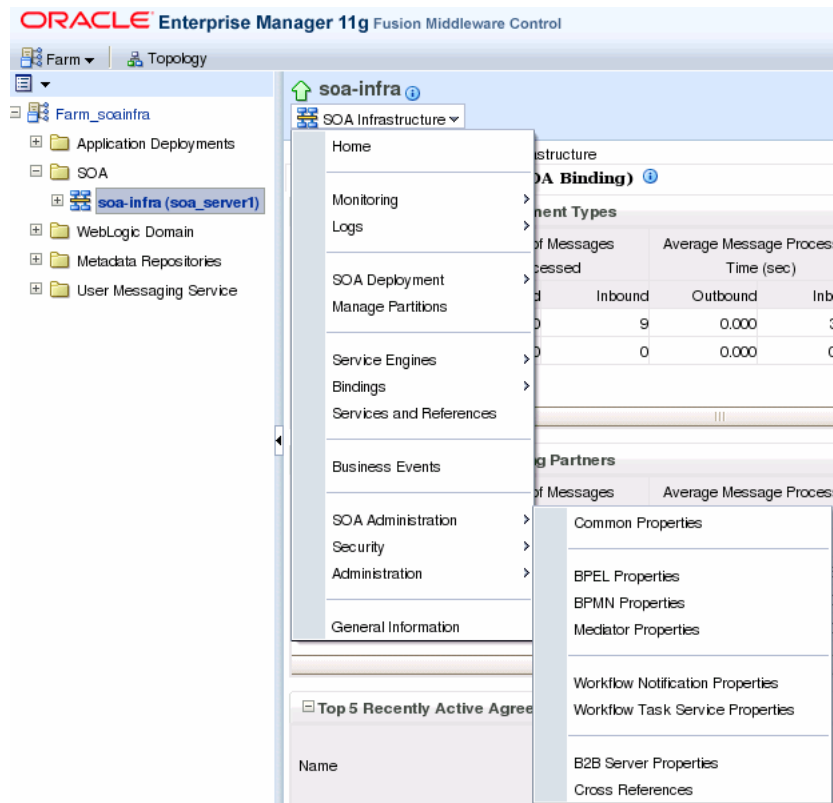
1. Log on to Oracle Enterprise Manager.

The URL is `http://hostname:port/em`

where *hostname* is the name of the computer on which WebLogic Server is running and *port* is the port number on which WebLogic Server is listening.

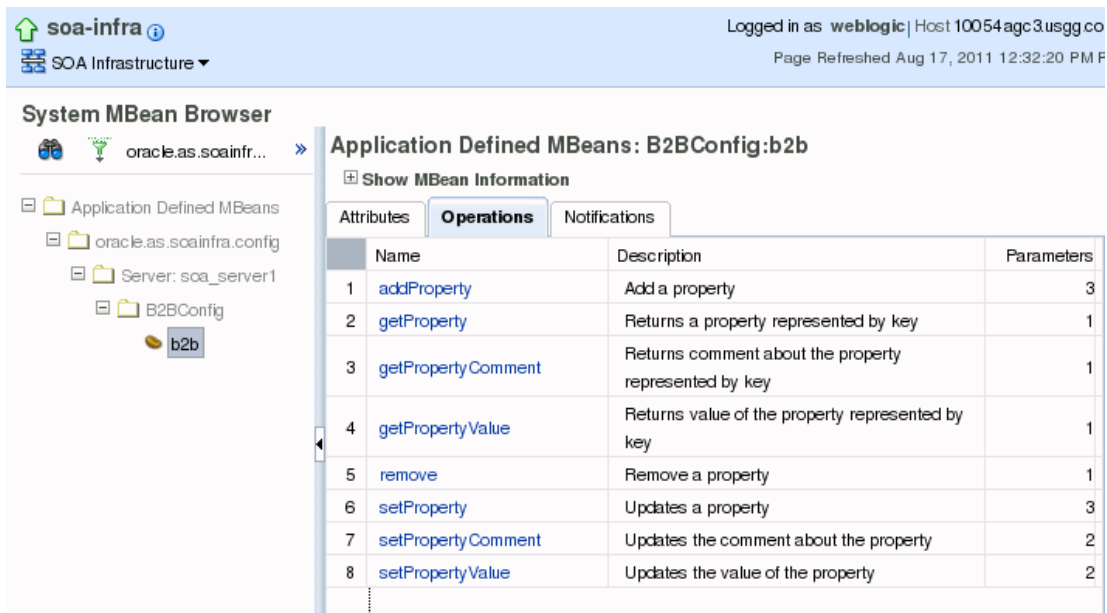
2. In the left navigation panel, expand the **SOA** node and select **soa-infra**.
3. Click the **SOA Infrastructure** menu, point to **SOA Administration** and then select **B2B Server Properties**.

Figure D-1 SOA Infrastructure Menu on Enterprise Manager



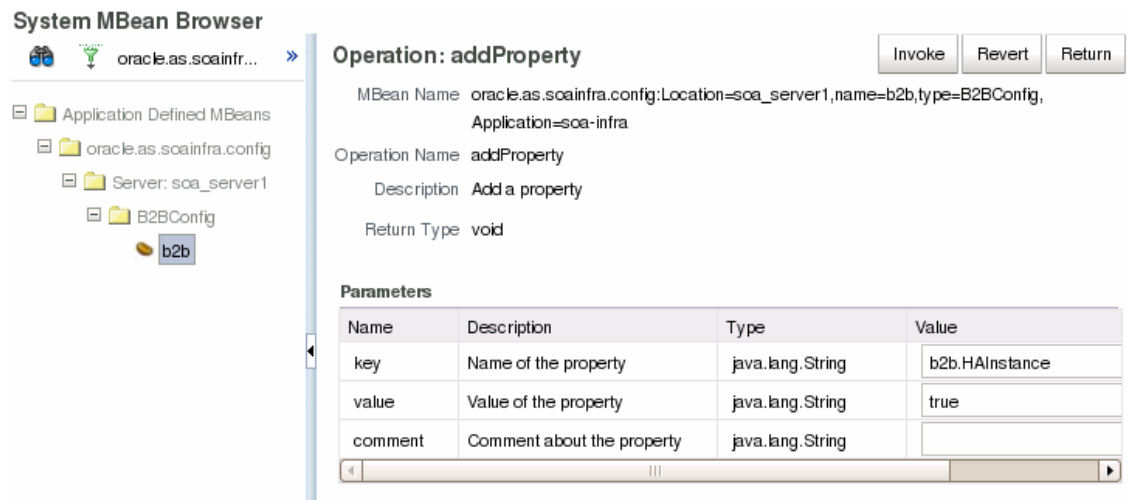
4. On the B2B Server Properties page, click **More B2B Configuration Properties**.
The System MBean Browser page appears.
5. Click the Operations tab and then click **addProperty**.

Figure D-2 System MBean Browser Operations Page



- In the Value column of the Parameters table, enter **b2b.HAInstance** in the **key** row and enter **true** in the **value** row.

Figure D–3 Adding the b2b.HAInstance Property



- Click **Invoke**.
The new property is saved.
- Using the above steps, create a new property named **b2b.MLLP_HA_Mode** and set the value to **true**.
- You can define the following optional properties. If these are not defined, the default values are used.

| Property | Description |
|--|--|
| b2b.HAMaxElapsedTimeout | The length of time in minutes before the next active instance takes over responsibility for MLLP traffic after the original instance fails. The default value is 2 minutes; 2 is also the minimum value allowed. |
| b2b.HAHeartBeatPing | The time interval in minutes between pings to determine whether the servers are alive. The default interval is 1 minute; 1 is also the minimum value allowed. |
| b2b.transportDispatcherThreadCount | The number of MLLP dispatcher threads to use in high availability mode. This is only used for non-sequenced messages, and is used in conjunction with a JMS resource. |
| b2b.transportDispatcherThreadSleepTime | The length of time (in milliseconds) after which an MLLP dispatcher thread will sleep after message processing. |
| b2b.MaxTimeinAcquiredState | The length in time in (minutes) that a message is in ACQUIRED state during failover after which it resumes processing. |
| b2b.AcquiredStatePollingInterval | The length in time in minutes before a message in the ACQUIRED state is polled again. |

| Property | Description |
|--------------------------------|---|
| b2b.SingleTransactionAtInbound | <p>In the case of an inbound MLLP HA, if the server crashes after wire message has been committed to the database but before the event gets enqueued to Event Queue, it is perpetually stuck in the Sequence Manager table and is not processed. This blocks the inbound message flow in the sequencing case.</p> <p>Set the <code>b2b.SingleTransactionAtInbound</code> to true only in the case of MLLP HA to enable the JMS and database commit to take place in a single transaction. It is suitable only for the MLLP case where only one inbound message is received at a time.</p> |

10. When you are done adding properties, click **Return**.
11. After you define high availability properties, you can view them on the Attributes tab. To view the properties, click the Attributes tab and then click **Properties**. Expand the **Element** nodes in the Value table to see the property names and values.

Figure D-4 High Availability Properties in Enterprise Manager

The screenshot shows the Oracle Enterprise Manager interface. The top navigation bar includes 'soa-infra' and 'SOA Infrastructure'. The main content area is titled 'System MBean Browser' and shows a tree view on the left with the path: oracle.as.soainfr... > Application Defined MBeans > oracle.as.soainfra.config > Server: soa_server1 > B2BConfig > b2b. The right pane is titled 'Attribute: Properties' and displays the following details:

- MBean Name: oracle.as.soainfra.config:Location=soa_server1,name=b2b,type=B2BConfig,Application=soa-infra
- Attribute Name: Properties
- Description: B2B config properties
- Type: Array of javax.management.openmbean.CompositeData
- Readable / Writable: R

Below these details is a 'Value' table with two columns: 'Key' and 'Element'. The table contains the following data:

| Key | Element |
|-----------|-------------------------|
| Element_2 | |
| comment | |
| name | b2b.HAInstance |
| value | true |
| Element_3 | |
| comment | |
| name | b2b.MLLP_HA_Mode |
| value | true |
| Element_4 | |
| comment | |
| name | b2b.HAMaxElapsedTimeout |

Batching HL7 Messages

This appendix provides information on implementing HL7 Batching in Oracle SOA Suite for healthcare integration. Batching allows a batch number of messages to be sent in a single file using an envelope consisting of File and Batch headers. An example would be the Batch of Detailed Financial Transactions (DFTs) sent from an ancillary system (such as laboratory, radiology, pharmacy, and so on) to a financial system.

Using the Healthcare console, you can also specify the number of records to be committed when there is a large number of business messages for a message exchange by using the Partial Batch Commit Size field in the **Administration** tab under **Settings > Runtime > Miscellaneous**.

This appendix contains the following topics:

- [Section E.1, "Introduction to HL7 Message Batching"](#)

E.1 Introduction to HL7 Message Batching

You can batch HL7 messages based on:

- Batch with File header (FHS)
- Batch with Batch header (BHS)
- Batch with both FHS & BHS
- Batch with only Message header (MSH)

You can batch HL7 messages in two ways:

- Standard Mode: Using HL7 batching protocol
- Custom Mode

E.1.1 Batching with File Header (FHS)

You can configure a default FHS using the Oracle SOA Suite for healthcare integration console.

To configure a default FHS:

1. Log on to the Oracle SOA Suite for healthcare integration console.
2. IN the **Designer** tab, click the **Configuration** tab, and then expand **Document Protocol > HL7 > Document Version**.
3. Double-click the Document Version to display the Document Version window on the right-hand pane.
4. Click the **File Header** tab and then select the **Create File Header** check box.

5. Provide the required parameter values in the available fields.

See [Table 3–2 in Section 3.3.1, "What You May Need to Know About HL7 Document Version Parameters"](#) for more information on the File Header parameters.

6. Click **Apply**.

Note: You can create and customize custom File Header ecs files by using Oracle Document Editor, and you can use the same to overwrite the default FHS.

E.1.2 Batching with Batch Header (BHS)

You can configure a default BHS using the Oracle SOA Suite for healthcare integration console.

To configure a default BHS:

1. Repeat Steps 1-3 from [Section E.1.1, "Batching with File Header \(FHS\)."](#)
2. Click the **Batch Header** tab and then select the **Create Batch Header** check box.
3. Provide the required parameter values in the available fields.

See [Table 3–2 in Section 3.3.1, "What You May Need to Know About HL7 Document Version Parameters"](#) for more information on the Batch Header parameters.

4. Click **Apply**.

Note: You can create and customize custom Batch Header ecs files by using Oracle Document Editor, and you can use the same to overwrite the default FHS.

E.1.3 Batching with Message Header (MSH)

In the case of batching MSHs, you can batch all the MSHs separated by a custom delimiter. You can configure this delimiter in the outbound endpoint in the case of Outbound message, and in the listening channel in the case of Inbound message.

See [Table 3–2 in Section 3.3.1, "What You May Need to Know About HL7 Document Version Parameters"](#) for more information on the Message Header parameters.

E.1.4 Sending Functional Acknowledgments When Batching

When batching messages using the Oracle SOA Suite for healthcare integration console, you can send Functional Acknowledgement to the endpoints partner in the following ways:

- Single message (Single)
- One Functional Acknowledgement message for every inbound business message (Multiple)

You can specify the Functional Acknowledgement options by using the **Ack Mode** list in the **Miscellaneous** tab in the Document Version window as shown in [Figure E–1](#).

Figure E-1 Specifying Functional Acknowledgment Options

You can also send Acknowledgement based on MSH 15 element. MSH 15 can have values such as:

- AL - always
- ER - Error or rejected conditions only
- NE - Never
- SU - successful completion only

Note: All batched messages are acknowledged in the response batch. An acknowledgment batch may contain acknowledgment messages only for those messages that have errors.

Note:

- Currently, HL7 batching is supported for a single document over Generic File and Generic FTP protocols.
 - Message sequencing and batching do not work simultaneously.
-

E.1.5 Standard Mode of Batching

You use the HL7 batching protocol in the standard mode of batching.

In this mode, multiple messages are placed in a single file by utilizing the HL7 standard batch protocol (FHS and BHS). A typical HL7 batch file structure looks like the following:

```
[FHS] (file header segment)
{--- BATCH begin
[BHS] (batch header segment)
{ [--- MESSAGE begin
  MSH(zero or more HL7 messages)
  ....
}
```

```
....--- messages may be of same type or different type
....
] }--- MESSAGE end
[BTS](batch trailer segment)
}--- Batch end
[FTS](file trailer segment)
```

E.1.6 Custom Mode of Batching

In this mode, multiple messages will put into a single file without utilizing above mentioned HL7 standard batch protocol (FHS and BHS), instead utilizing some other custom format as shown below:

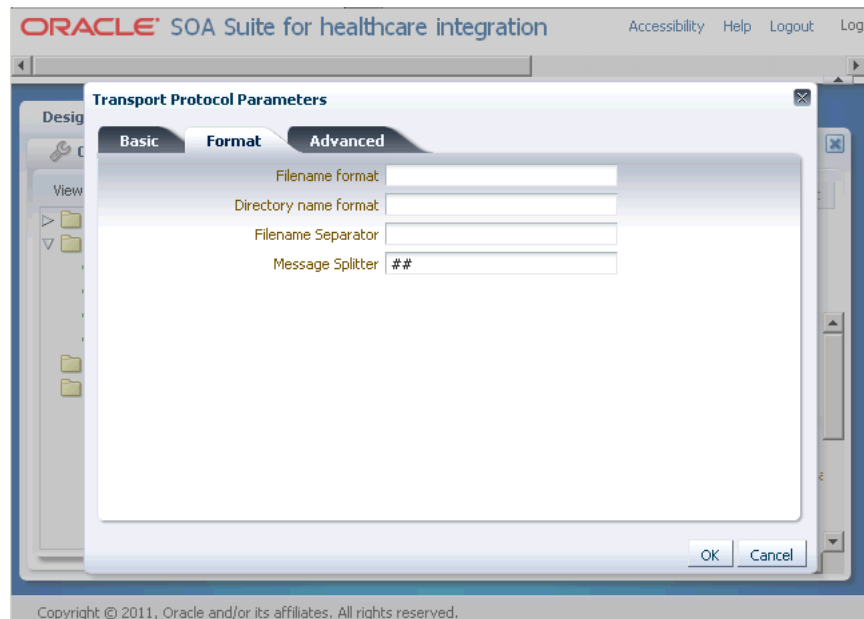
```
MSH
....
....
## --- message separator
MSH
....
....
## --- message separator
MSH
....
....
....
```

In custom mode, inbound messages are de-batched based on the message separator. The message separator for inbound custom message is derived from the incoming message itself. So no additional configuration is required.

You can specify custom delimiters for de-batching using the Oracle SOA Suite for healthcare integration console.

To specify custom delimiters:

1. Log on to the Oracle SOA Suite for healthcare integration console.
2. Open the required endpoint (File or FTP).
3. Click the **Transport Details** button to display the **Transport Protocol Parameters** dialog box.
4. Click the **Format** tab, specify the custom delimiter in the **Message Splitter** field, and click **OK** to close the dialog box as shown in [Figure E-2](#).

Figure E-2 Specifying Custom Delimiter

5. Click **Apply** to save the changes made to the endpoint.

Note: You need to ensure that the message separator string should not appear in message payload, otherwise you may see some unexpected errors.

E.1.7 Commandline Tools for Batching

This sections discusses the commandline tools that are available for batching.

[Table E-1](#) lists the parameters of the batching commandline.

Table E-1 Parameters for Batching Commandline

| Parameter Name | Description | Domain | Required |
|----------------|---|--|----------|
| endpoint | Name of the endpoint | - | Yes |
| batchname | Name for the batch | - | Yes |
| batchtime | The batch trigger time | A cron String or the date in dd/MM/yyyy HH:mm AM/PM format | Yes |
| document | The document protocol name | Valid values: EDI_EDIFACT, EDI_X12 | Yes |
| docrevision | The document revision number | - | Yes |
| doctype | The document tyoe name | - | Yes |
| isrepetitive | To enable repetitive batching when batch is created using the cron string | true false (default) | No |
| mode | The batch mode | Set to deletebatch to delete the batch | No |

Examples:

To create a batch operation with FileEndpoint for the ADT_A01 document that is executed in a repetitive mode for the given cron String:

```
ant -f ant-hcftp-util.xml hcfpbatch -Dendpoint=FileEndpoint -Dbatchtime="0 4850 11
7 5 ? 2010"-Dbatchname=batch1234 -Ddocument=HL7 -Ddocrevision=2.3.1
-Ddoctype=ADT_A01 -Disrepetitive=true
```

To create batches for multiple document types:

```
ant -f ant-hcftp-util.xml hcfpbatch -Dendpoint=FileEndpoint -Dbatchtime="0 58 11 7 5  
? 2010"-Dbatchname=batch1234 -Ddocument=HL7 -Ddocrevision=2.3.1 -Ddoctype=ADT_A01
```

or

```
ant -f ant-hcftp-util.xml hcfpbatch -Dendpoint=FileEndpoint -Dbatchtime="07/05/2010  
11:45 AM"-Dbatchname=batch1234 -Ddocument=HL7 -Ddocrevision=2.3.1  
-Ddoctype=ADYT_A01
```

To delete a batch operation:

```
ant -f ant-hcftp-util.xml hcfpbatch -Dmode=deletebatch -Dbatchname=batch1234
```

If the value for the batchtime contains special characters such as * or # then the character must be escaped using double quotation marks:

```
ant -f ant-hcftp-util.xml hcfpbatch -Dendpoint=FileEndpoint -Dbatchtime='0  
5,10,15,20,25,30,35,40,45,50,55,59" " " " ? 2010' -Dbatchname=batch1234  
-Ddocument=HL7 -Ddocrevision=2.3.1 -Ddoctype="ADT_A01" -Disrepetitive=true
```

Configuration for Functional Acknowledgment 999

This appendix provides information about the configuration of Oracle SOA Suite for healthcare integration applications to use the document type 999 Functional Acknowledgment (FA).

This appendix has the following topics:

- [Section F.1, "Introduction"](#)
- [Section F.2, "Function Acknowledgement 999: Use Cases"](#)

F.1 Introduction

Oracle Fusion Middleware B2B supports document type 999 Functional Acknowledgment (FA), which is used mostly by HIPAA professionals. By default, the document type configuration for FA is 997. However, you can override the default by specifying document type 999 as the FA. In addition, the document protocol version is not attached to the version of the incoming message, which means that you can send 999 v5010x231 for incoming message 837 v5010x223A1.

F.2 Function Acknowledgement 999: Use Cases

If you use X12 as the document protocol, the default Functional Acknowledgment document type is 997. In case of 997, the version for 997 Acknowledgment is the same as the version of the incoming message. During design time in Oracle B2B console, you can override the default 997 FA or the version, or both in the Document Type Parameters page by using the following parameters:

- Functional Acknowledgment Transaction and
- Functional Acknowledgment Transaction Version

The rest of the configuration, such as Document Definition, Delivery Channel, and Trading Partner Agreement is the same as 997.

The following use cases discuss the configuration for FA 999 and 997:

- [Use Case 1](#)
- [Use Case 2](#)
- [Use Case 3](#)

F.2.1 Use Case 1

If you need to use 999 as the FA but want to keep the version the same as the version of the incoming message, then you need to set only the Functional Acknowledgment Transaction to 999 and leave the Functional Acknowledgment Transaction Version blank.

F.2.2 Use Case 2

If you need to use 999 as the FA and also want to keep the version different from the version of the incoming message, then you need to set both Functional Acknowledgment Transaction and Functional Acknowledgment Transaction Version parameters. For example, you need to set Functional Acknowledgment Transaction to 999 and Functional Acknowledgment Transaction Version to 5010X231.

F.2.3 Use Case 3

If you need to use 997 as the FA, but want to keep the version different from the version of the incoming message, you need to set Functional Acknowledgment Transaction to 997 and Functional Acknowledgment Transaction Version to 5010. (assuming that the incoming message version is 4010). However, this use case is not very common.

[Figure F-1](#) shows the configuration for Functional Acknowledgment Transaction and Functional Acknowledgment Transaction Version.

Figure F-1 Configuration for Functional Acknowledgment Transaction

The screenshot shows the 'Document Type' configuration page for 'EDI_X12-5010X223A1-837'. The 'Transaction' tab is selected, and the 'Duplicate Transaction' button is visible. The configuration fields are as follows:

| Field | Value |
|---|----------|
| Document Type Name | 837 |
| Description | |
| * Functional Group Identifier Code | HC |
| Implementation Convention Reference | |
| Transaction Purpose Code | 00 |
| Functional Acknowledgment Transaction | 999 |
| Functional Acknowledgment Transaction Version | 5010X231 |

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