

**Oracle® Fusion Middleware**

Healthcare Integration User's Guide for Oracle SOA Suite

11g Release 1 (11.1.1.5.0 Feature Pack)

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Oracle Fusion Middleware Healthcare Integration User's Guide for Oracle SOA Suite, 11g Release 1 (11.1.1.5.0 Feature Pack)

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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

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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:

<b>Convention</b>	<b>Meaning</b>
<b>boldface</b>	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.

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# Getting Started with Oracle SOA Suite for Healthcare Integration

Oracle SOA Suite for healthcare integration provides a Web-based user interface for creating applications to transmit and transform data between various healthcare systems, and for monitoring and managing 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 with an error status, and you can 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.

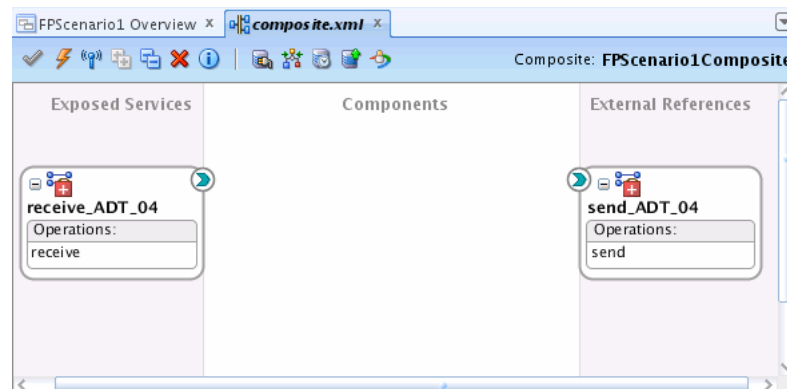
## 1.2 What You Need to Get Started with Oracle SOA Suite for Healthcare Integration

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.

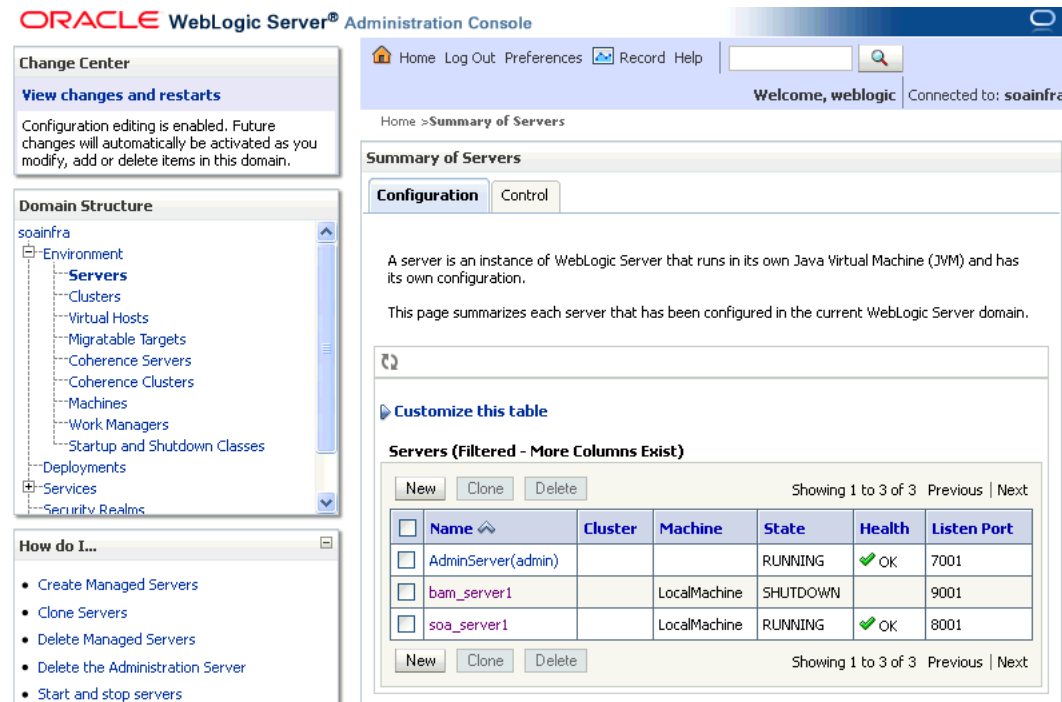
3. Click **Login**.

### 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.
  2. 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



3. 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

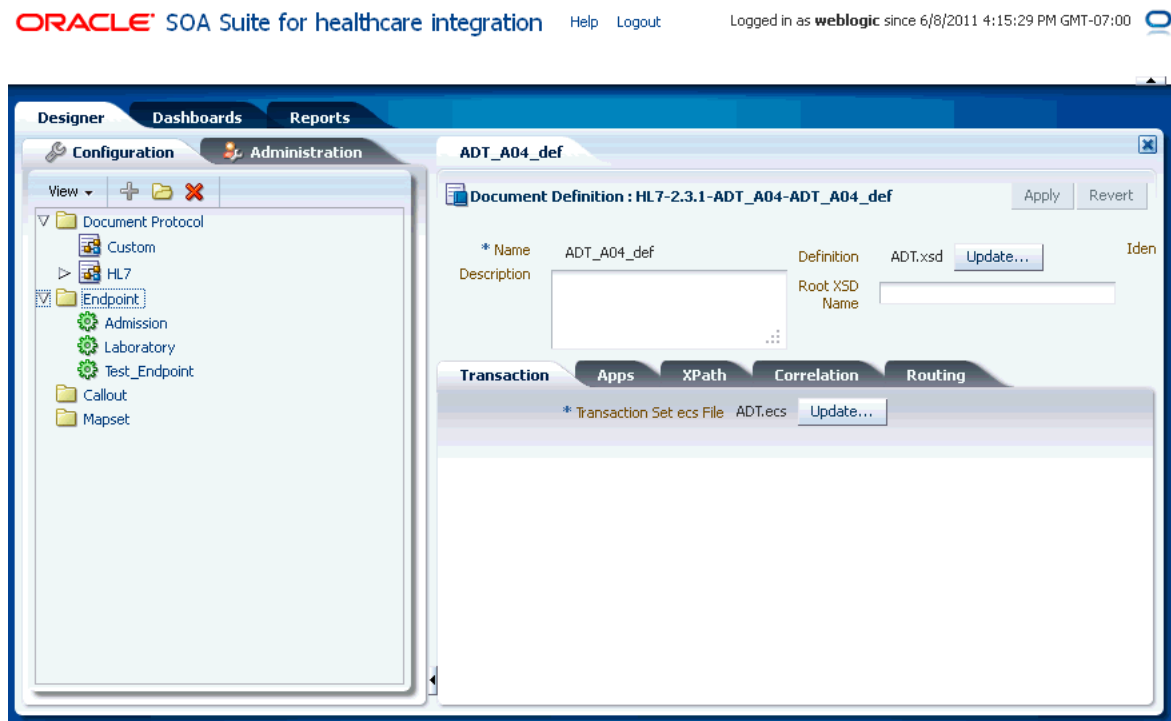
Healthcare activities are grouped as follows:

- [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

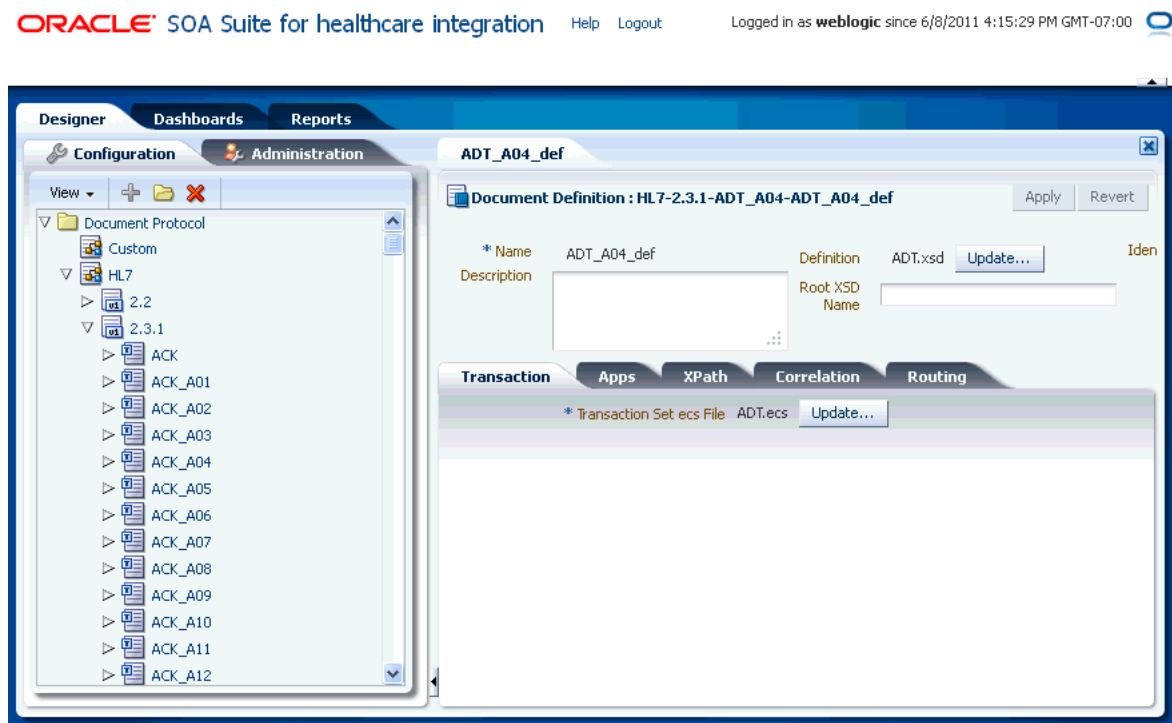


#### 1.4.1.1 Configuring Documents

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




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**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.

---

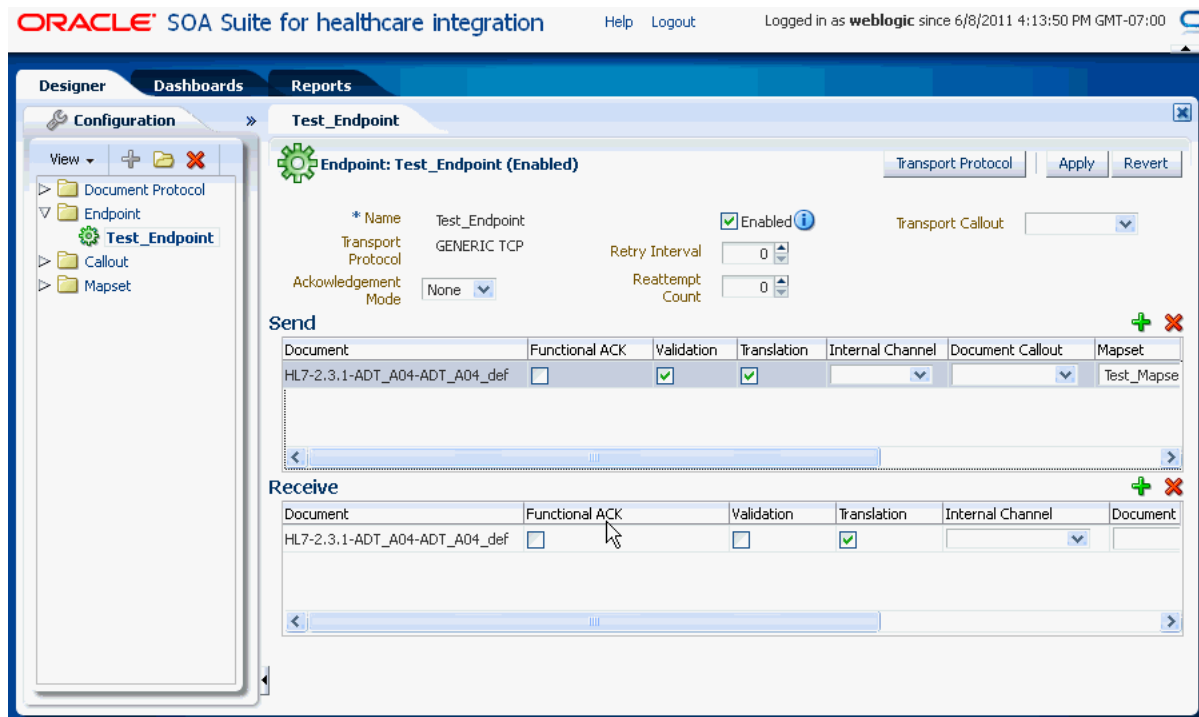
See [Chapter 3, "Working with Document Types and Protocols"](#) for more information on documents and document protocols.

### 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



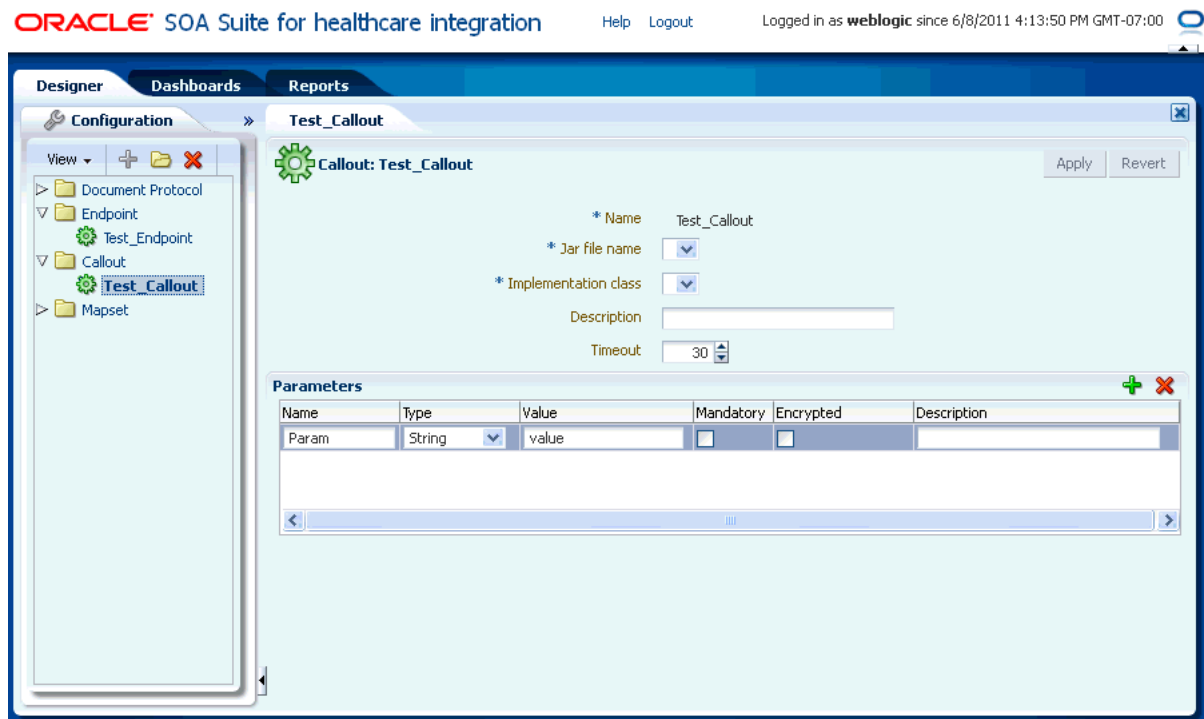
See [Chapter 4, "Working with Endpoints"](#) for more information on endpoints.

### 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



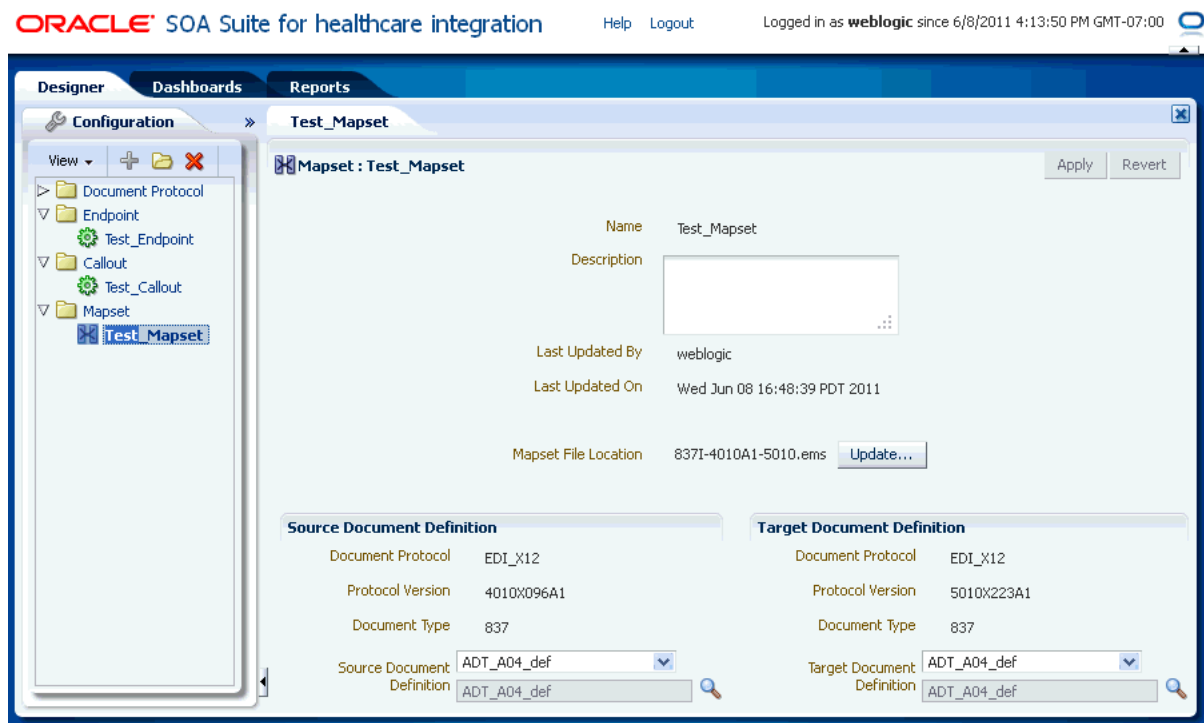
See [Chapter 5, "Working with Callouts"](#) for more information on callouts.

#### 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



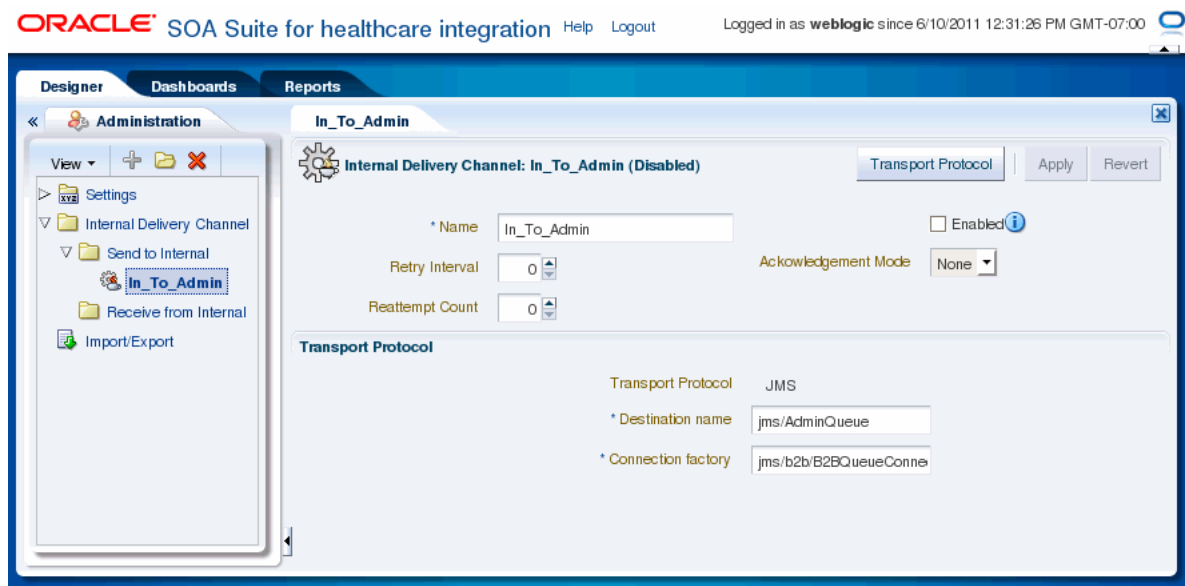
See [Chapter 6, "Working with Mapsets"](#) for more information on mapsets.

#### 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.

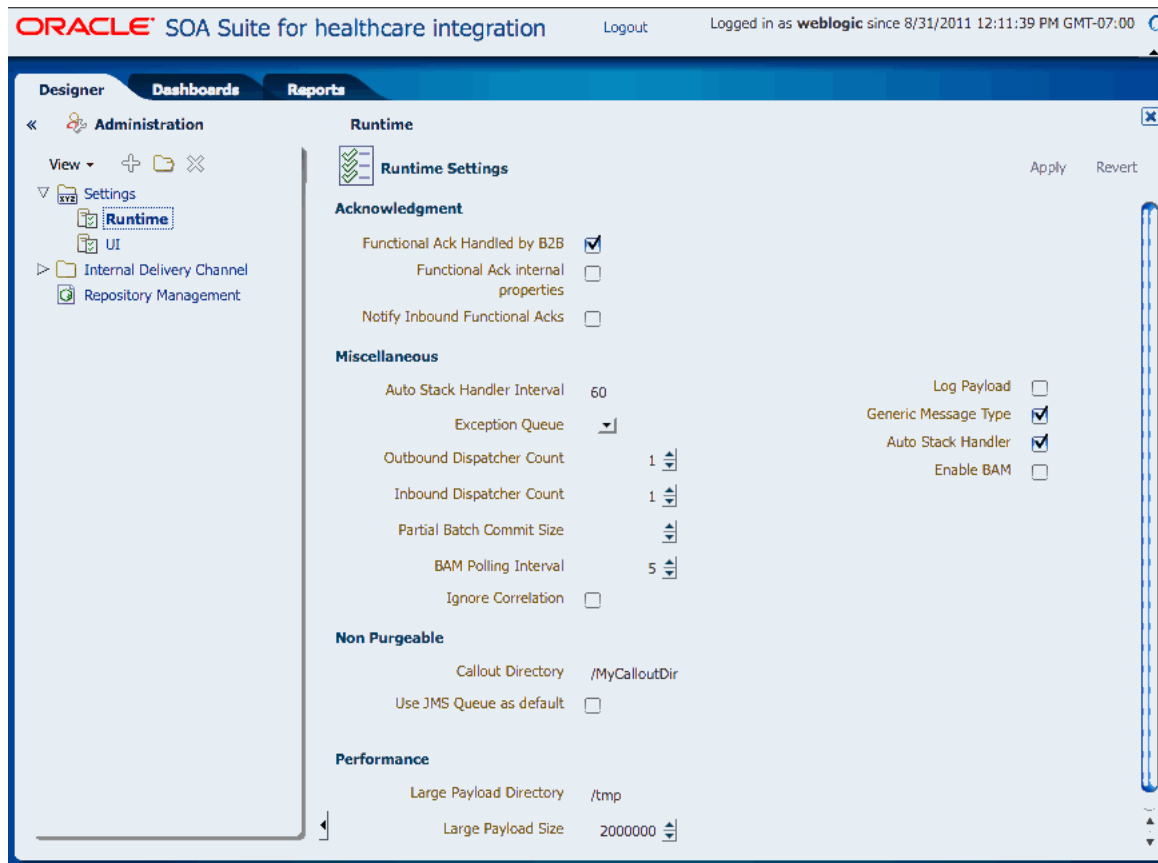
#### 1.4.1.6 Setting Run Time and User Interface Properties

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.

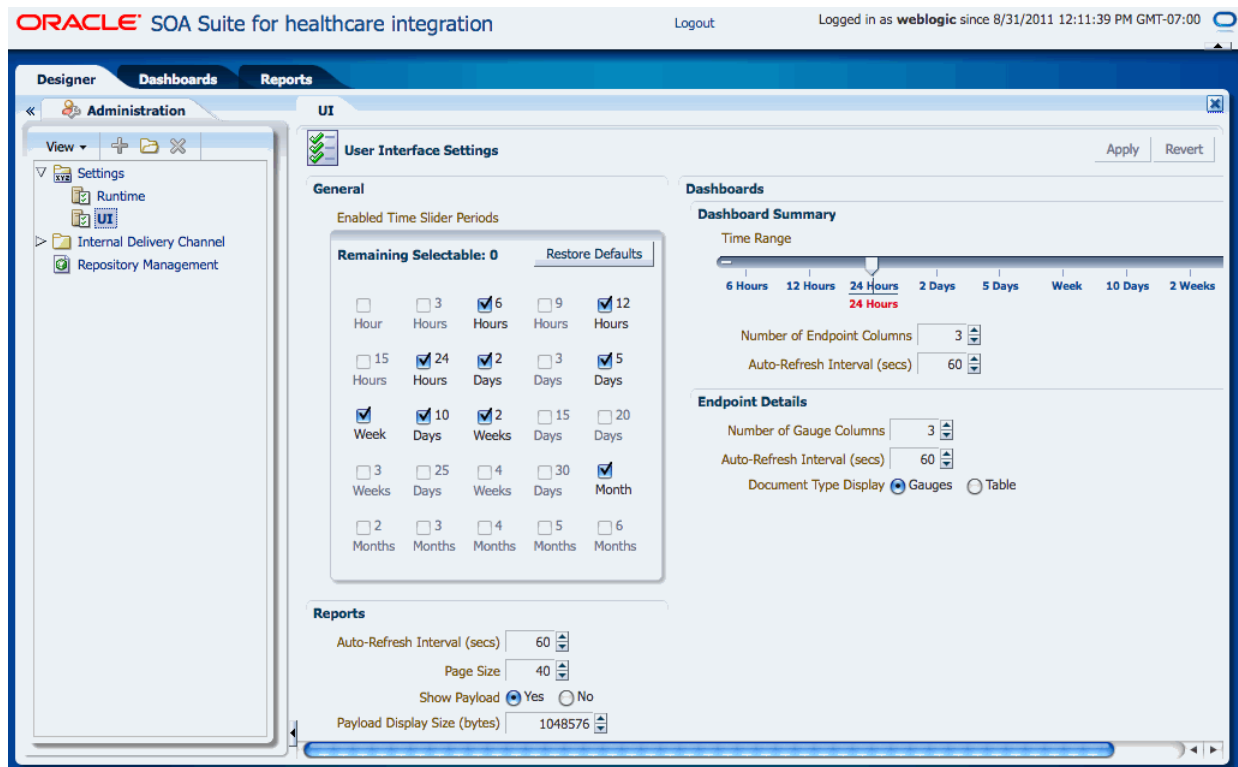
Figure 1–9 The Runtime Settings Page



- 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 12, "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 11, "Managing the Repository"](#) for more information on managing the Oracle SOA Suite for healthcare integration repository.

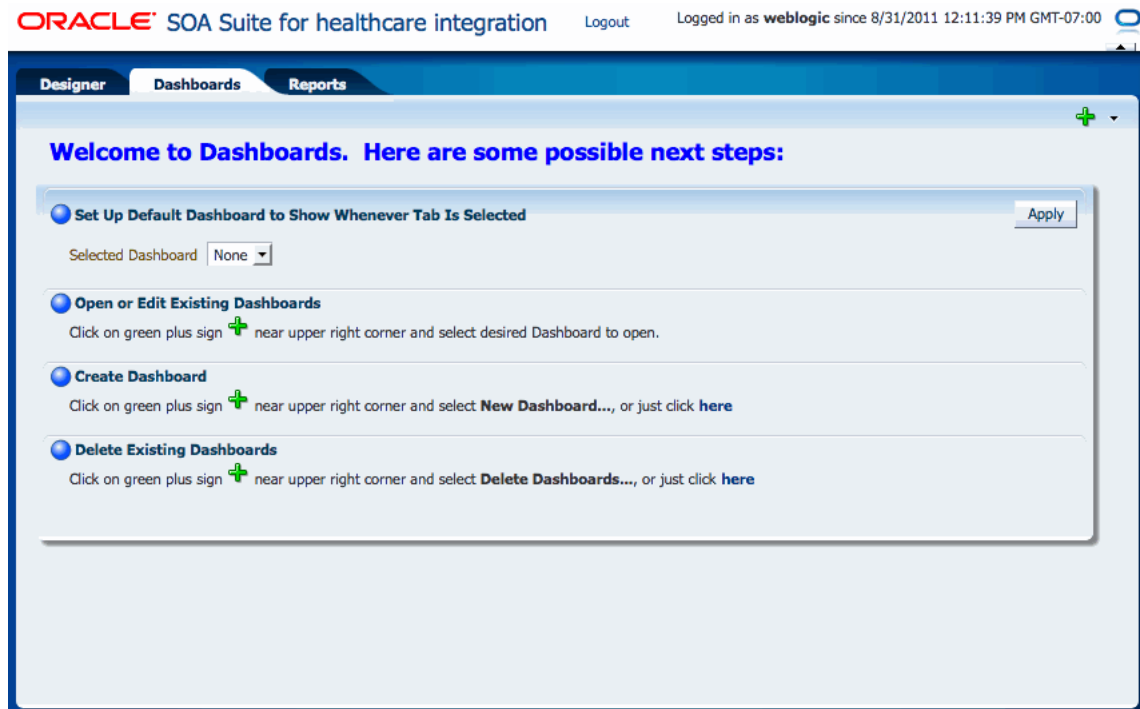
## 1.4.2 Dashboards

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 1–12](#):

- **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 1–12 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 1–13 displays a sample Dashboard page.

Figure 1–13 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 displays a dashboard for 'AdmitToLab'. The dashboard has a 'Time Range' selector on the left, currently set to '24 Hours'. The dashboard contains two widgets: 'Admission' and 'Laboratory'. Both widgets show a 'Running' status and 'Messages During Last 24 Hours' summary. 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 titled 'Endpoint Properties - Admission' is displayed, listing various properties like Protocol, Connection Mode, Host Name, Port, etc.

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 1–14](#) displays a sample report containing a list of the messages, message type details, and the Business Message Report Editor.

Figure 1–14 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

1 - 38 of 38 Page Size 40 Hide Filter Editor Last Updated: 8/31/2011 12:52:57 PM GMT

Found 38 results.

Message ID	Created Date and Time	Direction
1 > 0AE5BA9E132082BE768000017C2C302	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND
2 > 0AE5BA9E132082BE7BF0000017C2C30B	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND
3 > 0AE5BA9E132082BE6BD0000017C2C2F9	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND
4 > 0AE5BA9E132082BE859000017C2C314	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND
5 > 0AE5BA9E132082BE859000017C2C314	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND
6 > 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**

Message Type **REQ** Interchange Control Number

ID **0AE5BA9E132082BE77B0000017C2C306** Group Control Number

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.



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## Working with the Oracle Healthcare Adapter

Oracle SOA Suite for healthcare integration provides an Oracle Healthcare Adapter to enable 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 connection between a SOA composite application and the external healthcare applications with which it shares data or with an internal topic or queue, where data can be made available internally or to other systems. 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 an endpoint and document definition, 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, and you can create a new endpoint directly from the wizard.

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**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.

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## 2.1.2 What Happens When You Create a Healthcare Binding Component

When you add a Healthcare Adapter to a SOA composite application, you can use existing components from Oracle SOA Suite for healthcare integration and you can add new components for healthcare integration. For example, when you run the Healthcare Configuration Wizard, you need to specify an endpoint. You can either select an existing endpoint from Oracle SOA Suite for healthcare integration or you can create and configure a completely new endpoint. For more information on endpoints, see [Chapter 4, "Working with Endpoints."](#)

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**Note:** Some components commonly associated with endpoints, such as callouts, mapsets, and internal delivery channels, can only be associated with an endpoint through the healthcare integration user interface. If you are including any of these components, you should create the endpoint in the healthcare integration user interface before creating the binding components with the Healthcare Configuration Wizard in Oracle JDeveloper.

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Once the endpoint is specified, you need to associate it with a document definition. You can only select from a list of document definitions that already exist in Oracle SOA Suite for healthcare integration. This action associates the document definition with the endpoint in Oracle SOA Suite for healthcare integration.

Completing the Healthcare Configuration Wizard adds a new service or reference to the composite application and generates the corresponding WSDL file. In addition, it creates an endpoint in the Oracle SOA Suite for healthcare integration repository, which can be viewed using the healthcare integration user interface. Deploying the composite application to WebLogic Server enables the endpoint in Oracle SOA Suite for healthcare integration, and creates and deploys the corresponding configuration in Oracle SOA Suite for healthcare integration.

## 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:

- [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.

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

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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 <b>New Application</b> .
Has existing applications	From the <b>File</b> main menu or the <b>Application</b> menu: <ol style="list-style-type: none"> <li>1. Select <b>New &gt; Applications</b>. The New Gallery opens, where you can select different application components to create.</li> <li>2. In the <b>Categories</b> tree, under the <b>General</b> node, select <b>Applications</b>. In the <b>Items</b> pane, select <b>SOA Application</b> and click <b>OK</b>.</li> </ol>

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 any document definitions that you will use in the project. It is recommended that you also create and configure the endpoints in the healthcare integration user interface in order to take advantage of the full endpoint functionality.

### 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**.
4. On the Service Name page, provide a name for the healthcare service and click **Next**.
5. On the Application Server Connection page, 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.

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



8. On the Operation page, select **Send** for outbound messages or select **Receive** for inbound messages.
9. Click **Next**.

The Endpoint Configuration page appears.

**Figure 2–1 Healthcare Configuration Wizard - Endpoint Configuration**

10. On the Endpoint Configuration page, do one of the following:
  - To skip this step, leave **Skip Endpoint Configuration** selected. The adapter will not be associated with an endpoint.
  - To use and configure an existing endpoint, deselect **Skip Endpoint Configuration**, select an endpoint from the Endpoint field, and configure the endpoint as described in [Table 2–4](#).
  - To create a new endpoint, deselect **Skip Endpoint Configuration** and click the plus icon next to the Endpoint field. On the Add Endpoint dialog, fill in the properties described in [Table 2–3](#) and [Table 2–4](#), and click **OK**.

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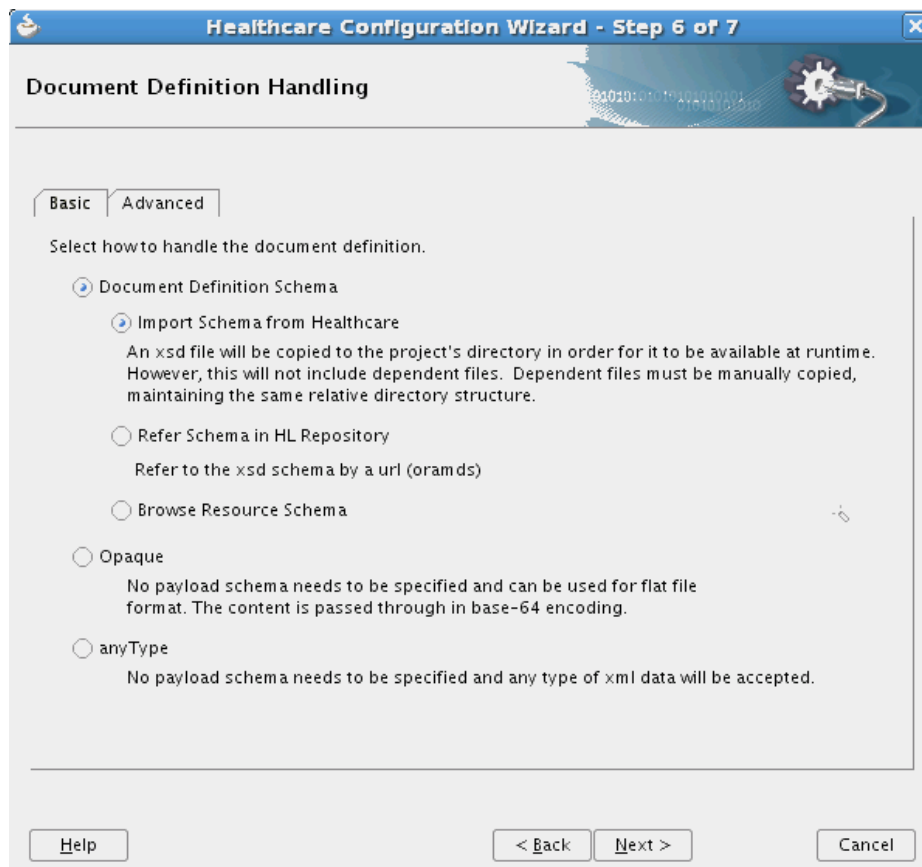
**Note:** In order to take advantage of all the endpoint features, you should create and configure your endpoints using the healthcare integration user interface instead of

the Healthcare Configuration Wizard. The user interface provides additional configuration options, such as associating mapsets, internal delivery channels, and callouts to an endpoint.

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11. When you are done configuring the endpoint, click **Next**.
12. On the Document Definition Handling page, 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 2-5](#).

**Figure 2-2 Healthcare Configuration Wizard - Document Definition Handling**



13. Click **Next**.
14. On the Document Definition page, expand the tree to select a document definition.

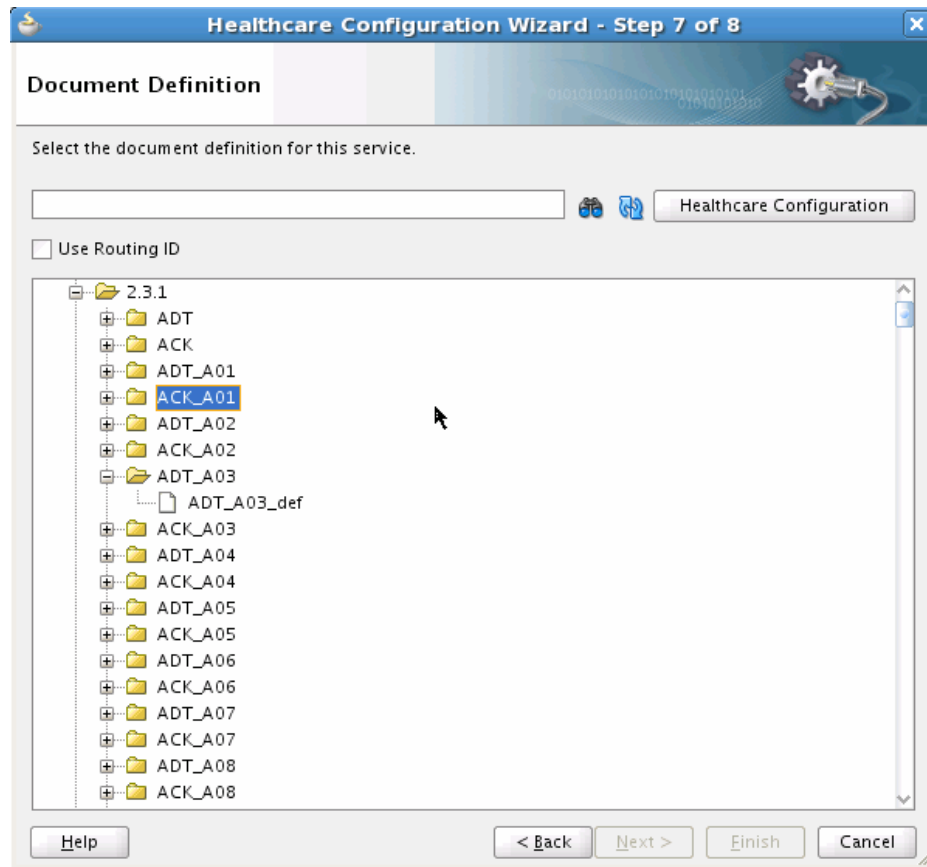
**Figure 2–3 Healthcare Configuration Wizard - Document Definition**

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 <b>Refresh</b> , and select the new document definition.
Use Routing ID	Selects all document definitions that use a document routing ID.

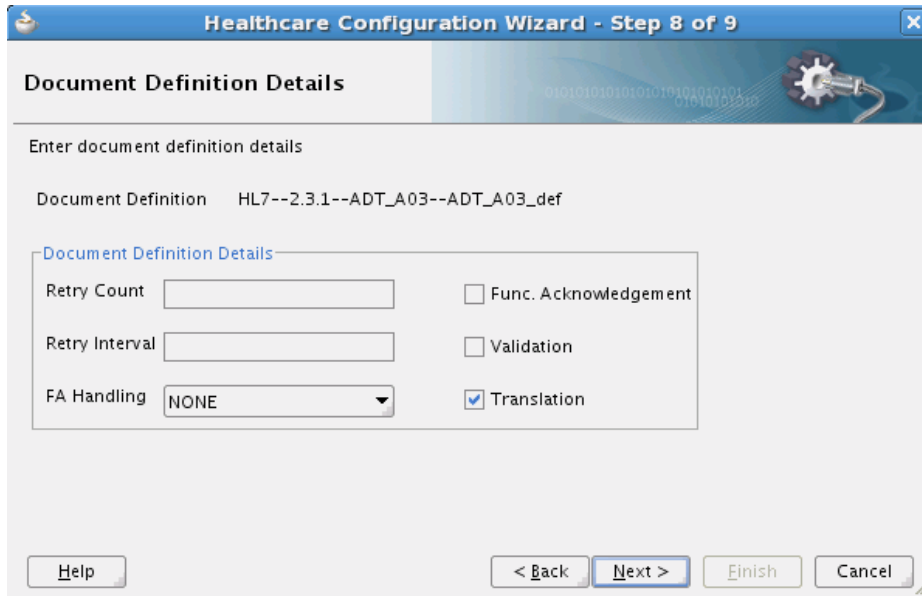
15. Click **Next**.

16. Do one of the following:

- If you selected a document definition that is already associated with the endpoint, a warning message appears. Click **Yes** to proceed with your selection, or click **No** to select a different document definition to associate with the endpoint.

- If you selected a document definition with multiple root elements, the Root Elements page appears. Select a root element to use and click **OK**.
  - If neither of the above occurred, proceed to the following step.
17. On the Document Definition Details page, configure the properties described in [Table 2-6](#).

**Figure 2-4 Healthcare Configuration Wizard - Document Definition Details**



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

### 2.2.2.1 Endpoints in the Healthcare Configuration Wizard

When you create a new healthcare integration binding component using the Healthcare Configuration Wizard in JDeveloper, you can either associate the component with an existing endpoint, or you can create a new endpoint. [Table 2-3](#) lists and describes the parameters you need to configure for a new endpoint. [Table 2-4](#) lists and describes the protocol parameters you need to configure for new and existing endpoints.

**Table 2-3 New Endpoint Parameters**

Parameter	Description
Endpoint	A unique name for the endpoint.
Protocol	The connection protocol for the endpoint. Supported protocols are MLLP 1.0 and Generic TCP. MLLP 2.0 is also available as an option, but it is not certified.
Retry Interval	The duration in minutes between attempts to resend a message.
Retry Count	The maximum number of attempts to resend a message.

**Table 2–3 (Cont.) New Endpoint Parameters**

Parameter	Description
ACK Mode	<p>The mode in which acknowledgment messages are received. Acknowledgments can be received in the following ways:</p> <ul style="list-style-type: none"> <li>■ <b>None:</b></li> <li>■ <b>Async:</b></li> <li>■ <b>Sync:</b></li> </ul> <p>Select <b>None</b> for all generic TCP and MLLP 1.0 exchanges.</p>

**Note:** [Table 2–4](#) lists the parameters for all protocols. Not all of the parameters listed apply to all protocols.

**Table 2–4 Endpoint Protocol Parameters**

Property	Description
Connection Mode	<p>The way the connection is established. The connection can be either client or server based.</p> <ul style="list-style-type: none"> <li>■ <b>Server:</b> The healthcare integration binding component waits and listens on a certain port for an incoming connection request from a client. Once the request is received, the component accepts the request and establishes the connection.</li> <li>■ <b>Client:</b> The healthcare integration binding component connects to an external server, specified by the host name and port number, to establish the connection.</li> </ul>
Host Name	The name of the computer on which the endpoint server is installed.
Port	The port number on which the endpoint server is listening.
Timeout	The period in minutes of inactivity after which the connection should time out.
Immediate ACK	<p>The type of immediate acknowledgment to send, if any. Immediate acknowledgments can be handled in the following ways:</p> <ul style="list-style-type: none"> <li>■ <b>None:</b> No immediate acknowledgment is sent.</li> <li>■ <b>Default:</b> Oracle SOA Suite for healthcare integration parses the incoming HL7 message and generates the ACK from it. This mode allows correlation information to be sent along with the ACK.</li> <li>■ <b>Simple:</b> Oracle SOA Suite for healthcare integration sends a basic ACK that only confirms the receipt of the message.</li> <li>■ <b>Negative:</b> This type of ACK is sent when the message received does not match the defined MLLP parameter or the data is not received properly.</li> </ul>
Start Block Character (or Start Block, for TCP)	The first envelope marker character in the HL7 envelope in hexadecimal format.
End Block Character (or End Block, for TCP)	The last envelope marker character in the HL7 envelope in hexadecimal format.

**Table 2–4 (Cont.) Endpoint Protocol Parameters**

<b>Property</b>	<b>Description</b>
Permanent Connection	An indicator of whether the connection to the server is permanent or transient. When the connection is permanent, one connection is used for all messages transmitted between endpoints. When the connection is transient, a new connection socket is created for each message and the connection socket is not closed until the ACK is received. Select this option to make the connection permanent.
Sequencing	An indicator of whether to send messages in sequence. Select this option to enable sequencing.
Map ACK Control ID	An indicator of whether to map the MSH.10 segment of the message to the MSH.19 segment of the acknowledgment. Select this option to enable mapping.
Map Trigger Event	An indicator of whether to send an immediate acknowledgment with a trigger event. Select this option to map the trigger event.
Polling Interval	The period of time in minutes to wait between polls to the server for new messages.
Discard HL7 ACK	<p>An indicator of whether the functional ACK will be correlated at the transport level. This avoids the traditional message correlation, thus improving performance. Because the ACK is stopped at the transport layer after correlation, it appears in the wire message report, but does not appear in the business message report.</p> <p>You can use the following codes. If the selected code is in the MSA.2 segment, the ACK is stopped at the transport layer.</p> <p><b>None:</b> Functional ACK correlation is disabled.  <b>AA:</b> Application acknowledgment: Accept  <b>AE:</b> Application acknowledgment: Error  <b>AR:</b> Application acknowledgment: Reject  <b>CA:</b> Application acknowledgment: Commit Accept  <b>CE:</b> Application acknowledgment: Commit Error  <b>CR:</b> Application acknowledgment: Commit Reject</p>
Carriage Return Character	The character used in the messages to indicate a carriage return. Specify this value in hexadecimal format.
Negative Ack	For MLLP 2.0 only, the character for the negative acknowledgment in hexadecimal format. The standard default value is 0x15.
Ack	For MLLP 2.0 only, the character for the commit acknowledgment in hexadecimal format. The standard default value is 0x06.
Header Length	For Generic TCP only, the size of the message header, which is prefixed to the actual message.
Msg Length Index	For Generic TCP only, the data size of the header, represented by the start index location and the end index location. For example, if the message header is the first four bytes, then the header length is "4" and the message length index is "1-4".
Retain Header	For Generic TCP only, an indicator of whether to retain the header when sending the message.

### 2.2.2.2 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 2–5](#) lists and describes the possible options for handling the document definition.

**Table 2–5 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.

### 2.2.2.3 Document Definition Configuration in the Healthcare Configuration Wizard

The Healthcare Configuration Wizard allows you to configure certain parameters for the document definition for handling acknowledgments, retries, validation, and translation. [Table 2–6](#) lists and describes the parameters you can configure.

**Table 2–6 Document Definition Parameters**

Property	Description
Retry Count	The maximum number of attempts to resend a message.
Retry Interval	The period of time in minutes between attempts to resend a document.
FA Handling	<p>An indicator of how functional acknowledgments are generated. Handling is indicated by one of the following options:</p> <ul style="list-style-type: none"> <li>■ <b>None:</b></li> <li>■ <b>Yes:</b></li> <li>■ <b>No:</b></li> </ul>
Func. Acknowledgment	Select this option to enable the functional acknowledgment for success or error criterion.

**Table 2–6 (Cont.) Document Definition Parameters**

Property	Description
Validation	An indicator of whether to validate the document against the configured ECS file. Select this option to enable validation.
Translation	An indicator of whether to translate from XML to native format and back. Enabling translation allows correlation of the message with the functional acknowledgment, irrespective of the value of the FA Handling property.

### 2.2.3 Add Service Components

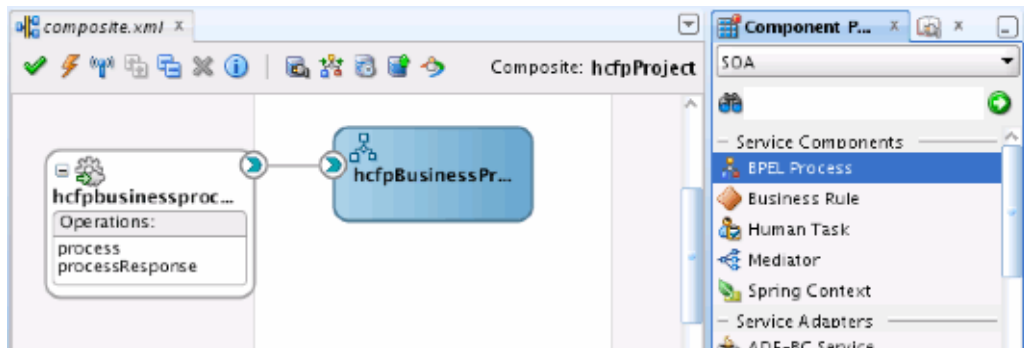
Once you create the SOA application and project, you can add the service components that implement the business logic and processing rules for the application.

#### 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 2–5 BPEL Process in a Composite Application**



A dialog specific to the selected service component appears. [Table 2–7](#) describes the available dialogs.

**Table 2–7 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 you are done configuring the settings, click **OK**.
5. 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.



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## Working with Document Types and Protocols

This chapter covers how to work with documents in Oracle SOA Suite for healthcare integration.

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"](#)

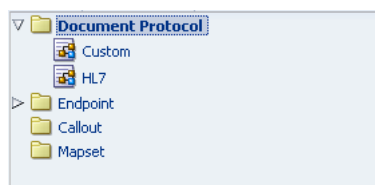
### 3.1 Introduction to Document Protocols

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.

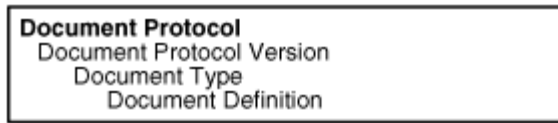
**Figure 3–1** Oracle SOA Suite for healthcare integration Document Protocols



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.) If validation is enabled, then, at run time, the payload must conform to the document definition file type you use.

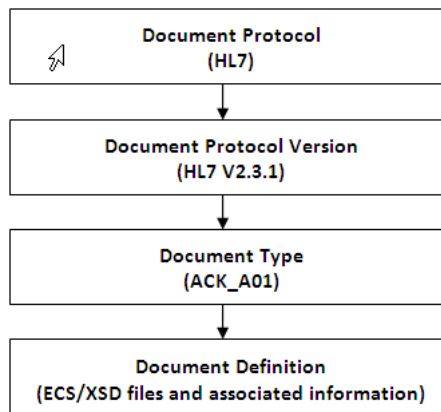
#### 3.1.1 What You May Need to Know About the Document Hierarchy

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 EDI EDIFACT document.

**Example 3–1 Document Definition Name for an HL7 Document**

Document protocol: HL7

Document protocol version: V2 . 3 . 1

Document type: ACK\_A01

Document definition: ACK\_A01\_def

The resulting document definition is:

HL7-2.3.1-ACK\_A01-ACK\_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 trading partner agreements for specific message types.

When creating a Custom document, you specify rules to identify the incoming document. For XML documents, specify 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 start and end positions or a document routing ID.

### 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 Type Parameters

When you create a Custom document type, you can set ebXML messaging service (ebMS) parameters to identify the ebXML document. [Figure 3–4](#) shows the document type parameters for a Custom document.

**Figure 3–4 Document Type Parameters for a Custom Document**

The screenshot shows the Oracle Healthcare FastPath interface. At the top, there's a navigation bar with 'Designer', 'Dashboards', and 'Reports'. The main content area is titled 'NewDocType' and contains a form for configuring a document type. The form has a 'Name' field with the value 'NewDocType' and a 'Description' field. Below this is an 'ebMS' section with several input fields: 'Action name', 'Service name', 'Service type', 'From Role', and 'To Role'. There is also a 'Validate ebMS Header' checkbox which is checked.

[Table 3–1](#) describes the document type parameters for a Custom document.

**Table 3–1 Document Type Parameters for a Custom Document**

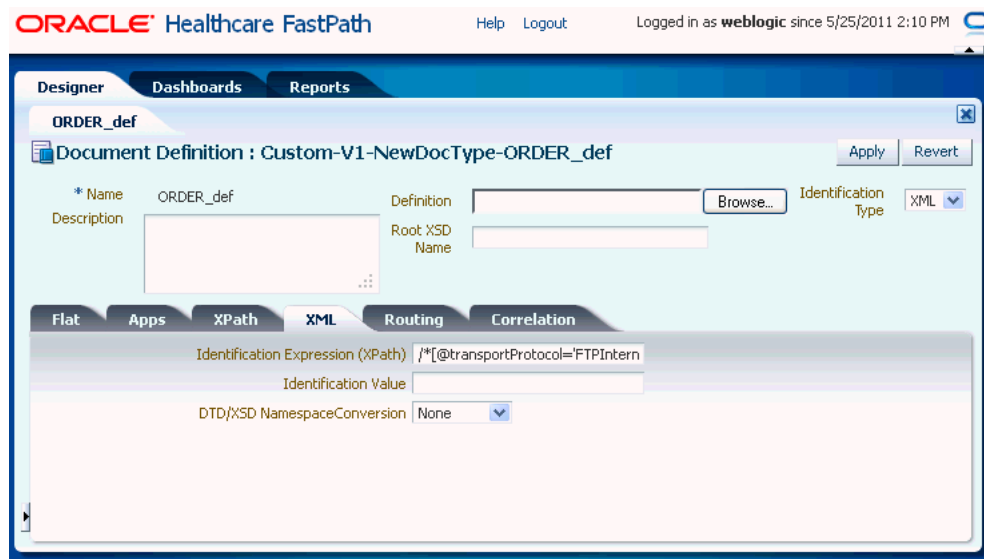
Parameter	Description
ebMS Tab	-
Action name	The action name for the ebXML header, which is also an identification criteria for inbound and outbound messages. ebMS documents require an action name to avoid run-time errors.
Service name	The service name for the ebXML header, which is also an identification criteria for inbound messages. ebMS documents require a service name to avoid run-time errors.
Service type	The service type for the ebXML header, which is also an identification criteria for inbound messages. ebMS documents require a service type to avoid run-time errors.

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

Parameter	Description
From Role	The endpoint that sends the message. A value provided here overrides the <b>Identifiers</b> values supplied on the <b>Profile</b> tab.
To Role	The endpoint that receives the message. A value provided here overrides the <b>Identifiers</b> values supplied on the <b>Profile</b> tab.
Validate ebMS Header	When selected, validates inbound ebMS header from role to role.

### 3.2.3 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 file type—XML or Flat, and set parameters in the tabbed areas. [Figure 3–5](#) shows the document definition parameters for an XML-type Custom document.

**Figure 3–5 Document Definition Parameters for an XML-Type Custom Document**

[Figure 3–6](#) shows the document definition parameters for a flat-file Custom document.

**Figure 3–6 Document Definition Parameters for a Flat-File Custom Document**

The screenshot shows the Oracle Healthcare FastPath Designer interface. At the top, there are navigation tabs for 'Designer', 'Dashboards', and 'Reports'. The main window is titled 'NewDefinition' and contains a 'Document Definition : Custom-V1-NewDocType-NewDefinition' form. The form has several input fields: '\* Name' (NewDefinition), 'Description' (empty), 'Definition' (empty), 'Root XSD Name' (empty), and 'Identification Type' (Flat). There are 'Apply' and 'Revert' buttons. Below the form are several tabs: 'Flat', 'Apps', 'XPath', 'XML', 'Routing', and 'Correlation'. The 'Flat' tab is selected, showing three input fields: 'Identification Start Position', 'Identification End Position', and 'Identification Value'.

Table 3–2 describes the document definition parameters for a Custom document.

**Table 3–2 Document Definition Parameters for a Custom Document**

Parameter	Description
<b>XML Tab</b>	(Available if XML is selected from <b>Identification Type</b> )
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 <b>None</b> , <b>Both</b> , <b>Inbound</b> , or <b>Outbound</b> .
<b>Routing Tab</b>	-
Document Routing ID	Sets the consumer name to the back-end application
<b>XPath Tab</b>	See <a href="#">Section 3.2.3.1, "How to Configure the XPath Expression for a Custom XML Document."</a>
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.
<b>Correlation Tab</b>	-
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 3–2 (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.
<b>Flat Tab</b>	-
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
<b>Apps Tab</b>	-
Document	The name of the internal application document.
Action	A sub-classification within the document.
XSLTFile	The name of the XSLT file.

### 3.2.3.1 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](#)

**3.2.3.1.1 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 agreement. [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>

```

**3.2.3.1.2 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>

```

**3.2.3.1.3 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 3–7](#) shows document version parameters for an HL7 document.

**Figure 3–7 Document Version Parameters for an HL7 Document**

ORACLE SOA Suite for healthcare integration Logout      Logged in as weblogic since 9/5/2011 1:52:43 AM GMT-07:

Designer      Dashboards      Reports

2.3.1

Document Version : HL7-2.3.1      Apply      Revert

\* Name      2.3.1

Description

Batch Header      Message Header      Delimiters      File Header      Miscellaneous

Security      Internationalization Code Alternate Text

Processing ID      P      Internationalization Code Alternate Coding System Name

Accept Acknowledgement Type      AL      International Version Identifier

Application Acknowledgement Type      AL      International Version ID Text

Country Code      US      International Version ID Coding System Name

Character Set      ASCII      International Version ID Alternate Identifier

Internationalization Code Identifier      International Version ID Alternate Text

Internationalization Code Text      International Version ID Alternate Coding System Name

Internationalization Coding System Name

Internationalization Code Alternate Identifier

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

**Table 3–3 Document Version Parameters for an HL7 Document**

Parameter	Description
<b>Message Header Tab</b>	-
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 <b>AL</b> (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 <b>AL</b> (always) is supplied.
Country Code	Sets the country of origin for the message. The value <b>US</b> is supplied.
Character Set	Sets the character set for the entire message. The value <b>ASCII</b> is supplied.
Internationalization Code Identifier	MSH.19

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

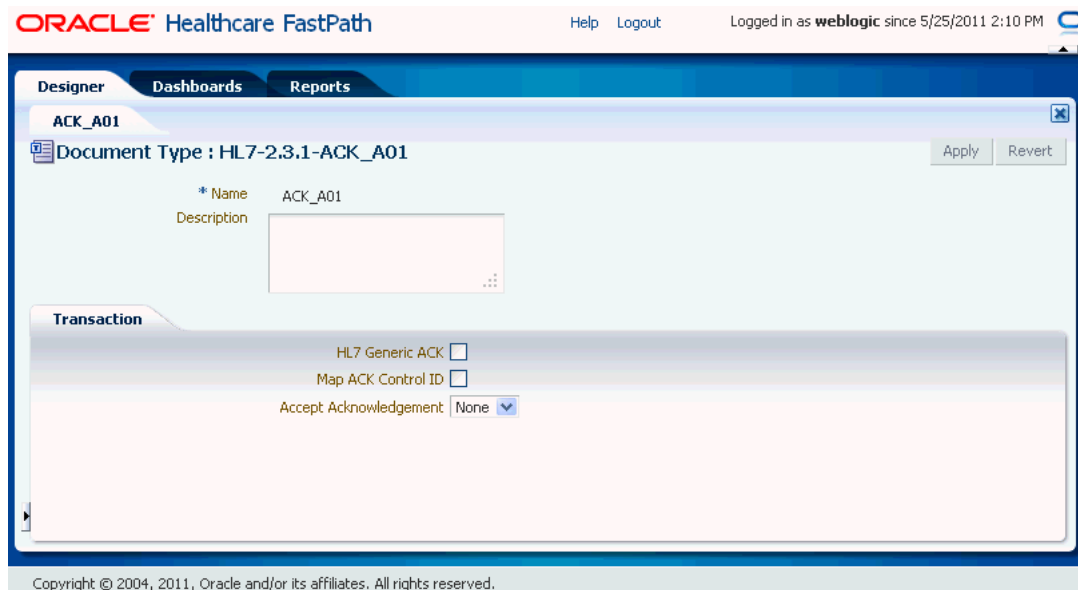
<b>Parameter</b>	<b>Description</b>
Internationalization Code Text	MSH.19
Internationalization Coding System Name	MSH.19
Internationalization Code Alternate Identifier	MSH.19
Internationalization Code Alternate Text	MSH.19
Internationalization Code Alternate Coding System Name	MSH.19
International Version 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
<b>Batch Header Tab</b>	-
Create Batch Header	Select the box to create batch headers.
Batch Header Ecs File	Use the <b>Browse</b> 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) #).
<b>File Header Tab</b>	-
Create File Header	Select the check box to create file headers.
File Header Ecs File	Use the <b>Browse</b> 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) #).
<b>Delimiters Tab</b>	Click <b>Select Hexadecimal Characters</b> 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 <b>0x7c</b> is supplied.
Escape Character	The value <b>0x5c</b> 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 <b>0x7e</b> is supplied.

**Table 3–3 (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 <b>0x0d</b> is supplied.
Subcomponent Delimiter	The value <b>0x26</b> is supplied.
Subelement Delimiter	The value <b>0x5e</b> is supplied.
<b>Miscellaneous Tab</b>	-
Ignore Envelope Parameters	Use this option to provide a list of envelope elements, separated by commas, to be ignored during look-up validation. The possible values depend on the identifiers used in the agreement. For an HL7 agreement, the possible values include <b>MessageSendingApp</b> , <b>MessageReceivingApp</b> , <b>MessageSendingFacility</b> , and <b>MessageReceivingFacility</b> .
Ack Mode	Select this option to specify whether to send a single acknowledgment or multiple acknowledgments for inbound batched HL7 messages. You need to configure this in the inbound business message document definition.

### 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 3–8](#) shows the document type parameters for an HL7 document.

**Figure 3–8 Document Type Parameters for an HL7 Document**

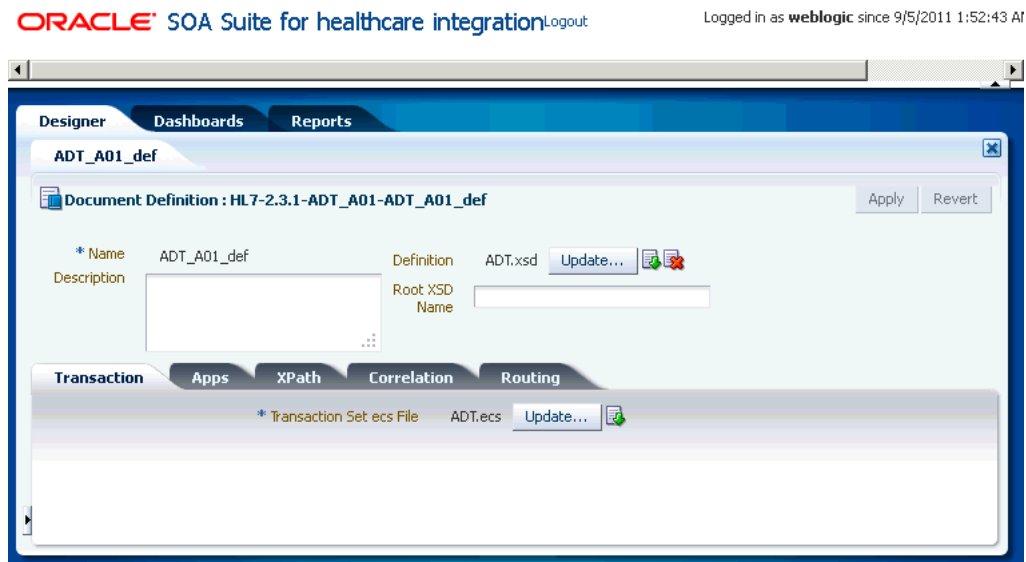
[Table 3–4](#) describes the document type parameters for an HL7 document.

**Table 3–4 Document Type Parameters for an HL7 Document**

Parameter	Description
Transaction Tab	-
HL7 Generic ACK	If selected, Oracle SOA Suite for healthcare integration sends a generic ACK immediately upon receiving an HL7 message.
Map ACK Control ID	Select to enable mapping the MSH.10 of the business message to the MSH.10 of the acknowledgment. <b>Note:</b> 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 <b>None</b> to take no action. Acknowledgment generation is dependent on the value in MSH.15 of the business message. Select <b>AL</b> (always) to generate the acknowledgment under any conditions. Select <b>ER</b> (error/reject) to generate the acknowledgment when the message errors or is rejected. Select <b>SU</b> (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 3–9](#) shows document definition parameters for an HL7 document.

**Figure 3–9 Document Definition Parameters for an HL7 Document**

[Table 3–5](#) describes the document definition parameters for an HL7 document.

**Table 3–5 Document Definition Parameters for an HL7 Document**

Parameter	Description
Transaction Tab	-
*Transaction Set ecs File	Use the <b>Browse</b> button to find the ecs file.
Routing Tab	-
Document Routing ID	Sets the consumer name to the back-end application

**Table 3–5 (Cont.) Document Definition Parameters for an HL7 Document**

Parameter	Description
<b>XPath Tab</b>	-See <a href="#">Section 3.2.3.1, "How to Configure the XPath Expression for a Custom XML Document,"</a> for more information.
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
<b>Correlation Tab</b>	-
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.
<b>Apps Tab</b>	-
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). In summary, because immediate acknowledgments are sent at the transport level, the entry is available only in the wire message report and not in the business message report.

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.

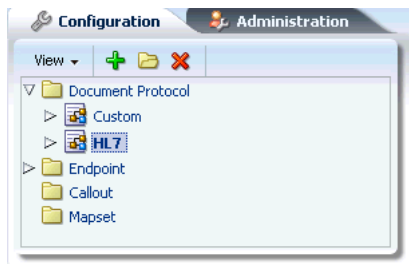
**Note:** The document version, document type, and document definition are not editable after they are created. You must delete the specific document element (version, type, or definition) and create a new one. Updating the document elements after creation can lead to metadata inconsistency, metadata 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 3–10](#), 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 3–10** *Selecting a Document Protocol*



**Note:** To create a Custom document with a name that you provide, click the **Document Protocols** folder and click **Create**. This displays the **Create Document Protocol** dialog box.

In the Create Document Protocol dialog box, enter a protocol name, for example, MyXML\_Document. Do not use an existing document protocol name.

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 3–11 shows the document protocol version page for an HL7 V2.3.1 document.

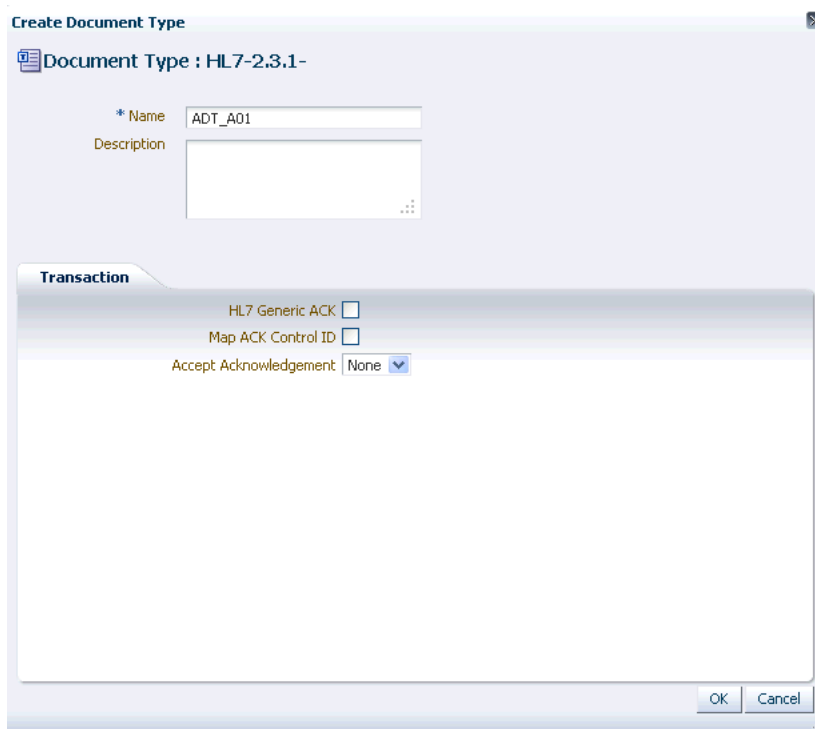
**Figure 3–11 Entering Document Protocol Version Information**

For parameter descriptions, see [Table 3–3, " 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 3–12 shows the document type parameters page for an HL7 V2.3.1 document.

**Figure 3–12 Entering Document Type Parameter Information**



For document type parameter descriptions, see the following:

- [Table 3–1, " Document Type Parameters for a Custom Document"](#)
  - [Table 3–4, " 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 3–13](#) shows the document definition parameters page for an HL7 V2.3.1 document.

**Figure 3–13 Entering Document Definition Parameter Information**

The screenshot shows a 'Create Document Definition' dialog box. The title bar reads 'Create Document Definition'. Below the title bar, the text 'Document Definition : HL7-2.3.1-ADT\_A01-' is displayed. The dialog contains several input fields: '\* Name' (empty), 'Description' (empty), 'Definition' (empty) with a 'Browse...' button, 'Root XSD Name' (empty), and 'Identification Type' (dropdown menu showing 'Flat'). Below these fields are tabs for 'Transaction', 'Apps', 'XPath', 'Correlation', and 'Routing'. Under the 'Transaction' tab, there is a field '\* Transaction Set ecs File' with a 'Browse...' button. At the bottom right, there are 'OK' and 'Cancel' buttons.

For definition parameter descriptions, see the following:

- [Table 3–2, " Document Definition Parameters for a Custom Document"](#)
- [Table 3–5, " Document Definition Parameters for an HL7 Document"](#)

## 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 covers how to work with endpoints in Oracle SOA Suite for healthcare integration.

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, "Deleting an Endpoint"](#)

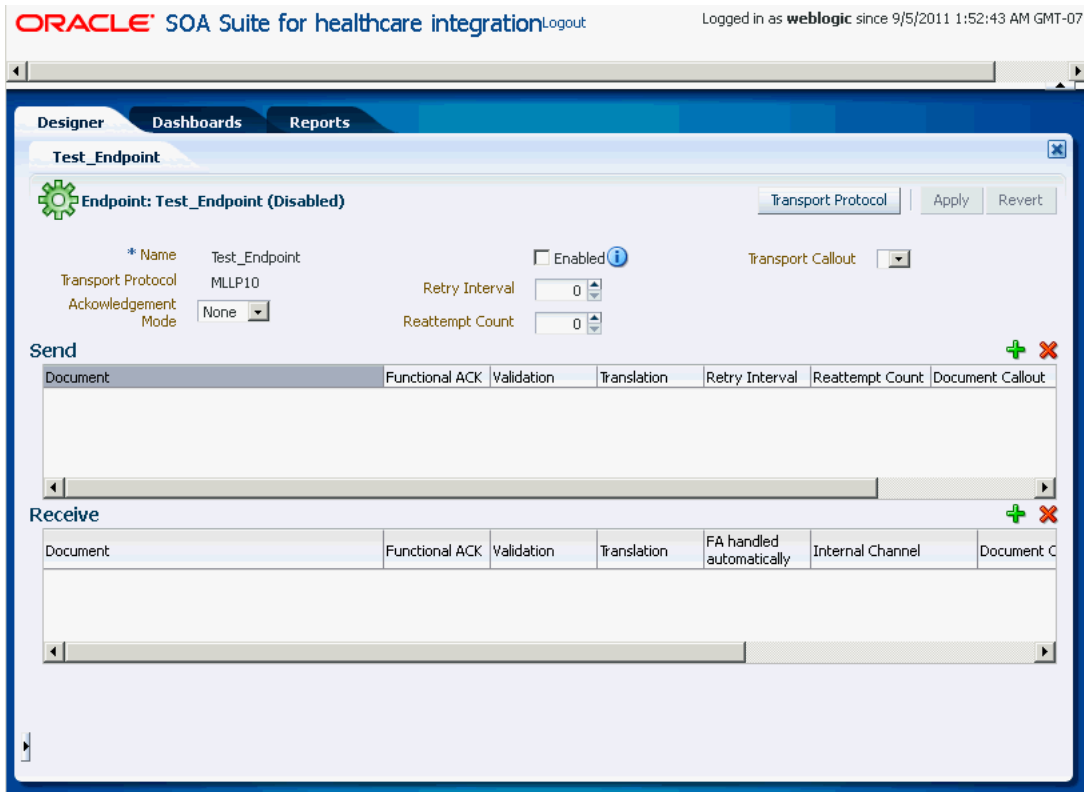
### 4.1 Introduction to Endpoints

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

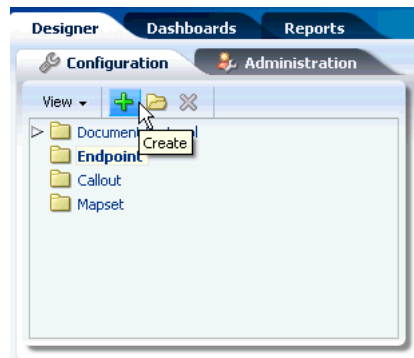


## 4.2 Creating Endpoints

The Oracle SOA Suite for healthcare integration user interface provides an Endpoints page where you can create and configure endpoints. You can also create endpoints using the Healthcare Adapter in Oracle JDeveloper. 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."](#)

### To create endpoints:

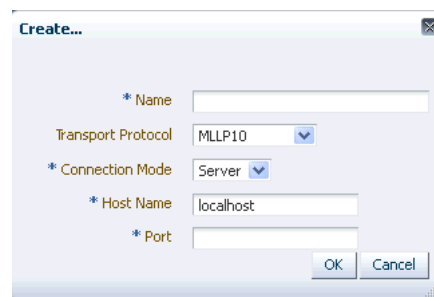
1. Log on to the Oracle SOA Suite for healthcare integration user interface.
2. In the **Configuration** tab under the **Design** tab, click the **Endpoint** folder and then click the **Create** icon as shown in [Figure 4-2](#). You can also double-click the Endpoint folder to display the Create Endpoint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

**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. Currently, Oracle SOA Suite for healthcare integration supports Generic TCP and MLLP 1.0 protocols.  
MLLP 2.0 is also available as an option, but it is not certified.
- **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:** Name of the computer hosting Oracle SOA Suite for healthcare integration. 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.

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

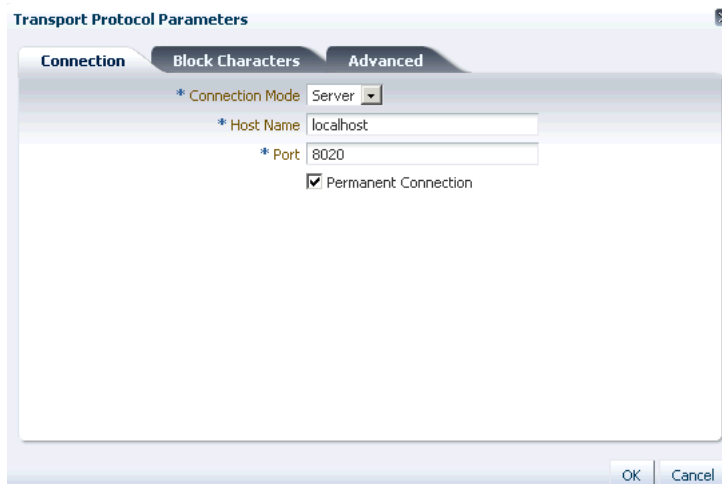
**Figure 4–3 Specifying Endpoint Parameters**

## 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 an endpoint with a document:**

1. Open the required endpoint.
2. Set the following parameters:
  - Acknowledgement (ACK) Mode: Select **Sync**, **Async**, or **None** for the mode in which the endpoint receives messages. Select **None** for all generic TCP and MLLP 1.0 exchanges.
  - Retry Interval: The interval between each attempt to retry message delivery. This option is used only if the transport level ACK is not received within the specified interval. This option is not applicable for generic TCP and MLLP 1.0. It is also not applicable for MLLP 2.0 if the acknowledgment mode is set to **None**.
  - Reattempt Count: The number of times to retry message delivery. This option is not applicable for generic TCP and MLLP 1.0. It is also not applicable for MLLP 2.0 if the acknowledgment mode is set to **None**.
  - 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 Protocol** 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:

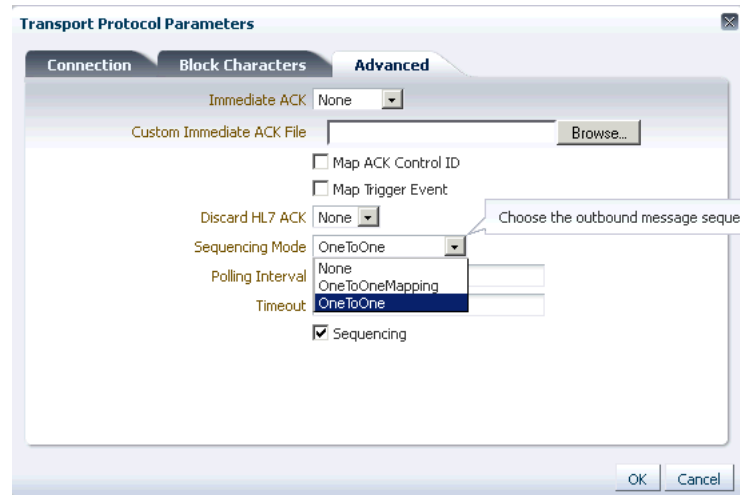
- **None**: Messages are dispatched in sequence without waiting for an ACK
- **OneToOne** (Default): Messages are sent in a sequenced manner, but the ACKs are not expected to carry the Control Numbers (the correlation is done without checking the control number in the ACK). In case of a negative ACK, 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 4–4 displays the available sequencing modes for outbound messages.

**Figure 4–4 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*.

3. 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.

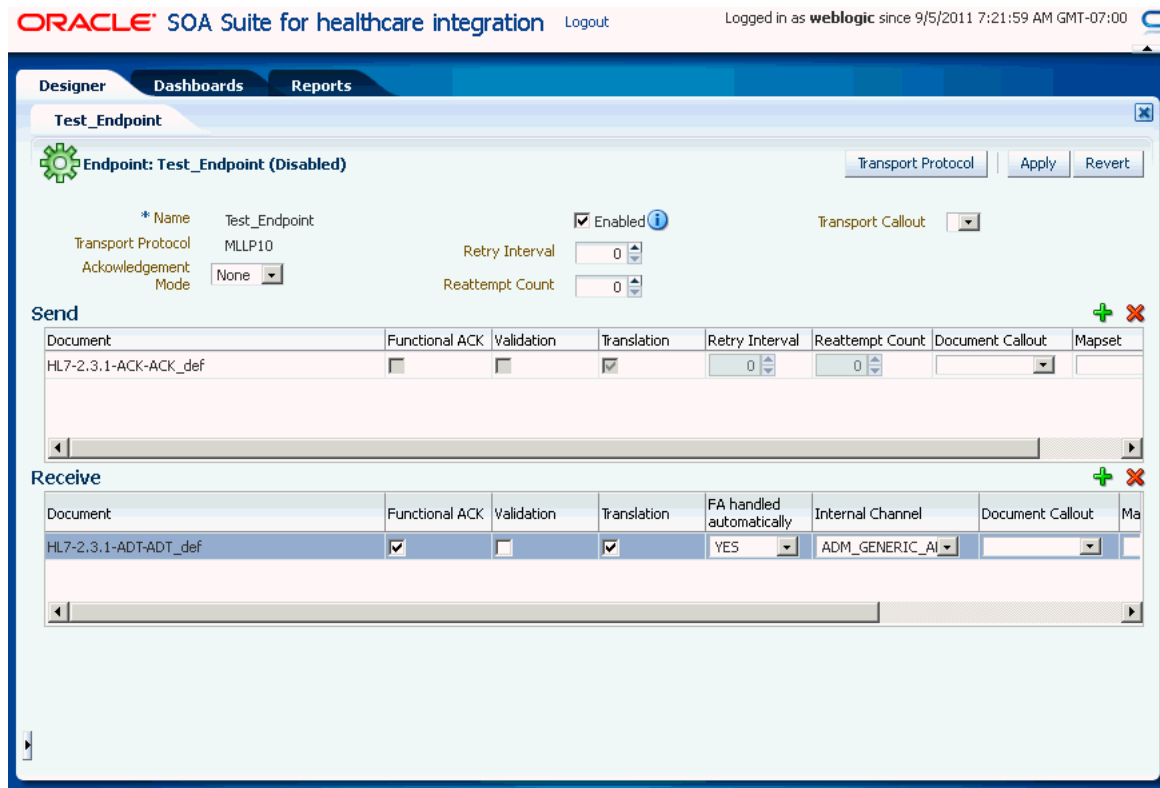
---

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

---

Figure 4–5 displays an endpoint associated with a document definition.

Figure 4-5 Associating an Endpoint with Document Definitions



- c. Select any of the following agreement options to enable them for the endpoint: **Functional ACK, Validation, or Translation.**  
For more information on agreement options, see Table 6-1 Agreement Options in Chapter 6 Creating and Deploying Trading Partner Agreements in *Oracle Fusion Middleware User's Guide for Oracle B2B*.
- 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*.
4. Select the **Enabled** check box to enable the endpoint for sending and receiving messages.
5. Click **Apply**. 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.

---

## 4.4 Deleting an Endpoint

To delete an endpoint, select the endpoint name on the left-hand navigation panel of the Oracle SOA Suite for healthcare integration user interface, and click the **Delete** icon. You can also right-click the endpoint name and click **Delete** from the shortcut menu.

---

---

## Working with Callouts

This chapter describes how to create and use Java callouts, which 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"](#)

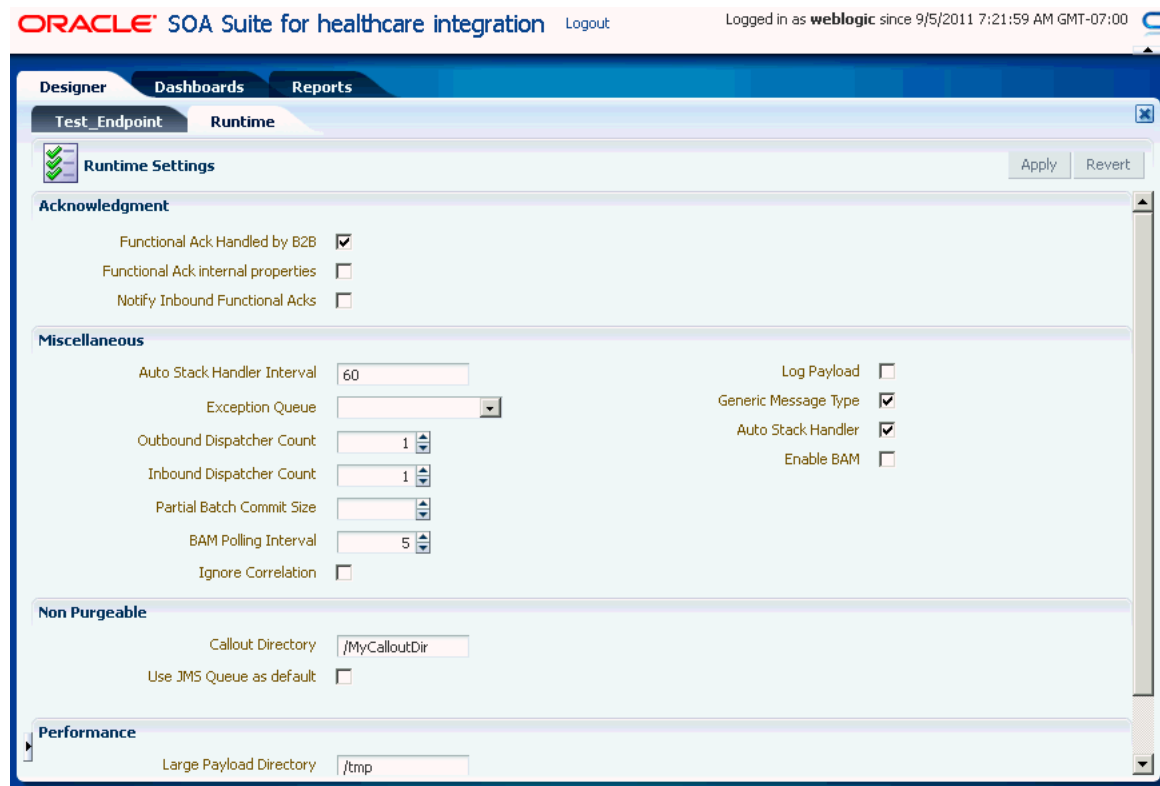
### 5.1 Introduction to Callouts

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




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

---

## 5.2 Types of Callouts

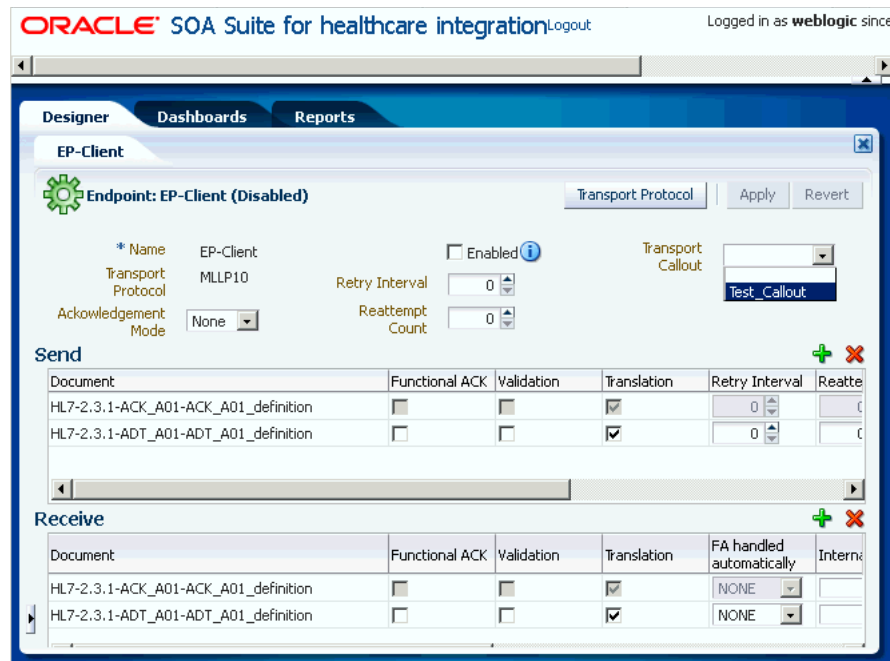
Oracle SOA Suite for healthcare integration provides two types of callouts:

- [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 order request 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 order request 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 order request.
- Associate `callout_inbound` in the endpoint for the inbound message, which is, the endpoint for the responding order 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

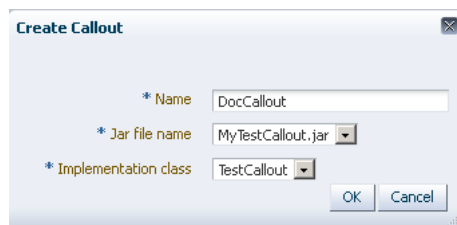
To create a callout, provide callout details—the library name and the implementation class name—and callout parameters, as shown in [Figure 5-4](#).

---

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

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

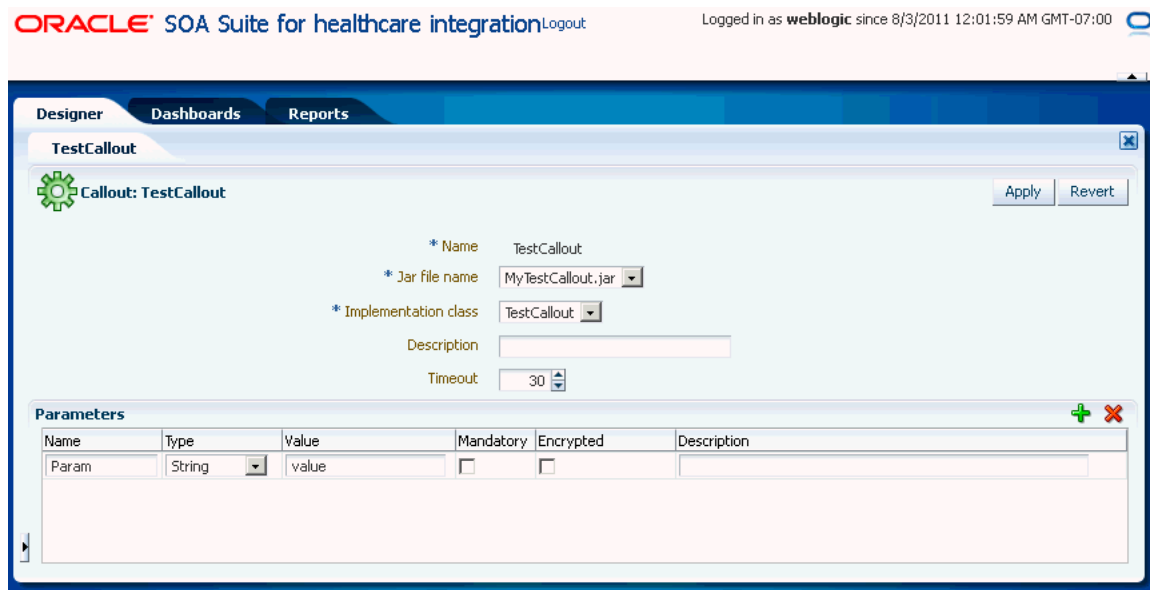
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After creating the callout, you can configure it by specifying the timeout value and optional parameters as shown in [Figure 5-4](#).

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 <b>Integer</b> , <b>Float</b> , <b>String</b> , <b>Boolean</b> , or <b>Date</b> types. The format for the <b>Date</b> type is MM/DD/YYYY. <b>Note:</b> Changing a type can invalidate the parameter default value.
Value	Enter a value. If <b>Encrypted</b> is set to <b>True</b> , then this value is encrypted.
Mandatory	Select <b>True</b> or <b>False</b> .
Encrypted	Select <b>True</b> or <b>False</b> .
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**.



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## Working with Mapsets

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.

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**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.

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#### 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*.

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## 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

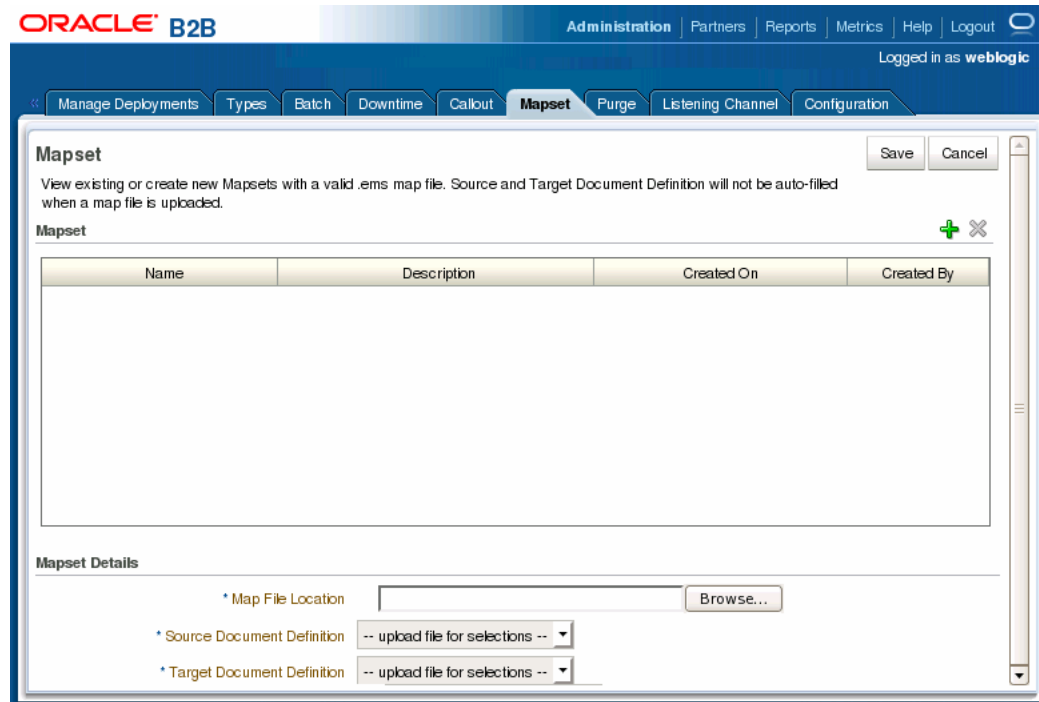
Before you begin this step, make sure the map file is available on the computer from which you are accessing the Oracle B2B Console, and that the required document definitions are already created in Oracle B2B for both of the standards you are mapping. The mapset cannot be created without these three 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.

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 [Update...]

\* 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.

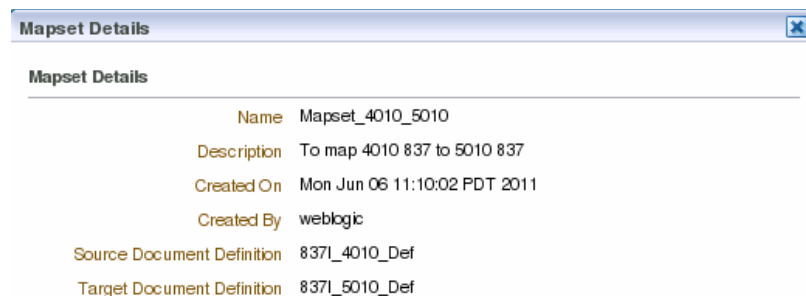
**Figure 6–3 Mapset Page in Oracle B2B**

---

**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 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**

**Mapset**

**Mapse** Apply Revert

**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 Update...

Source Document Definition		Target Document Definition	
Document Protocol	HL7	Document Protocol	HL7
Protocol Version	2.4	Protocol Version	2.4
Document Type	ORM	Document Type	ORM

Source Document Definition:  Browse

Target Document Definition:  Browse

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**.



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## Working with Internal Delivery Channels

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 an Oracle SOA Suite for 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

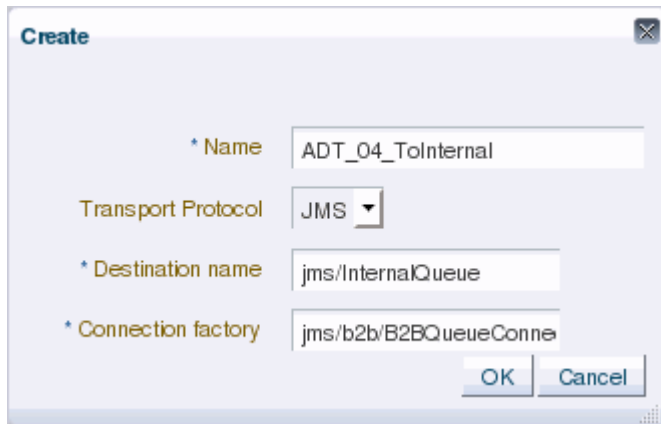
If you need to send messages to an internal delivery channel, create a “send to” internal delivery channel to associate with the endpoint. If you need to receive messages from an internal delivery channel, create a “receive from” internal delivery channel.

#### 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:

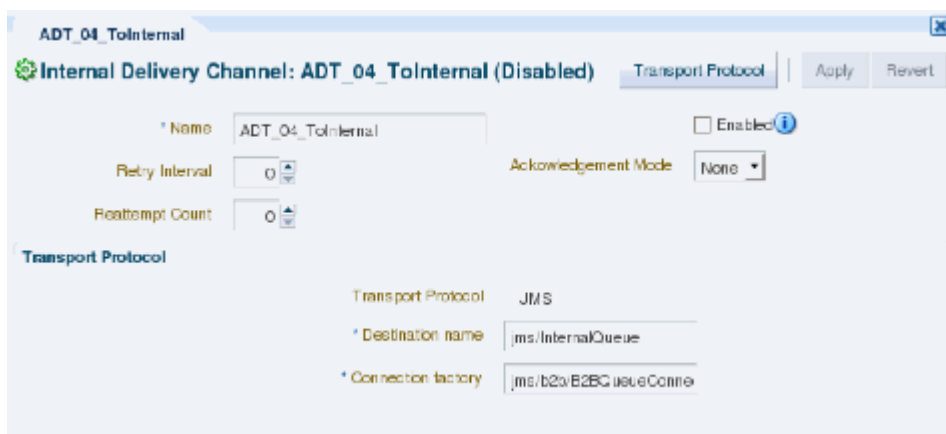
**Table 7-1 New Internal Delivery Channel Properties (Send to)**

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: <b>BYTES</b> , <b>TEXT</b> , or <b>MAP</b> .
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.
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.



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# Working with Dashboards

Oracle SOA Suite for healthcare integration provides dashboards that display endpoint-level status and volume metrics on instance data. This includes endpoint status, message counts, 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, "Viewing Endpoint Error Messages"](#)

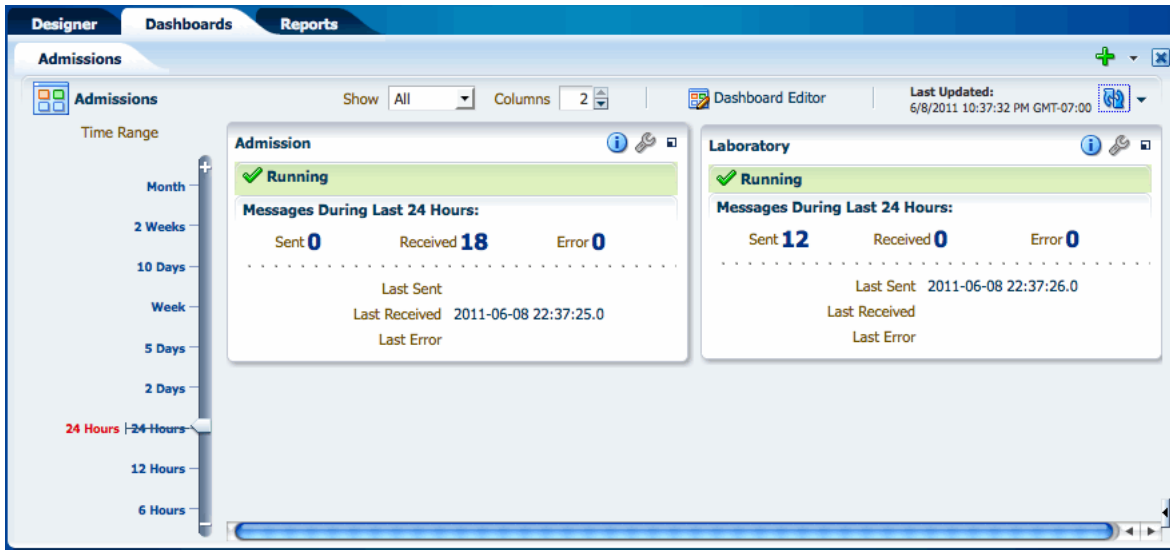
## 8.1 Introduction to Dashboards

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

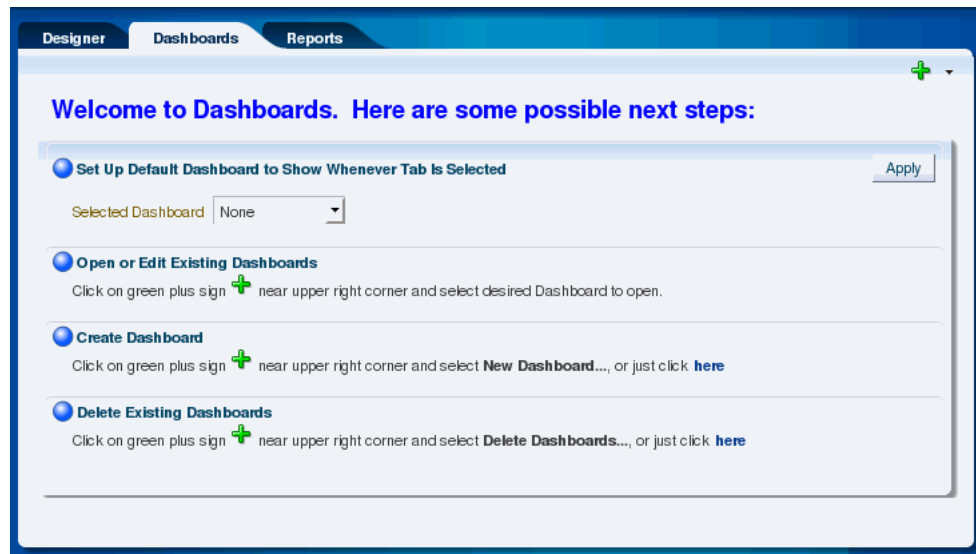
You can create multiple dashboards in Oracle SOA Suite for healthcare integration for a single endpoint or combinations of multiple endpoints.

#### To create a dashboard

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

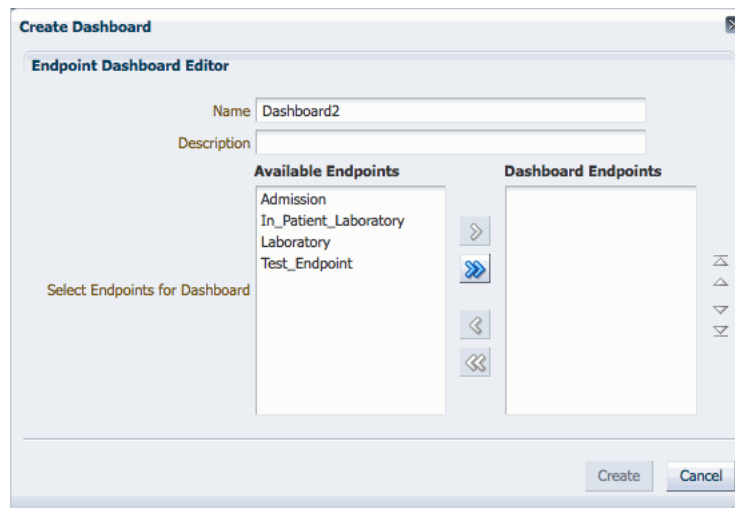
The main Dashboards page appears.

Figure 8–2 Main Dashboards Page



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

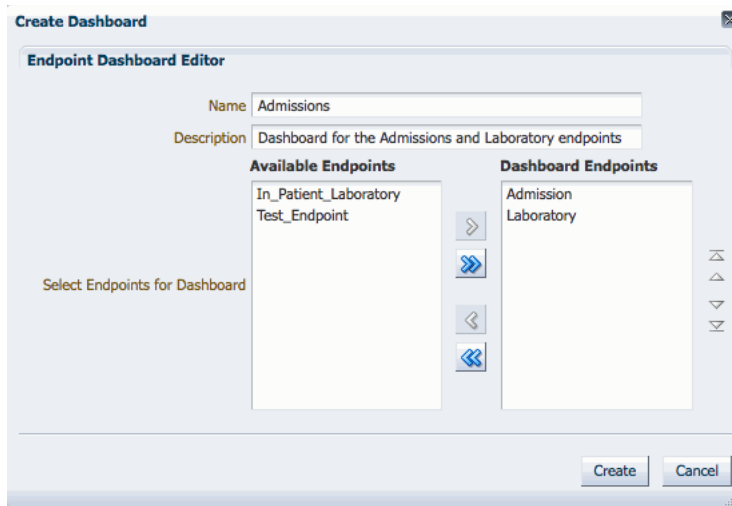
Figure 8–3 Create Dashboard Dialog



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.

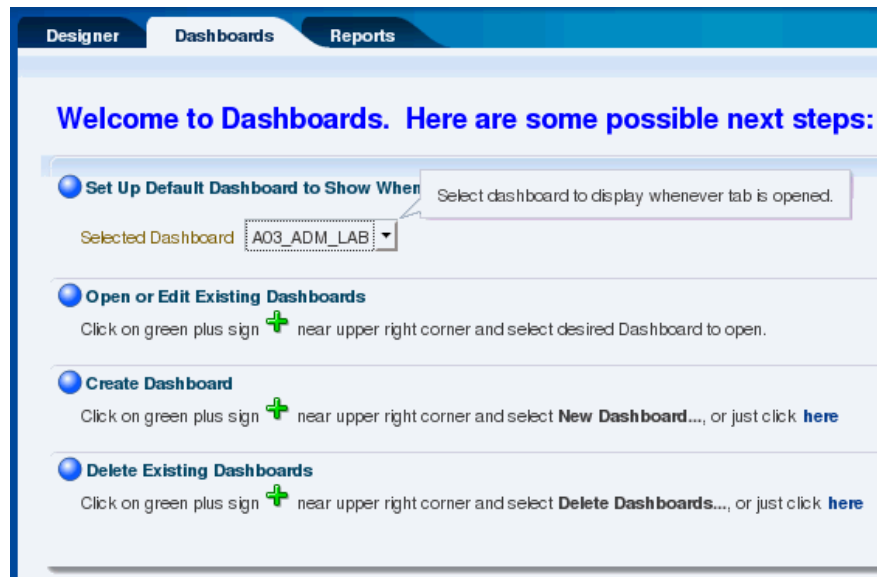
### 8.2.2 Selecting a Default Dashboard

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.

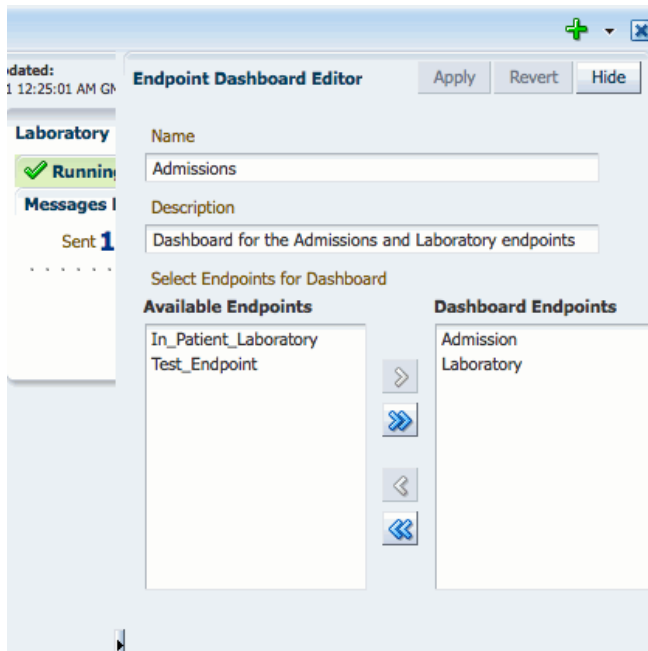
### 8.2.3 Configuring an Existing Dashboard

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 Dashboard Editor**.  
The editor appears on the right side of the dashboard.

**Figure 8–6 Endpoint Dashboard Editor**

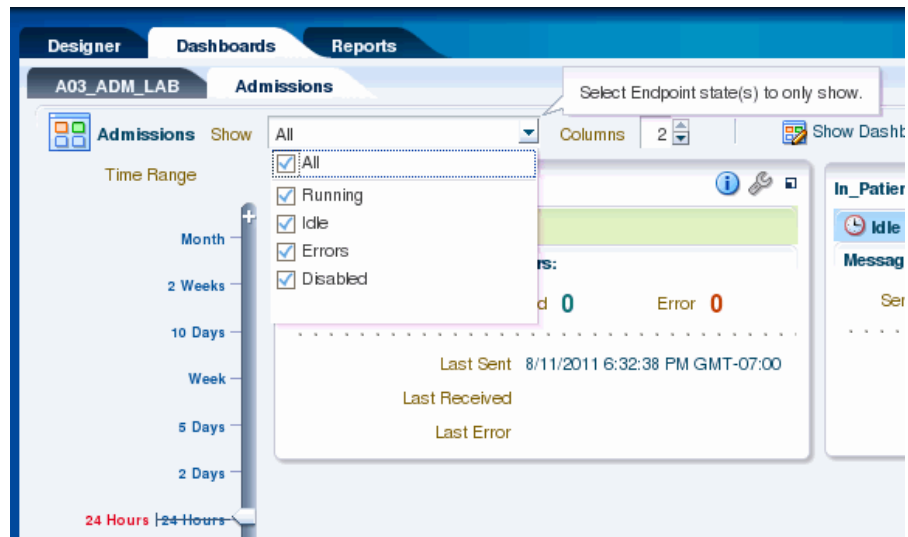


3. Do any of the following:
  - Change the name or description of the dashboard.
  - Add an endpoint by selecting it in the Available Endpoint section and clicking the right-facing arrow.
  - Remove an endpoint by selecting it in the Dashboard Endpoints section and clicking the left-facing arrow.
  -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

**Tip:** If you do not see your changes in the dashboard after you close the editor, 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 logout 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

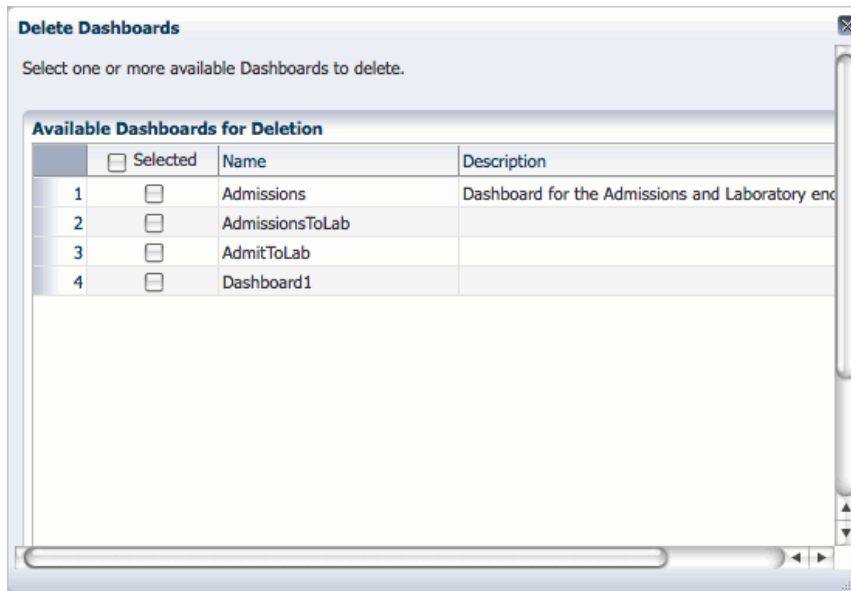
You can delete any of the dashboards you create. Use caution when deleting dashboards. This action is irreversible.

### 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

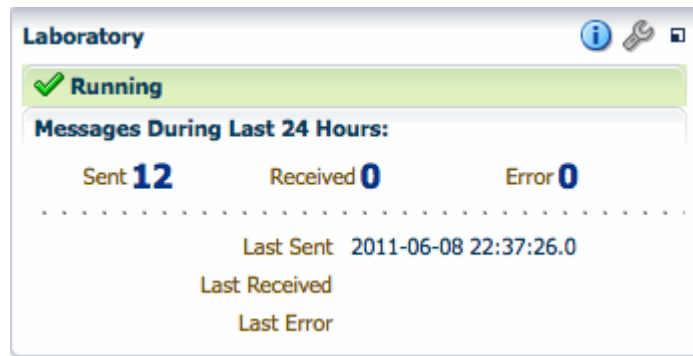
A dashboard has multiple views and you can drill down from each view to get a higher level of detail about a specific endpoint, error, or message.

#### 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:

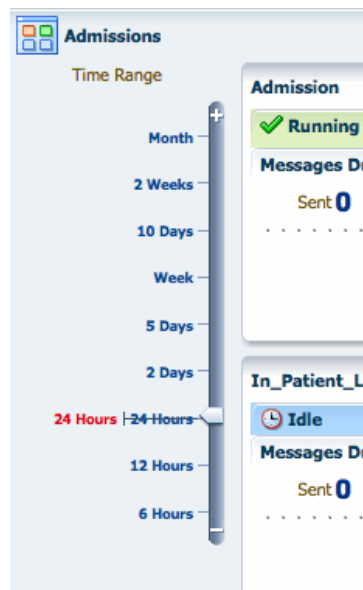


Figure 8–9 Endpoint Summary on a Dashboard



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

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

### 8.3.2 Viewing Detailed Endpoint Information in a Dashboard

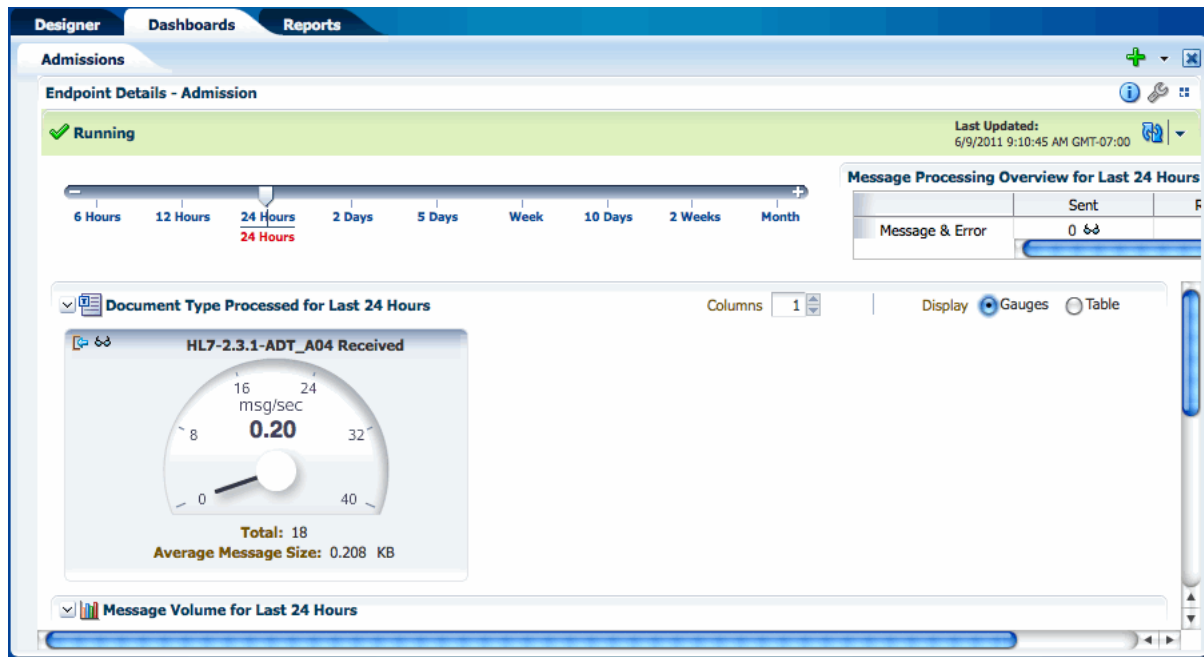
From any endpoint summary view, you can drill down into more information for a specific endpoint, such as the message processing rate, the message volume broken down by message type (sent, received, or error), and the average message size. Additional information is available for errors.

#### 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 8–12 Endpoint Details Page on a Dashboard

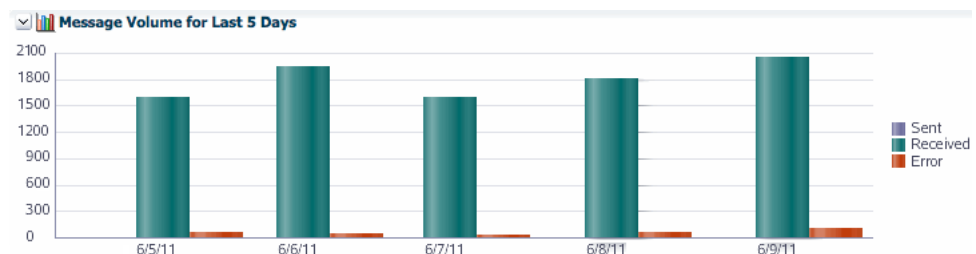


3. To change the time period for the displayed data, move the slider to the left or right on the timescale at the top of the page.
4. You can view the volume metrics for the endpoint as a gauge (shown above) or in tabular format. Select either **Gauge** or **Table** next to **Display**.

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 8–13 Graphical Representation of Message Volume



6. Scroll to the bottom of the page to view error messages for the displayed endpoint.
7. 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 take you to the Reports page.

Figure 8–14 Endpoint Report Accessed from a Dashboard

The screenshot shows a dashboard titled 'Endpoint Admission Report[3]' with a table of message details. The table has columns for Message ID, Created Date and Time, Direction, Endpoint, and State. Below the table is a navigation bar with icons for Admission, Wire Message, Business Message, Application Message, and Composite.

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] 0AE5BA9E13072DE099B0000014671645-1	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] 0AE5BA9E13072DDDFD300000146715CD-1	6/8/2011 10:26:01 PM GMT-07:00	INBOUND	Admission	MSG_COMPLETE

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."

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

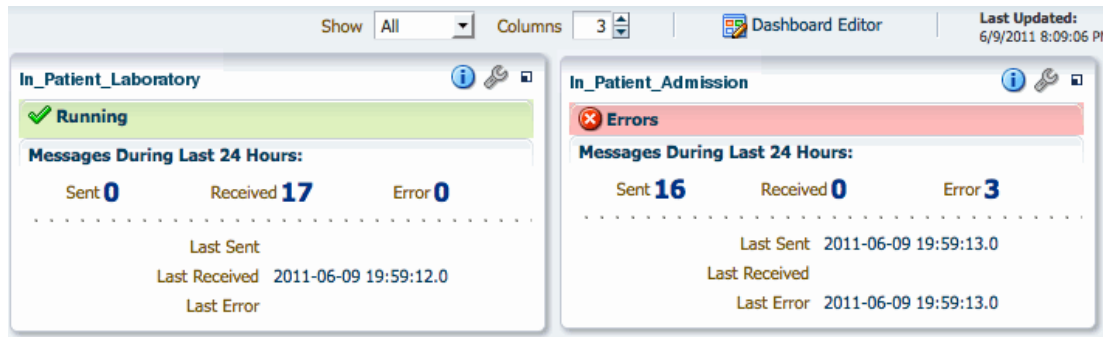
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## 8.4 Viewing Endpoint Error Messages

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 8–15 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.

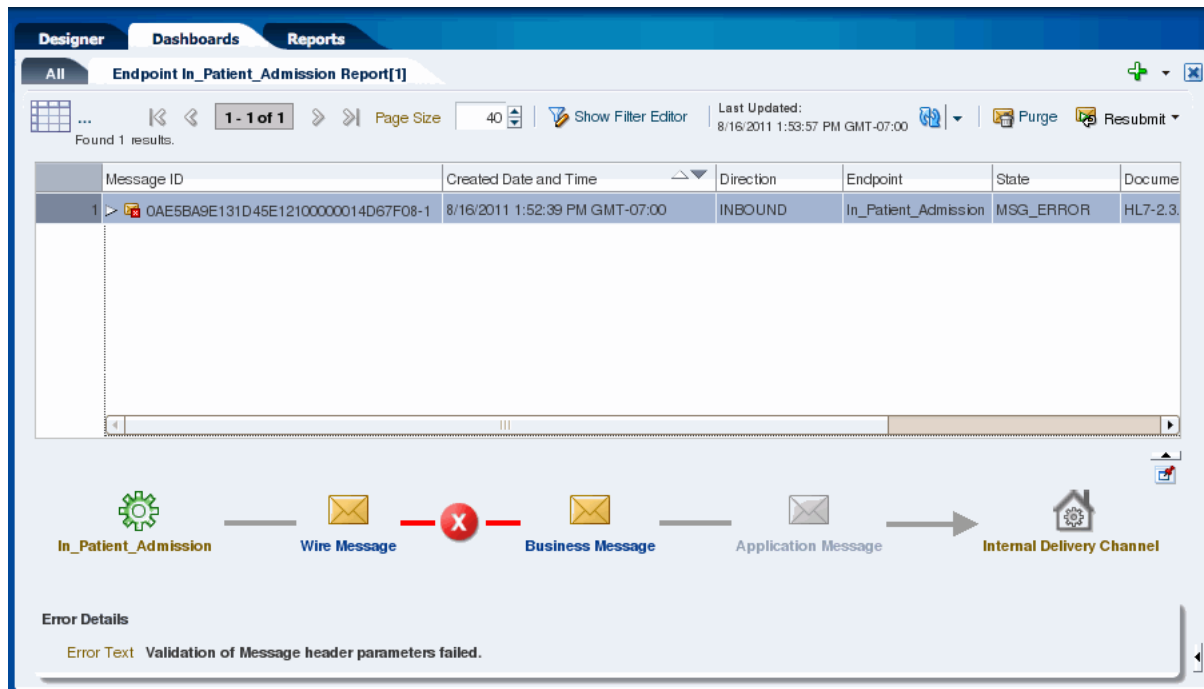
**Figure 8–16 Endpoint Error Messages List**

Latest Errors

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	OAE5BA9E131D45E12100000014D67F08-1
B2B-51512	Validation of Message header parameters failed.	ADT_A03	2011-08-16 13:52:36.0	OAE5BA9E131D45E0F2E0000014D67EFF-1
B2B-51512	Validation of Message header parameters failed.	ADT_A03	2011-08-15 16:13:39.0	OAE5BA9E131CFB8CA400000014D67CB4-1

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 8–17 Endpoint Error Message Report



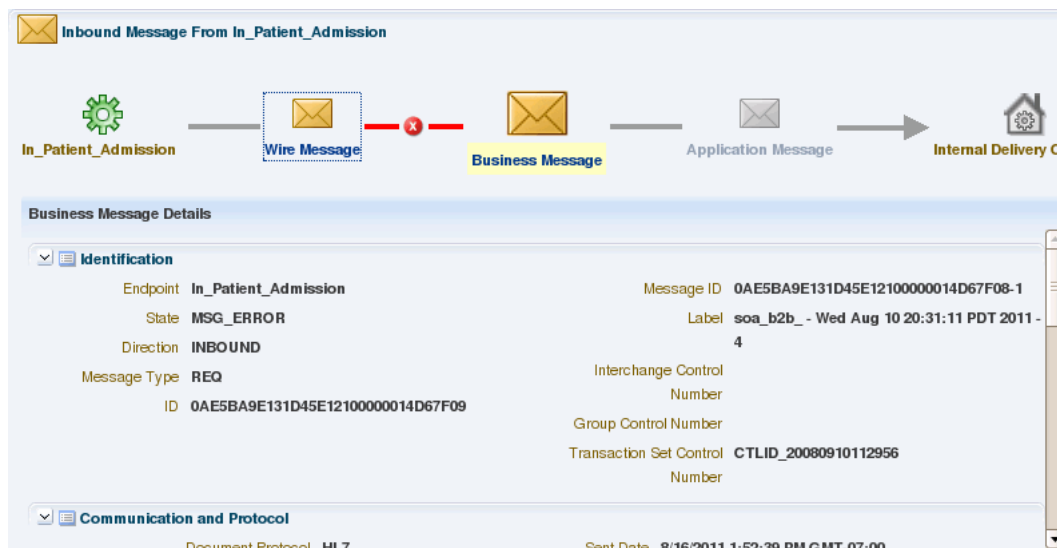
Message ID	Created Date and Time	Direction	Endpoint	State	Docume
1 > OAE5BA9E131D45E12100000014D67F08-1	8/16/2011 1:52:39 PM GMT-07:00	INBOUND	In_Patient_Admission	MSG_ERROR	HL7-2.3

**Error Details**  
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 8–18 Business Message Details



**Business Message Details**

**Identification**

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 Number	CTLID_20080910112956

**Communication and Protocol**

Document Protocol HL7  
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 8–19 Endpoint Transport Error Details**

The screenshot displays an error message within a monitoring dashboard. At the top, a yellow envelope icon is followed by the text "Inbound Message From In\_Patient\_Admission". Below this, a process flow diagram shows the message path: "In\_Patient\_Admission" (gear icon) → "Wire Message" (envelope icon) → "Business Message" (envelope icon) → "Application Message" (envelope icon) → "Internal Delivery Ct" (house icon). A red dashed box with a white 'X' is overlaid on the arrow between "Wire Message" and "Business Message", indicating the point of failure.

**Error Details**

**Error Text** Validation of Message header parameters failed.

**Error Code** B2B-51512

**Error** ERROR

**Severity**

**Error Level** ERROR\_LEVEL\_COLLABORATION

**Error** Machine Info: (Host100123) Validation of Message header parameters failed. Please verify all the Message header parameters in the

**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]





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## Working with Reports

Oracle SOA Suite for healthcare integration provides configurable reports that display real-time status message processing through the healthcare integration application.

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 'Reports' page in Oracle Fusion Middleware. The top navigation bar includes 'Designer', 'Dashboards', and 'Reports'. The main content area is titled 'Last 24 Hours' and displays a table of messages. The table has the following columns: Message ID, Created Date and Time, Direction, Endpoint, and State. The messages listed are all from 6/10/2011 at 10:18:56 AM GMT-07:00, originating from the 'Laboratory' endpoint. The states are 'MSG\_WAIT\_FA' and 'MSG\_COMPLETE'. Below the table is a navigation bar with icons for 'Laboratory', 'Wire Message', 'Business Message', 'Application Message', and 'Composite'. A 'Business Message Details' panel is open, showing the following information:

Identification	
Endpoint	Laboratory
State	MSG_WAIT_FA
Direction	OUTBOUND
Message Type	REQ
ID	0AE5BA9E1307A90505C000001467AC35
Message ID	0AE5BA9E1307A903F2E000001467AA7E
Label	soa_b2b_ - Fri Jun 10 09:53:26 PDT 2011 - 10
Interchange Control Number	
Group Control Number	
Transaction Set Control Number	853246818333403

Below the details panel is a 'Communication and Protocol' section.

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

The screenshot shows the 'Edit Business Message Report Filter' dialog box. At the top, there are buttons for 'Search', 'Save', 'Revert', and 'Hide'. The 'Name' field contains 'Last Month', 'Group' is 'STANDARD\_ALL', and 'Description' is 'All Business Messages for Last Month'. Under 'Match', 'All conditions' is selected. The 'Basic' section includes 'Message ID (Business)' set to 'Any', 'Created Date' set to 'Last', and a time range selector with 'Month' selected. Below that, the 'Range' section has 'From' and 'To' fields, both with '(UTC-08:00) US Pacific Time' and 'Inclusive' checked. 'Direction' is 'Any', 'Endpoint' is 'Any', and 'State' is empty.

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.

### 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

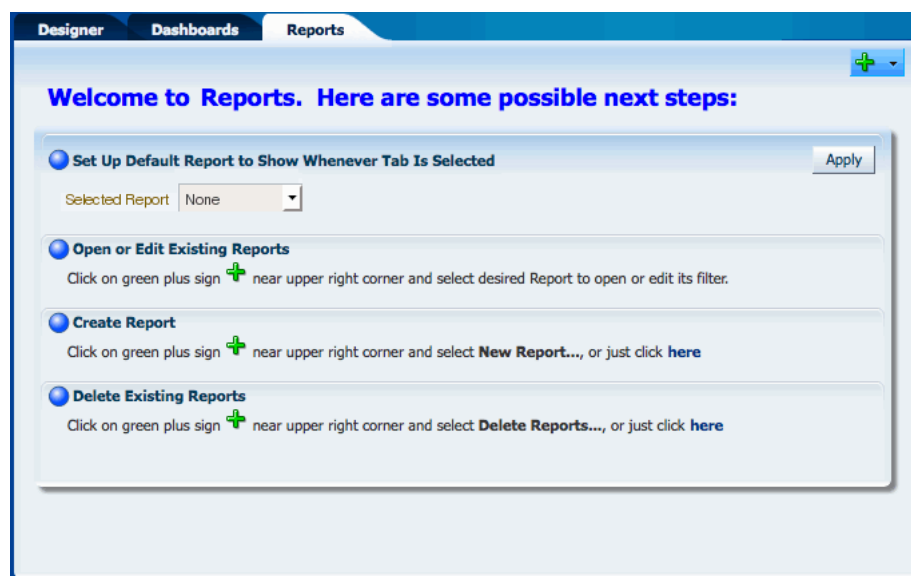
Although several time-based reports are predefined, you can create additional reports to meet your specific requirements.

### 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




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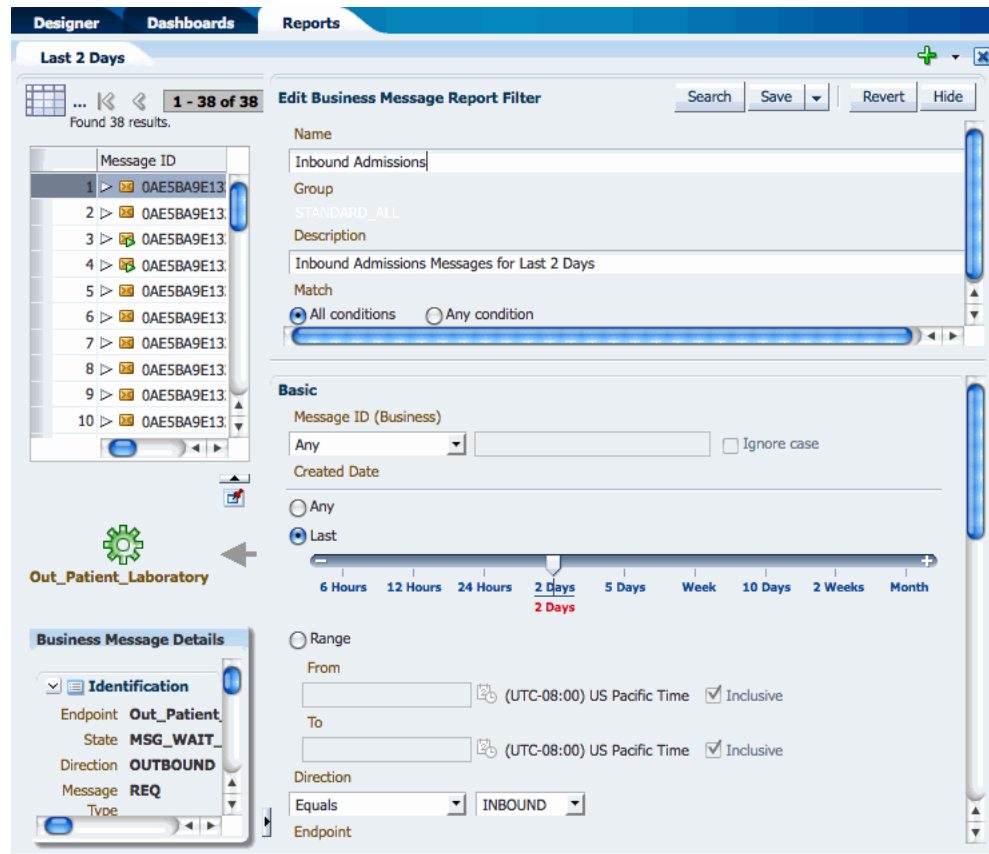
**Note:** If you have already defined a default report, that report will automatically appear. You can perform the following steps from the default report page.

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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**



4. On the Business Message Report Filter Editor, enter any of the filter criteria described in the following table.

**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 <b>All conditions</b> to use AND; select <b>Any condition</b> 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.
<ul style="list-style-type: none"> <li>Any</li> </ul>	Does not narrow the report by any date range, and displays messages from all dates and times.

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

<b>Filter</b>	<b>Description</b>
<ul style="list-style-type: none"> <li>■ Last</li> </ul>	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"> <li>■ Range</li> </ul>	<p>Narrows the report down to the range of dates you specify. In the <b>From</b> or <b>To</b> 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 <b>Select Date and Time</b> 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 <b>From</b> field. To search for all messages earlier than a specific date, only enter a date in the <b>To</b> field. To search for all messages within a range of dates, enter dates in both the <b>From</b> and <b>To</b> fields. To exclude a specific time range, enter the first date in the range to exclude in the <b>To</b> field and enter the last date in the range to exclude in the <b>From</b> field. The search returns all messages received.</p> <p>For both the from and to dates, select <b>Inclusive</b> to include the specified dates in the search, or deselect <b>Exclusive</b> to exclude those dates from the search.</p>
Direction	The direction of the messages to display. Select from <b>Any</b> , <b>Equals</b> , or <b>Not Equals</b> , 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 <b>Any</b> , <b>Equals</b> , or <b>Not Equals</b> , and then click in the field on the right to select one or more message states from the list.
<b>Document</b>	The following three fields specify document properties. For any of these fields, select <b>Ignore case</b> if you do not want the search to be case sensitive.
<ul style="list-style-type: none"> <li>■ Protocol</li> </ul>	The document protocol of the messages to display. Select the operator and then enter the document protocol. For HL7 messages, enter <b>HL7</b> .
<ul style="list-style-type: none"> <li>■ Version</li> </ul>	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 <b>2.6</b> .
<ul style="list-style-type: none"> <li>■ Type</li> </ul>	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 <b>ADT_A04</b> .
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 <b>Name</b> fields, enter the name specified on the XPath page, which represents a field in the message. For <b>Value</b> fields, enter the expected value of the corresponding field.</p> <p>For more information about key fields, see <a href="#">Section 9.1.1.1, "About Correlation and Payload Key Fields."</a></p>

5. To define advanced filters for the report, click **More Details**.

Additional filter options appear in the filter list. Configure any of the filters listed in the following table.

**Table 9–2 Advanced Business Message Report Filters**

Filter	Description
<b>Document</b>	
<ul style="list-style-type: none"> <li>■ Document Definition</li> </ul>	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"> <li>■ Interchange Control Number</li> </ul>	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"> <li>■ Group Control Number</li> </ul>	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"> <li>■ Transaction Set Control Number</li> </ul>	A unique identifier for the transaction set. The functional acknowledgment references this number for transaction set acknowledgment.
<b>Composite</b>	
<ul style="list-style-type: none"> <li>■ Transport Protocol Name</li> </ul>	The name of the transport protocol used by the Oracle SOA composite application.
<ul style="list-style-type: none"> <li>■ Transport Protocol Version</li> </ul>	The version of the transport protocol used by the Oracle SOA composite application
<ul style="list-style-type: none"> <li>■ ECID</li> </ul>	The execution context ID. The ECID enables end-to-end message tracking.
<ul style="list-style-type: none"> <li>■ Composite Instance ID</li> </ul>	The Oracle SOA composite instance ID.
<ul style="list-style-type: none"> <li>■ Composite Name</li> </ul>	The name of the Oracle SOA composite application in Oracle JDeveloper.
<ul style="list-style-type: none"> <li>■ Service Name</li> </ul>	The name of the healthcare integration service binding component in the Oracle SOA composite application.
<ul style="list-style-type: none"> <li>■ Reference Name</li> </ul>	The name of the healthcare integration reference binding component in the Oracle SOA composite application.
<ul style="list-style-type: none"> <li>■ Domain Name</li> </ul>	The name of the WebLogic domain on which the Oracle SOA composite application is deployed.
<ul style="list-style-type: none"> <li>■ Composite Version</li> </ul>	The version of the Oracle SOA composite application in Oracle JDeveloper.
<b>Correlation</b>	
<ul style="list-style-type: none"> <li>■ Correlation From XPath Name</li> </ul>	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 <b>Payload Key Fields</b> in <a href="#">Table 9–1</a> .
<ul style="list-style-type: none"> <li>■ Correlation From XPath Value</li> </ul>	The value of the above field.
<ul style="list-style-type: none"> <li>■ Correlation To XPath Name</li> </ul>	The name of the second field for the correlation.
<ul style="list-style-type: none"> <li>■ Correlation To XPath Value</li> </ul>	The value of the above field.
<b>Error</b>	



**Table 9–2 (Cont.) Advanced Business Message Report Filters**

<b>Filter</b>	<b>Description</b>
■ Error Code	The error code for error message to display on the report.
■ Error Text	The text of an error message to display on the report.
<b>Message</b>	
■ 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 <b>Any</b> , <b>Equals</b> , <b>Not Equal</b> , <b>Less than</b> , <b>Less than or equals</b> , <b>Greater than</b> , or <b>Greater than or equals</b> , and provide a numerical value.
■ Translated Message Size	The size of the message after it is translated. Select from <b>Any</b> , <b>Equals</b> , <b>Not Equal</b> , <b>Less than</b> , <b>Less than or equals</b> , <b>Greater than</b> , or <b>Greater than or equals</b> , and provide a numerical value.

6. To revert any unsaved changes you made to the report filters, click **Revert**.
7. When you are done specifying report filters, do any of the following:
  - To test your filter criteria, click **Search**, and then click **Hide** or **Hide Filter Editor** to close the Business Message Report Filter Editor and view the report.
  - 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

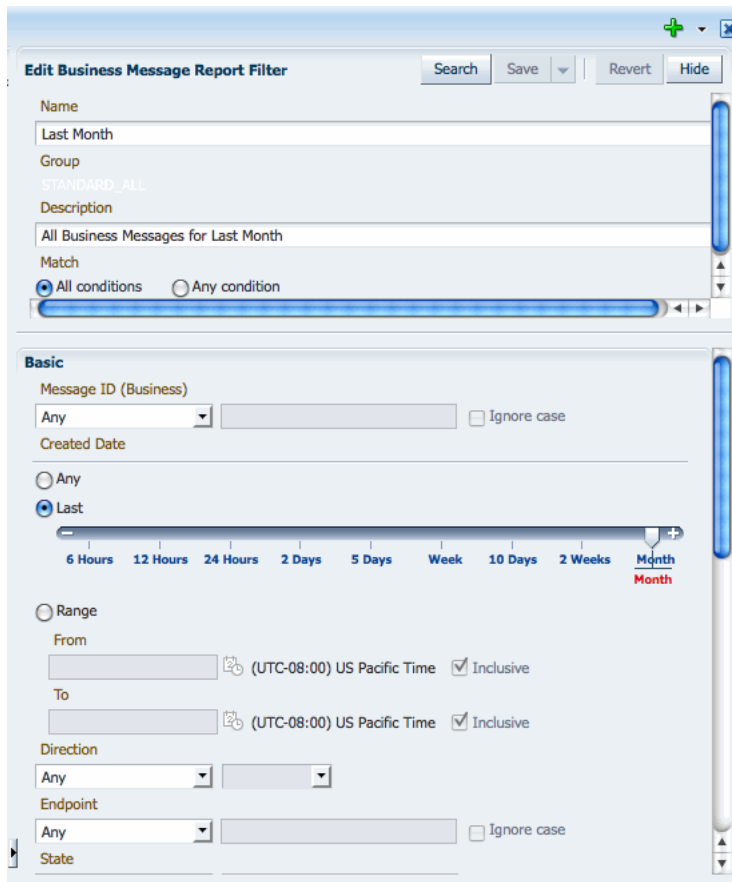
Once you create a report, you can use the Business Message Filter Editor to modify the filter criteria for the report. You can also create a new report using an existing report as a template.

### To configure a report

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

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](#) or [Table 9–2](#).
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 **Hide** or **Hide Filter Editor** to close the Business Message Report Filter Editor and 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

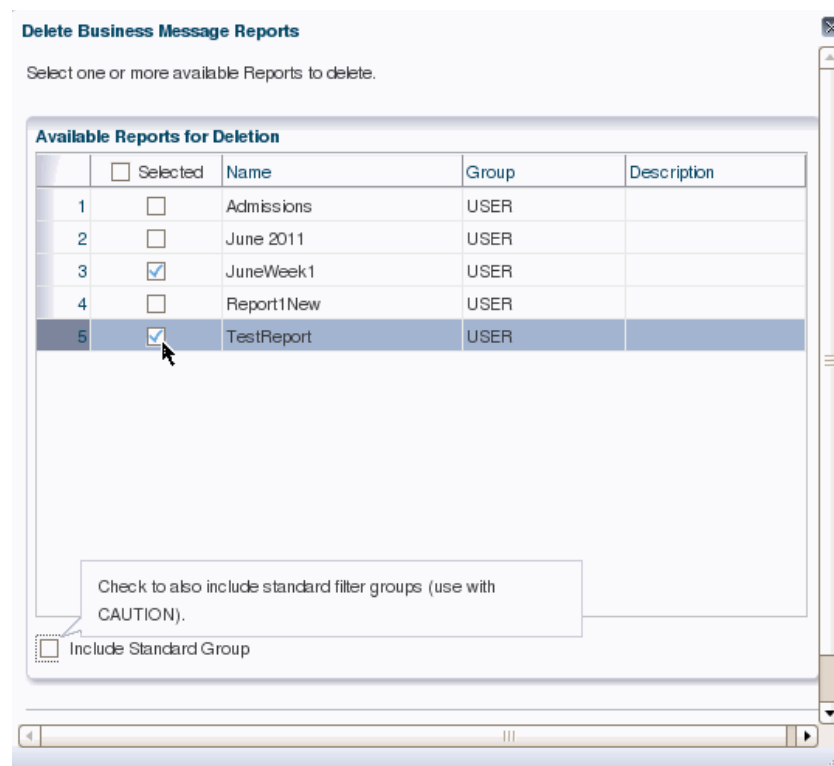
You can delete any of the reports you create. You can also delete any of the predefined reports, but use caution when doing this because this action is irreversible.

### 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 with 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

Below the Content section 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.

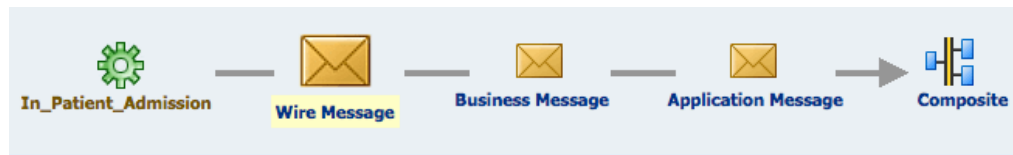
### 9.3.2 Viewing a Wire Message

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.

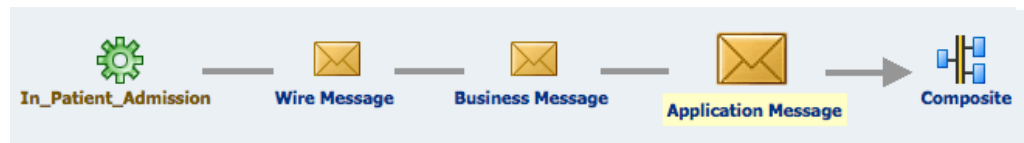
### 9.3.3 Viewing an Application Message

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	FPSscenario1_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	FPSscenario1_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.

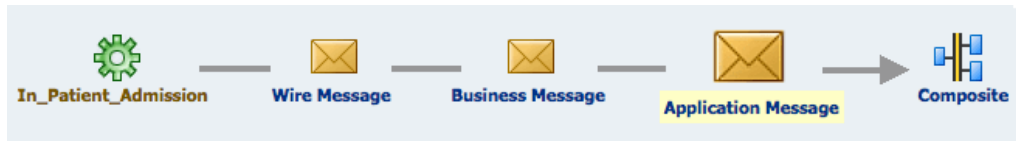
### 9.3.4 Viewing the Flow Trace in Oracle Enterprise Manager

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 <sup>④</sup>

This page shows the flow of the message through various composite and component instances. <sup>②</sup>

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 displays a web-based interface for managing messages. At the top, it shows '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 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**

Message ID	Created Date and Time	Direction	Endpoint	State
2 > [X] OAE5BA9E132082BE7BF0000017C2C30B	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
3 > [X] OAE5BA9E132082BE6BD0000017C2C2F9	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
4 > [X] OAE5BA9E132082BE8590000017C2C314	8/26/2011 3:18:07 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
5 > [X] OAE5BA9E1320829CC950000017C2C2B8	8/26/2011 3:15:50 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
6 > [X] OAE5BA9E1320829CC700000017C2C2B5	8/26/2011 3:15:50 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
7 > [X] OAE5BA9E1320829CC4E0000017C2C2B2	8/26/2011 3:15:50 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
8 > [X] OAE5BA9E1320829CCB10000017C2C2BB	8/26/2011 3:15:50 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
9 > [X] OAE5BA9E1320829CC180000017C2C2AC	8/26/2011 3:15:50 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_
10 > [X] OAE5BA9E1320829CC2A0000017C2C2AF	8/26/2011 3:15:50 PM GMT-07:00	OUTBOUND	Out_Patient_Laboratory	MSG_WAIT_

**4 Business Messages Selected** [Purge] [Resubmit]

**Selection Overview**

- 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

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**.



---

---

## Viewing the Healthcare User Audit Trail

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 10.1, "Introduction to the Audit Trail"](#)
- [Section 10.2, "Enabling and Configuring the Healthcare Integration Audit Trail"](#)
- [Section 10.3, "Viewing User Audit Logs"](#)

### 10.1 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*.

### 10.1.1 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 10–1 Healthcare Integration Components on the Audit Policy Page**

The screenshot shows the Oracle SOA Suite Audit Policy page. At the top, it displays the domain 'soainfra' and 'WebLogic Domain'. Below this is an 'Information' banner stating that changes require a server restart. The main section is titled 'Audit Policy' and includes 'Apply' and 'Revert' buttons. A descriptive paragraph explains the page's purpose. Below the text is a control bar with 'Audit Level' set to 'Custom', 'Select Failures Only', and 'Export... Import...' buttons. The main table lists audit components and events with columns for 'Name', 'Enable Audit', 'Filter', and 'Edit Filter'. The 'Enable Audit' checkbox is checked for the main category and its sub-items.

Name	Enable Audit	Filter	Edit Filter
Oracle SOA Suite for healthcare integration	<input checked="" type="checkbox"/>		
User Session	<input checked="" type="checkbox"/>		
User Login	<input checked="" type="checkbox"/>		
User Logout	<input checked="" type="checkbox"/>		
Endpoint Management	<input checked="" type="checkbox"/>		
Enable Endpoint	<input checked="" type="checkbox"/>		
Disable Endpoint	<input checked="" type="checkbox"/>		
Document Management	<input checked="" type="checkbox"/>		
Read Payload	<input checked="" type="checkbox"/>		
Oracle Identity Federation	<input checked="" type="checkbox"/>		

Below the table is the 'Users to Always Audit' section, which includes a text input field for entering a comma-delimited list of user accounts.

The available components and events for audit in Oracle SOA Suite for healthcare integration include the following:

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

### 10.1.2 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.

## 10.2 Enabling and Configuring the Healthcare Integration Audit Trail

Before you can use the auditing features of Oracle SOA Suite for healthcare integration you need to install the audit policy for healthcare integration and then configure the policy to capture the information you need. Currently, Oracle B2B components and events are not included in the audit trail.

### 10.2.1 Enabling the Healthcare Integration Audit Trail

An audit policy is provided for you to install once you have installed Oracle SOA Suite for healthcare integration.

#### To enable healthcare integration auditing

1. Download the audit policy installation file, `install_audit.zip`.
2. Extract the contents of the file to a temporary directory.
3. From a command prompt, navigate to the temporary directory and extract the contents of the file.
4. Navigate to `/audit`, and run the following command:

```
./install_audit.sh
```

---

**Note:** You might need to change permissions on `./install_audit.sh` so you have execute privileges.

---

### 10.2.2 Configuring Auditing for Healthcare Integration

Once you install the audit policy, you need to configure the policy by selecting the events or components to include in the audit log. 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.

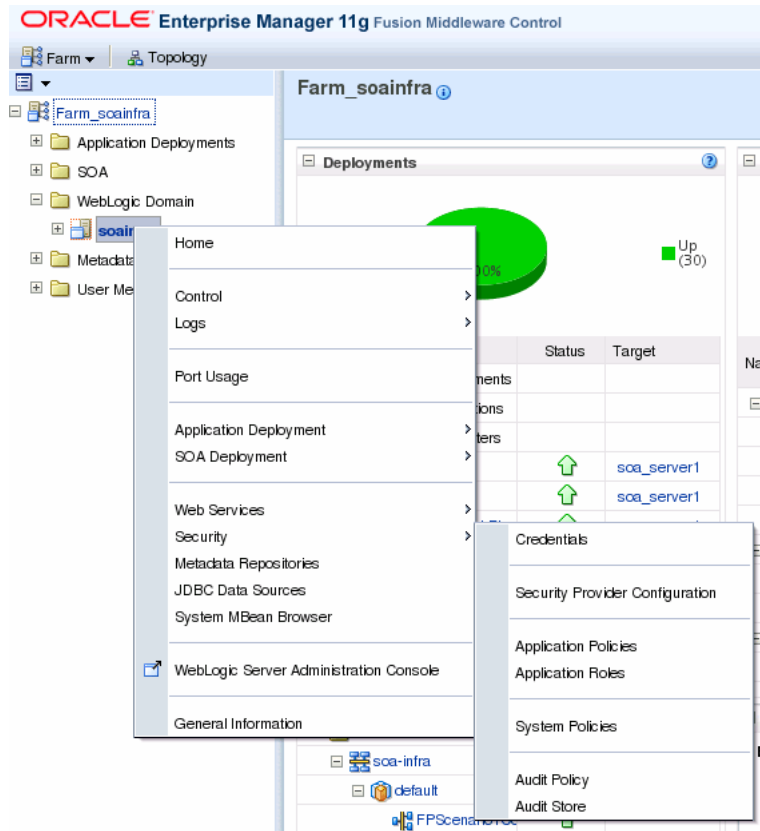
The following instructions apply to custom-level audit policy configuration.

#### 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 10–2 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 10–3 Endpoint Management Component With All Events Selected**

Name	<input type="checkbox"/> Enable Audit	Filter
<input type="checkbox"/> Oracle SOA Suite for healthcare integration	<input type="checkbox"/>	
<input type="checkbox"/> User Session	<input type="checkbox"/>	
<input type="checkbox"/> User Login	<input type="checkbox"/>	
<input type="checkbox"/> User Logout	<input type="checkbox"/>	
<input checked="" type="checkbox"/> Endpoint Management	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/> Enable Endpoint	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/> Disable Endpoint	<input checked="" type="checkbox"/>	
<input type="checkbox"/> Document Management	<input type="checkbox"/>	
<input type="checkbox"/> Read Payload	<input type="checkbox"/>	
<input type="checkbox"/> Oracle Identity Federation	<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 10.1.2, "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.

## 10.3 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

Design-time and runtime data for the Oracle SOA Suite for healthcare integration is 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 11.1, "Introduction to the Oracle SOA Suite for Healthcare Integration Repository"](#)
- [Section 11.2, "Importing and Exporting the Design-Time Repository"](#)
- [Section 11.3, "Purging Repository Data"](#)

### 11.1 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*.

#### 11.1.1 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, healthcare integration projects, 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.

#### 11.1.2 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.

### 11.1.3 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.

### 11.1.4 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. 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

### 11.1.5 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.

## 11.2 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.

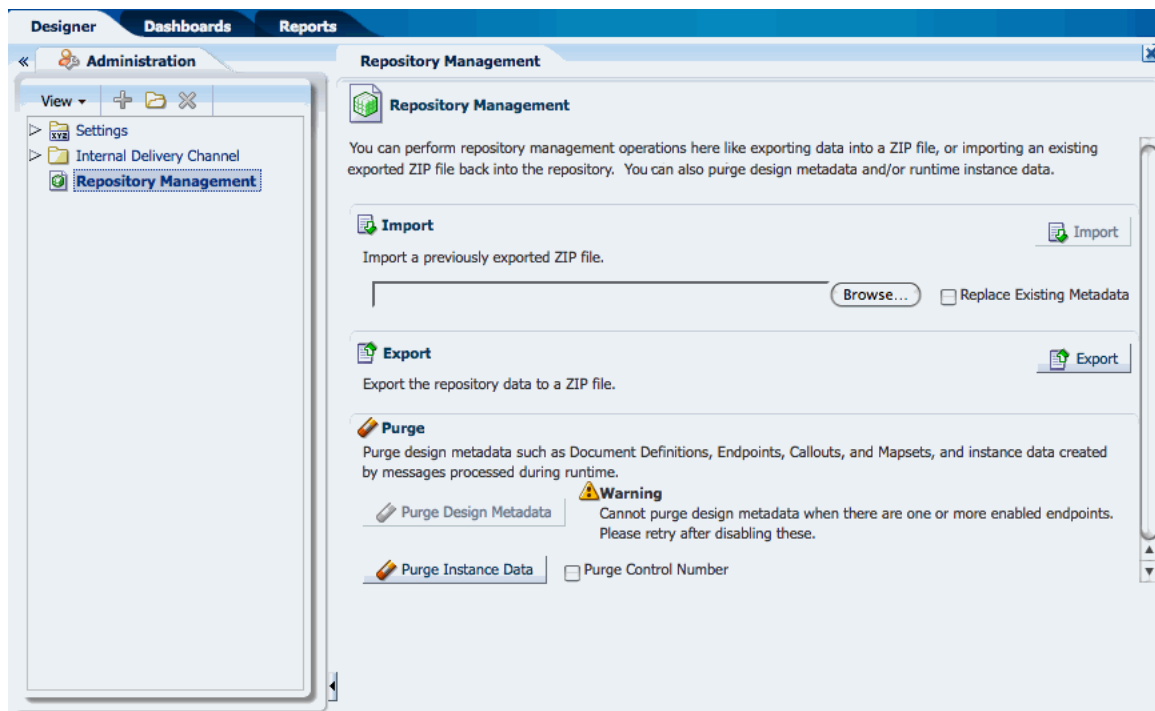
---

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

---

Figure 11–1 shows the Repository Management tab, where you import and export design-time data.

**Figure 11–1** 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**.

## 11.3 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.



---

---

## Configuring System Settings

System settings include properties that define runtime processing for healthcare integration and properties that configure the appearance of the web-based user interface.

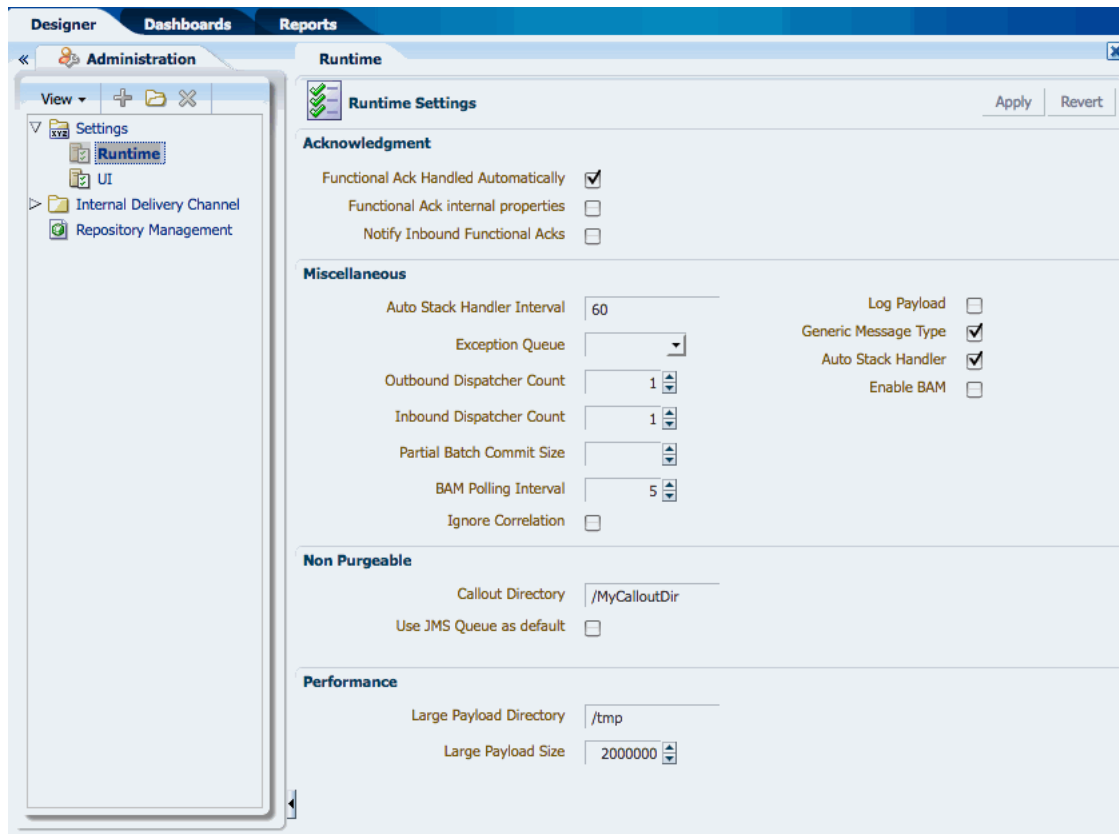
This chapter includes the following topics:

- [Section 12.1, "Configuring the Runtime Settings"](#)
- [Section 12.2, "Configuring the User Interface Settings"](#)

### 12.1 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.

Figure 12–1 Runtime Settings



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*.

**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 12–1](#).
4. When you are done making changes, click **Apply** to save your changes.

**Table 12–1 Runtime Configuration Settings**

Field	Description
<b>Acknowledgment</b>	

**Table 12–1 (Cont.) Runtime Configuration Settings**

Field	Description
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 agreement-level setting), then this property is ignored. This property is selected by default.</p> <p>If the FA is marked as expected in an agreement, 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 <b>Functional Ack Handled Automatically</b> is not selected, <b>Notify Inbound Functional Acks</b> must also be deselected in order for the inbound FA to be sent to the backend application. If <b>Notify Inbound Functional Acks</b> is selected and <b>Functional Ack Handled Automatically</b> 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"> <li>■ 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.</li> <li>■ 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.</li> </ul> <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. When this property is selected, the autogenerated FA message contains interchange/group envelope information from the original message. To swap the interchange and group IDs in the generated FA from the sender to the receiver and vice versa, select this property.</p>

**Table 12–1 (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 <b>Functional Ack Handled Automatically</b> is not selected, <b>Notify Inbound Functional Acks</b> must also not be selected in order for the inbound FA to be sent to the backend application. If <b>Notify Inbound Functional Acks</b> is selected and <b>Functional Ack Handled Automatically</b> 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>
<b>Miscellaneous</b>	
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	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.
Exception Queue	<p>A JMS internal delivery channel for the host to use as the exception queue. A null default value for this parameter means that exceptions are sent to the default JMS queue (B2B_IN_QUEUE) if <b>Use JMS Queue as default</b> is selected or to the AQ queue (IP_IN_QUEUE) if <b>Use JMS Queue as default</b> 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 for MLLP. The default value is 1.
Inbound Dispatcher Count	The number of dispatchers used for handling the inbound messages. This is used in message sequencing for MLLP. The default value is 1.
Auto Stack Handler Interval	The time interval in seconds for the MLLP stack handler to process the stacked messages. Enter comma-separated values for the intervals. The default value is 1.
Partial Batch Commit Size	The number of records to be committed when there is a large number of business messages for a message exchange. Instead of using a single commit, which is prone to errors in case of failure, this feature enables specifying a partial batch commit size. For example, if Partial Batch Commit Size=10 for a message exchange with more than 10 business messages, a separate commit is called for every 10 transaction sets.
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> .

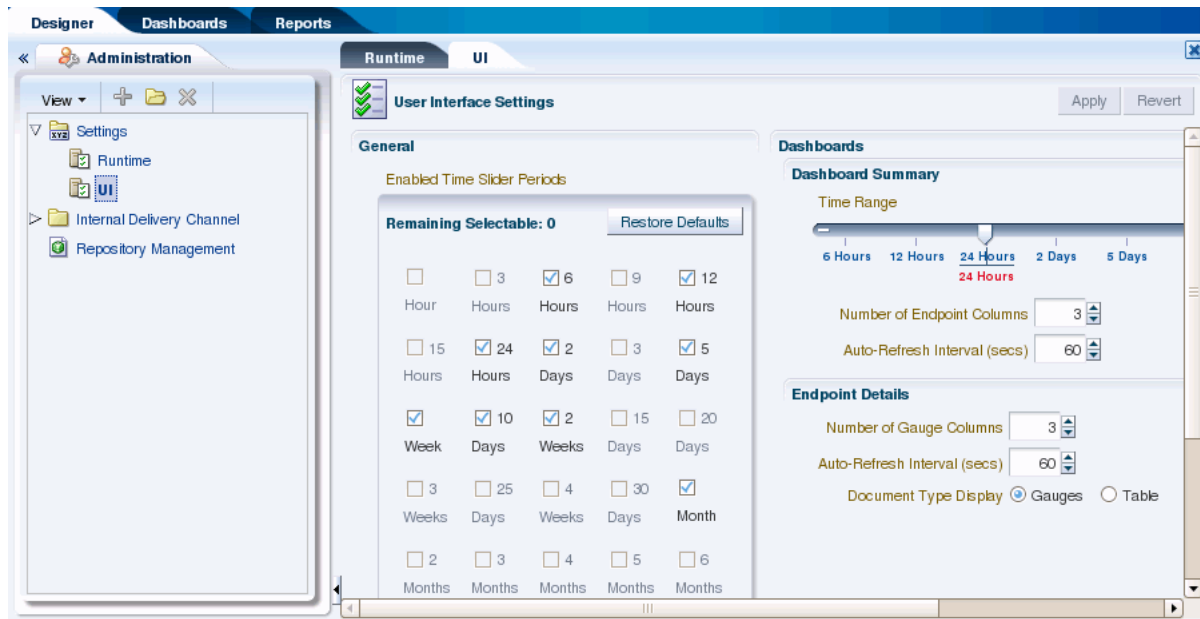
**Table 12–1 (Cont.) Runtime Configuration Settings**

Field	Description
BAM Polling Interval	The polling interval in minutes for Oracle BAM. This is ignored if Oracle BAM is not enabled.
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.
<b>Non Purgeable</b>	
<b>Note:</b> 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, <code>/MyCalloutDir</code> , 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 <code>B2B_OUT_QUEUE</code> for outbound messages, and delivers all inbound messages to <code>B2B_IN_QUEUE</code> . Polling on <code>IP_OUT_QUEUE</code> is stopped.  If this option is not selected (the default), Oracle SOA Suite for healthcare integration starts to poll on the AQ queue <code>IP_OUT_QUEUE</code> for outbound messages, and delivers all inbound messages to <code>IP_IN_QUEUE</code> . Polling on <code>B2B_OUT_QUEUE</code> 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.
<b>Performance</b>	
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 <code>/tmp</code> . For Windows-based systems, change the directory to an appropriate directory, such as <code>C:\temp</code> .

## 12.2 Configuring the User Interface Settings

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

**Figure 12–2 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 12–3 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 12–2](#).



**Table 12–2 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 <b>Yes</b> to display the payload; otherwise select <b>No</b> .
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

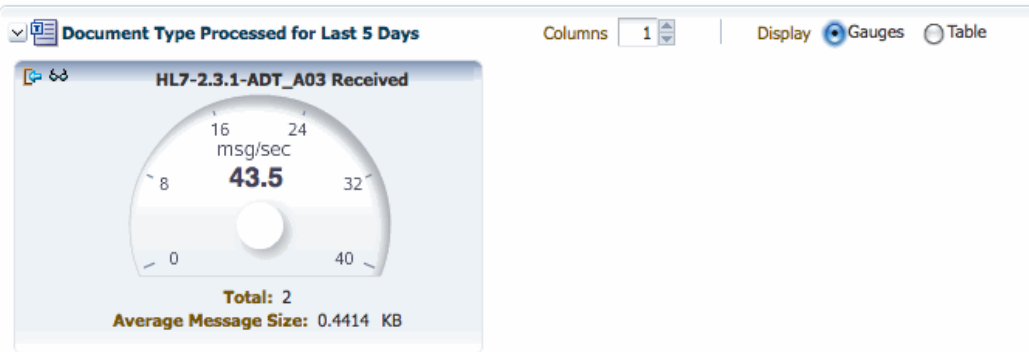
You can configure the appearance of the Endpoint Details page of a dashboard. This is the page that appears when you click the Endpoint Details icon for an endpoint on the Dashboard Summary page.

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 12–3](#).

**Table 12–3 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 the following figures.

**Figure 12–4 Document Type Information in Gauge Format**



**Figure 12–5 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

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

---

---

# Managing Message Sequencing

Oracle SOA Suite for healthcare integration provides command-line and Java-based tools to help monitor and manage message sequencing.

This appendix includes the following topics:

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

## A.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.

## A.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 A.3.1, "Prerequisites for Running Command-Line Tools."](#)

## A.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

```

## A.2.2 Listing Pending Sequence Messages

You can generate a report of pending sequence 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 sequence messages, depending on the criteria you want to use.

### Listing Pending Sequence 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.
state	The state of the messages to include in the report. Specify one of the following states: <ul style="list-style-type: none"> <li>■ <b>PROCESSED</b>: Message processing is complete and is pending for delivery.</li> <li>■ <b>STACKED</b>: An error has occurred preventing the message from processing.</li> <li>■ <b>PAUSED</b>: The endpoint is paused.</li> </ul>

**Listing Pending Sequence 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	<p>The state of the messages to include in the report. Specify one of the following states:</p> <ul style="list-style-type: none"> <li>■ <b>PROCESSED:</b> Message processing is complete and is pending for delivery.</li> <li>■ <b>STACKED:</b> An error has occurred preventing the message from processing.</li> <li>■ <b>PAUSED:</b> The endpoint is paused.</li> </ul>

**Listing Pending Sequence 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.

**A.2.3 Discarding Messages**

You can delete sequence 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
- 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 Sequence 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
```

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"> <li>■ <b>PROCESSED:</b> Message processing is complete and is pending for delivery.</li> <li>■ <b>STACKED:</b> An error has occurred preventing the message from processing.</li> <li>■ <b>PAUSED:</b> The endpoint is paused.</li> </ul>

**Discarding Sequence 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"> <li>■ <b>PROCESSED:</b> Message processing is complete and is pending for delivery.</li> <li>■ <b>STACKED:</b> An error has occurred preventing the message from processing.</li> <li>■ <b>PAUSED:</b> The endpoint is paused.</li> </ul>

**Discarding Sequence 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
```

Parameter	Description
target	The name (or IP address and port number) for the endpoint for which you want to discard messages.

**Discarding Sequence 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.

## A.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.

## A.2.5 Pausing and Resuming an 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.

### Pausing an Endpoint

The syntax of this method is:

```
public boolean pauseSequenceTarget(java.lang.String target)
    throws java.lang.Exception
```

Parameter	Description
target	The name (or IP address and port number) for the endpoint you want to pause.

### Resuming an Endpoint

The syntax of this method is:

```
public boolean resumeSequenceTarget(java.lang.String target)
    throws java.lang.Exception
```

Parameter	Description
target	The name (or IP address and port number) for the endpoint you want to resume

## A.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.

### A.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
```

---

---

### A.3.2 Listing Endpoints With States

You can generate a report that lists the messages 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 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 <b>listTargets</b> .

### A.3.3 Listing Pending Sequence Messages

You can generate a report of pending sequence 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 <b>report</b> .
-Dstate	The state of the message to include in the report. Specify one of the following states: <ul style="list-style-type: none"> <li>■ <b>PROCESSED</b>: Message processing is complete and is pending for delivery.</li> <li>■ <b>STACKED</b>: An error has occurred preventing the message from processing.</li> <li>■ <b>PAUSED</b>: The endpoint is paused.</li> </ul> To generate a report with 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 generate a report for all targets, do not use this option when running the command.

#### **Example A-1 Listing Sequence Messages Based on State and Endpoint**

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=report -Dstate=STACKED
-Dtarget=Pharmacy01
```

#### **Example A-2 Listing Sequence Messages Based on State Only**

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=report -Dstate=PROCESSED
```

#### **Example A-3 Listing Sequence Messages Based on Endpoint Only**

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=report -Dtarget=Pharmacy01
```

### A.3.4 Discarding Messages

You can delete sequence 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
```

Option	Description
-Dmode	The mode in which to run the command. For discarding messages, set this option to <b>discard</b> . If you are discarding only the first message in an endpoint, set this option to <b>discardFirst</b> .
-Dstate	The state of the messages to discard. Specify one of the following states: <ul style="list-style-type: none"> <li>■ <b>PROCESSED</b>: Message processing is complete and is pending for delivery.</li> <li>■ <b>STACKED</b>: An error has occurred preventing the message from processing.</li> <li>■ <b>PAUSED</b>: The endpoint is paused.</li> </ul> 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.

**Example A-4 Discarding Sequence 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 A-5 Discarding Sequence 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 A-6 Discarding Sequence 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 A-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 A-8 Discarding Sequence 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
```

### A.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 <b>pause</b> or <b>resume</b> .
-Dtarget	The name (or IP address and port number) for the endpoint you want to pause.

**Example A-9 Pausing an Endpoint**

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=pause -Dtarget=Pharmacy01
```

**Example A-10 Resuming an Endpoint**

```
ant -f ant-b2b-util.xml b2bsequencemanager -Dmode=resume -Dtarget=Pharmacy01
```



---

---

## Implementing MLLP with High Availability

Oracle SOA Suite for healthcare integration provides support for the Minimal Lower Layer Protocol (MLLP) in a high availability environment.

This appendix contains the following topics:

- [Section B.1, "Introduction to Healthcare Integration High Availability"](#)
- [Section B.2, "Enabling MLLP High Availability in Oracle SOA Suite for Healthcare Integration"](#)
- [Section B.3, "Creating the JMS Resources"](#)

### B.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.

#### B.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 active instance in the cluster 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, an 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.

#### B.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. Remote trading partners and

other 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. An alternative to using a load balancer is to use the WebLogic cluster IP address.

### B.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

### B.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](#)

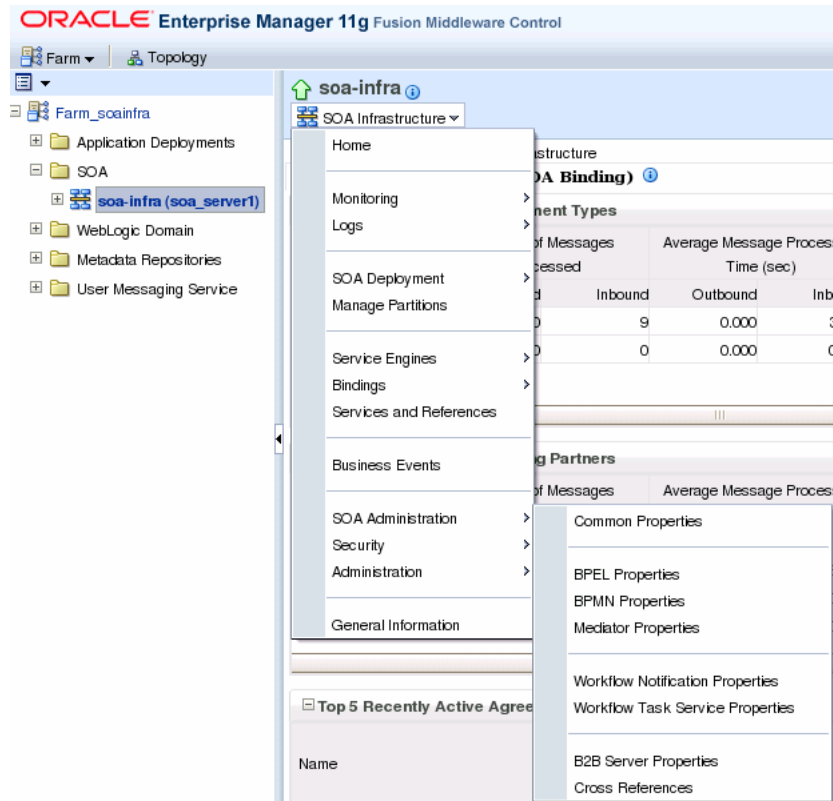
## B.2 Enabling MLLP High Availability in Oracle SOA Suite for Healthcare Integration

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

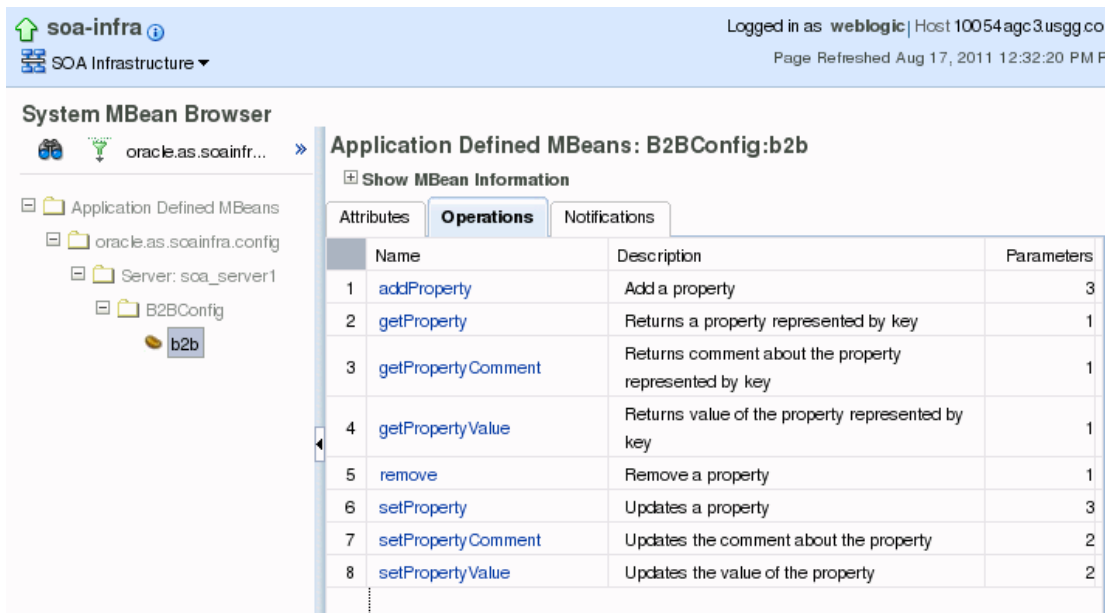
1. Log on to Oracle Enterprise Manager.  
The URL is `http://hostname:port/em`  
where *hostname* is the name of the computer on which WebLogic Server is running and *port* is the port number on which WebLogic Server is listening.
2. In the left navigation panel, expand the **SOA** node and select **soa-infra**.
3. Click the **SOA Infrastructure** menu, point to **SOA Administration** and then select **B2B Server Properties**.

Figure B-1 SOA Infrastructure Menu on Enterprise Manager



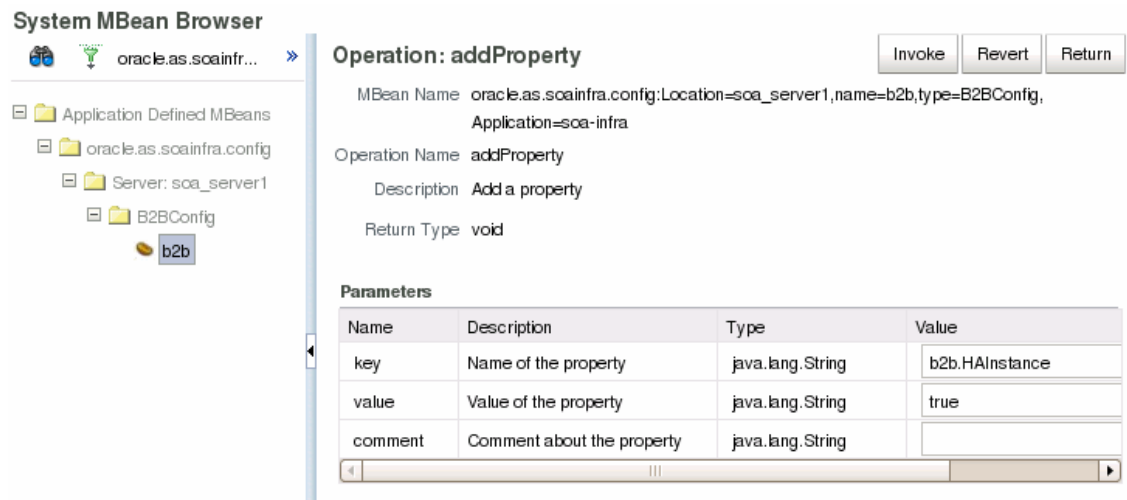
4. On the B2B Server Properties page, click **More B2B Configuration Properties**.  
The System MBean Browser page appears.
5. Click the Operations tab and then click **addProperty**.

Figure B-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 B-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 (see <a href="#">Section B.3, "Creating the JMS Resources"</a> ).
b2b.transportDispatcherThreadSleepTime	The length of time (in milliseconds) after which an MLLP dispatcher thread will sleep after message processing.

- When you are done adding properties, click **Return**.
- 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 B-4 High Availability Properties in Enterprise Manager

The screenshot shows the Oracle Enterprise Manager console interface. At the top, the user is logged in as 'weblogic' on host '10054agc3.usgg.co'. The page was refreshed on Aug 17, 2011 at 1:17:38 PM F. The main area is titled 'System MBean Browser' and shows a tree view of the SOA Infrastructure. The selected path is 'oracle.as.soainfr...' > 'Application Defined MBeans' > 'oracle.as.soainfra.config' > 'Server: soa\_server1' > 'B2BConfig' > 'b2b'. The right pane shows the 'Attribute: Properties' for the selected MBean. The MBean Name is 'oracle.as.soainfra.config:Location=soa\_server1,name=b2b,type=B2BConfig,Application=soa-infra'. The Attribute Name is 'Properties', and the Description is 'B2B config properties'. The Type is 'Array of javax.management.openmbean.CompositeData' and it is Readable/Writable 'R'. Below this, a table lists the values for the attribute:

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

### B.3 Creating the JMS Resources

Oracle SOA Suite for healthcare integration requires a distributed queue for MLLP dispatchers in a clustered environment. Using the WebLogic Server Console, create a JMS connection factory using the following guidelines:

- The name is **TransportDispatcherQueueConnectionFactory**
- The JNDI name is **jms/b2b/TransportDispatcherQueueConnectionFactory**
- Enable **Default Targeting**
- Select **xa-connection-factory**

Create a JMS distributed queue with the following guidelines:

- The name is **TransportDispatcherQueue**
- The JNDI name is **jms/b2b/TransportDispatcherQueue**
- Disable **Default Targeting**
- The sub-deployment must be **SOA%**

The JMS queue should be set up like the B2BEVENTQUEUE. For more information about creating JMS components, see ["Configuring Basic JMS System Resources"](#) in *Oracle Fusion Middleware Configuring and Managing JMS for Oracle WebLogic Server*.



---

---

## Batching HL7 Messages

HL7 Batching allows to batch number of messages to be sent in a single file using the envelope consisting of File and Batch headers. An example can be the Batch of Detailed Financial Transactions (DFTs) sent from an ancillary (such as laboratory, radiology, pharmacy, and so on) system to a financial system.

### C.1 Introduction to HL7 Message Batching

You can batch HL7 messages in two ways:

- Standard Mode: Using HL7 batching protocol
- Custom Mode

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)

In the case of batching MSHs, you can batch all the MSHs separated by a custom delimiter. You can configure this delimiter in the delivery channel in the case of Outbound message, and in the listening channel in the case of Inbound message.

When batching messages, you can send Functional Acknowledgement to the endpoints partner in the following ways:

- Single message
- One Functional Acknowledgement message for every inbound business message
- 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:**

- Currently, HL7 batching is supported for a single document over Generic File and Generic FTP protocols.
  - Message sequencing and batching do not work simultaneously.
- 

## C.1.1 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)
```

There are only two cases in which an HL7 batch file may contain zero HL7 messages:

- Batch containing zero HL7 messages may be sent to meet a requirement for periodic submission of batches when there are no messages to send.
- Batch containing zero or negative acknowledgment messages may be sent to indicate that all the HL7 messages contained in the batch are implicitly acknowledged.

### C.1.1.1 Acknowledging Batched Messages

All batched messages are acknowledged in the response batch. An acknowledgment batch may contain acknowledgment messages only for those messages that have errors. You can also send an empty acknowledgment batch indicating all the messages in the received batch are successful.

## C.1.2 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.



---

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