Oracle® Enterprise Manager

Getting Started with Management Pack Plus for SOA

10*g* Release 5 (10.2.0.5.0)

E14396-04

May 2009

ORACLE®

Oracle Enterprise Manager Getting Started with Management Pack Plus for SOA, 10*g* Release 5 (10.2.0.5.0)

E14396-04

Primary Author: Aravind Jayaraaman

Contents

Preface

This guide introduces you to Oracle Management Pack Plus for SOA and describes how you can enable this pack and monitor SOA-related products such as Oracle BPEL Process Manager (BPEL Process Manager), Oracle Service Bus, and so on using Enterprise Manager Grid Control.

The preface chapter covers the following:

Audience

This document is intended for users who want to discover and monitor SOA-related products such as BPEL Process Manager, Oracle Service Bus, and so on using Enterprise Manager Grid Control.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible to all users, including users that are disabled. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at `http://www.oracle.com/accessibility/`.

Accessibility of Code Examples in Documentation

Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

Accessibility of Links to External Web Sites in Documentation

This documentation may contain links to Web sites of other companies or organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these Web sites.

Deaf/Hard of Hearing Access to Oracle Support Services

To reach Oracle Support Services, use a telecommunications relay service (TRS) to call Oracle Support at 1.800.223.1711. An Oracle Support Services engineer will handle technical issues and provide customer support according to the Oracle service request process. Information about TRS is available at `http://www.fcc.gov/cgb/consumerfacts/trs.html`, and a list of phone numbers is available at `http://www.fcc.gov/cgb/dro/trsphonebk.html`.

Related Documents

For more information, see the following documents in the Enterprise Manager Grid Control documentation library:

- *Oracle Enterprise Manager Concepts*
- *Oracle Enterprise Manager Grid Control Installation and Basic Configuration Guide*

For the latest releases of these and other Oracle documentation, check the Oracle Technology Network at

`http://otn.oracle.com/documentation/oem.html`

Oracle Enterprise Manager also provides extensive online Help. Click **Help** at the top of any Enterprise Manager page to display the online help window.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	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.

1

Overview of Oracle Management Pack Plus for SOA

This chapter provides an overview of Oracle Management Pack Plus for SOA and describes how you can enable this pack and monitor SOA products such as Oracle BPEL Process Manager (BPEL Process Manager), Oracle Service Bus, and so on using Enterprise Manager Grid Control.

Oracle Management Packs offer several premium features when enabled in Enterprise Manager Grid Control. For middleware management, Oracle offers packs such as diagnostic pack, configuration management pack, provisioning and patch automation pack, management pack plus for SOA, and so on.

The Management Pack Plus for SOA delivers comprehensive management capabilities for a Service-Oriented Architecture-based (SOA) environment. By combining SOA runtime governance, business-IT alignment, and SOA infrastructure management with Oracle's rich and comprehensive system management solution, Enterprise Manager Grid Control significantly reduces the cost and complexity of managing SOA-based environments.

Table 1–1 Feature Highlights of Management Pack Plus for SOA

Feature	Benefit
Centralized management console	Provides administrators managing SOA environments with a consolidated browser-based view of the entire enterprise, thereby enabling them to monitor and manage all of their components from a central location.
Discovery and service modeling	Provides discovery of the following: ■ Oracle BPEL processes deployed to the Oracle BPEL Process Manager (BPEL Process Manager) server and the dependent partner links. ■ Oracle Service Bus-based business and proxy services. ■ Service modeling offers out-of-the-box automated system modeling capabilities for the SOA infrastructure.
Runtime governance	Defines SOAP tests to measure and record availability and performance of partner links (or any Web service) and business/proxy services for historical trending, troubleshooting, and root cause analysis purposes. Also provides an error hospital of process instances with drilldowns into instance details.

Table 1–1 (Continued)Feature Highlights of Management Pack Plus for SOA

Feature	Benefit
Infrastructure management	Monitors the availability and performance of the SOA infrastructure components. Both current and historic availability of targets (such as BPEL Process Manager or Oracle Service Bus) are recorded for troubleshooting and root cause analysis.
Configuration management	Collects configuration information for the BPEL Process Manager server/domains/processes and Oracle Service Bus. The parameters can be refreshed, saved, or compared with another target. Different versions of the same target can also be compared.
Deployment automation	Automates the deployment of the following: ■ BPEL suitcases to one or more BPEL Process Manager targets. ■ Oracle Service Bus resources from one domain to another. For more information, see Chapter 4, "Provisioning Oracle BPEL Processes" and Chapter 5, "Provisioning Oracle Service Bus Resources".
Adapter metrics	Provides throughput and error metrics for different adapters in graphical format.
Business-IT alignment	Enables you to consolidate their IT and business management tools into a unified system. BAM-EM integration unites business KPIs and system metrics in one system for correlation and trending.
Service level management	Enables you to monitor services from the end-user's perspective using service tests or synthetic transactions, model relationships between services and underlying IT components, and report on achieved service levels.
Composite application monitoring and modeling	Enables you to manage your SOA solutions by leveraging a model-driven top-down approach within your development, quality assurance (QA), staging, and production environments. Business application owners and operational staff can automatically discover your BPEL workflows and correlate them with the underlying Web services; Enterprise Service Buses (ESBs); and back-end Java 2 Platform, Enterprise Edition (J2EE) resources through detailed modeling and drill-down directly into the performance metrics at the component level. For more information, see the following document: ■ `http://download.oracle.com/docs/cd/E14209_01/doc.102/release_notes.pdf`
Historical analysis and reporting	Store the collected metric and configuration data in a central repository, thereby enabling administrators to analyze metrics through various historical views and facilitate strategic trend analysis and reporting.

2

Discovering and Monitoring Oracle BPEL Process Manager

This chapter describes how you can discover and monitor Oracle BPEL Process Manager (BPEL Process Manager) using Enterprise Manager Grid Control.

In particular, this document covers the following:

2.1 Supported Versions

The following are the versions of BPEL Process Manager that are supported for monitoring in Enterprise Manager Grid Control.

Table 2–1 Supported Versions

Supported BPEL Process Manager Version	Application Server Deployed To	Supported Enterprise Manager Grid Control
Oracle BPEL Process Manager 10.1.2	Oracle Application Server 10g Release 1 (10.1.2)	Enterprise Manager 10g Grid Control Release 4 (10.2.0.4)

Table 2–1 (Continued)Supported Versions

Supported BPEL Process Manager Version	Application Server Deployed To	Supported Enterprise Manager Grid Control
Oracle BPEL Process Manager 10.1.3.1 and 10.1.3.3 *(Part of Oracle SOA Suite 10.1.3.1 and 10.1.3.3)*	Oracle Application Server 10g Release 1 (10.1.3.1) and (10.1.3.3)	Enterprise Manager 10g Grid Control Release 3 (10.2.0.3) or higher
	Oracle WebLogic Managed Server 9.2	Enterprise Manager 10g Grid Control Release 5 (10.2.0.5) Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) with one-off patches applied. For details, see Section 2.3, "Understanding the Discovery Process".
	IBM WebSphere Application Server 6.1	Enterprise Manager 10g Grid Control Release 5 (10.2.0.5) Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) with one-off patches applied. For details, see Section 2.3, "Understanding the Discovery Process".
Oracle BPEL Process Manager 10.1.3.4 *(Part of Oracle SOA Suite 10.1.3.4)*	Oracle Application Server 10g Release 1 (10.1.3.1) and (10.1.3.3)	Enterprise Manager 10g Grid Control Release 5 (10.2.0.5) or higher
	Oracle WebLogic Managed Server 9.2	
	IBM WebSphere Application Server 6.1	

2.2 Understanding the Discovery Mechanism

The following describes the mechanism followed for discovering BPEL Process Managers in Enterprise Manager Grid Control.

Table 2–2 Mechanism for Discovering BPEL Process Managers

BPEL Process Manager Version	Application Server Deployed To	Discovery Mechanism	Process
Oracle BPEL Process Manager 10.1.2	Oracle Application Server 10g Release 1 (10.1.2)	Manual/Automatic Discovery	▪ If the Management Agent is installed before Oracle Application Server and BPEL Process Manager are installed, then you must **manually discover** that Oracle Application Server and BPEL Process Manager in Enterprise Manager Grid Control. ▪ If the Management Agent is installed after Oracle Application Server and BPEL Process Manager are installed, then Enterprise Manager Grid Control **automatically discovers** that Oracle Application Server and BPEL Process Manager The Management Agent can be installed along with Enterprise Manager Grid Control or separately as a standalone product. For discovery procedures, see Section 2.6.1, "Discovering BPEL Process Manager Deployed to Oracle Application Server".
Oracle BPEL Process Manager 10.1.3.1, 10.1.3.3, 10.1.3.4 *(Part of Oracle SOA Suite 10.1.3.1, 10.1.3.3, 10.1.3.4)*	Oracle Application Server 10g Release 1 (10.1.3.1) and (10.1.3.3)	Manual/Automatic Discovery	▪ If the Management Agent is installed before Oracle Application Server and BPEL Process Manager are installed, then you must **manually discover** that Oracle Application Server and BPEL Process Manager in Enterprise Manager Grid Control. ▪ If the Management Agent is installed after Oracle Application Server and BPEL Process Manager are installed, then Enterprise Manager Grid Control **automatically discovers** that Oracle Application Server and BPEL Process Manager The Management Agent can be installed along with Enterprise Manager Grid Control or separately as a standalone product. For discovery procedures, see Section 2.6.1, "Discovering BPEL Process Manager Deployed to Oracle Application Server".
Oracle BPEL Process Manager 10.1.3.1, 10.1.3.3, 10.1.3.4 *(Part of Oracle SOA Suite 10.1.3.1, 10.1.3.3, 10.1.3.4)*	Oracle WebLogic Managed Server 9.2	Manual Discovery	First, manually discover Oracle WebLogic Managed Server. For procedures, see Section 2.6.2.1, "Discovering Oracle WebLogic Managed Server". Then, manually discover BPEL Process Manager. For procedures, see Section 2.6.2.2, "Discovering BPEL Process Manager Deployed to Oracle WebLogic Managed Server".

Table 2–2 (Continued)Mechanism for Discovering BPEL Process Managers

BPEL Process Manager Version	Application Server Deployed To	Discovery Mechanism	Process
Oracle BPEL Process Manager 10.1.3.1, 10.1.3.3, 10.1.3.4 *(Part of Oracle SOA Suite 10.1.3.1, 10.1.3.3, 10.1.3.4)*	IBM WebSphere Application Server 6.1	Manual Discovery	First, manually discover IBM WebSphere Application Server. For procedures, see Section 2.6.3.1, "Discovering IBM WebSphere Application Server". Then, manually discover BPEL Process Manager. For procedures, see Section 2.6.3.2, "Discovering BPEL Process Manager Deployed to IBM WebSphere Application Server".

2.3 Understanding the Discovery Process

The following describes the overall process involved in discovering and monitoring BPEL Process Manager in Enterprise Manager Grid Control. Follow the instructions outlined against each step in this process to successfully discover and monitor your BPEL Process Manager.

Table 2–3 Discovery Process

Step	Requirement	Description

1	BPEL Process Manager	Install the BPEL Process Manager software in one of the following ways:
		■ For Oracle middleware, download and install the BPEL Process Manager using Oracle BPEL Process Manager 10.1.2, Oracle SOA Suite 10.1.3.1, 10.1.3.3, or 10.1.3.4 from the following URL:
		`http://www.oracle.com/technology/software/tech/soa/index.html`
		■ For non-Oracle middleware, download and install the BPEL Process Manager from the following URL:
		`http://www.oracle.com/technology/software/products/ias/bpel/index.html`

Table 2–3 (Continued)Discovery Process

Step	Requirement	Description
2	Enterprise Manager Grid Control	▪ If you want to monitor Oracle BPEL Process Manager 10.1.3.3 that is deployed to Oracle Application Server 10g Release 1 (10.1.3.3), then install Enterprise Manager 10g Grid Control Release 3 (10.2.0.3) or higher. ▪ If you want to monitor Oracle BPEL Process Manager 10.1.2 that is deployed to Oracle Application Server 10g Release 1 (10.1.2), then install Enterprise Manager 10g Grid Control Release 4 (10.2.0.4). ▪ If you want to monitor Oracle BPEL Process Manager 10.1.3.3 that is deployed to Oracle WebLogic Managed Server 9.2 or IBM WebSphere Application Server 6.1, then install Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) and apply the one-off patches. ▪ If you want to monitor Oracle BPEL Process Manager 10.1.3.4 that is deployed to Oracle Application Server 10g Release 1 (10.1.3.1 or 10.1.3.3), Oracle WebLogic Managed Server 9.2, or IBM WebSphere Application Server 6.1, then install Enterprise Manager 10g Grid Control Release 5 (10.2.0.5). Note that 10.2.0.3, 10.2.0.4, 10.2.0.5 are patch sets. Therefore, if you are installing Enterprise Manager Grid Control for the first time, then install the base release first and then apply the 10.2.0.3, 10.2.0.4, 10.2.0.5 patch set on it. For information about installing the base release of Enterprise Manager Grid Control, see the *Enterprise Manager Grid Control Installation and Basic Configuration Guide* available at: `http://www.oracle.com/technology/documentation/oem.html` Oracle recommends that you install the Enterprise Manager Grid Control components on a host that is different from the host where the BPEL Process Manager is installed. For example, if the BPEL Process Manager is installed on host1.xyz.com, then install and configure Oracle Management Service (OMS) and the Management Repository on host2.xyz.com.

Table 2–3 (Continued)Discovery Process

Step	Requirement	Description

3	Oracle Management Agent
	
	(Management Agent)
		Install Oracle Management Agent 10g Release 3 (10.2.0.3) or higher on every host where BPEL Process Manager is installed.
		
		If Oracle Application Server/BPEL Process Manager and Enterprise Manager Grid Control are all on the same host, then you do not have to install a separate Management Agent. The Management Agent that comes with Enterprise Manager Grid Control is sufficient. Howver, if they are different hosts, then you must install a separate Management Agent on every host where BPEL Process Manager is installed.
		
		You can install the Management Agent in one of the following ways:
		
		▪ Invoke the installer provided with Enterprise Manager 10 Grid Control Release 3 (10.2.0.3) or higher, and select the installation type **Additional Management Agent**.
		
		▪ Use the Agent Deploy application within the Grid Control console.
		
		▪ Use the full agent kit that is available at:
		
		`http://www.oracle.com/technology/software/products/oem/htdocs/agentsoft.html`
		
		For information about installing the Management Agent, see the *Enterprise Manager Grid Control Installation and Basic Configuration Guide* available at:
		
		`http://www.oracle.com/technology/documentation/oem.html`

4	One-Off Patches	If you are using Enterprise Manager 10g Grid Control Release 4 (10.2.0.4), then you will be able to discover and monitor the BPEL Process Manager deployed to Oracle WebLogic Managed Server 9.2 and IBM WebSphere Application Server 6.1 only when the following one-off patches are applied. **OMS One-Off Patches:** Apply these one-off patches to Oracle Management Service (OMS) in the order given below. ▪ Patch 6678593 (Or ARU Patch 10024972) ▪ Patch 6877335 (Or ARU Patch 10024974) ▪ Patch 6850462 (Or ARU Patch 10024971) - Before applying this one-off patch, you must set up Oracle Software Library in Enterprise Manager Grid Control. For procedures to set up the library, see Section 2.4, "Setting Up Oracle Software Library". **Agent One-Off Patches:** Apply these one-off patches to the Management Agent in the order given below. ▪ Patch 6692284 (Or ARU Patch 10024969) ▪ Patch 6877323 (Or ARU Patch 10024970) For information about these patches, refer to the ReadMe.txt file that comes with the one-off patch. For procedures to download these one-off patches, see Section 2.5, "Downloading One-Off Patches".
5	Discovery in Enterprise Manager Grid Control	BPEL Process Managers deployed to Oracle Application Servers are automatically discovered in Enterprise Manager Grid Control. BPEL Process Managers deployed to Oracle WebLogic Managed Servers and IBM WebSphere Application Servers must be manually discovered in Enterprise Manager Grid Control. For procedures to discover them, see Section 2.6, "Discovering BPEL Process Manager".

Table 2–3 (Continued)Discovery Process

Step	Requirement	Description
6	Management Pack Plus for SOA	The Management Pack Plus for SOA comes with the installation of Enterprise Manager 10g Grid Control Release 3 (10.2.0.3) or higher. Therefore, you do not have to download the management pack plus from any location. You only have to enable it to gain access to value-added features. Even without enabling it you can discover and monitor BPEL Process Managers, but enabling the pack offers you additional features. For procedures to enable management packs, see Section 2.8, "Enabling Management Packs".

2.4 Setting Up Oracle Software Library

If you are using Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) to discover and monitor the BPEL Process Manager deployed to Oracle WebLogic Managed Server 9.2 and IBM WebSphere Application Server 6.1, then you must apply the one-off patches as described in Section 2.3, "Understanding the Discovery Process". However, before applying the one-off patch 6850462, you must set up Oracle Software Library (Software Library) in Enterprise Manager Grid Control.

If you do not set up the Software Library and if you try to apply the one-off patch, you might see the following error:

```
ERROR !
Software Library has not been setup !
Please configure Software Library and try again
```

Note: This is a requirement only for patch 6850462. The other patches do not require the Software Library to be set up.

To set up the Software Library:

1. Log in to Enterprise Manager Grid Control.
2. Click **Deployments** and then **Provisioning**.

   Enterprise Manager Grid Control displays the Provisioning page.
3. In the Provisioning page, Click **Administration**.
4. In the Administration page, from the Software Library Configuration section, click **Add**. Enterprise Manager Grid Control displays the Add Software Library Location page.
5. In the Add Software Library Location page, specify a valid directory path where you want to store the raw data for the components, and click **OK**.

Note: For more information about setting up the Software Library, see the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

`http://www.oracle.com/technology/documentation/oem.html`

2.5 Downloading One-Off Patches

If you are using Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) for discovering and monitoring of BPEL Process Manager deployed to Oracle WebLogic Managed Server 9.2 or IBM WebSphere Application Server 6.1, then apply the following one-off patches.

Note: You do not required these patches for Enterprise Manager 10g Grid Control Release 5 (10.2.0.5) or higher.

Table 2–4 One-Off Patches to Download

One-Off Patch Type	One-Off Patches to Download
OMS One-Off Patches	Apply these one-off patches to Oracle Management Service (OMS) in the order given below: ■ Patch 6678593 (Or ARU Patch 10024972) ■ Patch 6877335 (Or ARU Patch 10024974) ■ Patch 6850462 (Or ARU Patch 10024971)
Agent One-Off Patches	Apply these one-off patches to Oracle Management Service (OMS) in the order given below: ■ Patch 6692284 (Or ARU Patch 10024969) ■ Patch 6877323 (Or ARU Patch 10024970)

To download these one-off patches:

1. Log in to My Oracle Support at:

   `https://metalink.oracle.com/`

2. Click **Patches & Updates**.

3. In the Patches & Updates page, from the **Quick Find** list, select **Patch Number**, quote the one-off patch number you want to download, and click **Go**.

   My Oracle Support displays the Patch <*patch_number*> page that provides details about the one-off patch.

4. In the Patch <*patch_number*> page, click **Download** to download the patch. Click **View Readme** to view the ReadMe file and learn more about the patch.

2.6 Discovering BPEL Process Manager

This section describes the procedures for discovering BPEL Process Managers. In particular, this section covers the following:

- Discovering BPEL Process Manager Deployed to Oracle Application Server
- Discovering BPEL Process Manager Deployed to Oracle WebLogic Managed Server
- Discovering BPEL Process Manager Deployed to IBM WebSphere Application Server

2.6.1 Discovering BPEL Process Manager Deployed to Oracle Application Server

A BPEL Process Manager deployed to Oracle Application Server is manually or automatically discovered in Enterprise Manager Grid Control depending on when the Management Agent is installed.

- If the Management Agent is installed before Oracle Application Server and BPEL Process Manager are installed, then you must manually discover that Oracle Application Server and BPEL Process Manager in Enterprise Manager Grid Control.
- If the Management Agent is installed after Oracle Application Server and BPEL Process Manager are installed, then Enterprise Manager Grid Control automatically discovers that Oracle Application Server and BPEL Process Manager.

Note: You must intall a Management Agent on every host where BPEL Process Manager is installed. If Oracle Application Server/BPEL Process Manager and Enterprise Manager Grid Control are all on the same host, then you need not install a separate Management Agent. The Management Agent that comes with Enterprise Manager Grid Control is sufficient. However, if they are different hosts, then you must install a separate Management Agent on every host where BPEL Process Manager is installed. The Management Agent can be installed along with Enterprise Manager Grid Control or separately as a standalone product.

Also note that if you have added a new BPEL Process Manager to an Oracle Application Server that is already discovered and monitored in Enterprise Manager Grid Control, then you must manually *redicover* that Oracle Application Server.

To manually discover or *rediscover* Oracle Application Server:

1. Log in to Enterprise Manager Grid Control.
2. Click **Targets** and then **Middleware**.

   Enterprise Manager Grid Control displays the Middleware page that lists all the middleware targets being monitored. In Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) or lower, the Middleware tab is Application Servers.
3. (Only for *Rediscovering*) In the Middleware page, select the Oracle Application Server that you want to rediscover and click **Remove**.
4. In the Middleware page, from the **Add** list, select **Oracle Application Server** and click **Go**.

   Enterprise Manager Grid Control displays the Add Oracle Application Server Target: Specify Host page.
5. In the Add Oracle Application Server Target: Specify Host page, specify the name of the host where that Oracle Application Server is running, and click **Continue**.

   Enterprise Manager Grid Control rediscovers that Oracle Application Server along with its core components and the newly added BPEL Process Manager.

2.6.2 Discovering BPEL Process Manager Deployed to Oracle WebLogic Managed Server

To discover the BPEL Process Manager deployed to Oracle WebLogic Managed Server, you have to first discover and add Oracle WebLogic Managed Server to Enterprise Manager Grid Control.

This section describes the procedures for the following:

- Discovering Oracle WebLogic Managed Server
- Discovering BPEL Process Manager Deployed to Oracle WebLogic Managed Server

2.6.2.1 Discovering Oracle WebLogic Managed Server

To discover and add Oracle WebLogic Managed Server to Enterprise Manager Grid Control:

1. Log in to Enterprise Manager Grid Control (as a SYSMAN user).
2. Click **Targets** and then **Middleware**.

   Enterprise Manager Grid Control displays the Middleware page that lists all the middleware targets being monitored. In Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) or lower, the Middleware tab is Application Servers
3. In the Middleware page, from the **Add** list, select **Oracle WebLogic Server Domain**, and click **Go**.

   Enterprise Manager Grid Control displays the Add Oracle WebLogic Server Domain wizard that captures the details of the Oracle WebLogic Server Domain to be discovered and monitored.
4. In the Add Oracle WebLogic Server Domain wizard, specify the required details and click **Next** on each page to reach the end of the wizard.

   For information about the details to be provided for each page of the wizard, click **Help** on each page.
5. In the last page of the Add Oracle WebLogic Server Domain wizard, click **Finish** to complete the discovery process and add the target to Grid Control for monitoring purposes.

   Enterprise Manager Grid Control displays the Middleware page with a confirmation message that confirms that the Oracle WebLogic Manager Server has been successfully added to Grid Control. In the Middleware page that shows all the middleware targets being monitored, you can see the Oracle WebLogic Managed Server you just added.

2.6.2.2 Discovering BPEL Process Manager Deployed to Oracle WebLogic Managed Server

To discover and add the BPEL Process Manager deployed to Oracle WebLogic Managed Server:

1. Log in to Enterprise Manager Grid Control (as a SYSMAN user).
2. Click **Targets** and then **All Targets**.

   Enterprise Manager Grid Control displays the All Targets page that lists all the targets being monitored.
3. In the All Targets page, from the **Search** menu, select **Agent** and click **Go**.

Enterprise Manager Grid Control displays all the Agents that are being monitored.

4. From the list of monitored agents, click the agent that monitors the Oracle WebLogic Managed Server.

   Enterprise Manager Grid Control displays the Agent home page that provides details about the selected agent.

5. In the Agent home page, from the **Add** list, select **Oracle BPEL Process Manager** and click **Go**.

Note: At this point, if you encounter an exception error (404 Not Found), then follow the workaround steps given in Table 2–9 and resolve the issue.

Enterprise Manager Grid Control displays the Select Application Server page of the Add BPEL Process Manager wizard.

a. In the Select Application Server page, provide the following details and click **Next**.

Table 2–5 Select Application Server Page - Element Description

UI Page Element	Description
Application Server Type	Select the type of application server where the BPEL Process Manager to be discovered is running.
Application Server Name	Specify the name of the application server where the BPEL Process Manager to be discovered is running. If you are not sure about the name, click the seach icon (torch icon) to view a list of application servers and select the appropriate one. The application server name must be suffixed with *oracleBPELServer*.

b. In the Target Details page, provide the following details and click **Next**.

Table 2–6 Target Details Page - Element Description

UI Page Element	Description
Oracle Home	Specify the full path to the Oracle Application Server home directory where the BPEL Process Manager is installed. For example, /opt/app/orabpel/product/10.1.3.1/OracleAS.
Application Server Home	Specify the full path to the directory where Oracle Weblogic Managed Server (to which the BPEL target is deployed) is running. For example, /opt/wls9.2/weblogic9.2.

Note:

- Enterprise Manager Grid Control checks the configuration settings of the associated application server and prefills the values for fields such as BPEL Process Manager Name, Display Name, Context Provider URL, and Oracle BPEL PM Console URL.
- At this point, if you encounter a discovery failure error, then follow the workaround steps given in Table 2–10 to resolve the issue.

---

c. In the Host Credentials page, specify the operating system credentials of the host where BPEL Process Manager is running. By default, the fields are prefilled with preferred credentials that are stored in the Management Repository for the selected host. You can either use these prefilled values or edit them to override the preferred credentials with your new credentials.

d. In the Review page, review the details and click **Finish** to complete the discovery process and add the target to Enterprise Manager Grid Control.

   Enterprise Manager Grid Control displays the Agent home page with a confirmation message that confirms that the BPEL Process Manager has been successfully added for monitoring.

Note: At this point, if you encounter a discovery failure error, then follow the workaround steps given in Table 2–11 and resolve the issue.

---

6. To verify whether the BPEL Process Manager has been added, click **Targets** and then **Middleware**.

   Enterprise Manager Grid Control displays the Middleware page that shows all the middleware targets being monitored, including the Oracle WebLogic Managed Server and the BPEL Process Manager you just added. In Enterprise Manager 10g Grid Control Release 4 (10.2.0.4) or lower, the Middleware tab is Application Servers

2.6.3 Discovering BPEL Process Manager Deployed to IBM WebSphere Application Server

To discover the BPEL Process Manager deployed to IBM WebSphere Application Server, you have to first discover and add IBM WebSphere Application Server to Enterprise Manager Grid Control.

This section describes the procedures for the following:

- Discovering IBM WebSphere Application Server
- Discovering BPEL Process Manager Deployed to IBM WebSphere Application Server

2.6.3.1 Discovering IBM WebSphere Application Server

To discover and add IBM WebSphere Application Server to Enterprise Manager Grid Control:

1. Log in to Enterprise Manager Grid Control (as a SYSMAN user).
2. Click **Targets** and then **Middleware**.

   Enterprise Manager Grid Control displays the Middleware page that lists all the middleware targets being monitored.

3. In the Middleware page, from the **Add** list, select **IBM WebSphere Application Server**, and click **Go**.

   Enterprise Manager Grid Control displays the Add IBM WebSphere Application Server wizard that captures the details of the IBM WebSphere Application Server to be discovered and monitored.

4. In the Add IBM WebSphere Application Server wizard, specify the required details and click **Next** on each page to reach the end of the wizard.

For information about the details to be provided for each page of the wizard, click **Help** on each page.

5. In the last page of the Add IBM WebSphere Application Server wizard, click **Finish** to complete the discovery process and add the target to Enterprise Manager Grid Control for monitoring purposes.

   Enterprise Manager Grid Control displays the Middleware page with a confirmation message that confirms that the IBM WebSphere Application Server has been successfully added for monitoring. In the Middleware page that shows all the application server being monitored, you can see the IBM WebSphere Application Server you just added.

2.6.3.2 Discovering BPEL Process Manager Deployed to IBM WebSphere Application Server

To discover and add the BPEL Process Manager deployed to IBM WebSphere Application Server:

1. Log in to Enterprise Manager Grid Control (as a SYSMAN user).
2. Click **Targets** and then **All Targets**.

   Enterprise Manager Grid Control displays the All Targets page that lists all the targets being monitored.
3. In the All Targets page, from the **Search** menu, select **Agent** and click **Go**.

   Enterprise Manager Grid Control displays all the Agents that are being monitored.
4. From the list of monitored agents, click the agent that monitors the IBM WebSphere Application Server.

   Enterprise Manager Grid Control displays the Agent home page that provides details about the selected agent.
5. In the Agent home page, from the **Add** list, select **Oracle BPEL Process Manager** and click **Go**.

   Enterprise Manager Grid Control displays the Select Application Server page of the Add BPEL Process Manager wizard.

   a. In the Select Application Server page, provide the following details and click **Next**.

Table 2–7 Select Application Server Page - Element Description

UI Page Element	Description
Application Server Type	Select **IBM WebSphere Application Server** from the list.
Application Server Name	Specify the name of IBM WebSphere Application Server where the BPEL Process Manager to be discovered is running. If you are not sure about the name, click the seach icon (torch icon) to view a list of application servers and select the appropriate one. The application server name must be suffixed with *oracleBPELServer*.

   b. In the Target Details page, provide the following details and click **Next**.

Table 2–8 Target Details Page - Element Description

UI Page Element	Description
Oracle Home	Specify the full path to the Oracle Application Server home directory where the BPEL Process Manager is installed. For example, /opt/app/orabpel/product/10.1.3.1/OracleAS.
Application Server Home	Specify the full path to the directory where IBM WebSphere Application Server (to which the BPEL target is deployed) is running.
BPEL Application Installation Location	Specify the full path to the installation directory where the BPEL application is installed. For example, if the BPEL application is installed in <$WEBSPHERE_ HOME>/profiles/AppSrv01/installedApps/sta00114Cell01/CollaxaWebApplications-sta00114Node01.ear, then specify the path as <$WEBSPHERE_ HOME>/profiles/AppSrv01/installedApps. Here, replace $WEBSPHERE_HOME with the full path of the application home location.

Note:

- Enterprise Manager Grid Control checks the configuration settings of the associated application server and prefills the values for fields such as BPEL Process Manager Name, Display Name, Context Provider URL, and Oracle BPEL PM Console URL.

c. In the Host Credentials page, specify the operating system credentials of the host where BPEL Process Manager is running. By default, the fields are prefilled with preferred credentials that are stored in the Management Repository for the selected host. You can either use these prefilled values or edit them to override the preferred credentials with your new credentials.

d. In the Review page, review the details and click **Finish** to complete the discovery process and add the target to Enterprise Manager Grid Control.

Enterprise Manager Grid Control displays the Agent home page with a confirmation message that confirms that the BPEL Process Manager has been successfully added for monitoring.

Note: At this point, if you encounter a discovery failure error, then follow the workaround steps given in Table 2–12 and resolve the issue.

6. To verify whether the BPEL Process Manager has been added, click **Targets** and then **Middleware**.

Enterprise Manager Grid Control displays the Middleware page that shows all the middleware targets being monitored, including the IBM WebSphere Application Server and the BPEL Process Manager you just added.

2.7 Configuring BPEL Process Manager

After discovering BPEL Process Manager, you must perform the following configuration steps:

- Specifying Details for Monitoring BPEL Process Manager
- Adding BPEL JAR Files To Agent CLASSPATH

2.7.1 Specifying Details for Monitoring BPEL Process Manager

Follow these steps to specify the details required for monitoring BPEL Process Managers. If the values are prefilled, then validate them.

1. In the BPEL Process Manager Home page, from the Related Links section, click **Monitoring Configuration**.
2. In the Monitoring Configuration page, specify the following details. If these values are prefilled, then validate them.
   - **BPEL Admin Username** - Specify the BPEL administrator user ID.
   - **BPEL Password** - Specify the BPEL admin password.

     When adding the credentials, validate the following two criteria:
     - BPEL Admin User ID and password should have BPEL Admin role
     - The same credentials should succeed for the BPEL console login operation
   - **Initial Context Factory** - Specify the initial context factor. You can copy the following string value:

     `com.evermind.server.rmi.RMIInitialContextFactory`
   - **Context Provider URL** - Specify the context provider URL. You can copy the following string value:

     `opmn:ormi://<host>:<opmn_port>:home/orabpel`

Note: Replace the <host>,<opmn port> with the correct host address and opmn port number details for the Oracle Application Server where the BPEL Process Manager is deployed.

To retrieve SOA Applications Server OPMN PORT details, follow these steps:

1. Open the configuration file `$SOA_ORACLE_HOME/opmn/conf/opmn.xml`. $SOA_ORACLE_HOME corresponds to SOA Application server home location.
2. Identify the value of the request port attribute in the configuration file.

   - **BPEL Repository Host Name -** Specify the BPEL Dehydration store (database) host name.
   - **BPEL Repository Port -** Specify the BPEL Dehydration store (database) port.
   - **BPEL Repository SID -** Specify the BPEL Dehydration store (database) SID.
   - **BPEL Repository User Name -** Specify the BPEL Dehydration store (database) user name. By default, the user name is `orabpel`.
   - **BPEL Repository Password -** Specify the BPEL Dehydration store (database) password. By default, the password is `welcome1`.
   - **Recoverable Instances Time Threshold (Days) -** Specify the number of days for which the retryable instances must be shown.

- **Process Aggregate State -** Specify 5, a numeric value that signifies the "constant" state of the BPEL target.

3. Click **OK** to save the settings.

2.7.2 Adding BPEL JAR Files To Agent CLASSPATH

Follow these steps to add the required BPEL JAR files (storage containers) to the Agent CLASSPATH:

1. Log in to the host machine where SOA is installed.
2. Go to the ORACLE_HOME of the EM Agent installed on the same host.
3. Open file '$AGENT_ORACLE_HOME/sysman/config/emd.properties' as shown in figure.
4. Check whether the following jar files have been added to the CLASSPATH property in the file. The property must manually update with the BPEL-specific jar file names to get the process listing.
   - $BPEL_SERVER_ORACLE_HOME/opmn/lib/optic.jar
   - $BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel.jar
   - $BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel-common.jar
   - $BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel-thirdparty.jar
   - $BPEL_SERVER_ORACLE_HOME/j2ee/home/oc4jclient.jar
   - $BPEL_SERVER_ORACLE_HOME/j2ee/home/j2ee_1.3.01.jar

Note: The $BPEL_SERVER_ORACLE_HOME should be replaced with the absolute path of the ORACLE_HOME path of the application server where the SOA is installed.

5. Add the JAR filenames to CLASSPATH property. When adding the jar files to CLASSPATH, ensure that the BPEL home `optic.jar` property is the first value in the classpath.
6. Restart the Agent.

2.7.3 Registering BPEL Process Manager Credentials and Host Credentials

Follow these steps to register the credentials of the BPEL Process Manager, and the credentials of the host where BPEL Process Manager is running.

1. In Grid Control, from the top-right corner of the page, click **Preferences**.
2. On the General page, from the vertical menu bar, click **Preferred Credentials**.
3. On the Preferences page, for the target type **Oracle BPEL Process Manager**, from the **Set Credentials** column, click the icon.
4. On the Oracle BPEL Process Manager Preferred Credentials page, in the Target Credentials section, for the BPEL Process Manager target you discovered, specify the administrator credentials and host credentials. Then click **Apply**.
5. Similarly, on the Preferences page, for the target type **Host**, from the **Set Credentials** column, click the icon.

6. On the Host Preferred Credentials page, in the Target Credentials section, for the host on which the BPEL Process Manager is running, specify the normal credentials and privileged credentials. Then click **Apply**.

2.8 Enabling Management Packs

Besides monitoring the status of the BPEL Process Manager, if you want to gain access to additional value-added features, then you must enable the Management Pack Plus for SOA.

To enable the Management Pack for SOA:

1. Log in to Enterprise Manager Grid Control.

   Enterprise Manager Grid Control displays the home page.

2. From the top-right corner of the Home page, click **Setup**.

   Enterprise Manager Grid Control displays the Overview of Setup page.

3. In the Overview of Setup page, from the vertical menu bar, click **Management Pack Access**.

   Enterprise Manager Grid Control displays the Management Pack Access page.

4. In the Management Pack Access page, from the Search list, select **Oracle BPEL Process Manager**.

   Enterprise Manager Grid Control lists all the BPEL Process Managers being monitored.

5. From the table, for the BPEL Process Manager you are interested in, enable the following packs and click **Apply**.

   - Management Pack Plus for SOA
   - Application Server Provisioning Pack
   - Configuration Management Pack for Oracle Middleware

2.9 Troubleshooting

This section describes the errors you might encounter while discovering BPEL Process Managers, and the workaround steps you can follow to resolve each of them.

This section covers the following:

2.9.1 404 Not Found Errors

The following exception error occurs when you try to access the Add BPEL Process Manager wizard to add a BPEL Process Manager installed on Oracle WebLogic Managed Server.

Table 2–9 Error Message: 404 Not Found - Workaround Steps

Error Message	Workaround Steps

`404 Not Found OracleJSP:java.io.FileNotFoundException Set the init-param debug_mode to "true" to see the complete exception message`	1. Copy the following file:
	`/opt/app/consola10g/oms10g/j2ee/OC4J_EM/config/global-web-application.xml`
	2. Paste the file in the following location:
	`/opt/app/consola10g/oms10g/sysman/j2ee/config/`
	3. Ensure that the following parameter is uncommented in the file:
	`<init-param> <param-name>main_mode</param-name> <param-value>justrun</param-value> </init-param>`

2.9.2 Discovery Errors on Target Details Page (Adding BPEL Deployed to Oracle WebLogic Managed Server)

The following error occurs in the Target Details page of the Add BPEL Process Manager wizard where you provide details about the BPEL Process Manager installed on Oracle WebLogic Managed Server.

Table 2–10 Errors on Target Details Page While Adding BPEL Process Manager Deployed to Oracle WebLogic Managed Server

Error Message	Workaround Steps
`Oracle BPEL Proess Manager Discovery Failed - Unable to connect to Oracle BPEL Process Manager. The possible reasons can be incorrect path or insufficient permission to access Oracle BPEL Process Manager home location or inaccessible Oracle BPEL Process Manager home location. Review the specified value.`	1. Ensure that the BPEL directories have *read* permission for the Agent user.

2.9.3 Discovery Errors on Review Page (Adding BPEL Deployed to Oracle WebLogic Managed Server)

The following errors occur in the Review page of the Add BPEL Process Manager wizard when you are about to add a BPEL Process Manager installed on Oracle WebLogic Managed Server, to Enterprise Manager Grid Control for monitoring purposes.

Table 2–11 Errors on Review Page While Adding BPEL Process Manager Deployed to Oracle WebLogic Managed Server

Error Message	Workaround Steps
`Discovery Failure - Oracle BPEL Process Manager target discovery failed due to incorrect host credentials.`	1. In the last page of the Add BPEL Process Manager wizard where you see this error message, click **Previous** to reach the Host Credentials page. 2. In the Host Credentials page, specify the correct host credentials or set the preferred credentials for the specific host. Ensure that these are Agent user credentials.
`Oracle BPEL Proess Manager Discovery Failed - Unable to connect to Oracle BPEL Process Manager. The possible reasons can be incorrect path or insufficient permission to access Oracle BPEL Process Manager home location or inaccessible Oracle BPEL Process Manager home location. Review the specified value.`	1. In the last page of the Add BPEL Process Manager wizard, click **Previous** repeatedly to reach the Target Details page. 2. In the Target Details page, verify the Oracle home location of the BPEL Process Manager. 3. In the Target Details page, verify the the installation location of the associated application server.

2.9.4 Discovery Errors on Review Page (Adding BPEL Deployed to IBM WebSphere Application Server)

The following errors occur in the Review page of the Add BPEL Process Manager wizard when you are about to add a BPEL Process Manager installed on IBM WebSphere Application Server, to Enterprise Manager Grid Control for monitoring purposes.

Table 2–12 Error on Review Page While Adding BPEL Process Manager Deployed to IBM WebSphere Application Server

Error Message	Workaround Steps
`Discovery Failure - Oracle BPEL Process Manager target discovery failed due to incorrect host credentials.`	1. In the last page of the Add BPEL Process Manager wizard where you see this error message, click **Previous** to reach the Host Credentials page. 2. In the Host Credentials page, specify the correct host credentials or set the preferred credentials for the specific host. Ensure that these are Agent user credentials.

Table 2–12 (Continued)Error on Review Page While Adding BPEL Process Manager Deployed to IBM WebSphere Application Server

Error Message	Workaround Steps

`Oracle BPEL Proess Manager Discovery Failed - Unable to connect to Oracle BPEL Process Manager. The possible reasons can be incorrect path or insufficient permission to access Oracle BPEL Process Manager home location or inaccessible Oracle BPEL Process Manager home location. Review the specified value.`	1. In the last page of the Add BPEL Process Manager wizard where you see this error message, click **Previous** repeatedly to reach the Target Details page.
	2. In the Target Details page, verify the BPEL application installation location.
	For example, the BPEL application may be installed at the following location:
	`<$WEBSPHERE_ HOME>/profiles/AppSrv01/installedApps/sta00114Cell01/CollaxaWebApplications-sta00114Node01.ear`
	In this case, the path you specify must look like this:
	`<$WEBSPHERE_ HOME>/profiles/AppSrv01/installedApps`
	Note: Replace $WEBSPHERE_HOME with the absolute application home location.
	3. In the Target Details page, verify the application server home location of the associated application server.
	4. In the Target Details page, verify the Oracle home location of the BPEL Process Manager.

2.9.5 Display Errors on Processes Page

Sometimes, after the discovery of a BPEL Process Manager, the BPEL process may occasionally not be listed in the BPEL Process Manager Processes page in Enterprise Manager Grid Control.

There are two causes for this and two ways to ensure they display on the Processes page. The sections below discuss these causes and workaround steps to fix them.

2.9.5.1 No Credentials Specified for Monitoring BPEL Process Manager

You may not have specified the credentials required for monitoring BPEL Process Managers. To address this, do the following:

1. In the BPEL Process Manager Home page, from the Related Links section, click **Monitoring Configuration**.
2. In the Monitoring Configuration page, check the following fields:
   - **BPEL Admin Username** - Provide the BPEL administrator user ID.
   - **BPEL Password** - Provide the BPEL admin password.

     When adding the credentials validate the following two criteria:
     - BPEL Admin User ID and password should have BPEL Admin role
     - The same credentials should succeed for the BPEL console login operation

- **Initial Context Factory** - In case this field is empty, copy the following string value:

  `com.evermind.server.rmi.RMIInitialContextFactory`

- **Context Provider URL** - In case this field is empty, copy the following highlighted string value:

  `opmn:ormi://<host>:<opmn_port>:home/orabpel`

Note: Replace the <host>,<opmn port> with the correct host address and opmn port number details for the Oracle Application Server where the BPEL Process Manager is deployed.

---

3. Click **OK** to save the settings.

2.9.5.2 Required BPEL JAR Files Not Added To Agent CLASSPATH

Yo may not have added the required BPEL JAR files (storage containers) to the Agent CLASSPATH. To add the JAR files, do the following:

1. Log in to the host machine where SOA is installed.
2. Go to the ORACLE_HOME of the EM Agent installed on the same host.
3. Open file '$AGENT_ORACLE_HOME/sysman/config/emd.properties' as shown in figure.
4. Check whether the following jar files have been added to the CLASSPATH property in the file. The property must manually update with the BPEL-specific jar file names to get the process listing.
   - $BPEL_SERVER_ORACLE_HOME/opmn/lib/optic.jar
   - $BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel.jar
   - $BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel-common.jar
   - $BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel-thirdparty.jar
   - $BPEL_SERVER_ORACLE_HOME/j2ee/home/oc4jclient.jar
   - $BPEL_SERVER_ORACLE_HOME/j2ee/home/j2ee_1.3.01.jar

Note: The $BPEL_SERVER_ORACLE_HOME should be replaced with the absolute path of the ORACLE_HOME path of the application server where the SOA is installed.

---

5. Add the JAR filenames to CLASSPATH property. When adding the jar files to CLASSPATH, ensure that the BPEL home `optic.jar` property is the first value in the classpath.
6. Restart the Agent.

2.9.6 Retrieving the OPMN Port

To retrieve SOA Applications Server OPMN PORT details, follow these steps.

1. Open the configuration file `$SOA_ORACLE_HOME/opmn/conf/opmn.xml`. `$SOA_ORACLE_HOME` corresponds to SOA Application server home location.

2. Identify the value of the request port attribute in the configuration file.

2.9.7 java.lang.NoClassDefFoundError Error

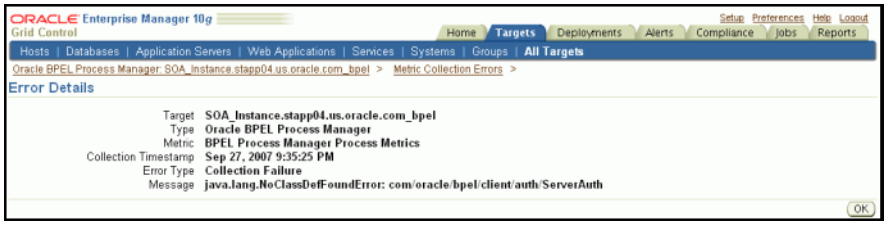
The following error occurs in the error details page when incorrect CLASSPATH setting is specified.

Table 2–13 java.lang.NoClassDefFoundError Error - Workaround Steps

Error Message	Workaround Steps

`Error Type: Collection Failure`
`Message:`
`java.lang.NoClassDefFoundError:`
`com/oracle/bpel/client/auth/ServerAuth`
 	
(See Figure 2–1)
	1. Identify the BPEL JARs that must be added to the CLASSPATH:
	`$BPEL_SERVER_ORACLE_HOME/opmn/lib/optic.jar`
	`$BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel.jar`
	`$BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel-common.jar`
	`$BPEL_SERVER_ORACLE_HOME/bpel/lib/orabpel-thirdparty.jar`
	`$BPEL_SERVER_ORACLE_HOME/j2ee/home/oc4jclient.jar`
	`$BPEL_SERVER_ORACLE_HOME/bpel/lib/j2ee_1.3.01.jar`
	2. Verify the PATH for the JAR files to ensure that there are no errors in the path settings. If there are errors, then the Java classes in the JAR files will not be loaded.
	3. Restart the Agent to ensure that the new JAR files are loaded.

Figure 2–1 java.lang.NoClassDefFoundError Error



2.9.8 javax.naming.NameNotFoundException Error

The following error occurs in the error details page when incorrect provider URL is specified.

Table 2–14 javax.naming.NameNotFoundException Error - Workaround Steps

Error Message	Workaround Steps
`oracle.sysman.emSDK.emd.fetchlet.FetchletException: java.lang.Exception: Failed to create "ejb/collaxa/system/ServerBean" bean; exception reported is: "javax.naming.NameNotFoundException:...` (See Figure 2–2)	1. Validate the format of the string. 2. Verify if the OPMN port is correct. 3. Veify if the <oc4j_instance> name is properly substituted with the correct value, that is, the OC4J name value. The format must be like this: `opmn:ormi://<host>:<opmn_port>:home/orabpel`

Figure 2–2 javax.naming.NameNotFoundException Error

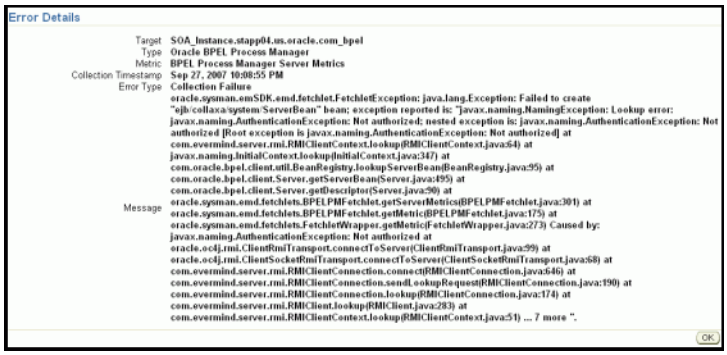
2.9.9 javax.naming.NamingException Error

The following error occurs in the error details page when incorrect password is specified.

Table 2–15 javax.naming.NamingExceptionError - Workaround Steps

Error Message	Workaround Steps
`oracle.sysman.emSDK.emd.fetchlet.FetchletException: java.lang.Exception: Failed to create "ejb/collaxa/system/ServerBean" bean; exception reported is: "javax.naming.NamingException: Lookup error:...` (See Figure 2–3)	1. Validate the values specified for **BPEL Admin username** and **BPEL Password** fields in the Monitoring Configuration page. (Confirm the validity of credentials by using the same credentials to log in to the BPELConsole).

Figure 2–3 javax.naming.NamingException Error



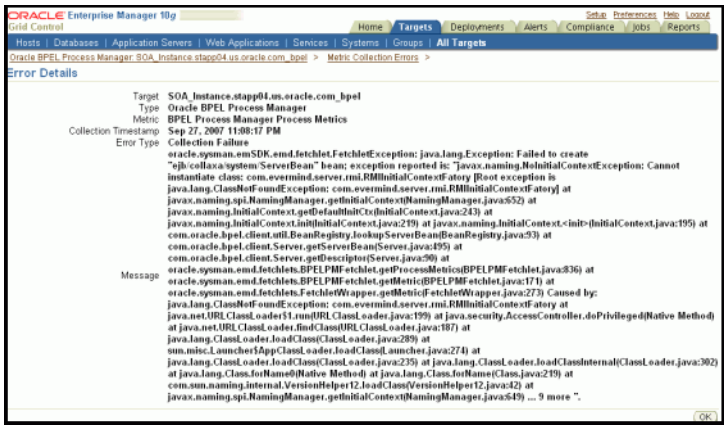
2.9.10 javax.naming.NoInitialContextException Error

The following error occurs in the error details page when incorrect *Initial Context Factory* value is specified.

Table 2–16 javax.naming.NoInitialContextException Error - Workaround Steps

Error Message	Workaround Steps
`oracle.sysman.emSDK.emd.fetchlet.FetchletException: java.lang.Exception: Failed to create "ejb/collaxa/system/ServerBean" bean; exception reported is: "javax.naming.NoInitialContextException: Cannot instantiate class:...` (See Figure 2–4)	1. Provide the following value for the **Initial Context Factory** field in the Monitoring Configuration page: `com.evermind.server.rmi.RMIInitialContextFactory`

Figure 2–4 javax.naming.NoInitialContextException Error



2.9.11 Error While Creating BPEL Infrastructure Services

The following error occurs when you are creating a new BPEL infrastructure service.

Table 2–17 javax.naming.NoInitialContextException Error - Workaround Steps

Error Message	Workaround Steps
`An error encountered while discovering the dependencies. Please try again.`	1. Apply patch 10849036 on the OMS and try creating the BPEL infrastructure service again: `com.evermind.server.rmi.RMIInitialContextFactory`

2.9.12 Metric Collection Errors for BPEL Process Manager Partner Link Metrics

The following metric collection error appears on the home page when you monitor BPEL 10.1.3.3 or 10.1.3.4 using Oracle Management Agent 10g Release 5 (10.2.0.5):

Table 2–18 Metric Collection Errors for BPEL Process Manager Partner Link Metrics - Workaround Steps

Error Message	Workaround Steps
`java.rmi.UnmarshalException: Error deserializing return-value: java.io.InvalidClassException: javax.xml.namespace.QName; local class incompatible: stream classdesc serialVersionUID = -916876369326528164, local class serialVersionUID = -9120448754896609940 at com.oracle.bpel.client.util.ExceptionUtils.handleServerException(ExceptionUtils.java:82) at com.oracle.bpel.client.BPELProcessHandle.getDescriptor(BPELProcessHandle.java:207) at oracle.sysman.emd.fetchlets.BPELPMFetchlet.getPartnerLinkMetrics(BPELPMFetchlet.java:873) at oracle.sysman.emd.fetchlets.BPELPMFetchlet.getMetric(BPELPMFetchlet.java:235) at oracle.sysman.emd.fetchlets.FetchletWrapper.getMetric(FetchletWrapper.java:382)`	Follow the workaround described in *My Oracle Support* note 735128.1.

3

Discovering and Monitoring Oracle Service Bus

This chapter describes how you can discover and monitor Oracle Service Bus (OSB) using Enterprise Manager Grid Control.

In particular, this document covers the following:

- Supported Versions
- Understanding the Discovery Mechanism
- Understanding the Discovery Process
- Downloading One-Off Patches
- Discovering Oracle Service Bus
- Enabling Management Packs
- Troubleshooting

3.1 Supported Versions

The following are the versions of OSB that are supported for monitoring in Enterprise Manager Grid Control.

Table 3–1 Supported Versions

Supported OSB Version	Oracle WebLogic Managed Server Deployed To	Supported Enterprise Manager Grid Control
Aqualogic Service Bus 2.6, 3.0, and Oracle Service Bus 10gR3	Oracle WebLogic Server 9.2, 10, 10g Release 3 (10.3)	Enterprise Manager 10g Grid Control Release 5 (10.2.0.5)

3.2 Understanding the Discovery Mechanism

The OSB deployed to Oracle WebLogic Managed Server is automatically discovered in Enterprise Manager Grid Control when that Oracle WebLogic Managed Server is discovered and added to Enterprise Manager Grid Control.

So, the discovery of OSB depends on the whether the Oracle WebLogic Managed Server is already being monitored in Enterprise Manager Grid Control.

- If Oracle WebLogic Managed Server is not being monitored in Grid Control, then first discover and add it to Grid Control; this will automatically discover the OSB that is deployed to it.

- If Oracle WebLogic Managed Server is already being monitored in Grid Control, then refresh the membership of the Oracle WebLogic Server Domain to which the Oracle WebLogic Managed Server belongs. This will automatically discover the OSB that is deployed to it.

For instructions to discover OSB, see Section 3.5, "Discovering Oracle Service Bus".

3.3 Understanding the Discovery Process

The following describes the overall process involved in discovering and monitoring OSB in Enterprise Manager Grid Control. Follow the instructions outlined against each step in this process to successfully discover and monitor your OSB.

Table 3–2 Discovery Process

Step	Requirement	Description
1	Oracle Service Bus	Install the OSB software.
2	Enterprise Manager Grid Control	Install Enterprise Manager 10g Grid Control Release 5 (10.2.0.5) or higher. Note that 10.2.0.5 is a patch set. Therefore, if you are installing Enterprise Manager Grid Control for the first time, then install the base release first and then apply the 10.2.0.5 patch set on it. For information about installing the base release of Enterprise Manager Grid Control, see the *Enterprise Manager Grid Control Installation and Basic Configuration Guide* available at: `http://www.oracle.com/technology/documentation/oem.html` Oracle recommends that you install the Enterprise Manager Grid Control components on a host that is different from the host where OSB is installed. For example, if OSB is installed on host1.xyz.com, then install and configure Oracle Management Service (OMS) and the Management Repository on host2.xyz.com.

Table 3–2 (Continued)Discovery Process

Step	Requirement	Description

3	Oracle Management Agent
	(Management Agent)
		Install Oracle Management Agent 10g Release 5 (10.2.0.5) or higher on the host where OSB is installed.
		If OSB and Enterprise Manager Grid Control are on the same host, then you do not have to install a separate Management Agent. The Management Agent that comes with Enterprise Manager Grid Control is sufficient. However, if they are different hosts, then you must install a separate Management Agent on the host where OSB is installed. Alternatively, the Management Agent can also be installed on a different host and made to remotely monitor the OSB target on another host.
		You can install the Management Agent in one of the following ways:
		▪ Invoke the installer provided with Enterprise Manager 10 Grid Control Release 2 (10.2.0.1), and select the installation type **Additional Management Agent**. Then apply the 10.2.0.5 Agent patch on it.
		▪ Use the Agent Deploy application within the Enterprise Manager 10g Grid Control Release 5 (10.2.0.5) console.
		▪ Use the full agent kit that is available at:
		`http://www.oracle.com/technology/software/products/oem/htdocs/agentsoft.html`
		For information about installing the Management Agent, see the *Enterprise Manager Grid Control Installation and Basic Configuration Guide* available at:
		`http://www.oracle.com/technology/documentation/oem.html`

4	One-Off Patches	The support for discovering and monitoring of OSB is enabled only when the one-off patches as described in Section 3.4, "Downloading One-Off Patches" are applied to the BEA Home where OSB is running.
5	Discovery in Enterprise Manager Grid Control	OSB is automatically discovered when the Oracle WebLogic Server Domain to which it is deployed is discovered and added to Enterprise Manager Grid Control.
6	Management Pack for SOA	The Management Pack for SOA comes with the installation of Enterprise Manager 10g Grid Control Release 3 (10.2.0.3) or higher. Therefore, you do not have to download the management pack from any location. You only have to enable it to gain access to value-added features. Even without enabling it you can discover and monitor OSB, but enabling the pack offers you additional features. For procedures to enable management packs, see Section 3.6, "Enabling Management Packs".

3.4 Downloading One-Off Patches

To view OSB services in Enterprise Manager Grid Control, you must apply the following patches on Oracle WebLogic Admin Server to which the OSB is deployed.

Table 3–3 One-Off Patches

Oracle Service Bus Version	ID	Password
Oracle Service Bus 2.6	EMMU	83XNT2D4
Oracle Service Bus 2.6.1	9NAF	TLZE4IPI

Table 3–3 (Continued)One-Off Patches

Oracle Service Bus Version	ID	Password
Oracle Service Bus 3.0	RPCD	JJEC2EY2
Oracle Service Bus 10gR3	9HPA	FFLQHDHP

You can apply the patches in one of the following ways:

- **Online mode** - Using the SmartUpdate tool available with Oracle WebLogic Managed Server
- **Offline mode** - Manually copying the JAR files and classes to the OSB directories

For information about downloading these patches and applying them in either offline or online mode, see My Oracle Support note 804148.1. You can access My Oracle Support at:

https://metalink.oracle.com/

Note: After applying the patches, restart the WebLogic Admin Server and the Management Agent running on the host where OSB is running.

3.5 Discovering Oracle Service Bus

The OSB deployed to Oracle WebLogic Managed Server is automatically discovered in Enterprise Manager Grid Control when that Oracle WebLogic Managed Server is discovered and added to Enterprise Manager Grid Control.

So, before discovering OSB, identify whether the Oracle WebLogic Managed Server is already being monitored in Enterprise Manager Grid Control.

- If Oracle WebLogic Managed Server is not being monitored in Grid Control, then first discover and add it to Enterprise Manager Grid Control; this will automatically discover the OSB that is deployed to it.
- If Oracle WebLogic Managed Server is already being monitored in Grid Control, then refresh the membership of the Oracle WebLogic Server Domain to which the Oracle WebLogic Managed Server belongs. This will automatically discover the OSB that is deployed to it.

This section outlines the instructions for discovering OSB for the cases described above. In particular, this section covers the following:

- Discovering OSB Deployed to Oracle WebLogic Managed Server That Is Not Monitored in Grid Control
- Discovering OSB Deployed to Oracle WebLogic Managed Server That Is Already Monitored in Grid Control

3.5.1 Discovering OSB Deployed to Oracle WebLogic Managed Server That Is Not Monitored in Grid Control

To discover OSB deployed to Oracle WebLogic Manager Server that is not monitored in Grid Control, first discover that Oracle WebLogic Manager Server in Enterprise Manager Grid Control; this will automatically discover the OSB that is deployed to it. To discover Oracle WebLogic Manager Server, follow these steps:

1. Log in to Enterprise Manager Grid Control (as a SYSMAN user).

2. Click **Targets** and then **Middleware**.

   Enterprise Manager Grid Control displays the Middleware page that lists all the middleware targets being monitored.

3. In the Middleware page, from the **Add** list, select **Oracle WebLogic Server Domain**, and click **Go**.

   Enterprise Manager Grid Control displays the Add Oracle WebLogic Server Domain wizard that captures the details of the Oracle WebLogic Server Domain to be discovered and monitored.

4. In the Add Oracle WebLogic Server Domain wizard, specify the required details and click **Next** on each page to reach the end of the wizard.

   For information about the details to be provided for each page of the wizard, click **Help** on each page.

5. In the last page of the Add Oracle WebLogic Server Domain wizard, click **Finish** to complete the discovery process and add the target to Grid Control for monitoring purposes.

   Enterprise Manager Grid Control displays the Middleware page with a confirmation message that confirms that the Oracle WebLogic Manager Server has been successfully added to Grid Control.

   In the Middleware page that shows all the middleware targets being monitored, you can see the Oracle WebLogic Managed Server and the OSB you just added. Note that, at this point, OSB will be the last target listed in the table. To see it nested under its Oracle WebLogic Managed Server, click **Refresh** on this page. Alternatively, navigate to another tab or page, and then return to the Middleware page.

Note: After discovering and adding OSB to Enterprise Manager Grid Control, you can monitor its status from the OSB Home page. You can use the Services page to view a list of services.

For the first collection that happens, you will see the value "0" for all the metrics. This is an expected behavior. From the second collection onwards, you should see the actual metric values. However, if you still see the value "0", then perhaps the service monitoring is turned off. To resolve this issue, on the Services page, click **Launch Console** to access the OSB Console, and turn on the service monitoring and set the level to "pipeline" or "action".

3.5.2 Discovering OSB Deployed to Oracle WebLogic Managed Server That Is Already Monitored in Grid Control

To discover OSB deployed to Oracle WebLogic Managed Server that is already being monitored in Grid Control, refresh the membership of the Oracle WebLogic Server Domain to which the Oracle WebLogic Managed Server belongs. This will automatically discover the OSB that is deployed to it.

To refresh the membership of the Oracle WebLogic Server Domain to which the Oracle WebLogic Managed Server belongs, follow these steps:

1. In Grid Control, click **Targets** and then **Middleware**.

2. On the Middleware page, from the table that lists all the middleware targets being monitored in Grid Control, click the name of the Oracle WebLogic Server Domain.

3. On the Oracle WebLogic Server Domain Home page, in the General section, click **Refresh Domain**. Enterprise Manager Grid Control displays the membership page that lists the OSB that is currently not being monitored. Click **OK**.

   Enterprise Manager Grid Control refreshes the membership and returns to the Oracle WebLogic Server Domain Home page.

Note: On the Oracle WebLogic Server Domain Home page, in the Status section, the legend of the status pie chart may not show an increased count to indicate the newly added OSB target. This is an expected behavior because Enterprise Manager Grid Control takes a few seconds to reflect the membership details in this section.

---

4. Click the **Members** tab and verify whether the OSB has been added.

3.6 Enabling Management Packs

Besides monitoring the status of OSB, if you want to gain access to additional value-added features, then you must enable the Management Pack for SOA.

To enable the Management Pack for SOA:

1. Log in to Enterprise Manager Grid Control.

   Enterprise Manager Grid Control displays the home page.

2. From the top-right corner of the Home page, click **Setup**.

   Enterprise Manager Grid Control displays the Overview of Setup page.

3. In the Overview of Setup page, from the left-vertical menu pane, click **Management Pack Access**.

   Enterprise Manager Grid Control displays the Management Pack Access page.

4. In the Management Pack Access page, from the Search list, select **Oracle Service Bus**.

   Enterprise Manager Grid Control lists all the Oracle Service Bus targets being monitored.

5. From the table, for the Oracle Service Bus target you are interested in, enable the following packs and click **Apply**.

   - Management Pack Plus for SOA
   - Configuration Management Pack for Oracle Middleware

3.7 Troubleshooting

This section describes the errors you might encounter while discovering OSB, and the workaround steps you can follow to resolve each of them.

This section covers the following:

3.7.1 Required Patches Missing

The following error occurs when you try to discover OSB from an Oracle WebLogic Admin Server that has not been patched with the required one-off patches.

Table 3–4 oracle.sysman.emSDK.emd.fetchlet.FetchletException Error - Workaround Steps

Error Message	Workaround Steps
`oracle.sysman.emSDK.emd.fetchlet.FetchletException: The MBean is not available on the OSB instance. The required EM plug in patch should be missing on OSB instance.`	Apply the one-off patches as described in Section 3.4, "Downloading One-Off Patches".

4

Provisioning Oracle BPEL Processes

Besides discovery and monitoring capabilities, Enterprise Manager Grid Control also offers provisioning capabilities using deployment procedures that help you deploy BPEL processes on Oracle BPEL Process Managers (BPEL Process Manager).

A deployment procedure is a procedure that contains a hierarchal sequence of provisioning or patching steps, where each step may contain a sequence of other steps. In other words, the workflow of all tasks that need to be performed for a particular lifecycle management activity is encapsulated in a deployment procedure.

The deployment procedure used for provisioning BPEL processes on BPEL Process Managers is *BPEL Process Provisioning*. This chapter describes how you can use this deployment Procedure to provision BPEL processes on BPEL Process Managers.

In particular, this chapter covers the following:

4.1 Prerequisites

Before running the Deployment Procedure to provision BPEL processes, meet the following prerequisites:

- Ensure that BPEL Process Manager on which the process suitcase files have to be deployed is already discovered and monitored in Enterprise Manager Grid Control.
- Ensure that Oracle Management Agent 10g Release 5 (or higher) is installed on the host where the target BPEL Process Manager is running.
- Register the credentials of application server instances on which the target BPEL Process Managers are running. Also register the BPEL administrator credentials (and RMI credentials for 10.1.2 BPEL targets) for the target BPEL Process Managers.
- Ensure that Oracle Software Library (Software Library) is set up. For instructions to set up the Software Library, see Section 2.4, "Setting Up Oracle Software Library". For more information, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

  `http://www.oracle.com/technology/documentation/oem.html`
- Store the BPEL process suitcase files as generic components in the Software Library. For instructions to create generic components, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

http://www.oracle.com/technology/documentation/oem.html

Note: While adding a generic component for BPEL processes, on the Create Component: Describe page of the Software Library Wizard, select **Generic Component** from the **Type** list, provide a name for the parent folder, and navigate to the Upload File page to upload the files. You DO NOT have to provide details for Customize and Set Directives page.

- If you want to use a deployment plan that can be associated with a BPEL process suitcase file (JAR file), then store this deployment file as a generic component in the Software Library. For instructions to create generic components, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL.

  http://www.oracle.com/technology/documentation/oem.html

4.2 Provisioning Procedure

To provision BPEL processes to a target BPEL Process Manager, follow these steps:

1. In Grid Control, click **Deployments**. Enterprise Manager Grid Control displays the Deployments page.
2. On the Deployments page, in the Deployment Procedure Manager, click **Deployment Procedures**. Enterprise Manager Grid Control displays the Deployment Procedure Manager page.
3. On the Deployment Procedure Manager page, in the Procedures tab, from the table, select **BPEL Process Provisioning**. Then click **Schedule Deployment**. Enterprise Manager Grid Control displays the Source Selection page.
4. On the Source Selection page, do the following:
   a. In the Source section, click **Add** and select the BPEL Process suitcase files that you want to deploy to a target BPEL Process Manager. The table is populated based on the selection made.

      If you have selected multiple suitcase files, then from the table, select the BPEL process suitcase file and use **Move Up** and **Move Down** to order the components the way they should be deployed by the Deployment Procedure.

   b. In the Select Deployment Plan, select a deployment plan that can be associated with a BPEL process suitcase file (JAR file).

      The deployment plan helps you modify the configuration details and partner link binding properties, which have been set for a particular environment, at run time. You can also use it to search and replace strings and URLs that have been set for a particular environment. This way, you can deploy the same BPEL processes on BPEL Process Managers that are in development, test, and production environments; without having to reconfigure your settings across these environments.

   c. Click **Next**. Enterprise Manager Grid Control displays Target Selection page.
5. On the Target Selection page, in the Target section, click **Add** and select the BPEL Process Managers on which you want to deploy the BPEL processes. If there are multiple domains available for a BPEL target, then you can select an appropriate domain from the **BPEL Domain** list, on which the suitcase files can be deployed. Click **Next**.

Note: When you click **Next**, Enterprise Manager Grid Control internally checks to see if the Context Provider URL is captured. If this URL is not captured, then you may see some errors. To resolve this issue, set the URL in the Monitoring Configuration page of the BPEL target.

6. On the Credentials page, specify the following:
   a. Credentials of application server instances on which the selected BPEL Process Managers are running.
   b. BPEL administrator credentials (and RMI credentials for 10.1.2 BPEL targets) for the selected Oracle BPEL Process Managers.

      The credentials required for BPEL Process Managers vary according to the supported BPEL Process Manager version. For BPEL 10.1.3 targets, you need to provide only one set of credentials that will be used for accessing the BPEL Process Manager. However, for BPEL 10.1.2 targets, you need to provide the BPEL administrator password and another set of OC4J RMI Access credentials for remote access.

      If the preferred credentials are already set and stored in the Management Repository, then by default, they are prefilled on this page. You can choose to either use these prefilled preferred credentials or edit them to use the changed credentials. If the preferred credentials are not stored, then the fields are blank. In this case, you have to specify the credentials. The credentials specified here apply only to the current deployment procedure session and do not get stored in the Management Repository for future use.

      Note that if you change the credentials, the change applies only to the current deployment procedure session and does not override the preferred credentials stored in the Management Repository.
   c. Click **Next**. Enterprise Manager Grid Control displays the Schedule page.
7. On the Schedule page, schedule the deployment procedure to run immediately or later, and specify a unique name for the deployment procedure so that it can be tracked. Click **Next**. Enterprise Manager Grid Control displays the Review page.
8. On the Review page, review the details you have provided for provisioning BPEL processes, and click **Submit**.

5

Provisioning Oracle Service Bus Resources

Besides discovery and monitoring capabilities, Enterprise Manager Grid Control also offers provisioning capabilities using deployment procedures that help you deploy Oracle Service Bus (OSB) resources from a source OSB domain or Oracle Software Library (Software Library) to a target OSB domain.

The resources of OSB can be organized into individual projects. Projects are non-hierarchical, disjointed, top-level grouping constructs. All resources (such as business services, proxy services, WS-Policies, WSDLs, schemas, XQuery transformations, JARs, and so on) reside in exactly one non-overlapping project. Resources can be created directly under a project or be further organized into folders. Folders may be created inside projects or inside other folders, and the folders are similar to directories in a file system, with the project level being the root directory.

And as described in the previous chapter, a deployment procedure is a procedure that contains a hierarchal sequence of provisioning or patching steps, where each step may contain a sequence of other steps. In other words, the workflow of all tasks that need to be performed for a particular lifecycle management activity is encapsulated in a deployment procedure.

The deployment procedure used for provisioning OSB resources is *Oracle Service Bus Resource Provisioning*. Using this deployment procedure, you can provision the resources for Oracle Service Bus 2.6, 2.6.1, 3.0, and 10gR3 (3.1).

This chapter describes how you can use this deployment procedure to provision OSB resources. In particular, this chapter covers the following:

- Provisioning Oracle Service Bus Resources from Oracle Service Bus Domain
- Provisioning Oracle Service Bus Resources from Oracle Software Library

5.1 Provisioning Oracle Service Bus Resources from Oracle Service Bus Domain

This section describes how you can provision OSB resources directly from a source OSB domain.

In particular, this section covers the following:

- Prerequisites
- Provisioning Procedure

5.1.1 Prerequisites

Before running the deployment procedure to provision OSB resources from a source OSB domain, meet the following prerequisites:

- Ensure that the source host and target host are discovered and monitored in Enterprise Manager Grid Control.
- Ensure that Oracle Management Agent 10g Release 5 (or higher) is installed on the source domain host as well as on the target domain host.
- Ensure that the source OSB (from where you want to export the resources) is already discovered and monitored in Enterprise Manager Grid Control.
- Register the credentials of the target host as preferred credentials in Enterprise Manager Grid Control.
- Ensure that Software Library is set up. For instructions to set up the Software Library, see Section 2.4, "Setting Up Oracle Software Library". For more information, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

  `http://www.oracle.com/technology/documentation/oem.html`
- If you want to use a customization file to customize the environment variables in the changed (target) environment, then you must ensure that the customization file is available as a generic component in Oracle Software Library. For instructions to create generic components, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

  `http://www.oracle.com/technology/documentation/oem.html`

5.1.2 Provisioning Procedure

To provision OSB resources from a source OSB domain, follow these steps:

1. In Grid Control, click **Deployments**. Enterprise Manager Grid Control displays the Deployments page.
2. On the Deployments page, in the Deployment Procedure Manager, click **Deployment Procedures**. Enterprise Manager Grid Control displays the Deployment Procedure Manager page.
3. On the Deployment Procedure Manager page, in the Procedures tab, from the table, select **Oracle Service Bus Resource Provisioning**. Then click **Schedule Deployment**. Enterprise Manager Grid Control displays the Select Source page.
4. On the Select Source page, in the Source section, select **Oracle Service Bus Domain**.
   a. For **Domain**, click the torch icon and select the OSB domain from where the resources can be exported and deployed to a target OSB domain. In the following page of the wizard, you will be allowed to select the domain's projects that you want to export.
   b. For **BEA Home Directory**, specify the full path to the BEA home directory where all BEA product-related files are stored. For example, `/home/mark/bea`.
   c. Click **Next**. Enterprise Manager Grid Control displays Select Projects page.
5. On the Select Projects page, do the following:

a. In the Resource Summary section, select the projects you want to export and deploy to the target OSB domain. The selected projects are exported to a JAR file, and the JAR file is moved to the host where the target OSB domain is running.

   Note that the resources of the selected projects that exist in the target OSB domain but not in the exported JAR file will be deleted.

b. In the Export Mode section, do one of the following:

   Select **Export Projects** if you want to export the resources at project level. While deploying the exported JAR file to the target host, the entire project is deployed. This may add, overwrite, or delete resources depending on the availability of resources on the target host.

   Select **Export Resources** if you want to export the resources at resource level. While deploying the exported JAR file to the target host, only the resources are deployed. This may add or overwrite resources depending on the availability of resources on the target host.

   To understand these options better, read the use cases described inSection 5.1.2.1, "Understanding Export Modes".

c. (Optional) In the Security Options section, if the projects you want to export contain any resources with sensitive data, then specify a pass-phrase to protect them. The same pass-phrase will be used to import the proctected resourced during deployment.

d. (Optional) In the Save Projects to Software Library section, select **Save Projects to Software Library** and specify a component name and location if you want to save the exported project JAR file as a generic component in the Software Library.

   By default, the projects you select here are exported to a JAR file and moved to the host where the Administration server of the target OSB domain is running. However, the JAR files are not saved in the Software Library for future use. Using this option, you can save them as a component in the Software Library.

6. On the Select Target page, do the following:

a. In the Target section, specify the following:

   For **Domain**, click the torch icon and select the OSB domain where you want to deploy the selected resources.

   For **BEA Home Directory**, specify the full path to the BEA home directory where all BEA product-related files are stored.

b. (Optional) In the Advanced Options section, select the settings you want to retain if you have done some customization to the resources selected for deployment, and if you want to preserve those changes in the target OSB domain.

   Note that for Oracle Service Bus 2.6.x, Security and Policy Configuration, Credentials, and Access Control Policies cannot be preserved.

c. In the Customization section, provide details about the customization file that can be used to modify the environment settings in the target OSB domain.

   If you do not want to use a customization file, select **None**.

   If you are using a customization file and if it is available on the host where the target OSB domain is running, then select **Use the Customization file on the target host** and specify the full path to the location where the file is present.

If the customization file is stored as a generic component in Oracle Software Library, then select **Select the customization file from the Software Library** and specify the full path to the location in Oracle Software Library where the generic component is stored.

d. Click **Next**. Enterprise Manager Grid Control displays the Set Credentials page.

7. On the Set Credentials page, specify the following and click **Next**.

a. Specify the login credentials of the source and target Oracle Sevice Bus (OSB) domains.

b. Specify the credentials of the hosts where the Management Agents, which are monitoring the administration servers of the OSB domains, are running

8. On the Schedule page, schedule the deployment procedure to run immediately or later, and specify a unique name for the deployment procedure so that it can be tracked. Click **Next**. Enterprise Manager Grid Control displays the Review page.

9. On the Review page, review the details you have provided for provisioning OSB resources, and click **Submit**.

5.1.2.1 Understanding Export Modes

The following describes the different use cases and explains how the export modes will work for those circumstances.

While the first column shows the project selected from the source domain and the resources contained in that selected project, the second column shows the availability of that project in the target domain. And, while the third column shows how Export at Project Level work, the fourth column shows how Export at Resource Level works.

Table 5–1 Understanding Export Modes

Source Domain	Target Domain	Export at Project Level	Export at Resource Level
You have selected Project_1 from the source domain, and this project has Resource_1, Resource_2, and Resource_3.	The target domain has no projects at all.	The entire Project_1 will be deployed to the target domain.	The entire Project_1 will be deployed to the target domain.
You have selected Project_1 from the source domain, and this project has Resource_1, Resource_2, and Resource_3.	The target domain has Project_1, and this project has Resource_1.	The entire Project_1 will be deployed to the target domain, wherein, Resource_1 will be overwritten because it is already available in the target domain, and Resource_2 and Resource_3 will be ADDED.	Only the resources of Project_1 will be deployed to the target domain, wherein, Resource_1 will be overwritten because it is already available in the target domain, and Resource_2 and Resource_3 will be ADDED.

Table 5–1 (Continued)Understanding Export Modes

Source Domain	Target Domain	Export at Project Level	Export at Resource Level
You have selected Project_1 from the source domain, and this project has Resource_1.	The target domain has Project_1, and this project has Resource_1, Resource_2, and Resource_3.	The entire Project_1 will be deployed to the target domain, wherein, Resource_1 will be overwritten because it is already available in the target domain, and Resource_2 and Resource_3 will be DELETED.	Only the resources of Project_1 will be deployed to the target domain, wherein, only Resource_1 will be overwritten because it is already available in the target domain. The other two resources already available in the target domain, that is, Resource_2 and Resource_3 will NOT be affected.

5.2 Provisioning Oracle Service Bus Resources from Oracle Software Library

This section describes how you can provision OSB resources from the Software Library.

In particular, this section covers the following:

- Prerequisites
- Provisioning Procedure

5.2.1 Prerequisites

Before running the Deployment Procedure to provision OSB resources from the Software Library, meet the following prerequisites:

- Ensure that the target host is discovered and monitored in Enterprise Manager Grid Control.
- Ensure that Oracle Management Agent 10g Release 5 (or higher) is installed on the the target host.
- Register the credentials of the target host as preferred credentials in Enterprise Manager Grid Control.
- Ensure that the Software Library is set up. For instructions to set up the Software Library, see Section 2.4, "Setting Up Oracle Software Library". For more information, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

  `http://www.oracle.com/technology/documentation/oem.html`
- Export the resources of an OSB domain as a JAR file. Use OSB console for this.
- Ensure that the JAR file is available as a generic component in Oracle Software Library. For instructions to create generic components, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

  `http://www.oracle.com/technology/documentation/oem.html`
- If you want to use a customization file to customize the environment variables in the changed (target) environment, then you must ensure that the customization

file is available as a generic component in Oracle Software Library. For instructions to create generic components, refer to the *Enterprise Manager Advanced Configuration Guide* available at the following URL:

http://www.oracle.com/technology/documentation/oem.html

5.2.2 Provisioning Procedure

To provision OSB resources from a source OSB domain, follow these steps:

1. In Grid Control, click **Deployments**. Enterprise Manager Grid Control displays the Deployments page.
2. On the Deployments page, in the Deployment Procedure Manager, click **Deployment Procedures**. Enterprise Manager Grid Control displays the Deployment Procedure Manager page.
3. On the Deployment Procedure Manager page, in the Procedures tab, from the table, select **Oracle Service Bus Resource Provisioning**. Then click **Schedule Deployment**. Enterprise Manager Grid Control displays the Select Source page.
4. On the Select Source page, in the Source section, select **Oracle Software Library**.
   a. For **Component**, click the torch icon and select the generic component that contains the resources to be deployed to a target OSB domain.
   b. (Optional) For **Pass Phrase**, specify a pass-phrase if any of the resources in the JAR file contain sensitive data and are protected. The same pass-phrase is used while importing these resources to the target domain.
   c. Click **Next**. Enterprise Manager Grid Control displays Select Target page.
5. On the Select Target page, do the following:
   a. In the Target section, specify the following:

      For **Domain**, click the torch icon and select the OSB domain where you want to deploy the selected resources.

      For **BEA Home Directory**, specify the full path to the BEA home directory where all BEA product-related files are stored.
   b. (Optional) In the Advanced Options section, select the settings you want to retain if you have done some customization to the resources selected for deployment, and if you want to preserve those changes in the target OSB domain.

      Note that for Oracle Service Bus 2.6.x, Security and Policy Configuration, Credentials, and Access Control Policies cannot be preserved.
   c. In the Customization section, provide details about the customization file that can be used to modify the environment settings in the target OSB domain.

      If you do not want to use a customization file, select **None**.

      If you are using a customization file and if it is available on the host where the target OSB domain is running, then select **Use the Customization file on the target host** and specify the full path to the location where the file is present.

      If the customization file is stored as a generic component in Oracle Software Library, then select **Select the customization file from the Software Library** and specify the full path to the location in Oracle Software Library where the generic component is stored.

d. Click **Next**. Enterprise Manager Grid Control displays the Set Credentials page.

6. On the Set Credentials page, specify the following and click **Next**.

   a. Specify the login credentials of the source and target Oracle Sevice Bus (OSB) domains.

   b. Specify the credentials of the hosts where the Management Agents, which are monitoring the administration servers of the OSB domains, are running

7. On the Schedule page, schedule the deployment procedure to run immediately or later, and specify a unique name for the deployment procedure so that it can be tracked. Click **Next**. Enterprise Manager Grid Control displays the Review page.

8. On the Review page, review the details you have provided for provisioning OSB resources, and click **Submit**.