Oracle® Enterprise Manager

Middleware Lifecycle Management Administrator's Guide

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ORACLE®

Oracle Enterprise Manager Middleware Lifecycle Management Administrator's Guide, 13*c* Release 5

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Preface

The Cloud Control Host Lifecycle Management Guide introduces you to the suite of operating system and host lifecycle management solutions offered by Enterprise Manager Cloud Control, and describes in detail how you can use the discovery, provisioning, patching, and monitoring features to manage your data center.

Audience

This guide is primarily meant for administrators who want to use the discovery, provisioning, patching, and monitoring features offered by Cloud Control to meet their operating system and host lifecycle management challenges. As an administrator, you can be either a *Designer*, who performs the role of a system administrator and does critical operating system and host operations, or an *Operator*, who runs the default as well custom deployment procedures, patch plans, and patch templates to manage operating system and host configurations.

Scope and Coverage

Oracle Enterprise Manager Middleware Lifecycle Management Administrator's Guide describes features pertaining to the following plug-ins and platforms:

- Oracle Fusion Middleware Plug-in
- Oracle Cloud Framework Plug-in
- Cloud Services Management Plug-in
- Enterprise Manager Cloud Control

Documentation Accessibility

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

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` or visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` if you are hearing impaired.

Related Resources

For more information, see the documents available in the Oracle Enterprise Manager documentation library: Enterprise Manager Documentation.

Conventions

The following 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
Discover Middleware Hosts

In this chapter we will cover how to discover and add Middleware hosts that will be managed by Oracle Entreprise Manager.

To add and monitor different Middleware hosts like WebLogic, Exalytics and standalone Oracle HTTP servers please consult the full guide at Discovering and Adding Middleware Targets on *Cloud Control Administrator's Guide*.

2
Overview of Middleware Provisioning

Provisioning involves repeatable, reliable, automated, unattended, and scheduled mass-deployment of software, applications, or servers across different platforms, environments, and locations.

Middleware Provisioning involves remotely installing Oracle homes and configuring domains using automated deployment procedures. A deployment procedure is a pre-defined sequence of steps that is meant to perform a set of operations on one or more hosts monitored by Cloud Control.

In particular, this chapter covers the following:

- Introduction to Middleware Provisioning
- Oracle Fusion Middleware Provisioning Terminology
- Supported Use Cases for Middleware Provisioning Procedures

Introduction to Middleware Provisioning

Provisioning is an important solution offered as a part of Lifecycle Management that enables you to provision middleware artifacts such as WebLogic Domain, Java EE Applications, Coherence Nodes and Clusters, SOA Artifacts and Composites, Service Bus Resources, and Oracle WebCenter.

The following figure shows the Middleware Provisioning solutions offered in Cloud Control:
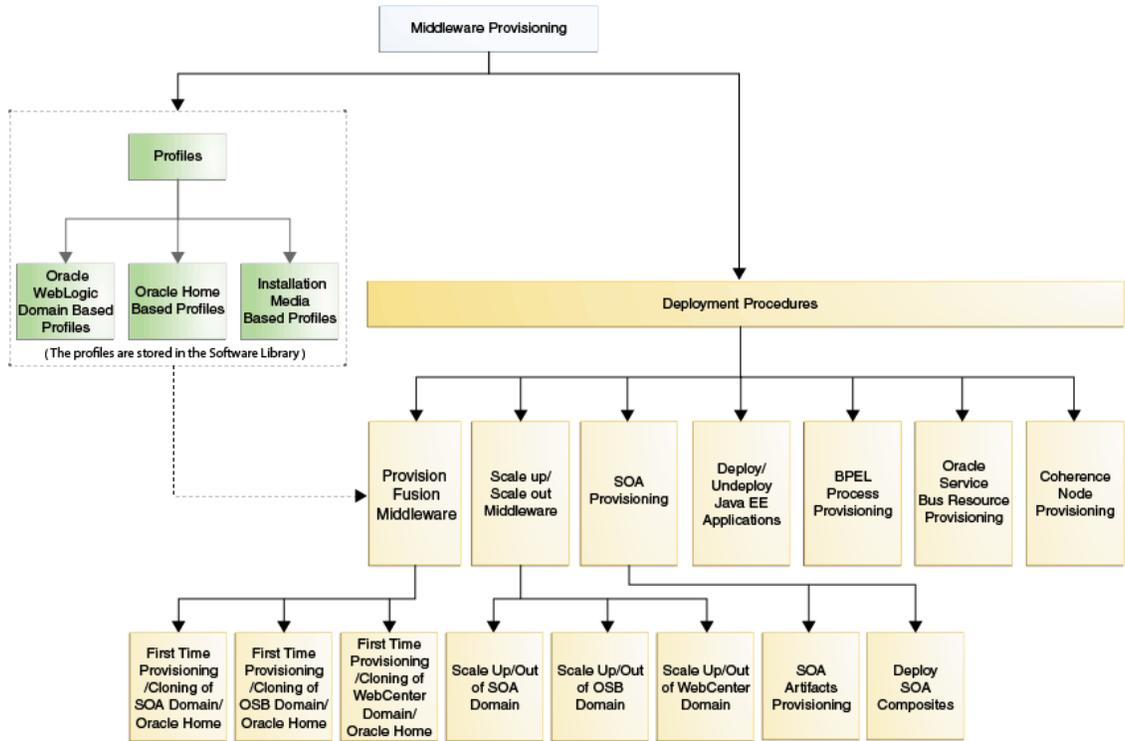
To manage these Deployment Procedures and Profiles effectively in Cloud Control there is a centralised middleware provisioning page which exposes all the features relevant to Middleware Provisioning like creating, viewing, and provisioning profiles and deployment procedures. To access this page, from **Enterprise** menu, select **Provisioning and Patching**, then click **Middleware Provisioning**.

In addition to accessing all the relevant provisioning related features from **Middleware Provisioning** page, you can also launch some of them from the **target** menu. To do so, from **Targets** menu, select **Middleware**. Select a target of type domain, and select **Provisioning**, and the options in this menu allow you to **create provisioning profile** based on WebLogic Domain or Oracle Home.

You can create the profile for multiple purposes. Based on the details configured in the selected target type domain, the appropriate profile types are displayed under the provisioning sub-menu.
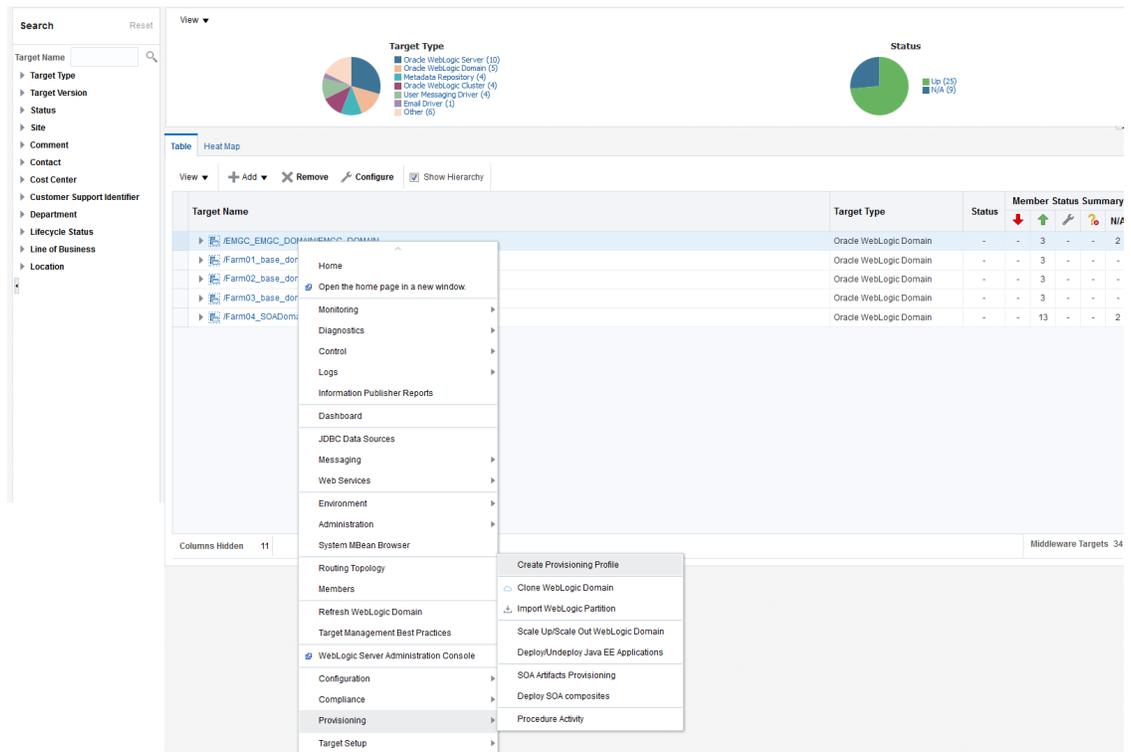
The below figure shows the different profile types:
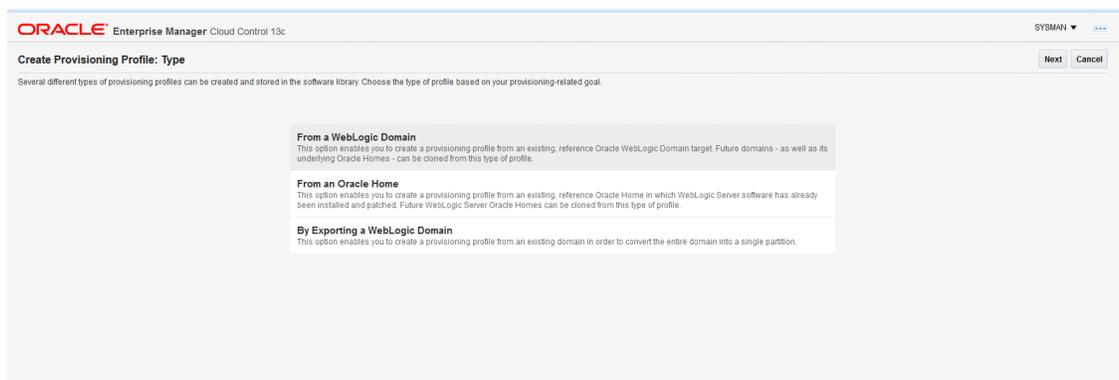
The Middleware Provisioning page is categorized into the following sections:

- Profiles
- Deployment Procedures

Profiles

The profiles section lists all the provisioning profiles that you have created and the profiles on which you have been granted access. No profiles are shipped out of the box. You have to create your own profiles based on the provisioning needs. You can:

- Click the profile to view the profile details.

- Filter the profile based on what you want to display in the Profiles table. To do so, from **View** menu, select **Show Profiles,** then click the option that you want to display. For example, if you click **All**, then all the profiles are displayed.

- To clone a WebLogic Domain or an Oracle Home, select a profile and click **Provision**.

- To create a new profile, select an option from the **Create** menu.

- To delete an existing profile, select the profile name, and click **Delete**.

- To create a new partition in an existing domain, select the appropriate profile (i.e. a profile that was created either by exporting an older domain or by exporting a partition) and click **Import Partition**.

Deployment Procedures

The deployment procedures section lists all the Oracle-provided deployment procedures, the Custom Deployment Procedures (CDP) that you have created, and the procedures on which you (the administrator you have logged in as) have been granted access. Select a deployment procedure from the list, and perform any of the following action on it:

- To run a deployment procedure, select the procedure, and click **Launch**.

- To create a copy of an Oracle-supplied deployment procedure, click **Create Like.**

- To delete a User-owned deployment procedure, select the procedure, and click **Delete.** Note that, you can not delete Oracle-provided procedures.

- To edit a deployment procedure, select the procedure and click **Edit.**

  Note: You can not edit Oracle-supplied procedures. If you want to edit a procedure, you must first clone an Oracle-supplied procedure using the Create Like option. You can now edit the newly cloned procedure that you own. To do so, click **Edit**.

- To grant other administrators, for example: EM_PROVISIONING_OPERATOR role, access on a particular deployment procedure, click **Edit Permissions.**

Oracle Fusion Middleware Provisioning Terminology

The definitions of terms listed in this section are useful in helping to understand the Middleware concepts presented in this part:

- **WebLogic Domain:** A WebLogic Domain is a logically related group of Java components. A domain includes a special WebLogic Server instance called the Administration Server, which is the central point from which you configure and manage all resources in the domain. Usually, you configure a domain to include additional WebLogic Server instances called Managed Servers. You deploy Java components, such as Web applications, EJBs, and Web services, and other resources, to the Managed Servers and use the Administration Server for configuration and management purposes only.

- **Administration Server:** The Administration Server operates as the central control entity for the configuration of the entire domain. It maintains the domain's configuration documents and distributes changes in the configuration documents to managed servers. The Administration Server is the central location from where you can monitor all the resources in a domain. Each WebLogic Server domain must have one server instance that acts as the Administration Server.

- **Managed Server:** Managed servers host business applications, application components, Web services, and their associated resources. To optimize performance, managed servers maintain a read-only copy of the domain's configuration and security document. When a managed server starts up, it connects to the domain's Administration Server to synchronize its configuration document with the document that the Administration Server maintains.

- **Node Manager:** Node Manager is a Java utility that runs as a separate process from Oracle WebLogic Server and allows you to perform common operations for a Managed Server, regardless of its location with respect to its Administration Server. While use of Node Manager is optional, it provides valuable benefits if your Oracle WebLogic Server environment hosts applications with high-availability requirements.

  If you run Node Manager on a computer that hosts Managed Servers, you can start and stop the Managed Servers remotely using the Administration Console, Fusion Middleware Control, or the command line. Node Manager can also automatically restart a Managed Server after an unexpected failure.

- **WebLogic Server Home:** A WebLogic Server home contains installed files necessary to host a WebLogic Server. The WebLogic Server home directory is a peer of Oracle home directories and resides within the directory structure of the Middleware home.

- **Middleware Home:** A Middleware home is a container for the Oracle WebLogic Server home, and, optionally, one Oracle Common home and one or more Oracle homes. A Middleware home can reside on a local file system or on a remote shared disk that is accessible through NFS.

- **Oracle Home:** An Oracle home contains installed files necessary to host a specific product. For example, the SOA Oracle home contains a directory that contains binary and library files for Oracle SOA Suite. An Oracle home resides within the directory structure of the Middleware home.

- **Cloning:** The process of creating a copy of the WebLogic Domain and the Oracle home binaries present within the domain is referred to as cloning. Typically, cloning is performed at the WebLogic Domain-level. Fusion Middleware Domain cloning can be performed from an existing target or using provisioning profiles.

- **Provisioning Profiles:** A profile is a snapshot of a live WebLogic Domain or Oracle Home, or it can simply contain a set of installation media archives pertaining to the product suite. A profile can be created from the Cloud Control or using Enterprise Manager Command Line Interface or through REST APIs.

- **Gold Image:** The gold image is a single image that includes the binary and library files for an Oracle home.

  For Oracle Fusion Middleware 11*g,* the Middleware Home was the top-level directory that comprised of multiple product-specific Oracle Homes. For example:

```
[user1@<agent host name> middhome]$ ls
Oracle_OSB1  Oracle_SOA1  coherence_3.7  domain-registry.xml  logs  modules
oracle_common  osb  patch_ocp371  patch_wls1036  registry.dat  registry.xml  utils
wlserver_10.3
```

For Oracle Fusion Middleware 12c, there is no concept of Middleware Home. Infact, the Middleware Home itself functions as the Oracle Home, and middleware products like SOA, Service Bus, WebCenter are installed within this folder directly. For example:

```
[user1@<agent host name> OH12JRF]$ ls
OPatch  cfgtoollogs  crs  em   install    jdeveloper  ldap  mft      nls  oep
oraInst.loc     oracore  oui   plsql    rdbms     root.sh.old    root.sh.old.2
soa       srvm      wlserver
bin     coherence     css  has  inventory  jlib       lib  network  odi  ohs
oracle_common  osb      perl  precomp  root.sh  root.sh.old.1  slax
sqlplus  webgate  xdk
```

- **Scaling Up**: When a managed server is added or cloned to a host that already exists in the domain or cluster.

- **Scaling Out:** When a managed server is added or cloned to a host that is not present in the domain or cluster.

- **Scaling Down:** The managed server cannot be removed from host that is not present in the domain or cluster.

Supported Use Cases for Middleware Provisioning Procedures

This section lists the supported use cases in the middleware space, provisioning capabilities like Exporting/Importing partitions and Exporting/Importing a weblogic domain, and the corresponding targets that get provisioned.

In particular, this section covers the following:

- Provisioning Middleware Domains and Oracle Homes

- Scaling Up/Out/ WebLogic Server, SOA, Service Bus, and WebCenter Domains

- Deploying / Redeploying / Undeploying Java EE Applications

- Provisioning Coherence Nodes and Clusters

- Provisioning SOA Artifacts

- Provisioning Service Bus Resources

- Exporting WebLogic Domain Partition

- Importing WebLogic Domain Partition

- Exporting WebLogic Domain

> **Note:**
>
> To configure a domain with a TCPS enabled database, you must first disable TCPS in the database, provision the domain with TCP, enable TCPS, and re-configure the domain for TCPS mode manually.
>
> For more information, see Configuring SSL in Oracle Fusion Middleware located in *Fusion Middleware Administrator's Guide.*

> **Note:**
>
> Enterprise Manager Cloud Control will not support the provisioning of Middleware domains and Oracle Homes, beginning with WebLogic 14.1 and SOA/Service Bus 12.2.1.3. WebLogic 12.2.1.4 and SOA/Service Bus 12.2.1.2 are the final versions that Enterprise Manager supports the middleware domain and Oracle Home provisioning.

Provisioning Middleware Domains and Oracle Homes

This table covers the use cases for deploying SOA domain, Service Bus domain, WebLogic domain, WebCenter domain and Oracle homes.

Table 2-1   Provisioning Middleware Domains and Oracle Homes

Deployment Procedure	Use Case	Targets Provisioned	Link
Provision Fusion Middleware	• Install media based profile • Domain based profile • Oracle home based Profile	WLS • 12.2.1 to 12.2.1.4 • 12.1.x • 10.3.x To perform the use cases against release 12.2.1.3, you must first apply Patch ID 26849044 to the WebLogic Server or Fusion Middleware Platform home. Download the patch from My Oracle Support Web site at https://support.oracle.com. This patch is not necessary for earlier releases of WebLogic or Fusion Middleware.	Provisioning Fusion Middleware Domain and Oracle Homes
		SOA Domain • 12.2.1 to 12.2.1.2 • 12.1.x • 11.1.1.x	Provisioning the SOA Domain and Oracle Homes
		Service Bus Domain • 12.2.1 to 12.2.1.2 • 12.1.x • 11.1.1.x	Provisioning the Service Bus Domain and Oracle Homes

Steps to access the Certification Matrix

Use the steps below to view the correct certified versions of various components.

1. Access `https://support.oracle.com`

2. Click **Certifications** tab.

3. In the **Certification Search** tab, enter the following details:

Field	Details
Product	Enterprise Manager Base Platform – OMS
Release	13.4.0.0.0

4. Click **Search.**

5. The search result displays the Enterprise Manager Base Platform - OMS 13.4.0.0.0 Certifications.

6. Expand **Middleware** in the search results.

7. The Certification Matrix of various components and provisioning targets along with certified versions is displayed.

Java Prerequisites

When using deployment procedures to provision Oracle Fusion Middleware software, Oracle Enterprise Manager does not automatically provision Java. You must ensure that Java gets installed prior to performing provisioning-related operations.

When provisioning install-media based profiles, consult the certification information available on My Oracle Support in order to determine the vendor and version of Java that the middleware software supports.

Figure 2-1   Install-media based profile provisioning use case

In addition, when provisioning middleware-related profiles that include an Oracle Home, ensure that the destination has the proper vendor and version of Java. The Java version at the destination should preferably be identical or at least be of the same major version as the Java version used at the original source. The deployment procedure user interface informs you of the Java version used at the original source so that you are aware of which version to use at the destination.

Figure 2-2   Provisioning use case with profile which includes Oracle Home

Scaling Up/Out/ WebLogic Server, SOA, Service Bus, and WebCenter Domains

This table covers the use cases for scaling an existing SOA Domain, Service Bus Domain, and WebLogic Domain:

Table 2-2   Scaling SOA, Service Bus, WLS, and WebCenter Domains

Deployment Procedure	Use Case	Targets Provisioned	Link
Scaling WLS Domain	Scaling WLS Domain	WLS 12.2.1.1 - 12.2.1.4 WLS 12.1.X WLS 10.3.X	Running the Scale Up / Scale Out Middleware Deployment Procedure

> **Note:**
>
> To perform the use cases against release 12

Table 2-2   (Cont.) Scaling SOA, Service Bus, WLS, and WebCenter Domains

Deployment Procedure	Use Case	Targets Provisioned	Link
		.2.1.3, you must first apply patch 26849044 to the WebLogic S	

Table 2-2   (Cont.) Scaling SOA, Service Bus, WLS, and WebCenter Domains

Deployment Procedure	Use Case	Targets Provisioned	Link
			erver or Fusion Middleware Platform home. This patch is not

Table 2-2   (Cont.) Scaling SOA, Service Bus, WLS, and WebCenter Domains

Deployment Procedure	Use Case	Targets Provisioned	Link
		necessary again stearlierrreleasesofWebLogicorFusionM	

Table 2-2   (Cont.) Scaling SOA, Service Bus, WLS, and WebCenter Domains

Deployment Procedure	Use Case	Targets Provisioned	Link
		i d d l e w a r e .	
Scaling up/ Scale out Middleware	Scaling SOA Domain	SOA Domain 12.2.1 - 12.2.1.2 12.1.X 11.1.1.X	Running the Scale Up / Scale Out Middleware Deployment Procedure
Scaling Service Bus Domain	Scaling Service Bus Domain	Service Bus Domain 12.2.1 - 12.2.1.2 12.1.X 11.1.1.X	Running the Scale Up / Scale Out Middleware Deployment Procedure

Steps to access the Certification Matrix

Use the steps below to view the correct certified versions of various components.

1. Access `https://support.oracle.com`

2. Click **Certifications** tab.

3. In the **Certification Search** tab, enter the following details:

Field	Details
Product	Enterprise Manager Base Platform – OMS
Release	13.4.0.0.0

4. Click **Search.**

5. The search result displays the Enterprise Manager Base Platform - OMS 13.4.0.0.0 Certifications.

6. Expand **Middleware** in the search results.

7. The Certification Matrix of various components and provisioning targets along with certified versions is displayed.

Java Prerequisites

When using deployment procedures to scale out domains, Oracle Enterprise Manager does not automatically provision Java. You must ensure that Java gets installed prior to performing the scale out operation.

When scaling out a domain, ensure that the destination has the proper vendor and version of Java. The Java version at the destination should preferably be identical or at least be of the same major version as the Java version used at the source.

Deploying / Redeploying / Undeploying Java EE Applications

This table covers the use cases for deploying, undeploying, and redeploying Java EE Application.

Table 2-3   Deploying, Undeploying, or Redeploying Java EE Applications

Deployment Procedure	Use Case	Targets Provisioned	Link
Deploy/Undeploy Java EE Applications	Deploying a Java EE Application	Deploy Java EE Applications to and from WebLogic versions 10.3, 10.3.x and later, including 12.1, 12.1.x, 12.1.2. and 12.2.1.x.	Deploying a Java EE Application
Deploy/Undeploy Java EE Applications	Undeploying a Java EE Application	Undeploy Java EE Applications to and from WebLogic versions 10.3, 10.3.x and later, including 12.1, 12.1.x, 12.1.2. and 12.2.1.x.	Undeploying a Java EE Application
Redeploy Java EE Applications	Redeploying a Java EE Application	Redeploy Java EE Applications to and from WebLogic versions 10.3, 10.3.x and later, including 12.1, 12.1.x, 12.1.2. and 12.2.1.x.	Redeploying a Java EE Application

Provisioning Coherence Nodes and Clusters

This table covers the use case to successfully deploy a Coherence node.

Table 2-4   Provisioning Coherence Nodes and Clusters

Deployment Procedure	Use Case	Targets Provisioned	Link
Coherence Node Provisioning	Deploying Coherence Nodes and Clusters	Oracle Coherence 3.7 and Oracle Coherence 12.1.2 Standalone Version.	Deployment Procedure

Provisioning SOA Artifacts

This table covers the use case to successfully deploy the various SOA artifacts:

Table 2-5   Provisioning SOA Artifacts

Deployment Procedure	Use Case	Targets Provisioned	Link
SOA Artifacts Provisioning	Provisioning SOA Artifacts from a Reference Installation	Oracle SOA Suite 11gR1 (11.1.1.2.0 to 11.1.1.7.0): • SOA Composites • Oracle WebLogic Server Policies • Assertion Templates • JPS Policy and Credential Stores • Human Workflow • Oracle B2B	Provisioning SOA Artifacts from a Reference Installation
SOA Artifacts Provisioning	Provisioning SOA Artifacts from a Gold Image	Oracle SOA Suite 11gR1 (11.1.1.2.0 to 11.1.1.7.0): • SOA Composites • Oracle WebLogic Server Policies • Assertion Templates • JPS Policy and Credential Stores • Human Workflow • Oracle B2B	Provisioning SOA Artifacts from Gold Image
Deploy SOA Composites	Provisioning SOA Composites	Oracle SOA Suite 11gR1 (11.1.1.2.0 to 11.1.1.7.0) SOA Composites	Deploying SOA Composites

Provisioning Service Bus Resources

This table covers the use case to successfully deploy Service Bus resources:

Table 2-6   Provisioning Service Bus Resources

Deployment Procedure	Use Case	Targets Provisioned	Link
Service Bus Resource Provisioning	Provision Service Bus resources from Service Bus Domain	Service Bus 2.6.0 - 2.6.1, 3.0.0, 10.3.0.0 - 10.3.1.0, 11.1.1.3.0 - 11.1.1.7.0, 12.1.3.0.0	Provisioning Service Bus Resources from Service Bus Domain
Service Bus Resource Provisioning	Provision Service Bus resources from Software Library	Service Bus 2.6.0 - 2.6.1, 3.0.0, 10.3.0.0 - 10.3.1.0, 11.1.1.3.0 - 11.1.1.7.0, 12.1.3.0.0	Provisioning Service Bus Resources from Oracle Software Library

3

Provisioning Fusion Middleware Domain and Oracle Homes

Provisioning is a solution offered as a part of Lifecycle Management by Enterprise Manager Cloud Control. As a part of Middleware Provisioning solution, Cloud Control enables you to provision Oracle WebLogic Domain (WebLogic Domain), Service-Oriented Architecture (SOA), Service Bus, and Oracle WebCenter. In addition to provisioning a domain, you can extend an existing domain to include new Oracle Homes. For provisioning any of the middleware entities, you can create profile, save it, and then use the saved profile as the source for provisioning. Doing this, ensures that the future installations follow a standard, consistent configuration.

> **Note:**
>
> The term Middleware Home is applicable only for WebLogic Server versions 10.3.x and 12.1.x. For WebLogic Server version 12.1.2.0.0 and higher, Middleware Home is referred to as Oracle Home.
>
> To provision a new Middleware Domain or an Oracle Home, you must have configured JDK version 1.6 or higher. Oracle recommends using the latest and the most updated JDK version of the product. To do so, log in to support.oracle.com, then click **Certifications** tab. In the Certification Search section, enter **Oracle WebLogic Server** in the Product field. From the **Release** menu, select a valid WebLogic Server version and from the **Platform** menu, select a valid operating system, and click **Search.**
>
> To clone an existing domain, you must ensure that the JDK version configured on the cloned destination host is equal to or higher than the JDK version available on the source host. Oracle recommends using the latest and the most updated JDK version of the product. To do so, log in to support.oracle.com, then click **Certifications** tab. In the Certification Search section, enter **Oracle WebLogic Server** in the Product field. From the **Release** menu, select a valid WebLogic Server version and from the **Platform** menu, select a valid operating system, and click **Search.**

This chapter explains how you can automate common provisioning operations for Middleware Homes and WebLogic Domains using Oracle Enterprise Manager Cloud Control. In particular, this chapter covers the following:

- Getting Started with Fusion Middleware Provisioning

- Different Approaches to Launch the Provision Fusion Middleware Deployment Procedure

- High-Level Steps for Middleware Provisioning

- Prerequisites for Provisioning from the Middleware Provisioning Profiles

- Creating Middleware Provisioning Profiles

- Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile

- Provisioning a Fusion Middleware Domain from an Existing Oracle Home

- Cloning from an Existing WebLogic Domain Based-Profile

Getting Started with Fusion Middleware Provisioning

This section helps you get started by providing an overview of the steps involved in provisioning WebLogic Domain and Middleware Home using the Fusion Middleware Deployment procedure.

Table 3-1   Getting Started with Fusion Middleware Provisioning

Step	Description	Reference Links
Step 1	**Different approaches to launch the Fusion Middleware Deployment Procedure.** Understanding the various approaches to launch the Fusion Middleware Deployment Procedure, which is used to provision the Middleware entities	To learn about the approaches to launch the Deployment Procedure, see Different Approaches to Launch the Provision Fusion Middleware Deployment Procedure Export and Import of Domain Partitions
Step 2	**Creating the Middleware Provisioning Profiles.** This chapter covers three types of provisioning profiles. Select the profile that best matches your requirement	To learn about the various Provisioning Profiles, see Creating Middleware Provisioning Profiles
Step 3	**Meeting Prerequisites to Provision a Middleware Profile** Before you run the Fusion Middleware Deployment Procedure, there are a few prerequisites that you must meet.	To learn about the prerequisites for provisioning an Installation Media/Oracle Home profile, see Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile To learn about the Prerequisites for provisioning a WebLogic Domain profile, see Prerequisites for Provisioning the WebLogic Domain Profile
Step 4	**Running the Fusion Middleware Deployment Procedure** Run this deployment procedure to successfully provision a Weblogic Domain and/or an Oracle Home.	To learn about provisioning from an Installation Media Profile or an Oracle Home Profile, see Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile To learn about provisioning from a WebLogic Domain Profile, see Provisioning a Fusion Middleware Domain from an Existing Oracle Home To provision from an existing home, see Cloning from an Existing WebLogic Domain Based-Profile

Different Approaches to Launch the Provision Fusion Middleware Deployment Procedure

You can use any of the following approaches to launch the Middleware Provisioning deployment procedure:

- (*Recommended Option*) For all the out of the box deployment procedures, launch the Provision Fusion Middleware procedure from the Profiles table. For this, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning.** On the Middleware Provisioning page, from the Profiles table select a profile, and click **Provision.**

- If you are provisioning a new domain from an existing Middleware home, or if you are using a customized deployment procedure, then you can directly run the Provision Fusion

Middleware deployment procedure. For this, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning.** On the Middleware Provisioning page, from the Deployment Procedures table, click **Provision Fusion Middleware.**

- To automate the process of provisioning using the command line, submit your procedure using the Enterprise Manager Command Line Interface (EMCLI) utility. The EMCLI enables you to access Enterprise Manager Cloud Control functionality from text-based consoles (shells and command windows) for a variety of operating systems. You can call Enterprise Manager functionality using custom scripts, such as SQL*Plus, OS shell, Perl, or Tcl, thus easily integrating Enterprise Manager functionality with your company's business process.

> **✎ Note:**
>
> For more information about related EM CLI verbs, see EM CLI verbs in the *Oracle Enterprise Manager Command Line Interface.*

High-Level Steps for Middleware Provisioning

Typically, for provisioning, you will need to create a profile and use the profile as the source for creating new WebLogic Domains and Oracle Homes. Use of profiles ensures that the future installations follow a standard, consistent configuration. Oracle additionally supports fresh install, which means that you can create a profile from install media, and then provision this profile by running the **Provision Fusion Middleware** deployment procedures. For this, you do not need any Oracle home or WebLogic Domain to have already been manually installed/configured and discovered by Enterprise Manager Cloud Console.

Middleware Provisioning is a two-step process as follows:

- Step1: Creating a Profile
- Step2: Running Provision Fusion Middleware Procedure to Provision the Profile

Step1: Creating a Profile

Profiles are templates that you create and internally store in the Software Library. Once a profile is created, it can be launched numerous times to provision WebLogic Domain and/or Oracle Home with the same characteristics.

Before going ahead with the profile creation, you must identify the profile that suits your requirements:

- If you do not have an existing WebLogic Domain, or an Oracle Home, use the Installation Media profile. This profile allows you to create a domain and a home using the shiphome (installation media files) that you have downloaded from the OTN or eDelivery, see Creating a Provisioning Profile Based on an Installation Media.

- If you have an Oracle Home that needs to be patched to fix some bugs, use the Oracle Home profile. This profile allows you to apply the relevant patches to the Oracle home, and then create a profile out of the patched Oracle home which can be your source of truth. Use the patched profile to provision all the Oracle Homes in your data center. For further details, see Creating a Provisioning Profile Based on an Oracle Home.

- If you have an existing Weblogic Domain that you want to clone, use the WebLogic Domain Profile. This profile allows you to create a copy of the source domain. For further details, see Creating a Provisioning Profile Based on a WebLogic Domain.

- Oracle WebLogic Server supports WebLogic domain partition functionality. It consolidates applications into fewer domains with partition within domains and maintains secured isolation. For further details, see Export and Import of Domain Partitions.

- Enterprise Manager Cloud Control provides an user friendly user interface that helps you to convert domains into partitions. For further details, see Exporting WebLogic Domain.

Step2: Running Provision Fusion Middleware Procedure to Provision the Profile

A deployment procedure is a pre-defined sequence of steps that is meant to perform a set of operations on one or most hosts monitored by Cloud Control. You can provision a domain or an Oracle home using the profiles you have already created. This section describes the various methods to provision a profile. In particular, it covers the following:

> **Note:**
>
> Meet the Prerequisites before going ahead with the provisioning procedure. For a detailed list of prerequisites, see Prerequisites for Provisioning from the Middleware Provisioning Profiles.
>
> For information about the other approaches to launch the Provision Fusion Middleware procedure, see Different Approaches to Launch the Provision Fusion Middleware Deployment Procedure.

In particular, it covers the following:

- Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile.
- Provisioning a Fusion Middleware Domain from an Existing Oracle Home
- Cloning from an Existing WebLogic Domain Based-Profile.

Creating Middleware Provisioning Profiles

Profiles are like templates that you can create and store in Software Library. Once a profile is created, it can be launched numerous times to provision WebLogic Domain and/or Oracle Home. The advantage of using a profile is that you can ensure that future WebLogic installations follow a standard, consistent configuration.

- Creating a Provisioning Profile Based on an Installation Media
- Creating a Provisioning Profile Based on an Oracle Home
- Creating a Provisioning Profile Based on a WebLogic Domain

Creating a Provisioning Profile Based on an Installation Media

You can upload Installation Media from a remote host, create a profile based on the Installation Media selected, and provision this profile from the Middleware Provisioning page.
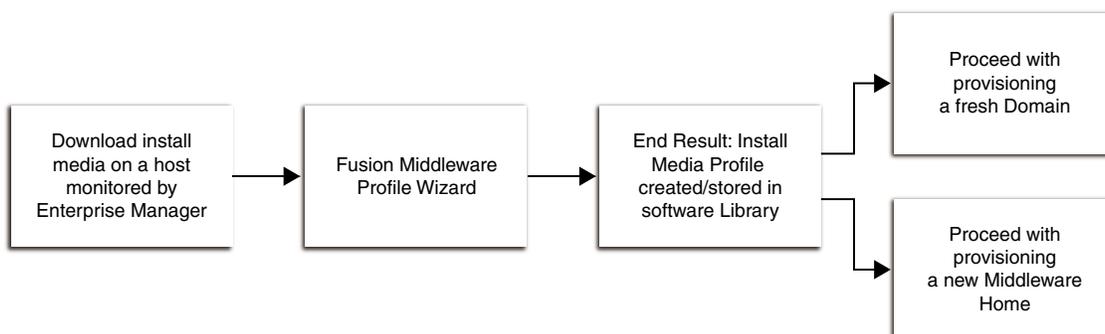
Before you begin creating the middleware provisioning profile, ensure that you meet the following prerequisites:

- Access the Oracle Fusion Middleware Download, Installation and Configuration Read-me file:

  http://docs.oracle.com/cd/E23104_01/download_readme.htm

  Download the required installation media file. The Fusion Middleware documentation, supported system configurations, system requirements, and specifications are available on this page.

  The installation media files available on Oracle Software Delivery Cloud (via edelivery.oracle.com) is certified.

- Create one directory for each product like SOA, Service Bus, WebCenter, RCU and WLS, and ensure that you add the necessary files under the respective directory.

- Ensure that you have read permissions on all the files and sub-directories inside the domain home, applications home, and the Oracle home.

To create an Installation Media profile, follow these steps:

1. In Cloud Control, from the **Enterprise** menu, select **Provisioning and Patching,** then select **Middleware Provisioning.**

2. On the Middleware Provisioning home page, in the Profiles section, click **Create** and select **From Installation Media**.

3. Click **Next**.

4. On the Create Fusion Middleware Provisioning Profile page, enter a unique name and description for your profile.

   By default, all the profiles are centrally located in Software Library under `Fusion Middleware Provisioning/Profiles directory`.

5. In the Product Details section, from the **Product** menu, select the product for which the installation media is being uploaded. Depending on the option selected, the **Version** menu gets updated. The Enterprise Manager does not determine the version of the installation media. Select the right version of the installation media file that you have downloaded.

> ✎ **Note:**
>
> When you select Oracle WebLogic Server as the option in the **Product** field, a checkbox **Oracle Fusion Middleware Infrastructure** appears. The user must ensure to check this box while uploading the Fusion Middleware Infrastructure installer. The user must not check this box for WebLogic server installer.

6. In the Files section, do the following:

    a. Click the search icon to search for the host. In the Select Target dialog box, search and select the target where the Installation Media files reside, then click **Select.**

    b. To access the files on a remote host, you need to provide the host credentials. To do so, click search, and in the Select Credential dialog box, enter the necessary credentials, and click **OK.** Click **Test** to validate these credentials against the selected target.

    c. Based on the product selected, the Files table gets updated. One of the following options are possible:

       If you select a product from the Product menu, then you can upload Oracle WebLogic Server, Oracle SOA, Service Bus, and Oracle RCU.

       Before actually uploading the files, as a prerequisite, download the software Installation Media files as stated above.

       To add the files, select the product name from the files table, and click **Select Folder.** Navigate to the directory where the files are present, and click **OK.** To remove files, select the product type, and click **Remove.**

7. In the Storage section, select the Software Library storage details. Ensure that you provide a valid storage type, and upload location to upload the Installation Media profile.

8. Click **Create** to submit the profile creation job.

9. After the job has successfully run, a new entry is available in the Profiles table. You can click the profile name to view the details.

Creating a Provisioning Profile Based on an Oracle Home

Use this page to create a new Oracle home profile, save it in Software Library, then use the saved profile as the source for provisioning new Oracle homes.
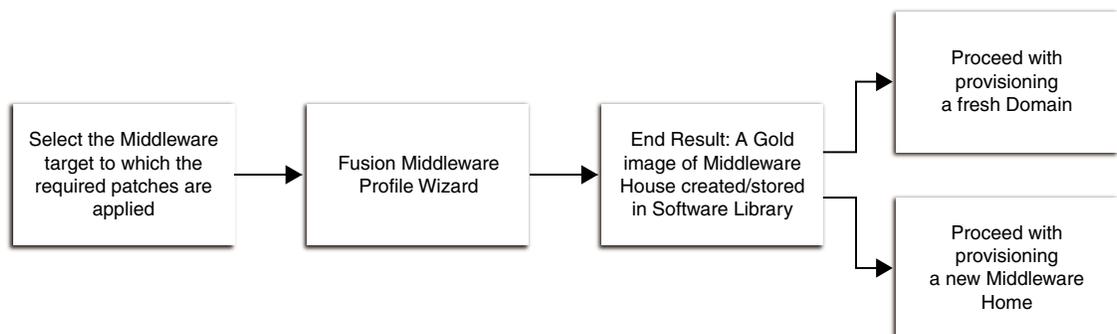
Before you begin creating the middleware provisioning profile, ensure that you meet the following prerequisites:

- Oracle Home should be a managed target that has been discovered in Enterprise Manager Cloud Control.

- Ensure that you have read permissions on all the files and sub-directories inside the Oracle home.

- Ensure that you have write permissions on Management Agent's working directory. Working directory is a temporary directory used for staging and provisioning entities across Cloud Control.

- The disk space required to create a provisioning profile is calculated as follows:

  ```
  Disk Space = Middleware Home Size + Space for Temporary Scripts
  ```

To create a Middleware Home profile, follow these steps:

1. In Cloud Control, from the **Enterprise** menu, select **Provisioning and Patching,** then select **Middleware Provisioning.**

2. On the Middleware Provisioning home page, in the Profiles section, click **Create** and select **From an Oracle Home**.

3. Click **Next**.

4. On the Create Fusion Middleware Provisioning Profile page, enter a unique name and description for your profile.

   By default, all the profiles are centrally located in Software Library under `Fusion Middleware Provisioning/Profiles` directory.

5. In the Reference Target section, click the search icon. In the Select Target dialog box, select an Oracle Home, and click **Select.** The corresponding host details are populated.

   You can also launch the Create Middleware Home Profile from the Middleware targets page. If you do so, the context of the target is maintained, and the fields such as **Type**, **Name**, and **Host** appear pre-populated.

6. Click the search icon to provide the credentials. In the Select Credentials dialog box, provide the necessary credentials for your target that is already set, and click **OK.** Click **Test** to validate the credentials against the selected target.

7. In the Storage section, select the Software Library storage details. Ensure that you provide a valid storage type, and upload location details to update the Oracle Home profile.

8. Click **Create Profile** to submit the profile creation job.

9. After the job has successfully run, a new entry is available in the Profiles table. You can click the profile name to view the details.

Creating a Provisioning Profile Based on a WebLogic Domain

Use this page to create a profile, save it in Software Library, then use the saved profile as a source for creating new WebLogic domains. This way, you can ensure that future WebLogic installations follow a standard and consistent configuration.

```
┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐          ┌─────────────────┐
│  Select the Web │     │                 │     │ End Result: Web │          │  Proceed with   │
│  Logic Domain   │ ──▶ │ Fusion Middleware │ ──▶ │  Logic Domain   │ ──────▶  │  provisioning   │
│     Target      │     │  Profile Wizard │     │     Profile     │          │  a fresh Domain │
└─────────────────┘     └─────────────────┘     └─────────────────┘          └─────────────────┘
                                                                              ┌─────────────────┐
                                                                              │  Proceed with   │
                                                                     ──────▶  │  provisioning   │
                                                                              │ a new Middleware │
                                                                              │      Home       │
                                                                              └─────────────────┘
```

> **Note:**
>
> - Profile creation and provisioning of domains with partitions is not supported.
> - In case the domain is cloned the partition may not function as expected once provisioned.
> - To clone, set up a new domain, and then import or export partitions. This is supported from release 13.2 only.

Before you begin creating the Middleware provisioning profile, ensure that you meet the following prerequisites:

- The Management Agent must be running on the Administration Server.
- Ensure that you have read permissions on all the files and sub-directories inside the domain home, applications home, and the Oracle home.
- Host credentials must be set for the source machine on which Administration Server is running.
- The WebLogic domain for which the profile is being created must be a monitored target in Cloud Control.
- Ensure to disable host name verification on all the hosts. This can be accomplished by following a simple procedure. In **SSL**, click **Advanced**, then set the **Host Name Verification** to *None*.
- The disk space required to create a profile is calculated as follows:

```
Disk Space = Middleware Home Size + WebLogic Domain Size + Space for Temporary
Scripts (about one GB)
```

> **Note:**
>
> While creating a provisioning profile for SOA or Oracle Service Bus domains, there is an option **Include metadata.** When you check this option it saves some information of the profile. It creates new schema and inserts the saved metadata. Hence database cloning is not required. This is supported from release 13.2 only.

To create a WebLogic Domain profile, follow these steps:

1. In Cloud Control, from the **Enterprise** menu, select **Provisioning and Patching,** then select **Middleware Provisioning.**

2. On the Middleware Provisioning home page, in the Profiles section, click **Create** and select **From a WebLogic Domain**.

3. Click **Next**.

4. On the Create Fusion Middleware Provisioning Profile page, in the Profile Details section, enter a unique name and description for your profile. By default, all the profiles are centrally located in Software Library under the `Fusion Middleware Provisioning/ Profiles` directory.

5. In the Reference Target section, search and select the WebLogic Domain target. Once you select the target, the Domain Home, the Host, and the Oracle home details for the host get populated.

   You must ensure that a database instance is associated with the WebLogic Domain except in the case of a plain WebLogic Domain where it may not be necessary. To associate a database with the domain, create a database profile using the Create Database Provisioning Profile wizard.

   Enter the Oracle Home credentials required to log into the host target selected.

   Enter an existing named credential of weblogic administrator for the domain or create a new named credential by entering the details.

   > **Note:**
   >
   > While creating Middleware Domain Provisioning profile, you must select a WebLogic named credential with admin privileges. You must explicitly select the option WebLogic Administrator Credentials as the Credential Type. If this option is not selected then a named credential of the same admin user without administrator privileges will be created and profile creation will be failed later.

   > **Note:**
   >
   > You can also launch the WebLogic Domain Profile from the Middleware target page. If this is done, then the context of the of the target is maintained, and the fields like **Type**, **Name**, **Host**, and **Oracle Home** details appear pre-populated.

6. Based on the target selection, you may create one of the following profiles:

   a. **Domain-Based Profile with Oracle Home:** If you do not wish to upload the Oracle Home files, de-select the **Include Oracle Home** checkbox available in the Reference Target section. If you do so, then while provisioning from this domain profile, you will need to have a pre-deployed Oracle Home that already exists at the destination, and the content of the Oracle Home should match with the one expected by the domain profile.

   b. **Domain-Based Profile without Oracle Home:** If you retain the default selection of **Include Oracle Home**, then a WebLogic Domain with the domain configurations, Middleware Home, and binaries is created.

   Click the search icon to provide credentials. In the Select Credentials dialog box, select the credentials that you have already set, and click **OK.** Click **Test** to validate the credentials against the selected target.

7. In the Software Library Upload Location section, select the Software Library storage details. Ensure that you provide a valid storage type, and upload location to update the profile.

8. Click **Create** to submit the profile creation job. After the job has successfully run, a new entry is available in the Profiles table. You can click the profile name to view the details.

Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile

To provision an Oracle Fusion Middleware domain or Oracle Home using an Installation Media-based profile, follow the steps below. The steps are same whether it involves SOA, OSB, WebCenter, or WebLogic.

> **Note:**
>
> Starting with Enterprise Manager for Oracle Fusion Middleware 12.1.0.7, you can provision SOA and Service Bus in a single operation. For this, you need to create an Installation Media profile with SOA and Service Bus installation files, and provision this profile. Until the previous release, you could only provision one domain (for example, SOA), and extend that domain to include the other product (for example, Service Bus).This release allows the flexibility of provisioning both SOA and Service Bus at the same time.
>
> Middleware Provisioning supports RAC only with GridLink Data Sources.

> **Note:**
>
> To provide inputs and further customize the destination environment, click **Advance**. To understand the settings and configuration parameters that can be customized, see Customizing the Destination Environment from an Installation Media Based-Profile or an Oracle Home Based-Profile.

1. In Cloud Control, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning.**

2. On the Middleware Provisioning home page, from the Profiles table select an Installation Media profile, and click **Provision.**

3. On the Provision Fusion Middleware page, in the General section, the Installation Media profile appears pre-selected.

> **Note:**
>
> If you are provisioning a WebCenter profile, you can choose to use Development Topology or Production Topology. If you do not specify, by default, the Production Topology is selected. For more information about the topologies, see About WebCenter Topologies Supported in Enterprise Manager.

4. In the Hosts section, search and select the destination hosts on which the Middleware Home and WebLogic Domain needs to be cloned. Click **+Add** to add the target hosts, and provide the login credentials for them. If you have selected multiple hosts, and the login credentials for all of them are the same, then you can select **Same Credentials for all**.

5. In the Middleware section, the Middleware Base and Java Home values appear pre-populated; you can customize these values if required. Provide credentials for the domain Administrator.

6. In the Database section, depending on the profile being provisioned the following options are possible:

   • **From an Installation media Profile:**

   If you are provisioning from an Installation Media profile, you can create a new schema using a profile contains an RCU shiphome. To do so, select the **Create Schema** option. A default value for the Schema Prefix is populated; you may change this if required. Provide credentials for the database target and the new schema. If you deselect the default schema creation option, then an existing schema on the database target is used.

   • **From an Oracle Home Profile:**

   If you are provisioning from an Oracle Home profile, you cannot create a new schema. You must, choose an existing schema and provide the schema password.

7. *(optional)* In the Identity and Security section, you must enter the OID target name and the OID credentials. These are mandatory fields for creating an LDAP Authenticator and/or for reassociating the Domain Credential Store.

> **Note:**
>
> If you are provisioning a WebCenter profile, this section is displayed only for the Production Topology which is the default option.

In addition to this, you must provide the following sets of inputs in the OID section:

• **Configure LDAP Authenticator Inputs.**This section describes how to create the LDAP authenticator:

  – Authenticator Name: Enter a name for the OIDAuthenticator provider. For example: MyOIDAuthenticator.

  – User Base DN: Specify the DN under which your Users start. For example, `cn=users,dc=us,dc=mycompany,dc=com`

  – Group Base DN: Specify the DN that points to your Groups node. For `example:cn=groups,dc=us,dc=mycompany,dc=com`

> **Note:**
>
> As a prerequisite, you must have already provisioned the users and groups in the LDAP.

- **Configure Security Store Inputs:** In this section, provide the JPS Root Node information. The JPS root node is the target LDAP repository under which all data is migrated. The format is `cn=nodeName`.

> **Note:**
>
> As a prerequisite, you must have already created the root node in the LDAP.

8. In the WebTier section, click **+Add** to search and select an Oracle HTTP Server (OHS) target. In the **Credential** field provide the credentials to access the target. If you have more than one Oracle HTTP Server, then you need to provide an **External Load Balancer URL.**

   The format of the URL for an External Load Balancer: `(http|https://hostname:port)`

   For example: `http://host.example.com:80`

   > **Note:**
   >
   > If you are provisioning a WebCenter target, you will additionally need to provide an **Internal Load Balancer URL.**

   The format of the URL for an Internal Load Balancer: `(http|https|tcp://hostname:port)`

   For example: `http://host.example.com:80`

   > **Note:**
   >
   > If you are provisioning a plain WebLogic Domain, this section will not be displayed.

9. *(For a WebCenter Production Domain only)* To configure an SES Domain with a WebCenter Production Domain, follow these steps:

   Prerequisites:

   - The SES Domain must be up and running.
   - The SES Domain must be configured with the same OID as the WebCenter Domain.
   - You must have created a Crawl Administrator Username in the OID.

   To configure SES for your WebCenter Domain, enter the following details:

   a. Provide the credentials for Crawl admin user in OID. You must enter the same Crawl Administrator Username and Crawl Administrator Password that was created as a part of the prerequisite step. The Crawl Administration users in Spaces, and in the Identity

Management System, are required to crawl certain Space objects, such as lists, pages, spaces, and people connections profiles. For example, `mycrawladmin`.

b. The Search Administrator Username and Search Administrator Password are the credentials that were used for creating the SES Domain. For example, for the Oracle SES 11.2.2.2 release, the Search Administrator user is `SEARCHSYS`.

c. The Search User Username and Search User Password are the credentials of the Oracle SES federation trusted entity. These get created while installing the SES. Each Oracle SES instance must have a trusted entity for allowing WebCenter Portal end users to be securely propagated at search time. A trusted entity allows the WebCenter Portal application to authenticate itself to Oracle SES and assert its users when making queries on Oracle SES. This trusted entity can be any user that either exists on the Identity Management Server behind Oracle SES or is created internally in Oracle SES. For example, `wesearch`.

d. In the SES Search URL field, enter the URL of Search Administration Tool. The format of this URL should be: `http://search_server_listenAddress:search_server_listenPort`. For example, `http://host.example.com:80`.

> **Note:**
>
> After configuring the WebCenter Domain with SES, if you encounter an issue with searching the portal, you must perform in the following steps manually:
>
> From the WebCenter Portal Oracle Home, copy webcenter_portal_ses_admin.zip to the host where SES Domain is present.
>
> Unzip the webcenter_portal_ses_admin.zip to find the files: facet.xml and searchAttrSortable.xml.
>
> Run these XML files as follows, for example:
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -p
> password -http://host.example.com:80/search/api/admin/AdminService
> createAll facetTree -i facet.xm
> ```
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -c http://
> http://host.example.com:80/search/api/admin/AdminService -p password
> updateAll searchAttr -a overwrite -i searchAttrSortable.xml
> ```
>
> Take a snapshot of the WebCenter Content server manually.

10. Click **Next** to schedule the procedure. If you click **Submit**, the procedure is submitted for execution right away. Click **Save** to save this as a template; this feature is particularly useful with lockdowns. For example, you can login with designer role and create a template with lockdowns, and assign the desired privileges to other administrator/operators to run this template. Click **Cancel** to exit the procedure configuration.

11. After submitting, you can track the progress of the provisioning operation from the Procedure Activity page, see About Deployment Procedures.

12. To view the newly provisioned target, from the **Targets** menu, select **Middleware**.

Customizing the Destination Environment from an Installation Media Based-Profile or an Oracle Home Based-Profile

To customize the destination environment, click Advance option available on the Fusion Middleware Provisioning wizard.

> **Note:**
>
> The Advance option is enabled only after you select the destination hosts.

Follow these steps:

> **Note:**
>
> Oracle recommends that you allow the default option **Typical** to remain selected, and provide all the details. Following which, you can click **Advance** to customize your destination environment. This way, the default values for most of the parameters appear pre-populated, and you will need to enter only the remaining (delta) details.Also, note that if you switch from Advance mode to typical mode, you will lose all the changes that you have made so far.
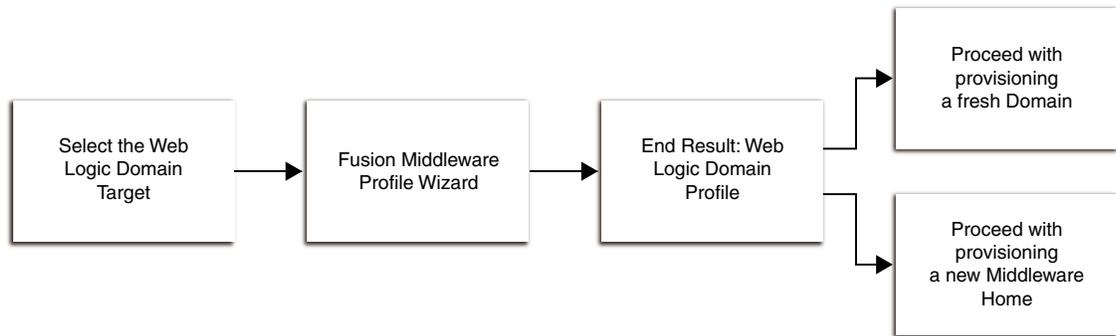
1. In Cloud Control, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning.**

2. On the Middleware Provisioning home page, from the Profiles table select an Installation Media profile, and click **Provision.**

3. On the Provision Fusion Middleware Configuration page, in the General section, the Installation Media profile appears pre-selected.

> **Note:**
>
> If you are provisioning a WebCenter profile, you can choose to use Development Topology or Production Topology. If you do not specify, by default, the Production Topology is selected, see About WebCenter Topologies Supported in Enterprise Manager.

By default, the middleware home is selected, you cannot deselect this option. However, you are allowed to choose whether or not you want to create a new domain for your middleware home. If you select **Provision Domain**, a middleware home is created on the destination host, and a new domain is set up for this middleware home on the destination host.

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> **Note:**
>
> If you are provisioning a SOA or a Service Bus profile, you can extend the domain to include the other product. For example, if you are provisioning a SOA domain, and you select the **Extend an existing Domain** option, then you will be allowed to extend your SOA domain to include Service Bus. To extend a domain, you will need to select the domain and provide the administrator credentials. The extend domain feature is different from Scaling a domain where you add additional managed servers to an existing domain. In extend domain, you are able to create a hybrid domain that includes two products. As of now, only a SOA or an Service BusService Bus domain can be extended. Support for other products like WebCenter is not available.

If you have added more than one destination host, select **Use Shared Storage** option to use a shared location for these hosts. The central inventory attached to that is executed locally in all hosts sharing the Oracle Home.

To clone only the Middleware Home, deselect the **Provision Domain**.

4. In the Hosts section, search and select the destination hosts on which the Middleware Home and WebLogic Domain needs to be cloned. Click **+Add** to add the target hosts, and provide the login credentials for them. If you have selected multiple hosts, and the login credentials for all of them are the same, then you can select **Same Credentials for all**.

5. In the Middleware section, the values for Middleware Base and Java Home fields appear pre-populated. You can change the location details, if required.

   • For **Middleware Home,** enter the full path to the directory in which the Middleware Home is to be created.

   • For **Java Home,** enter the absolute path to the JDK directory to be used on the destination Host.

   > **Note:**
   >
   > You must have already installed JDK at the same path on all the hosts.

6. In the Domain section, the configuration for the source domain is displayed by default. You can change the following attributes to customize the domain properties:

   • **Domain Name:** The name of the domain. The generated components for the domain are stored under the specified Domain directory. For example, if you enter *mydomain*, your domain files are stored (by default) in *MW_HOME\user_projects\domains\mydomain*.

   • **Administrator Username:** The default Administrator account for the domain. This account is used to boot and connect to the domain's Administration Server. The username must not contain commas, tabs, or any of these characters: < > # | & ? ( ) { }.

   • **Administrator Password:** The password for the Administrator account. The password must be at least eight characters, and must contain at least one numeric character or at least one of the following characters: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~

   • **Unique Domain Identifier:** The unique domain identifier is a prefix to the domain name.

- **Deploy JVMD Agent:** Deploys the JVMD agent on the servers or clusters of a Weblogic Domain. Java Virtual Machine Diagnostics (JVMD) enables administrators to diagnose performance problems in Java applications. After the JVMD Agent is deployed on the targeted JVM (the one running a production WebLogic Server), it collects real-time data and transmits it to the JVM Diagnostics Engine.

- **Available JVMD Endpoints:** This is the list of available JVMD endpoints. For a successful JVMD deployment, the JVMD engine must be active, if the JVMD engine is not active the agent is not deployed.

- **Targets:** This is the list of targets on clusters or managed servers. If no targets are provided, the JVMD agent will be deployed by default to all the clusters and non-clustered servers of the domain. If a cluster is selected as target, then all the servers that are part of that cluster automatically get the agent deployed.

- **Domain Directory:** The location in which your domain directory will be stored. By default, the same path as the source is used to create this directory, but it can be changed. For example: If the Middleware Home is located at `/user/mwh`, the domain directory is created as `/user/domains`. The domain location can be anywhere on your local drive or network. On Windows, you must include the drive letter in this path.

- **Applications Directory:** The directory in which the applications will be deployed on the destination host. By default, the same path as the source is used to create this directory, but it can be changed. For example: If the Middleware Home is located at `/user/mwh`, the application directory is created as `/user/mwh/applications`.

- **Domain Mode:** The domain can operate in one of the following modes:

  Production: The domain is used for production. In this mode, the security configuration is relatively stringent, requiring a username and password to deploy applications.

  Development: The domain is used for development. In this mode, the security configuration is relatively relaxed, allowing you to auto-deploy applications.

- **Server Startup Mode:** you can start the server in one of the following modes depending on your requirement:

  Start all Servers and Node Managers: This is the default option. Typically, you will select this option if you have no changes to make, and if the procedure has run as expected.

  Start only Administration Server: This option starts only Administrator Server and Node Manger. Typically, you will select this option if you want to add a custom step to invoke the WLST online script, and then start the servers.

  Do not start any Server or Node Manager: This option does not start any server or Node Manager. Typically, you will select this option if you have to customize the domain before starting any server.

7. In the Clusters section, you can modify the name of the cluster, enter the cluster address that identifies the Managed Servers in the cluster. You can select either Unicast or Multicast as the messaging mode. If you select **Multicast** mode, enter the address and port number that will be dedicated for multicast communications on the cluster. Click **+Add** to add one or more clusters to the configuration.

   A SOA or OSB domain can be configured with a owsm cluster. Click +**Add OWSM Cluster** to configure SOA or OSB domain with an OWSM cluster,

8. In the Machines section, enter configuration information for machines in the domain. A Machine is a logical representation of the system that hosts one or more WebLogic Server instances. The Administration Server and Node Manager use the Machine definition to

start remote servers. Click **+Add** to add one or more machine configurations. Enter the following details:

- **Node Manager Home:** The directory in which the Node Manager is installed. By default, the Node Manager is installed under the parent directory of the Middleware Home directory, but this can be modified.

  \

  > **Note:**
  >
  > The Node Manager home must always be installed inside the Administration Server domain home.

- **Node Manager Credentials:** You can use the same credentials as Administrative Server credentials or deselect the option to provide separate Node Manager Credentials.

- **Machine Name:** Enter a unique name for your machine.

- **Host:** Select the host name from the menu.

- **Node Manager Listen Address:** Enter the listen address used by Node Manager to listen for connection requests. By default, the IP addresses defined for the local system and localhost are shown in the drop-down list. The default value is the same as specified in the source domain.

  > **Note:**
  >
  > If multiple machines are running on the same host, the Node Manager Home location must be different for each host.

- **Node Manager Listen Port:** Enter a valid value for the listen port used by Node Manager to listen for connection requests. The valid Node Manager listen port range is 1 to 65535. The default value is 5556. The port number must be available on the destination machine.

9. In the Server section, enter the configuration information for the Administration Server and one or managed servers.

   - Select the **Configure Coherence** check box

   - **Coherence Port:** This field is enabled only when you select the Configure Coherence option. You can retain the port number that is populated by default or change it.

   - **Listen Port:** By default, this option is selected. The values for the listen ports are pre-populated. You may enter any value from 1 to 65535. The port number you enter here must be available on the destination machine.

     > **Note:**
     >
     > If a domain was registered on the host with a port number whose status is down, you need to select a different port or manually de-register the domain before launching the deployment procedure.

   - **SSL Listen Port:** If you enable SSL Listen Port, enter the port number of the SSL Listen Port for secure requests. You must ensure that the port numbers you specify for

the Listen Port and SSL Listen Port are available. If you are using the SSL configuration, you must ensure that the security/identity stores are present in the file system under the same path as on the source and are configured with certificates generated for the destination hosts.

- **Administration Port:** This port enables the domain to run in Administration Mode. For this, all the servers needs to be SSL enabled.

- **Host:** Select the host on which the Administration Server or Managed Server is to be installed.

- **Listen Address:** Enter the listen address to be used to connect to the Administration Server or the Managed Server instance.

- **Machine:** Select the machine configuration that is to be associated with the Administration Server or the Managed Server

- **Cluster:** Select the cluster to be associated with the Managed Server.

- **Server Start:** Click to enter the Server Startup Parameters.Usually, the Node Manager can start a server without requiring you to specify startup options, however, since you have customized your environment you must specify the startup options in the Server Startup Parameter dialog box.

- **Transaction Log Directory:** Transaction log stores information about committed transactions that are coordinated by the server and that may not have been completed. Oracle WebLogic Server uses this transaction log for recovery from system crashes or network failures. To leverage the migration capability of the Transaction Recovery Service for the Managed Servers within a cluster, store the transaction log in a location accessible to the Managed Server and its backup servers.

- **Domain Directory for Managed Server:** The directory in which the Managed Servers are installed. By default, they are installed under the parent directory of the Middleware Home directory, but this can be modified.

10. In the JMS Servers section, click **+Add** to add new JMS persistent stores and JMS servers. The storage type can be one of the following:

    - A JMS file store is a disk-based file in which persistent messages can be saved. You can modify the JMS file stores configured in your domain.

    - A JDBC Store:

        – Data Source

        – Targets

11. In the Database section, depending on the profile being provisioned the following options are possible:

    - **From an Installation Media Profile:**

      Search and select the database target. A default value for the Schema Prefix is populated; you may change this if required.

        – The **Create Schema** option allows you to create a new schema for the RCU profile selected by default. Provide credentials for the database target and the new schema.

        – Select **Same password for all** option if you would like to use the same username and password for all the data sources on the selected database target

          If you deselect the default schema creation option, then an existing schema on the database target is used.

    - **From an Oracle Home Profile:**

If you deselect the default schema creation option, then an existing schema on the database target is used.

12. *(optional)* In the Identity and Security section, you must enter the OID target name and the OID credentials. These are mandatory fields for creating an LDAP Authenticator and/or for reassociating the Domain Credential Store.

> **Note:**
>
> If you are provisioning a WebCenter profile, this section is displayed only for the Production Topology which is the default option.

In addition to this, you must provide the following sets of inputs in the OID section:

- **Configure LDAP Authenticator Inputs.**This section describes how to create the LDAP authenticator:

  – Authenticator Name: Enter a name for the OIDAuthenticator provider. For example: MyOIDAuthenticator.

  – User Base DN: Specify the DN under which your Users start. For example, `cn=users,dc=us,dc=mycompany,dc=com`

  – Group Base DN: Specify the DN that points to your Groups node. For `example:cn=groups,dc=us,dc=mycompany,dc=com`

  > **Note:**
  >
  > As a prerequisite, you must have already provisioned the users and groups in the LDAP.

- **Configure Security Store Inputs:** In this section, provide the JPS Root Node information. The JPS root node is the target LDAP repository under which all data is migrated. The format is `cn=nodeName`.

  > **Note:**
  >
  > As a prerequisite, you must have already created the root node in the LDAP.

13. In the WebTier section, click **+Add** to search and select an Oracle HTTP Server (OHS) target. In the **Credential** field provide the credentials to access the target. If you have more than one Oracle HTTP Server, then you need to provide an **External Load Balancer URL.**

The format of the URL for an External Load Balancer: `(http|https://hostname:port)`

For example: `http://host.example.com:80`

> **Note:**
>
> If you are provisioning a WebCenter target, you will additionally need to provide an **Internal Load Balancer URL.**

The format of the URL for an Internal Load Balancer: (`http|https|tcp://
hostname:port`)

For example: `tcp://wcp-prov-ucm.example.com:4444`

> **Note:**
>
> If you are provisioning a plain WebLogic Domain, this section will not be
> displayed.

14. *(For a WebCenter Production Domain only)* To configure an SES Domain with a
    WebCenter Production Domain, follow these steps:

    Prerequisites:

    • The SES Domain must be up and running.

    • The SES Domain must be configured with the same OID as the WebCenter Domain.

    • You must have created a Crawl Administrator Username in the OID.

    To configure SES for your WebCenter Domain, enter the following details:

    a. Provide the credentials for Crawl admin user in OID. You must enter the same Crawl
       Administrator Username and Crawl Administrator Password that was created as a part
       of the prerequisite step. The Crawl Administration users in Spaces, and in the Identity
       Management System, are required to crawl certain Space objects, such as lists,
       pages, spaces, and people connections profiles. For example, `mycrawladmin`.

    b. The Search Administrator Username and Search Administrator Password are the
       credentials that were used for creating the SES Domain. For example, for the Oracle
       SES 11.2.2.2 release, the Search Administrator user is `SEARCHSYS`.

    c. The Search User Username and Search User Password are the credentials of the
       Oracle SES federation trusted entity. These get created while installing the SES. Each
       Oracle SES instance must have a trusted entity for allowing WebCenter Portal end
       users to be securely propagated at search time. A trusted entity allows the WebCenter
       Portal application to authenticate itself to Oracle SES and assert its users when
       making queries on Oracle SES. This trusted entity can be any user that either exists
       on the Identity Management Server behind Oracle SES or is created internally in
       Oracle SES. For example, `wesearch`.

    d. In the SES Search URL field, enter the URL of Search Administration Tool. The format
       of this URL should be: `http://
       search_server_listenAddress:search_server_listenPort`. For example, `http://
       host.example.com:80`.

> **✎ Note:**
>
> After configuring the WebCenter Domain with SES, if you encounter an issue with searching the portal, you must perform in the following steps manually:
>
> From the WebCenter Portal Oracle Home, copy webcenter_portal_ses_admin.zip to the host where SES Domain is present.
>
> Unzip the webcenter_portal_ses_admin.zip to find the files: `facet.xml` and `searchAttrSortable.xml`.
>
> Run these XML files as follows, for example:
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -p
> password -c http://host.example.com:80/search/api/admin/AdminService
> createAll facetTree -i facet.xml
> ```
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -c http://
> host.example.com:80/search/api/admin/AdminService -p password
> updateAll searchAttr -a overwrite -i searchAttrSortable.xml
> ```
>
> Take a snapshot of the WebCenter Content server manually.

15. In the Custom Scripts section, you can select the scripts stored as directives in Software Library to customize the deployment procedure. Following options are possible, you may or may not choose to pass the scripts with parameters:

    a. You can pass a script with input parameters. For more information, see Using Custom Scripts Stored in the Software Library.

    > **✎ Note:**
    >
    > If you pass the input parameter, ensure that you allow the default option of **Input File** to be selected. For example, in the Pre Script field, you can choose **My Custom Script With Parameters** script that you earlier created. For more information see Using Custom Scripts with Input Parameters .

    Following are the contents of a sample input properties (`input.properties`) file:

    ```
    ADMIN_SERVER_LISTEN_ADDRESS=host.example.com
    ADMIN_SERVER_LISTEN_PORT=7001
    ADMIN_PROTOCOL=t3
    MIDDLEWARE_HOME=/scratch/usr1/soa/middleware
    ```

    b. You can alternatively choose to pass a script without any input parameters. For more information, see Using Custom Scripts Stored in the Software Library.

    > **✎ Note:**
    >
    > If you do not want to pass an input parameter, you should deselect the **Input File** option. For example, in the Pre Script field, you can choose **My Custom Script Without Parameters** script that you earlier created. For more information, see Using Custom Scripts Without Input Parameters.

    You can pass the following scripts to customize your procedure:

16. Click **Next** to schedule the procedure. If you click **Submit**, the procedure is submitted for execution right away. Click **Save** to save this as a template; this feature is particularly useful with lockdowns. For example, you can login with designer role and create a template with lockdowns, and assign the desired privileges to other administrator/operators to run this template. Click **Cancel** to exit the procedure configuration.

17. After submitting, you can track the progress of the provisioning operation from the Procedure Activity page. For more information about this, see About Deployment Procedures.

18. To view the newly provisioned target, from the **Targets** menu, select **Middleware**.

Provisioning a Fusion Middleware Domain from an Existing Oracle Home

To provision a fresh domain from an existing Oracle home, follow these steps:

> **Note:**
>
> To provide inputs and further customize the destination environment, click **Advance**. To understand the settings and configuration parameters that can be customized, see Customizing the Destination Environment from an Existing Oracle Home.

1. On Cloud Control, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning**

2. On the Middleware Provisioning home page, from Deployment Procedure section select **Provision Fusion Middleware**, then click **Launch**.

3. On the Middleware Provisioning page, in the General section, select **Oracle Home.** Click the search icon, the Select target dialog box is displayed. Search and select the WebLogic Server home that you want to reuse.

4. In the Hosts section, click **+Add** to search and select the destination hosts where the cloned Middleware Home will reside. For the cloning operation, you will need to provide the login credentials for the destination hosts. If you have selected multiple hosts, and the login credentials for all of them are the same, then you can select **Same Credentials for all** option.

5. In the Middleware section, provide the domain Administrator credentials.

6. In the Database section, select a Database Target, choose an existing schema and provide the schema password.

7. *(optional)* In the Identity and Security section, you must enter the OID target name and the OID credentials. These are mandatory fields for creating an LDAP Authenticator and/or for reassociating the Domain Credential Store.

> **Note:**
>
> If you are provisioning a WebCenter profile, this section is displayed only for the Production Topology which is the default option.

In addition to this, you must provide the following sets of inputs in the OID section:

- **Configure LDAP Authenticator Inputs.**This section describes how to create the LDAP authenticator:

  – Authenticator Name: Enter a name for the OIDAuthenticator provider. For example: MyOIDAuthenticator.

  – User Base DN: Specify the DN under which your Users start. For example, `cn=users,dc=us,dc=mycompany,dc=com`

  – Group Base DN: Specify the DN that points to your Groups node. For `example:cn=groups,dc=us,dc=mycompany,dc=com`

  > **Note:**
  >
  > As a prerequisite, you must have already provisioned the users and groups in the LDAP.

- **Configure Security Store Inputs:** In this section, provide the JPS Root Node information. The JPS root node is the target LDAP repository under which all data is migrated. The format is `cn=nodeName`.

  > **Note:**
  >
  > As a prerequisite, you must have already created the root node in the LDAP.

8. In the WebTier section, click **+Add** to search and select an Oracle HTTP Server (OHS) target. In the **Credential** field provide the credentials to access the target. If you have more than one Oracle HTTP Server, then you need to provide an **External Load Balancer URL.**

   The format of the URL for an External Load Balancer: `(http|https://hostname:port)`

   For example: `http://wcp-prov.example.com:80`

   > **Note:**
   >
   > If you are provisioning a WebCenter target, you will additionally need to provide an **Internal Load Balancer URL.**

   The format of the URL for an Internal Load Balancer: `(http|https|tcp://hostname:port)`

   For example: `tcp://wcp-prov-ucm.example.com:4444`

   > **Note:**
   >
   > If you are provisioning a plain WebLogic Domain, this section will not be displayed.

9. *(For a WebCenter Production Domain only)* To configure an SES Domain with a WebCenter Production Domain, follow these steps:

Prerequisites:

- The SES Domain must be up and running.
- The SES Domain must be configured with the same OID as the WebCenter Domain.
- You must have created a Crawl Administrator Username in the OID.

To configure SES for your WebCenter Domain, enter the following details:

a. Provide the credentials for Crawl admin user in OID. You must enter the same Crawl Administrator Username and Crawl Administrator Password that was created as a part of the prerequisite step. The Crawl Administration users in Spaces, and in the Identity Management System, are required to crawl certain Space objects, such as lists, pages, spaces, and people connections profiles. For example, `mycrawladmin`.

b. The Search Administrator Username and Search Administrator Password are the credentials that were used for creating the SES Domain. For example, for the Oracle SES 11.2.2.2 release, the Search Administrator user is `SEARCHSYS`.

c. The Search User Username and Search User Password are the credentials of the Oracle SES federation trusted entity. These get created while installing the SES. Each Oracle SES instance must have a trusted entity for allowing WebCenter Portal end users to be securely propagated at search time. A trusted entity allows the WebCenter Portal application to authenticate itself to Oracle SES and assert its users when making queries on Oracle SES. This trusted entity can be any user that either exists on the Identity Management Server behind Oracle SES or is created internally in Oracle SES. For example, `wesearch`.

d. In the SES Search URL field, enter the URL of Search Administration Tool. The format of this URL should be: `http://search_server_listenAddress:search_server_listenPort`. For example, `http://slc01rsk.us.example.com:5720`.

> **✎ Note:**
>
> After configuring the WebCenter Domain with SES, if you encounter an issue with searching the portal, you must perform in the following steps manually:
>
> From the WebCenter Portal Oracle Home, copy webcenter_portal_ses_admin.zip to the host where SES Domain is present.
>
> Unzip the webcenter_portal_ses_admin.zip to find the files: facet.xml and searchAttrSortable.xml.
>
> Run these XML files as follows, for example:
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -p
> password -c http://slc01rsk.us.example.com:5720/search/api/admin/
> AdminService createAll facetTree -i facet.xml
> ```
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -c http://
> slc01rsk.us.example.com:5720/search/api/admin/AdminService -p
> password updateAll searchAttr -a overwrite -i searchAttrSortable.xml
> ```
>
> Take a snapshot of the WebCenter Content server manually.

10. Click **Next** to schedule the procedure. If you click Submit, the procedure is submitted for execution right away. Click **Save** to save this as a template; this feature is particularly useful with lockdowns. For example, if you want to create a template with lockdowns, and allow other users with operator privilege to run the template multiple times with minor modifications.

    Click **Cancel** to exit the procedure configuration.

11. After submitting, you can track the progress of the provisioning operation from the Procedure Activity page. For more information about this, see About Deployment Procedures.

12. To view the newly provisioned target, from the **Targets** menu, select **Middleware**.

Customizing the Destination Environment from an Existing Oracle Home

To customize the destination environment, click Advance available on the Fusion Middleware Provisioning wizard. Note that the Advance option is enabled only after you select the destination hosts.

Follow these steps:

> **✎ Note:**
>
> Oracle recommends that you allow the default option **Typical** to remain selected, and provide all the details. Following which, you can click **Advance** to customize your destination environment. This way, the default values for most of the parameters appear pre-populated, and you will need to enter only the remaining (delta) details.Also, note that if you switch from Advance mode to typical mode, you will lose all the changes that you have made so far.

1. On Cloud Control, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning**

2. On the Middleware Provisioning home page, from Deployment Procedure section, select **Provision Fusion Middleware**, then click **Launch**.

3. On the Provision Fusion Middleware Configuration page, in the General section, the Oracle Home appears pre-selected.

    By default, the **Provision Domain** option is selected. Basically, a fresh domain is provisioned with an existing Oracle home.

    To clone only the Middleware Home, deselect the **Provision Domain**.

4. In the Hosts section, search and select the destination hosts on which the Middleware Home and WebLogic Domain need to be cloned. Click **+Add** to add the target hosts, and provide the login credentials for them. If you have selected multiple hosts, and the login credentials for all of them are the same, then you can select **Same Credentials for all**.

5. In the Domain section, the configuration for the domain is displayed by default. You can change the following attributes to customize the domain properties:

    • **Domain Name:** The name of the domain. The generated components for the domain are stored under the specified Domain directory. For example, if you enter *mydomain*, your domain files are stored (by default) in *MW_HOME\user_projects\domains\mydomain*. Ensure that you provide a unique domain name.

- **Administrator Username:** The default Administrator account for the domain. This account is used to boot and connect to the domain's Administration Server. The username must not contain commas, tabs, or any of these characters: < > # | & ? ( ) { }.

- **Administrator Password:** The password for the Administrator account. The password must be at least eight characters, and must contain at least one numeric character or at least one of the following characters: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~

- **Unique Domain Identifier:** The unique domain identifier is a prefix to the domain name.

- **Domain Directory:** The location in which your domain directory will be stored. By default, the same path as the source is used to create this directory, but it can be changed. For example: If the Middleware Home is located at `/user/mwh`, the domain directory is created as `/user/domains`. The domain location can be anywhere on your local drive or network. On Windows, you must include the drive letter in this path.

- **Applications Directory:** The directory in which the applications will be deployed on the destination host. By default, this directory is created under the parent directory of the Middleware Home. For example: If the Middleware Home is located at `/user/mwh`, the application directory is created as `/user/mwh/applications`.

- **Domain Mode:** The domain can operate in one of the following modes:

  Production: The domain is used for production. In this mode, the security configuration is relatively stringent, requiring a username and password to deploy applications.

  Development: The domain is used for development. In this mode, the security configuration is relatively relaxed, allowing you to auto-deploy applications.

- **Server Startup Mode:** you can start the server in one of the following modes depending on your requirement:

  Start all Servers and Node Managers: This is the default option. Typically, you will select this option if you have no changes to make, and if the procedure has run as expected.

  Start only Administration Server: This option starts only Administrator Server and Node Manger. Typically, you will select this option if you want to add a custom step to invoke the WLST online script, and then start the servers.

  Do not start any Server or Node Manager: This option does not start any server or Node Manager. Typically, you will select this option if you have to customize the domain before starting any server.

6. In the Clusters section, you can modify the name of the cluster, enter the cluster address that identifies the Managed Servers in the cluster. You can select either Unicast or Multicast as the messaging mode. If you select **Multicast** mode, enter the address and port number that will be dedicated for multicast communications on the cluster. Click **+Add** to add one or more clusters to the configuration.

7. In the Machines section, enter configuration information for machines in the domain. A Machine is a logical representation of the system that hosts one or more WebLogic Server instances. The Administration Server and Node Manager use the Machine definition to start remote servers. Click **+Add** to add one or more machine configurations. Enter the following details:

   - **Node Manager Home:** The directory in which the Node Manager is installed. By default, the Node Manager is installed under the parent directory of the Middleware Home directory, but this can be modified.

Note that the Node Manager home must always be installed inside the Administration Server domain home.

- **Node Manager Credentials:** You can use the same credentials as Administrative Server credentials or deselect the option to provide separate Node Manager Credentials.

- **Machine Name:** Enter a unique name for your machine.

- **Host:** Select the host name from the menu.

- **Node Manager Listen Address:** Enter the listen address used by Node Manager to listen for connection requests. By default, the IP addresses defined for the local system and localhost are shown in the drop-down list. The default value is the same as specified in the source domain. Note that if multiple machines are running on the same host, the Node Manager Home location must be different for each host.

- **Node Manager Listen Port:** Enter a valid value for the listen port used by Node Manager to listen for connection requests. The valid Node Manager listen port range is 1 to 65535. The default value is 5556. The port number must be available on the destination machine.

8. In the Server section, enter the configuration information for the Administration Server and one or managed servers.

   - Select the **Configure Coherence** check box

   - **Coherence Port:** This field is enabled only when you select the Configure Coherence option. You can retain the port number that is populated by default or change it.

   - **Listen Port:** By default, this option is selected. The values for the listen ports are pre-populated. You may enter any value from 1 to 65535. The port number you enter here must be available on the destination machine.

     Note If a domain was registered on the host with a port number whose status is down, you need to select a different port or manually de-register the domain before launching the deployment procedure.

   - **SSL Listen Port:** If you enable SSL Listen Port, enter the port number of the SSL Listen Port for secure requests. You must ensure that the port numbers you specify for the Listen Port and SSL Listen Port are available. If you are using the SSL configuration, you must ensure that the security/identity stores are present in the file system under the same path as on the source and are configured with certificates generated for the destination hosts.

   - **Administration Port:** This port enables the domain to run in Administration Mode. For this, all the servers needs to be SSL enabled.

   - **Host:** Select the host on which the Administration Server or Managed Server is to be installed.

   - **Listen Address:** Enter the listen address to be used to connect to the Administration Server or the Managed Server instance.

   - **Machine:** Select the machine configuration that is to be associated with the Administration Server or the Managed Server

   - **Cluster:** Select the cluster to be associated with the Managed Server.

   - **Server Start:** Click to enter the Server Startup Parameters.Usually, the Node Manager can start a server without requiring you to specify startup options, however, since you have customized your environment you must specify the startup options in the Server Startup Parameter dialog box.

- **Transaction Log Directory:** Transaction log stores information about committed transactions that are coordinated by the server and that may not have been completed. Oracle WebLogic Server uses this transaction log for recovery from system crashes or network failures. To leverage the migration capability of the Transaction Recovery Service for the Managed Servers within a cluster, store the transaction log in a location accessible to the Managed Server and its backup servers.

- **Domain Directory for Managed Server:** The directory in which the Managed Servers are installed. By default, they are installed under the parent directory of the Middleware Home directory, but this can be modified.

9. In the JMS Servers section, click **+Add** to add new JMS persistent stores and JMS servers. The storage type can be one of the following:

   - A JMS file store is a disk-based file in which persistent messages can be saved. You can modify the JMS file stores configured in your domain.

   - A JDBC Store:

     – Data Source

     – Targets

10. In the Database section, choose an existing schema and provide the schema password. Select **Same password for all** option if you would like to use the same username and password for all the data sources on the selected database target.

11. *(optional)* In the Identity and Security section, you must enter the OID target name and the OID credentials. These are mandatory fields for creating an LDAP Authenticator and/or for re-associating the Domain Credential Store.

> **✎ Note:**
>
> If you are provisioning a WebCenter profile, this section is displayed only for the Production Topology which is the default option.

In addition to this, you must provide the following sets of inputs in the OID section:

- **Configure LDAP Authenticator Inputs.**This section describes how to create the LDAP authenticator:

  – Authenticator Name: Enter a name for the OIDAuthenticator provider. For example: MyOIDAuthenticator.

  – User Base DN: Specify the DN under which your Users start. For example, `cn=users,dc=us,dc=mycompany,dc=com`

  – Group Base DN: Specify the DN that points to your Groups node. For `example:cn=groups,dc=us,dc=mycompany,dc=com`

> **✎ Note:**
>
> As a prerequisite, you must have already provisioned the users and groups in the LDAP.

- **Configure Security Store Inputs:** In this section, provide the JPS Root Node information. The JPS root node is the target LDAP repository under which all data is migrated. The format is `cn=nodeName`.

> **Note:**
>
> As a prerequisite, you must have already created the root node in the LDAP.

12. In the WebTier section, click **+Add** to search and select an Oracle HTTP Server (OHS) target. In the **Credential** field provide the credentials to access the target. If you have more than one Oracle HTTP Server, then you need to provide an **External Load Balancer URL.**

   The format of the URL for an External Load Balancer: `(http|https://hostname:port)`

   For example: `http://host.example.com:80`

   > **Note:**
   >
   > If you are provisioning a WebCenter target, you will additionally need to provide an **Internal Load Balancer URL.**

   The format of the URL for an Internal Load Balancer: `(http|https|tcp://hostname:port)`

   For example: `http://host.example.com:80`

   > **Note:**
   >
   > If you are provisioning a plain WebLogic Domain, this section will not be displayed.

13. *(For a WebCenter Production Domain only)* To configure an SES Domain with a WebCenter Production Domain, follow these steps:

   Prerequisites:

   - The SES Domain must be up and running.
   - The SES Domain must be configured with the same OID as the WebCenter Domain.
   - You must have created a Crawl Administrator Username in the OID.

   To configure SES for your WebCenter Domain, enter the following details:

   a. Provide the credentials for Crawl admin user in OID. You must enter the same Crawl Administrator Username and Crawl Administrator Password that was created as a part of the prerequisite step. The Crawl Administration users in Spaces, and in the Identity Management System, are required to crawl certain Space objects, such as lists, pages, spaces, and people connections profiles. For example, `mycrawladmin`.

   b. The Search Administrator Username and Search Administrator Password are the credentials that were used for creating the SES Domain. For example, for the Oracle SES 11.2.2.2 release, the Search Administrator user is `SEARCHSYS`.

   c. The Search User Username and Search User Password are the credentials of the Oracle SES federation trusted entity. These get created while installing the SES. Each Oracle SES instance must have a trusted entity for allowing WebCenter Portal end users to be securely propagated at search time. A trusted entity allows the WebCenter Portal application to authenticate itself to Oracle SES and assert its users when

making queries on Oracle SES. This trusted entity can be any user that either exists on the Identity Management Server behind Oracle SES or is created internally in Oracle SES. For example, `wesearch`.

d. In the SES Search URL field, enter the URL of Search Administration Tool. The format of this URL should be: `http://search_server_listenAddress:search_server_listenPort.`

For example, `http://host.example.com:80`.

> **✎ Note:**
>
> After configuring the WebCenter Domain with SES, if you encounter an issue with searching the portal, you must perform in the following steps manually:
>
> From the WebCenter Portal Oracle Home, copy webcenter_portal_ses_admin.zip to the host where SES Domain is present.
>
> Unzip the webcenter_portal_ses_admin.zip to find the files: facet.xml and searchAttrSortable.xml.
>
> Run these XML files as follows, for example:
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -p
> password -c http://host.example.com:80/search/api/admin/AdminService
> createAll facetTree -i facet.xml
> ```
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -c http://
> host.example.com:80/search/api/admin/AdminService -p password
> updateAll searchAttr -a overwrite -i searchAttrSortable.xml
> ```
>
> Take a snapshot of the WebCenter Content server manually.

14. In the Custom Scripts section, you can select the scripts stored as directives in Software Library to customize the deployment procedure. Following options are possible, you may or may not choose to pass the scripts with parameters:

a. You can pass a script with input parameters. For more information, see Using Custom Scripts Stored in the Software Library.

> **✎ Note:**
>
> If you pass the input parameter, ensure that you allow the default option of **Input File** to be selected. For example, in the Pre Script field, you can choose **My Custom Script With Parameters** script that you earlier created. For more information see Using Custom Scripts With Input Parameters.

Following are the contents of a sample input properties (`input.properties`) file:

```
ADMIN_SERVER_LISTEN_ADDRESS=host.example.com
ADMIN_SERVER_LISTEN_PORT=7001
ADMIN_PROTOCOL=t3
MIDDLEWARE_HOME=/scratch/usr1/soa/middleware
```

b. You can alternatively choose to pass a script without any input parameters.

Note: If you do not want to pass an input parameter, you should deselect the **Input File** option. For example, in the Pre Script field, you can choose **My Custom Script**

Without Parameters script that you earlier created. For more information, see Using Custom Scripts Stored in the Software Library.

You can pass the following scripts to customize your procedure:

- **Pre Script**: This script runs soon after the prerequisite checks and before the Oracle Home or WebLogic Domain is deployed.

- **Post Administration Server Start Script**: This script runs after the Administration Server has been started.

- **Post Script**: This script runs after all the Managed Servers have started.

15. Click **Next** to schedule the procedure. If you click **Submit**, the procedure is submitted for execution right away. Click **Save** to save this as a template; this feature is particularly useful with lockdowns. For example, you can login with designer role and create a template with lockdowns, and assign the desired privileges to other administrator/operators to run this template. Click **Cancel** to exit the procedure configuration.

16. After submitting, you can track the progress of the provisioning operation from the Procedure Activity page. For more information about this, see About Deployment Procedures.

17. To view the newly provisioned target, from the **Targets** menu, select **Middleware**.

Cloning from an Existing WebLogic Domain Based-Profile

To clone an existing domain, follow these steps:

> **Note:**
>
> To provide inputs and further customize the destination environment, click **Advance**. To understand the settings and configuration parameters that can be customized, see Customizing the Destination Environment from an Existing WebLogic Domain Based-Profile.

> **Note:**
>
> For more information on cloning a database in WebLogic domain, see Use Case 6 - Cloning a database in WebLogic Domain.

Login into Enterprise Manager Cloud Control, and navigate to the Middleware Provisioning Page

Select a domain profile from the profile table

Select Destination host(s) and provide credentials

Do you want to use an existing Middleware Home?

Yes

Go to advanced and select an existing Midleware Home target.

(Provision new MWH) No

Do you want to use a shared Middleware Home?

Yes

Click Advanced and enter the shared MWH location

Do you want to provision domain?

No

Deselect Domain option. Provision Middleware Home-only, and STOP

Enter new domain administrator user name and password

You should create a profile of the database at the same time when you are creating the domain profile to keep both the profiles in sync. Provision a database from this DB profile and use it as destination database.

Select database and provide schema password

Was your source configured with a LDAP?

Yes

Enter LDAP details

Was your source configured with an OHS/HTTP LBR?

Yes

Select OHS target and enter external LBR URL if desired

Do you want to pause after running pre-req checks?

Select Pause and then click Submit and STOP. Track the progress from Procedure activity page

Submit and STOP. Track progress from procedure activity page

> **Note:**
>
> Middleware Provisioning supports RAC only with GridLink Data Sources.

1. In Cloud Control, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning.**

2. On the Middleware Provisioning home page, from the Profiles table select a WebLogic Domain profile, then click **Provision.**

3. On the Provision Fusion Middleware page, in the General section, the WebLogic Domain profile appears pre-selected.

4. In the Hosts section, search and select the destination hosts where the cloned WebLogic Domain will reside. Click **+Add** to add the target hosts, and provide the login credentials for them. If you have selected multiple hosts, and the login credentials for all of them are the same, then you can select **Same Credentials for all**.

   Note: The domain configuration for the destination host and the source host must be exactly the same for cloning operation to be successful. For example, if the source domain has servers on two different hosts, then you will need to select two different destinations hosts. You will be prompted to do so before you proceed.

5. In the Middleware section the value for Java Home appears pre-populated. Provide the domain Administrator credentials.

   > **Note:**
   >
   > The vendor and version of the JAVA in use at source and destination should preferably be identical or at least be of the same major version.

6. In the Database section, select the cloned database target, and provide the schema password.

   > **Note:**
   >
   > This section appears only if the source database had data sources.

7. *(optional)* The Identity and Security section, enter the OID target name, and the credential. As a prerequisite, you must have cloned the source OID to a destination environment.

8. In the WebTier section, click **+Add** to search and select an Oracle HTTP Server (OHS) target. In the **Credential** field provide the credentials to access the target. If you have more than one Oracle HTTP Server, then you need to provide an **External Load Balancer URL**.

   The format of the URL for an External Load Balancer: `(http|https://hostname:port)`

   For example: `http://wcp-prov.example.com:80`

> **Note:**
>
> If you are provisioning a WebCenter target, you will additionally need to provide an **Internal Load Balancer URL**.

The format of the URL for an Internal Load Balancer: (`http|https|tcp://hostname:port`)

For example: `http://host.example.com:80`

> **Note:**
>
> If you are provisioning a plain WebLogic Domain, this section will not be displayed.

9. *(For a WebCenter Production Domain only)* To configure an SES Domain with a WebCenter Production Domain, follow these steps:

Prerequisites:

- The SES Domain must be up and running.

- The SES Domain must be configured with the same OID as the WebCenter Domain.

- You must have created a Crawl Administrator Username in the OID.

To configure SES for your WebCenter Domain, enter the following details:

a. Provide the credentials for Crawl admin user in OID. You must enter the same Crawl Administrator Username and Crawl Administrator Password that was created as a part of the prerequisite step. The Crawl Administration users in Spaces, and in the Identity Management System, are required to crawl certain Space objects, such as lists, pages, spaces, and people connections profiles. For example, `mycrawladmin`.

b. The Search Administrator Username and Search Administrator Password are the credentials that were used for creating the SES Domain. For example, for the Oracle SES 11.2.2.2 release, the Search Administrator user is `SEARCHSYS`.

c. The Search User Username and Search User Password are the credentials of the Oracle SES federation trusted entity. These get created while installing the SES. Each Oracle SES instance must have a trusted entity for allowing WebCenter Portal end users to be securely propagated at search time. A trusted entity allows the WebCenter Portal application to authenticate itself to Oracle SES and assert its users when making queries on Oracle SES. This trusted entity can be any user that either exists on the Identity Management Server behind Oracle SES or is created internally in Oracle SES. For example, `wesearch`.

d. In the SES Search URL field, enter the URL of Search Administration Tool. The format of this URL should be: `http://search_server_listenAddress:search_server_listenPort`. For example, `http://slc01rsk.us.example.com:5720`.

> **✎ Note:**
>
> After configuring the WebCenter Domain with SES, if you encounter an issue with searching the portal, you must perform in the following steps manually:
>
> From the WebCenter Portal Oracle Home, copy webcenter_portal_ses_admin.zip to the host where SES Domain is present.
>
> Unzip the webcenter_portal_ses_admin.zip to find the files: facet.xml and searchAttrSortable.xml.
>
> Run these XML files as follows, for example:
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -p
> password -c http://slc01rsk.us.example.com:5720/search/api/admin/
> AdminService createAll facetTree -i facet.xml
> ```
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -c http://
> slc01rsk.us.example.com:5720/search/api/admin/AdminService -p
> password updateAll searchAttr -a overwrite -i searchAttrSortable.xml
> ```
>
> Take a snapshot of the WebCenter Content server manually.

10. Click **Next** to schedule the procedure. If you click Submit, the procedure is submitted for execution right away. Click **Save** to save this as a template; this feature is particularly useful with lockdowns. For example, if you want to create a template with lockdowns, and allow other users with operator privilege to run the template multiple times with minor modifications.

    Click **Cancel** to exit the procedure configuration.

11. After submitting, you can track the progress of the provisioning operation from the Procedure Activity page. For more information about this, see About Deployment Procedures.

12. To view the newly provisioned target, from the **Targets** menu, select **Middleware**.

Customizing the Destination Environment from an Existing WebLogic Domain Based-Profile

To customize the destination environment, click Advance available on the Fusion Middleware Provisioning wizard. Note that the Advance option is enabled only after you select the destination hosts.

Follow these steps:

> **✎ Note:**
>
> Oracle recommends that you allow the default option **Typical** to remain selected, and provide all the details. Following which, you can click **Advance** to customize your destination environment. This way, the default values for most of the parameters appear pre-populated, and you will need to enter only the remaining (delta) details.Also, note that if you switch from Advance mode to typical mode, you will lose all the changes that you have made so far.

1. In Cloud Control, from **Enterprise** menu, select **Provisioning and Patching**, and then click **Middleware Provisioning.**

2. On the Middleware Provisioning home page, from Deployment Procedure section, select **Provision Fusion Middleware**, then click **Launch**.

3. On the Middleware Provisioning page, in the General section, select the WebLogic domain profile that contains the source domain details that is to be cloned.

   By default, you will provision the WebLogic domain along with Oracle home. To provision only the domain *(Bitless profile)*, you must deselect **Provision Middleware Home** and select **Provision Domain.** Alternatively, to provision only the middleware home retain Provision Middleware Home option, and deselect Provision Domain.

   Use Shared Storage is particularly useful when you have multiple destination hosts. This option allows you to use a mounted location that is accessible by all the hosts.

4. In the Hosts section, search and select the destination hosts where the cloned WebLogic Domain will reside. Click **+Add** to add the target hosts, and provide the login credentials for them. If you have selected multiple hosts, and the login credentials for all of them are the same, then you can select **Same Credentials for all**.

   Note: The domain configuration for the destination host and the source host must be exactly the same for cloning operation to be successful. For example, if the source domain has servers on 2 different hosts, then you will need to select two different destinations hosts. You will be prompted to do so before you proceed.

5. In the Middleware section, by default, the values for Middleware Home and Java Home are pre-populated. You can change the location details if required.

   - For **Middleware Home,** enter the full path to the directory in which the Middleware Home is to be created.

   - For **Java Home,** enter the absolute path to the JDK directory to be used on the destination Host. You need to specify this path if a similar configuration is detected on the source machine.

   > **Note:**
   >
   > The vendor and version of the JAVA in use at source and destination should preferably be identical or at least be of the same major version.

6. In the Domain section, the configuration for the source domain is displayed by default. You can change the following attributes to customize the domain properties:

   a. **Domain Name:** The name of the domain. The generated components for the domain are stored under the specified Domain directory. For example, if you enter *mydomain*, your domain files are stored (by default) in *MW_HOME\user_projects\domains\mydomain*.

   b. **Administrator Username:** The default Administrator account for the domain. This account is used to boot and connect to the domain's Administration Server. The username must not contain commas, tabs, or any of these characters: < > # | & ? ( ) { }.

   c. **Administrator Password:** The password for the Administrator account. The password must be at least eight characters, and must contain at least one numeric character or at least one of the following characters: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | } ~

    d. **Unique Domain Identifier:** The unique domain identifier is a prefix to the domain name.

    e. **Deploy JVMD Agent:** Deploys the JVMD agent on the servers or clusters of a Weblogic Domain. Java Virtual Machine Diagnostics (JVMD) enables administrators to diagnose performance problems in Java applications. After the JVMD Agent is deployed on the targeted JVM (the one running a production WebLogic Server), it collects real-time data and transmits it to the JVM Diagnostics Engine.

    f. **Available JVMD Endpoints:** This is the list of available JVMD endpoints. For a successful JVMD deployment, the JVMD engine must be active, if the JVMD engine is not active the agent is not deployed.

    g. **Targets:** This is the list of targets on clusters or managed servers. If no targets are provided, the JVMD agent will be deployed by default to all the clusters and non-clustered servers of the domain. If a cluster is selected as target, then all the servers that are part of that cluster automatically get the agent deployed.

    h. **Domain Directory:** The location in which your domain directory will be stored. By default, the same path as the source is used to create this directory, but it can be changed. For example: If the Middleware Home is located at /user/mwh, the domain directory is created as /user/mwh/domains. The domain location can be anywhere on your local drive or network. On Windows, you must include the drive letter in this path.

    i. **Applications Directory:** The directory in which the applications will be deployed on the destination host. By default, the same path as the source is used to create this directory, but it can be changed. For example: If the Middleware Home is located at /user/mwh, the application directory is created as /user/mwh/applications.

    j. **Server Startup Mode:** you can start the server in one of the following modes depending on your requirement:

    Start all Servers and Node Managers: This is the default option. Typically, you will select this option if you have no changes to make, and if the procedure has run as expected.

    Start only Administration Server: This option starts only Administrator Server and Node Manger. Typically, you will select this option if you want to add a custom step to invoke the WLST online script, and then start the servers.

    Do not start any Server or Node Manager: This option does not start any server or Node Manager. Typically, you will select this option if you have to customize the domain before starting any server.

7. In the Clusters section, all the clusters available in the source domain are provisioned on the destination host.

8. In the Machines section, the configuration information in the source domain are pre-populated. A Machine is a logical representation of the system that hosts one or more WebLogic Server instances. The Administration Server and Node Manager use the Machine definition to start remote servers. You can not customize any of the values here.

9. In the Servers section, all the configuration information for the Administration Server and managed servers are picked up from the source domain. You can customize the following:

   a. Select the Configure Coherence check box

   b. Coherence Port: the port value is pre-populated that can not be customized.

   c. **Custom Identity and Custom Trust:** Use this option to specify custom certificates when configuring a domain in SSL mode.

10. In the JMS Servers section, all JMS servers configured for the source domain are cloned on the destination hosts. You can not customize any value here.

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11. In the Database section, you can change the schema username and password for your data sources.

> **Note:**
>
> This section appears only if the source database had data sources.

12. *(optional)* The Identity and Security section, enter the OID target name, and the credential. As a prerequisite, you must have cloned the source OID to a destination environment.

13. In the WebTier section, click **+Add** to search and select an Oracle HTTP Server (OHS) target. In the **Credential** field provide the credentials to access the target. If you have more than one Oracle HTTP Server, then you need to provide an **External Load Balancer URL.**

    The format of the URL for an External Load Balancer: `(http|https://hostname:port)`

    For example: `http://wcp-prov.example.com:80`

    > **Note:**
    >
    > If you are provisioning a WebCenter target, you will additionally need to provide an **Internal Load Balancer URL.**

    The format of the URL for an Internal Load Balancer: `(http|https|tcp://hostname:port)`

    For example: `tcp://wcp-prov-ucm.example.com:4444`

    > **Note:**
    >
    > If you are provisioning a plain WebLogic Domain, this section will not be displayed.

14. *(For a WebCenter Production Domain only)* To configure an SES Domain with a WebCenter Production Domain, follow these steps:

    Prerequisites:

    - The SES Domain must be up and running.
    - The SES Domain must be configured with the same OID as the WebCenter Domain.
    - You must have created a Crawl Administrator Username in the OID.

    To configure SES for your WebCenter Domain, enter the following details:

    a. Provide the credentials for Crawl admin user in OID. You must enter the same Crawl Administrator Username and Crawl Administrator Password that was created as a part of the prerequisite step. The Crawl Administration users in Spaces, and in the Identity Management System, are required to crawl certain Space objects, such as lists, pages, spaces, and people connections profiles. For example, `mycrawladmin`.

    b. The Search Administrator Username and Search Administrator Password are the credentials that were used for creating the SES Domain. For example, for the Oracle SES 11.2.2.2 release, the Search Administrator user is `SEARCHSYS`.

c. The Search User Username and Search User Password are the credentials of the Oracle SES federation trusted entity. These get created while installing the SES. Each Oracle SES instance must have a trusted entity for allowing WebCenter Portal end users to be securely propagated at search time. A trusted entity allows the WebCenter Portal application to authenticate itself to Oracle SES and assert its users when making queries on Oracle SES. This trusted entity can be any user that either exists on the Identity Management Server behind Oracle SES or is created internally in Oracle SES. For example, `wesearch`.

d. In the SES Search URL field, enter the URL of Search Administration Tool. The format of this URL should be: `http://search_server_listenAddress:search_server_listenPort`. For example, `http://slc01rsk.us.example.com:5720`.

> **Note:**
>
> After configuring the WebCenter Domain with SES, if you encounter an issue with searching the portal, you must perform in the following steps manually:
>
> From the WebCenter Portal Oracle Home, copy webcenter_portal_ses_admin.zip to the host where SES Domain is present.
>
> Unzip the webcenter_portal_ses_admin.zip to find the files: facet.xml and searchAttrSortable.xml.
>
> Run these XML files as follows, for example:
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -p
> password -c http://slc01rsk.us.example.com:5720/search/api/admin/
> AdminService createAll facetTree -i facet.xml
> ```
>
> ```
> /scratch/SES/oracle/middleware/Oracle_SES1/bin/searchadmin -c http://
> slc01rsk.us.example.com:5720/search/api/admin/AdminService -p
> password updateAll searchAttr -a overwrite -i searchAttrSortable.xml
> ```
>
> Take a snapshot of the WebCenter Content server manually.

15. In the Custom Scripts section, you can select the scripts stored as directives in Software Library to customize the deployment procedure. Following options are possible, you may or may not choose to pass the scripts with parameters:

a. You can pass a script with input parameters. For more information, see Using Custom Scripts Stored in the Software Library.

> **Note:**
>
> If you pass the input parameter, ensure that you allow the default option of **Input File** to be selected. For example, in the Pre Script field, you can choose **My Custom Script With Parameters** script that you earlier created. For more information see Using Custom Scripts With Input Parameters.

Following are the contents of a sample input properties (`input.properties`) file:

```
ADMIN_SERVER_LISTEN_ADDRESS=slc01.example.com
ADMIN_SERVER_LISTEN_PORT=7001
ADMIN_PROTOCOL=t3
MIDDLEWARE_HOME=/scratch/usr1/soa/middleware
```

ORACLE

    b. You can alternatively choose to pass a script without any input parameters. For more information, see Using Custom Scripts Stored in the Software Library.

        Note: If you do not want to pass an input parameter, you should deselect the **Input File** option. For example, in the Pre Script field, you can choose **My Custom Script Without Parameters** script that you earlier created.

You can pass the following scripts to customize your procedure:

- **Pre Script**: This script runs soon after the prerequisite checks and before the Oracle Home or WebLogic Domain is deployed.

- **Post Administration Server Start Script**: This script runs after the Administration Server has been started.

- **Post Script**: This script runs after all the Managed Servers have started.

16. Click **Next** to schedule the procedure. If you click Submit, the procedure is submitted for execution right away. Click **Save** to save this as a template; this feature is particularly useful with lockdowns. For example, if you want to create a template with lockdowns, and allow other users with operator privilege to run the template multiple times with minor modifications.

    Click **Cancel** to exit the procedure configuration.

17. After submitting, you can track the progress of the provisioning operation from the Procedure Activity page. For more information about this, see About Deployment Procedures.

18. To view the newly provisioned target, from the **Targets** menu, select **Middleware**.

Prerequisites for Provisioning from the Middleware Provisioning Profiles

This section describes all the prerequisites to be met before actually launching the Provision Fusion Middleware deployment procedure. In particular, it covers the following:

> **Note:**
>
> Before provisioning using a domain profile or an Oracle Home profile, you must download the following patches by signing in to My Oracle Support Web site at https://support.oracle.com.:
>
> - For SOA: 22912570
>
> - For Service Bus: 23003815
>
> If you are provisioning from a domain profile using an existing Middleware Home, then ensure that the Middleware Home is patched appropriately.

> **Note:**
>
> In Enterprise Manager Cloud Control 13.4, there is no way to Create a Provisioning Profile for OBIEE 12.2.1.x

- Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile

- **Prerequisites for Provisioning the WebLogic Domain Profile**

> **Note:**
>
> If you are performing a provisioning operation on a domain that was created in Development Mode, ensure that you disable the active configuration locks. To do so, perform the following steps:
>
> - Log in to the Middleware Administrator Console.
> - Click **Preferences**.
> - Deselect **Automatically Acquire Lock and Activate Changes** option.
> - Click **Save**.
> - Ensure that the **Lock and Edit** button is enabled in the Change Center.

Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile

Meet the following prerequisites:

- Write permission on the Working Directory, which is a temporary directory used for staging and provisioning entities across Cloud Control.

  If the working directory is not specified, then the Management Agent's working directory is used, and write permission on that is required.

- Following permissions on the Oracle Home directory:

  1. Write, if a new Oracle Home has to be created. For an Installation Media profile, creating a new Oracle Home is mandatory.

  2. Read, if you are using an existing Oracle Home. Note that this is applicable only for an Oracle Home profile, and not for an Installation Media profile.

- If you are using a shared storage, then mount the domain home and inventory directories on all the hosts beforehand. Typically, for a two-node setup, with two SOA Managed Servers running on two different hosts, for example host 1 and host 2; you can choose to create the shared storage on host 1. Effectively, this means that the Middleware Home location, the domain details, Inventory details, and all other information are mounted on host 1 for easy access from host 2.

  > **Note:**
  >
  > Support for provisioning using a Shared Storage is not available on a Window machine.

- All the hosts involved in the provisioning operation should be monitored as targets in Enterprise Manager.

- Server and Node Manager Ports should be free.

- If the domain uses a database or LDAP or Oracle HTTP Server, then ensure that the respective servers are monitored as targets in Enterprise Manager.

- Write permission on Domain /Application/Node Manager Directories.

Prerequisites for Provisioning the WebLogic Domain Profile

In addition to the requirements mentioned in Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile, you need to meet the following for cloning using a WebLogic Domain profile:

- Before cloning an existing Fusion Middleware domain, you must have cloned the source database, so that the data in the schema is in sync with the source database. If you haven't already cloned your source database, you can do so using the Cloning Database feature available in Enterprise Manager Cloud Control, see Cloning Oracle Databases and Pluggable Databases.

> **✏️ Note:**
>
> Before cloning the domain, run the following data scrubbing SQL scripts on the database.
>
> **For SOA**
>
> Create a Generic Component and upload `truncate_soa_oracle.sql` script to Software Library. For more information on creating generic components, see *Oracle Enterprise Manager Cloud Control Administrator's Guide.* Note that the truncate script (truncate_soa_oracle.sql) is located in the following directory under SOA Installation: `/MW_HOME/SOA_ORACLE_HOME/rcu/integration/soainfra/sql/truncate`
>
> **For Service Bus**
>
> Create a Generic Component and upload `llr_table.sql` script to Software Library. To create this script, for each server present in the Service Bus domain, you need to add the following statement in the SQL script:
>
> `TRUNCATE table WL_LLR_<SERVER_NAME>`
>
> For example, if the Service Bus domain has administrator server and two managed servers with name `OSB_SERVER1` and `OSB_SERVER2`, then the content of the sql script would look like:
>
> `TRUNCAETE table WL_LLR_ADMINSERVER`
>
> `TRUNCATE table WL_LLR_OSB_SERVER1`
>
> `TRUNCATE table WL_LLR_OSB_SERVER2`

- If the source domain was wired with LDAP, then before cloning an existing Fusion Middleware domain, ensure that the data (users, roles and policies) has been migrated from the source LDAP to a new LDAP and the new LDAP has been discovered in Enterprise Manager as a target.

> **Note:**
>
> Middleware provisioning fails for JRF 12.1.2.0.0 enabled WebLogic domain, in case the source database is either down or not reachable. While unpacking the installable file, an attempt is made for connecting to the source database. In case the source database is down or unresponsive the provisioning task fails. The database must be up and running. This is not applicable for WebLogic 12.1.3.0.0 and onwards.

Using Custom Scripts Stored in the Software Library

This section describes how to use the custom scripts available in the Software Library to customize your deployment procedure. In particular, this section covers the following:

- Using Custom Scripts Stored in the Software Library
- Using Custom Scripts Stored in the Software Library

Using Custom Scripts Stored in the Software Library

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- Using Custom Scripts Stored in the Software Library
- Using Custom Scripts Stored in the Software Library

4

Provisioning the SOA Domain and Oracle Homes

This chapter describes how you can use the Middleware Provisioning solution offered in Enterprise Manager Cloud Control to provision a SOA Domain or/and an Oracle Home.

> **Note:**
>
> Before provisioning a SOA Domain/ Oracle Home, sign in to My Oracle Support Web site at https://support.oracle.com and download Patch ID 20046898.

In particular, this chapter contains the following topics:

- Getting Started with Provisioning SOA Domain and Oracle Home
- Source Environment and Destination Environment after SOA Provisioning
- Supported Versions of SOA for Provisioning
- Before you Begin Provisioning SOA Domain and Oracle Home
- Use Case 1: First Time Provisioning of a SOA Domain
- Use Case 2: Provisioning from a SOA Oracle Home Based Provisioning Profile
- Use Case 3: Cloning from a Provisioning Profile based on an Existing SOA Domain
- Use Case 4: Provisioning from an Existing SOA Home
- Use Case 5: Scaling Up an Existing SOA Domain
- Use Case 6 - Cloning a database in WebLogic Domain

> **Note:**
>
> Enterprise Manager does not support creating domain profiles for SOA, OSB domain targets of version 12.2.1.3.0 and above only. If you attempt to create such a profile by clicking **Create Button**, you would run into errors.

Getting Started with Provisioning SOA Domain and Oracle Home

This section helps you get started by providing an overview of the steps involved in provisioning WebLogic Domain and Middleware Home using the Fusion Middleware Deployment procedure.

Table 4-1   Getting Started with SOA Provisioning

Step	Description	Reference Links
Step 1	**Selecting the Use Case.** This chapter covers the use cases for provisioning Oracle SOA Domain and Oracle SOA Home. Select the use case that best matches your requirements.	• To learn about first time provisioning of a SOA Domain, see Use Case 1: First Time Provisioning of a SOA Domain. • To learn about provisioning from an SOA home based provisioning profile, see Use Case 2: Provisioning from a SOA Oracle Home Based Provisioning Profile. • To learn about cloning from an existing SOA domain, see Use Case 3: Cloning from a Provisioning Profile based on an Existing SOA Domain. • To learn about provisioning from an existing SOA home, see Use Case 4: Provisioning from an Existing SOA Home. • To learn about scaling out a SOA domain, see Use Case 5: Scaling Up an Existing SOA Domain. • To learn about cloning a database in WebLogic domain, see Use Case 6 - Cloning a database in WebLogic Domain
Step 2	**Meeting Prerequisites to Provision a Middleware Profile** Before you run the Fusion Middleware Deployment Procedure, there are a few prerequisites that you must meet.	To learn about the prrequisites for provisioning a SOA domain or home, see Before you Begin Provisioning SOA Domain and Oracle Home.
Step 3	**Running the Fusion Middleware Deployment Procedure** Run this deployment procedure to successfully provision a Weblogic Domain and/or an Oracle Home.	To learn about provisioning from an Installation Media Profile or an Oracle Home Profile, see Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile. To learn about provisioning from a WebLogic Domain Profile, see Provisioning a Fusion Middleware Domain from an Existing Oracle Home. To provision from an existing home, see Cloning from an Existing WebLogic Domain Based-Profile. To scale out from a SOA domain, see Scaling Up / Scaling Out Fusion Middleware Domains .

Source Environment and Destination Environment after SOA Provisioning

This section describes the middleware components the source environment contains before provisioning, and the components that get provisioned after you run the Provision Fusion Middleware Deployment Procedure. Primarily, two use cases are being described here using a typical SOA topology. First use case is of a fresh provisioning, where you start with an Installation Media based profile or an Oracle Home based profile, and provision the fresh domain and/or Oracle Home. The second use case describes how you can clone an existing SOA domain.

This section contains the following topics:

- Source and Destination Environments for a Fresh SOA Provisioning Use Case
- Source and Destination Environments for SOA Cloning Use Case

Source and Destination Environments for a Fresh SOA Provisioning Use Case

For a fresh SOA provisioning use case, before you begin, you must ensure that you have met the following topology requirements:

- Oracle HTTP Server has been installed and discovered.
- Virtual IP Address 1 and Virtual IP Address 2 have already been reserved.
- APPHOST1 and APPHOST2 must be discovered in Cloud Control.
- Database should have been discovered.

> **Note:**
>
> Ensure that Oracle HTTP Server, APPHOST1, APPHOST2, and the RAC database are being monitored as managed targets in Cloud Control.
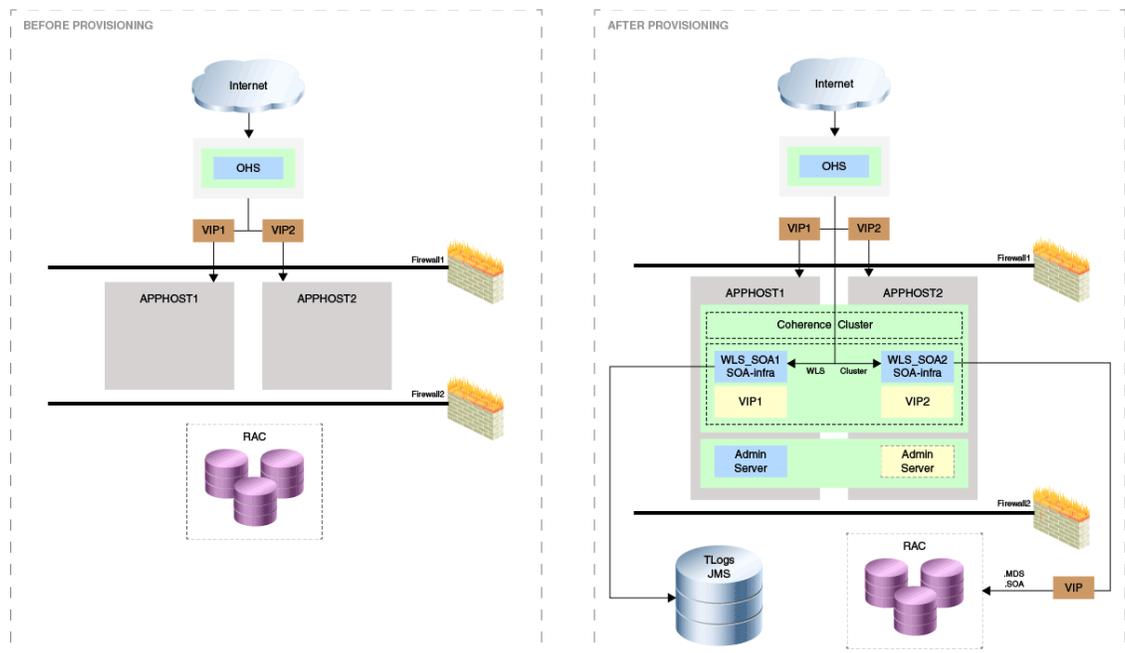
After running the Fusion Middleware Deployment Procedure, all the products that are displayed inside the green box in the destination environment get provisioned.

Source and Destination Environments for SOA Cloning Use Case

For a SOA cloning use case, before you begin, ensure that you have met the following topology requirements:

- Oracle HTTP Server has been installed and discovered.
- Virtual IP Address 3 and Virtual IP Address 4 have already been reserved.

- APPHOST3 and APPHOST4 must be discovered in Cloud Control.

- Database must be cloned and discovered.

- If source environment is configured with Oracle ID, then OID must be cloned and discovered.

> **Note:**
>
> Ensure that Oracle HTTP Server, APPHOST3, APPHOST4, and the RAC database are being monitored as managed targets in Cloud Control.
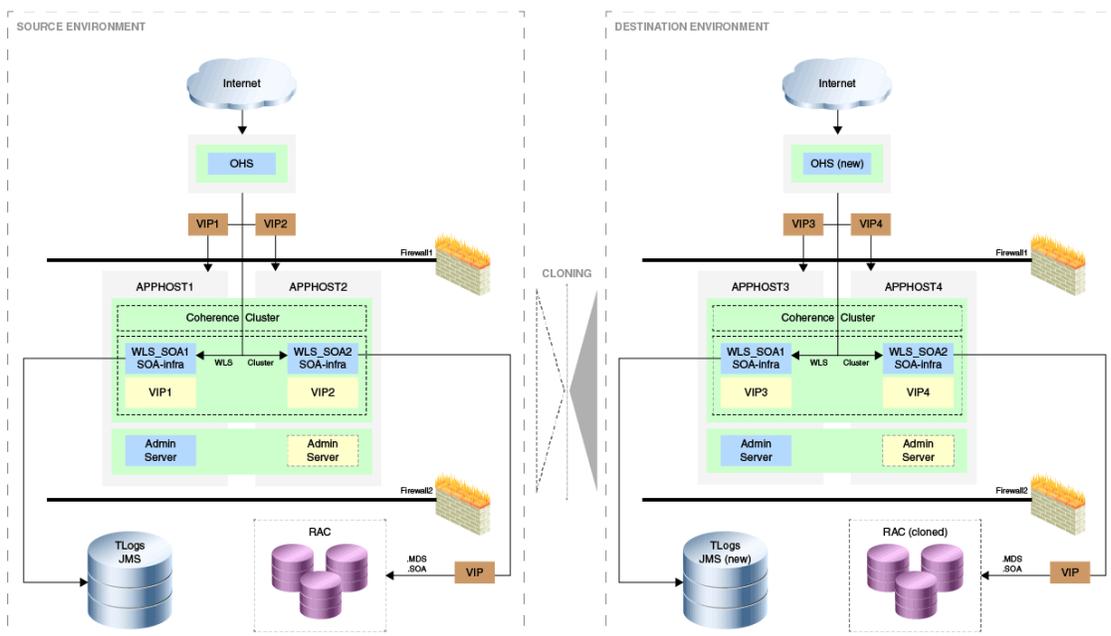
For the cloning case WLS_SOA1 and WLS_SOA2 are part of APPHOST1 and APPHOST2 respectively are cloned into APPHOST3 and APPHOST4. The RAC DB is cloned separately.

Supported Versions of SOA for Provisioning

The versions listed in the following table support SOA provisioning.

Product	Version
Oracle Repository Creation Utility (RCU)	11*g*
Oracle SOA	12*c*, 11*g*

Before you Begin Provisioning SOA Domain and Oracle Home

You must keep the things to keep in mind before you actually start creating middleware profiles and provisioning from these profiles.

In particular, this section contains the following topics:

- Create Middleware Roles and Assign Privileges to them
- Setting Named Credentials and Privileged Credentials for the Middleware Targets
- (Applicable only for a Cloning WebLogic Domain Use Case) Cloning a Database

Create Middleware Roles and Assign Privileges to them

In a typical data center, the main users of Deployment Procedures are Designers (Lead Administrators) and Operators. Deployment Procedure privileges enable users to perform some design-time activities such as, creating the profiles, granting accesses on the profile, creating profile lock-downs, and run-time activities like running the Deployment Procedure to provision software applications.

For Middleware Provisioning, you will need to create Administrators with the following roles:

Role: EM Super Administrator

Table 4-2 lists the roles based on which you can create administrators for Middleware Provisioning.

Table 4-2   Creating Administrators with the Required Roles

Enterprise Manager Role	Description
EM_PROVISIONING_DESIGNER	Role has privileges for provisioning designer
EM_PROVISIONING_OPERATOR	Role has privileges for provisioning operator

For instructions to create administrators with these roles, see Creating Enterprise Manager User Accounts.

Setting Named Credentials and Privileged Credentials for the Middleware Targets

Oracle recommends that you set the Named Credentials for normal operating system user account (*Oracle*) and Named Credentials for privileged user accounts (*root*) to perform any of the provisioning tasks in Enterprise Manager Cloud Control.

For instructions to set the Named Credentials, see Setting Up Credentials.

(Applicable only for a Cloning WebLogic Domain Use Case) Cloning a Database

You must have cloned a database from the source domain at the same time that the domain was being cloned. To clone a database, you must have discovered the source database as a managed target in Enterprise Manager, following which you can create a profile out of the source database, and then provision the profile to complete the cloning process.

Use Case 1: First Time Provisioning of a SOA Domain

This use case describes how you can perform a first time install of Oracle Fusion Middleware software, and first time provisioning of a WebLogic Domain. This is particularly useful when

you do not have an existing domain in your data center, or if you do not wish to clone from a provisioning profile based upon an existing domain. To do so, follow these steps:

> ✎ **Note:**
>
> If you use a Windows machine to provision the SOA Domain, after you have discovered the source SOA domain, you must bring the Node Manager down, and only then proceed with the SOA Domain Profile creation.

1. Log in with Designer privileges (`EM_PROVISIONING_DESIGNER` role) to create a Installation Media Profile. To do so, follow the steps mentioned in Creating a Provisioning Profile Based on an Installation Media.

2. *(optional)* You may choose to create some lock-downs and save the profile as a template after it passes the prerequisite checks. Doing so can be useful when you have to run the same profile multiple times for provisioning middleware products. The added benefit of saving the profile as a template is that you can grant accesses to Operators so they can run the profiles and carry out the Middleware Provisioning.

3. Before you provision a middleware profile based on an Installation Media profile, meet the prerequisites mentioned in Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile.

4. Log in with Operator Privileges (`EM_PROVISIONING_OPERATOR`). Select the template from the Deployment Procedure table, and click **Launch.**

   If you have not created a template out of the profile, you can select your profile from the Profiles table on the Middleware Provisioning page, then click **Provision.**

5. For provisioning a SOA Domain and Oracle Home from an Installation Media, follow the steps mentioned in Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile.

6. If you want to customize the settings in the destination environment, follow the steps mentioned in Customizing the Destination Environment from an Installation Media Based-Profile or an Oracle Home Based-Profile.

Use Case 2: Provisioning from a SOA Oracle Home Based Provisioning Profile

This use case describes how you can create a Gold Image from an existing Oracle Home (SOA) that has perhaps been patched, and provision this using the Oracle Home profile. This is particularly useful when you need to install Oracle Fusion Middleware software with or without a new WebLogic Domain.

1. Log in with `EM_PROVISIONING_DESIGNER` role to create an Oracle Home (SOA) Profile. To do so, follow the steps mentioned in Creating Middleware Provisioning Profiles.

2. Before you provision from a middleware profile based on an Oracle Home, meet the prerequisites mentioned in Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile.

3. Select the profile from the Profiles table on the Middleware Provisioning page, then click **Provision.**

4. For creating a clone of an existing domain's Oracle Home (with binaries and patches) but no domain configuration, follow the steps mentioned in Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile.

5. If you want to customize the settings in the destination environment, follow the steps mentioned in Customizing the Destination Environment from an Installation Media Based-Profile or an Oracle Home Based-Profile.

Use Case 3: Cloning from a Provisioning Profile based on an Existing SOA Domain

This use case describes how you can clone a WebLogic Domain from a provisioning profile based upon an existing WebLogic Domain. This is particularly useful when you need to install Oracle Fusion Middleware software and configure a new WebLogic Domain.

1. Log in with `EM_PROVISIONING_DESIGNER` role to create a WebLogic Domain Profile. To do so, follow the steps mentioned in Creating a Provisioning Profile Based on a WebLogic Domain.

2. Before you provision a middleware profile based on an WebLogic Domain profile, meet the prerequisites mentioned in Prerequisites for Provisioning the WebLogic Domain Profile.

3. Select the profile from the Profiles table on the Middleware Provisioning page, then click **Provision.**

4. For provisioning a SOA Domain and Oracle Home from a profile, follow the steps mentioned in Cloning from an Existing WebLogic Domain Based-Profile.

5. If you want to customize the settings in the destination environment, follow the steps mentioned in Customizing the Destination Environment from an Existing WebLogic Domain Based-Profile.

Use Case 4: Provisioning from an Existing SOA Home

If you have an Oracle Home that you want to provision as it is (without having to create a profile), then you can do so by selecting the Oracle Home source target in the Provision Fusion Middleware procedure. For more information, see Provisioning a Fusion Middleware Domain from an Existing Oracle Home.

Use Case 5: Scaling Up an Existing SOA Domain

To scale up a SOA Domain to include one or more managed servers, run the Scaleup/Scale Out Middleware procedure from the Deployment Procedures table on the Middleware Provisioning page. For more information, see Scaling Up / Scaling Out Fusion Middleware Domains .

Use Case 6 - Cloning a database in WebLogic Domain

A database can be cloned from the source domain at the same time the domain is being cloned. To clone a database, the source database must be discovered as a managed target in Enterprise Manager. This constitutes of creating a profile of the source database and provisioning the profile.

For an overview of database cloning methods, see Overview of Classic Cloning Methods.

The database cloning for WebLogic Server domain, SOA, Oracle Service Bus, WebCenter can be accomplished in the following ways:

1. The user can manually clone the database from the source domain to the destination domain before provisioning. The destination database inherits the schema from the original database.

2. The user can choose to export the database metadata as part of provisioning. This exports the product metadata necessary to clone the domain. The user can clone the application related schema later. Exporting the metadata is supported from SOA release 11g onwards and the schema creation is supported from SOA release 12c onwards.

> **Note:**
>
> While cloning the WebLogic domain, the entire database along with schema must be cloned in the destination domain before provisioning. Else, the cloning fails.

The following tables list the mapping of database cloning process supported with schema for the respective domains and releases.

Table 4-3   Database cloning process with schema supported for SOA domain

Case	SOA 12c	SOA 11g
User exports metadata during profile creation and provides a blank database with no schema during provisioning. The schema is created through Provisioning user interface in release 12c onwards.	Yes	No
User exports metadata during profile creation and provides a blank database with empty schema pre-created during provisioning.	Yes	Yes
User exports metadata during profile creation and provides a cloned database during provisioning.	No	No
Metadata not exported during profile creation, blank database with no schema provided during provisioning.	No	No
Metadata not exported during profile creation, blank database with schema provided during provisioning.	No	No
Metadata not exported during profile creation, cloned database provided during provisioning.	Yes	Yes

Table 4-4   Database cloning process with schema supported for Service Bus domain

Case	Service Bus 12c	Service Bus 11g
User exports metadata during profile creation and provides a blank database with no schema during provisioning. The schema is created through Provisioning user interface in release 12c onwards.	Yes	No
User exports metadata during profile creation and provides a blank database with empty schema pre-created during provisioning.	Yes	Yes
User exports metadata during profile creation and provides a cloned database during provisioning.	No	No
Metadata not exported during profile creation, blank database with no schema provided during provisioning.	No	No
Metadata not exported during profile creation, blank database with schema provided during provisioning.	No	No
Metadata not exported during profile creation, cloned database provided during provisioning.	Yes	Yes

Table 4-5   Database cloning process with schema supported for WebCenter domain

Case	WebCenter 12c	WebCenter 11g
User exports metadata during profile creation and provides a blank database with no schema during provisioning. The schema is created through Provisioning user interface in release 12c onwards.	Yes	No
User exports metadata during profile creation and provides a blank database with empty schema pre-created during provisioning.	Yes	Yes
User exports metadata during profile creation and provides a cloned database during provisioning.	No	No
Metadata not exported during profile creation, blank database with no schema provided during provisioning.	No	No

Table 4-5   (Cont.) Database cloning process with schema supported for WebCenter domain

Case	WebCenter 12c	WebCenter 11g
Metadata not exported during profile creation, blank database with schema provided during provisioning.	No	No
Metadata not exported during profile creation, cloned database provided during provisioning.	Yes	Yes

> **Note:**
>
> In case of WebCenter, it is recommended to clone the database instead of exporting the metadata.

Table 4-6   Database cloning process with schema supported for JRF domain

Case	JRF
User exports metadata during profile creation and provides a blank database with no schema during provisioning. The schema is created through Provisioning user interface in release 12c onwards.	No
User exports metadata during profile creation and provides a blank database with empty schema pre-created during provisioning.	No
User exports metadata during profile creation and provides a cloned database during provisioning.	No
Metadata not exported during profile creation, blank database with no schema provided during provisioning.	No
Metadata not exported during profile creation, blank database with schema provided during provisioning.	No
Metadata not exported during profile creation, cloned database provided during provisioning.	Yes

> **Note:**
>
> Metadata includes MDS (Metadata Services) and OPSS (Oracle Platform Security Services) data.

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5

Provisioning the Service Bus Domain and Oracle Homes

This chapter describes how you can use the Middleware Provisioning solution offered in Enterprise Manager Cloud Control to provision an Service Bus Domain or/and an Oracle Home.

> **Note:**
>
> Before provisioning an Service Bus Domain/Oracle Home, you must downloaded and apply the patch 20046866.

In particular, this chapter contains the following topics:

- Getting Started with Provisioning Service Bus Domain and Oracle Home
- Supported Versions of Service Bus for Provisioning
- Before you Begin Provisioning Service Bus Domain and Oracle Home
- Use Case 1: First Time Provisioning of a Service Bus Domain
- Use Case 2: Provisioning from a Service Bus Home Based Provisioning Profile
- Use Case 3: Cloning from a Provisioning Profile based on an Existing Service Bus Domain
- Use Case 4: Provisioning from an Existing Service Bus Home
- Use Case 5: Scaling Up an Existing Service Bus Domain

Getting Started with Provisioning Service Bus Domain and Oracle Home

This section helps you get started by providing an overview of the steps involved in provisioning WebLogic Domain and Middleware Home using the Fusion Middleware Deployment procedure.

Table 5-1   Getting Started with Service Bus Provisioning

Step	Description	Reference Links
Step 1	**Selecting the Use Case.** This chapter covers the use cases for provisioning an Service Bus Domain and Service Bus Home. Select the use case that best matches your requirements.	• To learn about first time provisioning of an Service Bus Domain, see Use Case 1: First Time Provisioning of a Service Bus Domain. • To learn about provisioning from an Service Bus home based provisioning profile, see Use Case 2: Provisioning from a Service Bus Home Based Provisioning Profile. • To learn about cloning from an existing Service Bus domain, see Use Case 3: Cloning from a Provisioning Profile based on an Existing Service Bus Domain. • To learn about provisioning from an existing Service Bus home, see Use Case 4: Provisioning from an Existing Service Bus Home. • To learn about scaling out an Service Bus domain, see Use Case 5: Scaling Up an Existing Service Bus Domain.
Step 2	**Meeting Prerequisites to Provision a Middleware Profile** Before you run the Fusion Middleware Deployment Procedure, there are a few prerequisites that you must meet.	To learn about the prrequisites for provisioning an Service Bus domain or home, see Before you Begin Provisioning Service Bus Domain and Oracle Home.
Step 3	**Running the Fusion Middleware Deployment Procedure** Run this deployment procedure to successfully provision a Weblogic Domain and/or an Oracle Home.	To learn about provisioning from an Installation Media Profile or an Oracle Home Profile, see Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile. To learn about provisioning from a WebLogic Domain Profile, see Provisioning a Fusion Middleware Domain from an Existing Oracle Home. To provision from an existing home, see Cloning from an Existing WebLogic Domain Based-Profile. To scale out from an Service Bus domain, see Scaling Up / Scaling Out Fusion Middleware Domains .

Supported Versions of Service Bus for Provisioning

The versions listed in the following table support Service Bus provisioning.

Product	Version
Oracle Repository Creation Utility (RCU)	11*g*
Oracle Service Bus	11*g*

Before you Begin Provisioning Service Bus Domain and Oracle Home

You must keep the things to keep in mind before you actually start creating middleware profiles and provisioning from these profiles.

In particular, this section contains the following topics:

- Create Middleware Roles and Assign Privileges
- Setting Named Credentials and Privileged Credentials for the Middleware Targets
- (Applicable only for a Cloning WebLogic Domain Use Case) Cloning a Database

Create Middleware Roles and Assign Privileges

In a typical data center, the main users of Deployment Procedures are Designers (Lead Administrators) and Operators. Deployment Procedure privileges enable users to perform some design-time activities such as creating the profiles, granting accesses on the profile, creating profile lock-downs, and run-time activities like running the Deployment Procedure to provision software applications.

For Middleware Provisioning, you will need to create Administrators with the following roles:

Role: EM Super Administrator

Table 5-2 lists the roles based on which you can create administrators for Middleware Provisioning.

Table 5-2   Creating Administrators with the Required Roles

Enterprise Manager Role	Description
EM_PROVISIONING_DESIGNER	Role has privileges for provisioning designer
EM_PROVISIONING_OPERATOR	Role has privileges for provisioning operator

For instructions to create administrators with these roles, see Creating Enterprise Manager User Accounts.

Setting Named Credentials and Privileged Credentials for the Middleware Targets

Oracle recommends that you set the Named Credentials for normal operating system user account (*Oracle*) and Named Credentials for privileged user accounts (*root*) to perform any of the provisioning tasks in Enterprise Manager Cloud Control.

For instructions to set the Named Credentials, see Setting Up Credentials.

(Applicable only for a Cloning WebLogic Domain Use Case) Cloning a Database

You must have cloned a database from the source domain at the same time that the domain was being cloned. To clone a database, you must have discovered the source database as a managed target in Enterprise Manager, following which you can create a profile out of the source database, and then provision the profile to complete the cloning process.

Use Case 1: First Time Provisioning of a Service Bus Domain

This use case describes how you can perform a first time install of Oracle Fusion Middleware software, and first time provisioning of a WebLogic Domain. This is particularly useful when

you do not have an existing domain in your data center, or if you do not wish to clone from a provisioning profile based upon an existing domain. To do so, follow these steps:

1. Log in with Designer privileges (`EM_PROVISIONING_DESIGNER` role) to create a Installation Media Profile. To do so, follow the steps mentioned in Creating a Provisioning Profile Based on an Installation Media.

2. *(optional)* You may choose to create some lock-downs and save the profile as a template after it passes the prerequisite checks. Doing so can be useful when you have to run the same profile multiple times for provisioning middleware products. The added benefit of saving the profile as a template is that you can grant accesses to Operators so they can run the profiles and carry out the Middleware Provisioning.

3. Before you provision a middleware profile based on an Installation Media profile, meet the prerequisites mentioned in Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile.

4. Log in with Operator Privileges (`EM_PROVISIONING_OPERATOR`). Select the template from the Deployment Procedure table, and click **Launch.**

   If you have not created a template out of the profile, you can select your profile from the Profiles table on the Middleware Provisioning page, then click **Provision.**

5. For provisioning a Service Bus Domain and Oracle Home from an Installation Media, follow the steps mentioned in Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile.

6. If you want to customize the settings in the destination environment, follow the steps mentioned in Customizing the Destination Environment from an Installation Media Based-Profile or an Oracle Home Based-Profile.

Use Case 2: Provisioning from a Service Bus Home Based Provisioning Profile

This use case describes how you can create a Gold Image from an existing Oracle Home (Service Bus) that has perhaps been patched, and provision this using the Oracle Home profile. This is particularly useful when you need to install Oracle Fusion Middleware software with or without a new WebLogic Domain.

1. Log in with Designer privileges (`EM_PROVISIONING_DESIGNER` role) to create an Oracle Home (Service Bus) Profile. To do so, follow the steps mentioned in Creating a Provisioning Profile Based on an Oracle Home.

2. Before you provision a middleware profile based on an Oracle Home, meet the prerequisites mentioned in Prerequisites for Provisioning the Installation Media Profile or the Oracle Home Profile.

3. Select the profile from the Profiles table on the Middleware Provisioning page, then click **Provision.**

4. For creating a clone of an existing domain's Oracle Home (with binaries and patches) but no domain configuration, follow the steps mentioned in Provisioning of a new Fusion Middleware Domain from an Installation Media Based-Profile or an Oracle Home Based-Profile.

5. If you want to customize the settings in the destination environment, follow the steps mentioned in Customizing the Destination Environment from an Installation Media Based-Profile or an Oracle Home Based-Profile.

Use Case 3: Cloning from a Provisioning Profile based on an Existing Service Bus Domain

This use case describes how you can clone a WebLogic Domain from a provisioning profile based upon an existing WebLogic Domain. This is particularly useful when you need to install Oracle Fusion Middleware software and configure a new WebLogic Domain.

1. Log in with Designer privileges (`EM_PROVISIONING_DESIGNER` role) to create a WebLogic Domain Profile. To do so, follow the steps mentioned in Creating a Provisioning Profile Based on a WebLogic Domain.

2. Before you provision a middleware profile based on an WebLogic Domain profile, meet the prerequisites mentioned in Prerequisites for Provisioning the WebLogic Domain Profile.

3. Select the profile from the Profiles table on the Middleware Provisioning page, then click **Provision.**

4. For provisioning a Service Bus Domain and Oracle Home from a profile, follow the steps mentioned in Cloning from an Existing WebLogic Domain Based-Profile.

5. If you want to customize the settings in the destination environment, follow the steps mentioned in Customizing the Destination Environment from an Existing WebLogic Domain Based-Profile.

Use Case 4: Provisioning from an Existing Service Bus Home

If you have an Oracle Home that you want to provision as it is (without having to create a profile), then you can do so by select the Oracle Home source target in the Provision Fusion Middleware procedure. For more information, see Provisioning a Fusion Middleware Domain from an Existing Oracle Home.

Use Case 5: Scaling Up an Existing Service Bus Domain

To scale up a Service Bus Domain to include one or more managed servers, run the Scaleup/ Scale Out Middleware procedure from the Deployment Procedures table on the Middleware Provisioning page. For more information, see Scaling Up / Scaling Out Fusion Middleware Domains .

6
Middleware Provisioning using the EM CLI

This chapter describes how you can use the command line option Enterprise Manager Command Line Interface offered by Oracle to create, describe, list, delete, and customize the Middleware Profiles.
In particular, this chapter covers the following:

- Creating Middleware Provisioning Profiles
- Submitting the Procedure using EM CLI
- Listing Middleware Provisioning Profiles
- Describing Provisioning Profiles
- Deleting Provisioning Profiles

Creating Middleware Provisioning Profiles

Profiles are like templates that you can create and store in Software Library. Once a profile is created, it can be launched numerous times to provision WebLogic Domain and/or Oracle Home. The advantage of using a profile is that you can ensure that future WebLogic installations follow a standard, consistent configuration.

This chapter covers following sections:

- Creating a WebLogic Domain Profile
- Creating an Oracle Home Profile
- Creating an Installation Media Profile

Creating a WebLogic Domain Profile

To create a Fusion Middleware Provisioning Profile from a WebLogic Domain, use the EM CLI verb `create_fmw_domain_profile`.

```
emcli create_fmw_domain_profile
-name="Profile Name"
-ref_target="Reference Target Name"
[-description="Profile Description"]
[-oh_cred="Oracle Home Owner Credentials"]
[-includeOh]
[-schedule=
start_time:yyyy/MM/dd HH:mm;
[tz:{java timezone ID}];
[grace_period:xxx];
]

[ ] indicates that the parameter is optional.

Description for the options:

-name
Name of the WebLogic Domain profile.
```

```
-ref_target
Name of the reference target used to create the WebLogic Domain profile.

-description
A short description for the WebLogic Domain profile you create.

 -oh_cred
        Named credential that will be used to access the reference host.
        Format: CREDENTIAL_NAME:CREDENTIAL_OWNER.
        All operations will be performed on the Administration Server host.
        Credentials of the Oracle Home owner on the Administration Server host are
required.
        If no named credential is provided, then preferred host credentials for the
Oracle Home target will be used.

-wls_cred
        Named credential used to access the Administration Server. This is an optional
parameter.
        To pass the credential parameter, enter a name:value pair in the following
format:

credential_name:credential_owner.
            Where,
              Credential_name is the name of the named credential.
              Credential_owner is the credentials of the Administrator of the WebLogic
Domain.
        All operations are performed in online mode (using T2P) in case of a Fusion
Middleware domain.
        If no named credential is provided, the preferred administrator credentials for
the domain target will be used.

-includeOh
        Whether the Oracle Home binaries have to be included in the profile or not.

-schedule
        The schedule for the Deployment Procedure.
        If not specified, the procedure will be executed immediately.
                start_time: when the procedure should start.
                        tz: the timezone ID.
              grace_period: grace period in minutes.
```

Following examples describe how to create a WebLogic Domain profile:

- A WebLogic Domain called BitlessDomainProfile is created using the reference target /
  `Farm01_base_domain/base_domain` at the specified schedule. Since the Oracle home
  parameter is not passed, a plain WebLogic domain without the Oracle home binaries is
  created. Also, since the Oracle home credentials haven't been specified, the preferred host
  credentials for the target home is used.

```
emcli create_fmw_domain_profile
-name="BitlessDomainProfile"
-ref_target="/Farm01_base_domain/base_domain"
-description="A domain profile without software bits"
-schedule="start_time:2014/6/21 21:23;tz:America/New_York;grace_period:60"
```

- A WebLogic Domain profile along with Oracle home binaries called *DomainProfilewithBits*
  is created immediately. This profile is created from the reference target /
  `Farm01_base_domain/base_domain` using the specified named credentials.

```
 emcli create_fmw_domain_profile
-name="DomainProfileWithBits"
```

```
-ref_target="/Farm01_base_domain/base_domain"
-oh_cred="MY_HOST_CRED:SYSMAN"
-includeMWH
```

- The is created in the Software Library in `Fusion Middleware Provisioning/Profiles` directory. Since the schedule is not mentioned, the job runs immediately.

```
 emcli create_fmw_domain_profile
-name=D=SoaProfile
-ref_target="="Farm01_SoaDomain/SoaDomain"
```

Output:

For example you will see following attributes when the profile has been submitted successfully:

- `instance_name: 'CreateFmwProfile-SoaProfile_SYSMAN_07_09_2014_11_36_AM'`

- `instance_guid: 'FDC7FC56E2CF2972E04373B1F00A1512'`

> **✎ Note:**
>
> To track the status of the profile being created, use the command:
>
> `emcli get_instance_status -instance=FDC7FC56E2CF2972E04373B1F00A1512 -xml -details -showJobOutput`

Creating an Oracle Home Profile

To create a Fusion Middleware Provisioning Profile from an Oracle Home target, use the EM CLI verb `create_fmw_home_profile_verb`.

```
emcli create_fmw_home_profile
-name="Profile Name"
-ref_target="Reference Target Name"
[-description="Profile Description"]
[-oh_cred="Oracle Home Owner Credentials"]
[-schedule=
start_time:yyyy/MM/dd HH:mm;
[tz:{java timezone ID}];
[grace_period:xxx];
]


[ ] indicates that the parameter is optional.


Description for the options:
-name
Name of the Oracle home profile.

-ref_target
Name of the Oracle Home target used as reference to create the profile.

-description
A short description for the Oracle home profile you create.

-oh_cred
Named credentials used to access the reference host. This is an optional parameter.
To pass the credential parameter, enter a name:value pair in the following format:
credential_name:credential_owner.
```

```
Where,
Credential_name is the name of the named credential.
Credential_owner is the credentials of the Oracle home owner on the Administration
Server host.
If no named credential is provided, the preferred host credential for the Oracle home
target will be used.

-schedule
The schedule for the Deployment Procedure.
If not specified, the procedure will be executed immediately.
To specify a value, enter:
start_time: when the procedure should start.
tz: the timezone ID.
grace_period: grace period in minutes.
```

Following examples describe how to create an Oracle Home profile:

- An Oracle Home profile is created in the Software Library in `Fusion Middleware Provisioning/Profiles` directory. Since the schedule is not mentioned, the job runs immediately.

  ```
  emcli  create_fmw_home_profile
  -name=SoaProfile
  -ref_target="WebLogicServer10_3_6_0_<agent host name>.example.com_6316"
  ```

  Output:

  You will see the following attributes when the profile has been submitted successfully:

  - `instance_name: 'CreateFmwProfile-SoaProfile_SYSMAN_07_09_2014_11_36_AM'`

  - `instance_guid: 'FDC7FC56E2CF2972E04373B1F00A1512'`

  > **Note:**
  >
  > To track the status of the profile being created, use the command:
  >
  > ```
  > emcli get_instance_status -instance=FDC7FC56E2CF2972E04373B1F00A1512
  > -xml -details -showJobOutput
  > ```

- An Oracle home profile called OhProfile1 is created using the reference host target at the specified schedule using preferred credentials.

  ```
  emcli create_fmw_home_profile
  -name="OhProfile1"
  -ref_target=""WebLogicServer_10.3.6.0_host.example.com_5033""
  -description="An Oracle Home profile"
  -schedule="start_time:2014/6/21 21:23;tz:America/New_York;grace_period:60"
  ```

- An Oracle home profile named OhProfile2 is created immediately from the reference host target using named credentials.

  ```
  emcli create_fmw_home_profile
  -name="OhProfile2" -ref_target="WebLogicServer_11.4.1.0_host.example.com_5023"
  -oh_cred="MY_HOST_CRED:SYSMAN"
  ```

Creating an Installation Media Profile

To create a profile using the Oracle Fusion Middleware installation media, use the EM CLI verb `create_inst_media_profile_verb`

```
emcli create_inst_media_profile
-name="Profile Name"
-host="Reference Target Name"
-version="Reference Target Name"
-platform="Reference Target Name"
[-description="Profile Description"]
[-host_cred="Oracle Home Owner Credentials"]
-files=
WebLogic:WLSFile1;
SOA:SOAFile1,SOAFile2;
OSB:OSBFile;
RCU:RCUFile;
```

`[ ]` indicates that the parameter is optional.

Description for the options:
-name
Name of the installation media profile.

-host
Name of the host target where the installation media files are stored.

-version
Version of the installation media files.

-platform
Platform for which the installation media is applicable.

-description
A short description for the installation media profile.

-host_cred
Named credentials used to access the reference host. This is an optional parameter. To
pass the credential parameter, enter a name:value pair in the following format:
credential_name:credential_owner.
Where,
Credential_name is the name of the named credential.
Credential_owner is the credentials of the Oracle home owner on the Administration
Server host.
If no named credential is provided, the preferred host credential for the host target
will be used.
.
-files
List of files that have to be uploaded to Software Library. These files are passed in
the format product:file1,file2. The Installation Media profile supports the following
products: WebLogic, SOA, OSB, and RCU. Note that, to create any of these profiles, you
must upload the WebLogic media file.

Following examples describe how to create an Oracle Home profile:

• Upload an installation media profile named `WebLogic1036Installer` containing WebLogic
  jar file called `wls1036_generic.jar` to the Software Library from the host
  `myhost.example.com`. Additionally, you must provide the platform and version details for
  the installation media file. Since you have not passed any credential as a parameter, the
  preferred host credentials will be used to access the WebLogic jar file.

  ```
  emcli create_inst_media_profile
  -name="WebLogic1036Installer"
  -host="host.example.com"
  -description="WebLogic Server 10.3.6.0 installer"
  -version="10.3.6.0"
  ```

```
-platform="Generic"
-files="WebLogic:/u01/media/weblogic/wls1036_generic.jar"
```

- Upload the SOA and WLS installation media files to the Software Library from the host myhost.example.com. Additionally, you must provide the platform and version details for the installation media file. The profile called SOA+WLSInstaller is created using the named credentials specified.

```
 emcli create_inst_media_profile
-name="SOA+WLSInstaller"
-host="myhost.example.com"
-description="SOA 11.1.1.7.0 and WebLogic Server 10.3.6.0 installer"
-version="11.1.1.7.0"
-platform="Generic"
-host_cred="MY_HOST_CRED:SYSMAN"
-files="WebLogic:/u01/media/weblogic/wls1036_generic.jar;SOA:/u01/media/soa/
soa1.zip,/u01/media/soa/soa2.zip"
```

- An Oracle Home profile is created in the Software Library in `Fusion Middleware Provisioning/Profiles` directory. Since the schedule is not mentioned, the job runs immediately.

```
emcli  create_inst_media_profile
-name="WebCenter Install Media"
-host=slc03qtn.example.com
-description="WC 11.1.1.8.0 and WebLogic Server 10.3.6.0 installer and RCU"
-version="11.1.1.8.0"
-platform="2000"
-host_cred="BBANTHIA:SYSMAN"
-files="WebLogic:/net/adcnas438/export/emgpqa/provisioning/fmwprov/linux64/shiphomes/
upinsmed_wls/wls1036_generic.jar;WCP:/net/slcnas478/export/farm_em_repos/emgpqa/
provisioning/fmwprov/linux64/shiphomes/wcp_11.1.1.8.0/wc.zip;WCC:/net/slcnas478/
export/farm_em_repos/emgpqa/provisioning/fmwprov/linux64/shiphomes/wcc_11.1.1.8.0/
ecm_main1.zip,/net/slcnas478/export/farm_em_repos/emgpqa/provisioning/fmwprov/
linux64/shiphomes/wcc_11.1.1.8.0/ecm_main2.zip;RCU:/net/slcnas478/export/
farm_em_repos/emgpqa/provisioning/fmwprov/linux64/shiphomes/wcrcu_11.1.1.8.0/
rcuHome.zip"
```

Submitting the Procedure using EM CLI

To automate the process of provisioning using the command line, submit your procedure using the Enterprise Manager Command Line Interface (EMCLI) utility. The EMCLI enables you to access Enterprise Manager Cloud Control functionality from text-based consoles (shells and command windows) for a variety of operating systems. You can call Enterprise Manager functionality using custom scripts, such as SQL*Plus, OS shell, Perl, or Tcl, thus easily integrating Enterprise Manager functionality with your company's business process.

> **Note:**
>
> Use the procedure below to generate a template input file based on configuration deployment procedure functionality:
>
> 1. From the **Middleware Provisioning** page launch the profile.
>
> 2. Enter the necessary values.
>
> 3. Provide a name to the provisioning deployment procedure and save.
>
> 4. Log in to EMCLI using the following commands:
>
>    ```
>    emcli login -username=sysman -password=sysman
>
>    emcli sync
>    ```
>
> 5. Run the following command to fetch the GUID of the configuration deployment procedure:
>
>    ```
>    emcli get_procedures | grep <deployment procedure name>
>    ```
>
> 6. Run the following command to fetch an example input file which contains all the values:
>
>    ```
>    emcli describe_procedure_input -
>    procedure=1965463666C90D9CE053E37BF00A8C65
>    ```
>
>   The result of the above command becomes the content of the input file.
>
> 7. Make the required changes to the input file including the password.
>
> 8. Run the following commands to submit the deployment procedure:
>
>    ```
>    emcli submit_procedure -input_file=data:/scratch/<input file
>    name>.xml -name=ProvisionMiddleware -instance_name=<new deployment
>    procedure name>
>    ```

Listing Middleware Provisioning Profiles

This section describes how you can list all the Fusion Middleware Provisioning profiles that you have created in Enterprise Manager.

In particular, this section covers the following topics:

- Listing All the Profiles
- Listing All the WebLogic Domain Profiles
- Listing All the Oracle Home Profiles
- Listing All the Installation Media Profiles

Listing All the Profiles

To list all the Fusion Middleware Profiles, run the following command:

```
emcli list_fmw_profiles
        [-source_type="Profile Source"]
```

Description for the options:

```
-source_type
    Valid values: weblogic_domain, oracle_home or install_media.
    Profiles of only this type as source will be shown.
```

Following examples describe how to list an Oracle Home profile:

•   To list all the Middleware Provisioning Profiles, run the following command:

```
emcli list_fmw_profiles
```

Output:

Location	Products	Platform	Version	Owner
Fusion Middleware Provisioning/Profiles/SoaBitlessProfile	Oracle SOA	Linux x86-64	10.3.6.0	SYSMAN
Fusion Middleware Provisioning/Profiles/SoaGoldImage	Oracle SOA	Linux x86-64	10.3.6.0	SYSMAN
Fusion Middleware Provisioning/Profiles/WebCenter Install Media	Oracle WebCenter Content	Generic Platform	11.1.1.8.0	SYSMAN

Listing All the WebLogic Domain Profiles

To list all the WebLogic Domain Profiles, run the following command:

```
emcli list_fmw_profiles
      [-source_type="Profile Source"]
```

Description for the options:
```
    -source_type
        Valid values: weblogic_domain, oracle_home or install_media.
        Profiles of only this type as source will be shown.
```

Following examples describe how to list a domain based profile:

•   To list all the WebLogic Domain Provisioning Profiles, run the following command:

```
emcli list_fmw_profiles
-source_type=weblogic_domain
```

Output:

Location	Products	Platform	Version	Owner
Fusion Middleware Provisioning/Profiles/SoaBitlessProfile	Oracle SOA	Linux x86-64	10.3.6.0	SYSMAN

Listing All the Oracle Home Profiles

To list all the Oracle Home Profiles, run the following command:

```
emcli list_fmw_profiles
      [-source_type="Profile Source"]
```

Description for the options:
```
    -source_type
        Valid values: weblogic_domain, oracle_home or install_media.
        Profiles of only this type as source will be shown.
```

Following examples describe how to list a Oracle Home based profile:

- To list all the WebLogic Domain Provisioning Profiles, run the following command:

```
emcli list_fmw_profiles
-source_type=oracle_home
```

Output:

Location	Products	Platform	Version	Owner
Fusion Middleware Provisioning/Profiles/ SoaGoldImage	Oracle SOA	Linux x86-64	10.3.6.0	SYSMAN

Listing All the Installation Media Profiles

To list all the Installation Media profiles, run the following command:

```
emcli list_fmw_profiles
        [-source_type="Profile Source"]
```

Description for the options:
```
    -source_type
        Valid values: weblogic_domain, oracle_home or install_media.
        Profiles of only this type as source will be shown.
```

Following examples describe how to list an Oracle Home profile:

- To list all the Install Media based Profiles, run the following command:

```
emcli list_fmw_profiles
-source_type=install_media
```

Output:

Location	Products	Platform	Version	Owner
Fusion Middleware Provisioning/Profiles/ WebCenter Install Media	Oracle WebCenter Content	Generic Platform	11.1.1.8.0	SYSMAN

Describing Provisioning Profiles

To view the summary of the Fusion Middleware Provisioning Profile that you have created in Cloud Control, run the following command:

Usage:

```
emcli describe_fmw_profile
-location="Profile Location"
```
Description for the options:
```
-location
        Complete Software Library path to the Profile.
        Use list_fmw_profiles to know the complete path.
```

In particular, this section covers the following topics:

- Describing a WebLogic Domain Profile
- Describing an Oracle Home Profile

• Describing an Installation Media Profile

Describing a WebLogic Domain Profile

To view a summary of the WebLogic Domain Profile, run the following command:

Usage:

```
emcli describe_fmw_profile
-location="Fusion Middleware Provisioning/Profiles/SoaBitlessProfile"

Output
Location: Fusion Middleware Provisioning/Profiles/SoaBitlessProfile
Created By: SYSMAN
Created On: Sun, 6 Jul 2014
URN:
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C0874
E04373B1F00AEC31:0.1
```

Attachments:

Name	Size	Content Type	Added By	Added On
nmMovePlan.xml	6.95 KB	text/plain	SYSMAN	Sun, 6 Jul 2014
mdm-url-resolver.xml	268 Bytes	text/plain	SYSMAN	Sun, 6 Jul 2014
domainMovePlan.xml	56.91 KB	text/plain	SYSMAN	Sun, 6 Jul 2014

```
Source: WebLogic Domain
Oracle Home Included: No
Node Manager Included: Yes
Platform: Linux x86-64
Version: 10.3.6.0
```

Oracle Homes:

```
Product: Oracle SOA
Version: 11.1.1.7.0
```

WebLogic Domain:

```
Domain Name: SoaDomain
Size: 611.45 MB
Products: Oracle SOA
```

Name	Host	Listen Address	Port Machine	Cluster	Maximum Heap	Average CPU Usage
AdminServer	<agent host name>.example.com	<agent host name>.example.com	7001 LocalMachine		1365	0.361
Soa_server1	<agent host name>.example.com	<agent host name>.example.com	8001LocalMachine	cluster_soa	1365	0.717

Data Sources:

Name	Username	URL	Target
EDNDataSource	SOA_SOAINFRA	jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com	cluster_soa
EDNLocalTxDataSource	SOA_SOAINFRA	jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com	cluster_soa
OraSDPMDataSource	SOA_SOAINFRA	jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com	cluster_soa
OraSDPMDataSource	SOA_SOAINFRA	jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com	cluster_soa
SOALocalTxDataSource	SOA_SOAINFRA	dbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com	cluster_soa
mds-owsm	SOA_MDS	jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com	cluster_soa
mds-soa	SOA_MDS	jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com	cluster_soa

JMS Servers:

Name	Persistent Store	Directory	Target
BPMJMSServer_auto_1	BPMJMSFileStore_auto_1	UMSJMSFileStore_auto_1	soa_server1
PS6SOAJMSServer_auto_1	PS6SOAJMSFileStore_auto_1	UMSJMSFileStore_auto_1	soa_server1
SOAJMSServer_auto_1	SOAJMSFileStore_auto_1	SOAJMSFileStore_auto_1	soa_server1
UMSJMSServer_auto_1	UMSJMSFileStore_auto_1	UMSJMSFileStore_auto_1	soa_server1

Describing an Oracle Home Profile

To view a summary of the Oracle Home Profile, run the following command:

Usage:

```
emcli describe_fmw_profile
-location="Fusion Middleware Provisioning/Profiles/SoaGoldImage"

Output
Location: Fusion Middleware Provisioning/Profiles/SoaGoldImage
Created By: SYSMAN
Created On: Tue, 8 Jul 2014
URN:
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B47
E04373B1F00AF708:0.1
Source: Oracle Home
Platform: Linux x86-64
Version: 10.3.6.0
```

Oracle Homes:

```
Product: Oracle SOA
Version: 11.1.1.7.0
```

Describing an Installation Media Profile

To view a summary of the Installation Media Profile, run the following command:

Usage:

```
emcli describe_fmw_profile
-location="Fusion Middleware Provisioning/Profiles/WebCenter Install Media"

Output:
Location: Fusion Middleware Provisioning/Profiles/WebCenter Install Media
Description: WC 11.1.1.8.0 and WebLogic Server 10.3.6.0 installer and RCU
Created By: SYSMAN
Created On: Sun, 6 Jul 2014
URN:
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7EE
EEA369A5E04373B1F00AE77C:0.1
Source: Installation Media
Product: Oracle WebCenter
Platform: Generic Platform
Version: 11.1.1.8.0
```

Files:

Product	File	Size
Oracle WebCenter Content	ecm_main1.zip	2.34 GB
	ecm_main2.zip	1.91 GB
Oracle RCU	PS6SOAJMSFileStore_auto_1	496.16 MB
Oracle WebCenter Portal	SOAJMSFileStore_auto_1	1.96 GB
Oracle WebLogic Server	UMSJMSFileStore_auto_1	1,019.01 MB

Describing an Exported Domain/Partiton Profile

To view a summary of the Exported Domain/Partiton Profile, run the following command:

Usage:

```
emcli describe_fmw_profile
-location="WebLogic Domain Partition Provisioning/Profiles/exportDomain"

Output
Location: WebLogic Domain Partition Provisioning/Profiles/exportDomain
Created By: SYSMAN
Created On: Mon, 16 Oct 2017
URN:
oracle:oracle:defaultService:em:provisioning:1:cmp:COMP_Component:PartitionProfile:5BB150
A40646CFC6E0535B31C40A1737:0.1
```

Attachments:

Name	Size	Content Type	Added By	Added On
base_domain-attributes.json	1.64 KB	text/plain	SYSMAN	Mon, 16 Oct 2017

```
Type: WebLogic Domain Partition ProfileOracle Home Included: No
Platform: Linux x86-64
Version: 12.2.1.3.0
Source: WebLogic Domain
Domain Name: base_domain
```

Virtual Targets

Name	URI	Prefix	Host Name	Target
${PARTITION_NAME}	-AdminServer	-virtualTarget	/${PARTITION_NAME}	AdminServer
${PARTITION_NAME}	-Cluster_1	-virtualTarget	/${PARTITION_NAME}	Cluster_1

Example Response:

```
{
    "location": "WebLogic Domain Partition Provisioning/Profiles/exportedDomain",
    "createdBy": "SYSMAN",
    "createdOn": "Mon, 16 Oct 2017",
    "urn":
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:PartitionProfile:5BAF9D80FF70
5B3CE0535B31C40ABEFC:0.1",
    "attachments": [
        {
            "fileName": "base_domain-attributes.json",
            "size": "1.64 KB",
            "contentType": "text/plain",
            "addedBy": "SYSMAN",
            "addedOn": "Mon, 16 Oct 2017"
        }
    ],
    "source": "Oracle Home",
    "platform": null,
    "wlsVersion": null
}
```

Deleting Provisioning Profiles

To delete the Fusion Middleware Provisioning Profile from Software Library, run the following:

Usage:

```
emcli delete_fmw_profile
        -location="Profile Location"
```

Description for the options:
```
    -location
Complete Software Library path to the Profile.
        Use list_fmw_profiles to know the complete path.
```

Examples:

To delete a profile by the name MyProfile, run the following command:

```
emcli delete_fmw_profile
            -location="Fusion Middleware Provisioning/Profiles/MyProfile"
```

To delete a DomainProfile, run the following command:

```
emcli delete_fmw_profile
            -location="Fusion Middleware Provisioning/Profiles/DomainProfile"
```

Output: The profile Fusion Middleware Provisioning/Profiles/DomainProfile has been deleted successfully.

You can delete only one Fusion Middleware Provisioning Profile at a time.

Describing scaledown_domain usage

To remove specified managed servers from a WebLogic Domain, run the following:

Usage:

```
emcli scaledown_domain
        -domain_target="Domain Target Name"
        -server_list="Server List"
        [-host_cred="Host Credentials"]
        [-wls_cred="WebLogic Administrator Credentials"]
        [-schedule=
                start_time:yyyy/MM/dd HH:mm;
                [tz:{java timezone ID}];
                [grace_period:xxx];
        ]
[ ] indicates that the parameter is optional.
```

Description for the options:

- -domain_target

  Name of the WebLogic domain target.

- -server_list

  Comma separated list of the managed servers names to be removed.

- -host_cred

  Named credential list for OS user that has write permission on the managed servers domain homes. To pass the credential parameter, enter a name:value pair in the following format: `credential_name:credential_owner`.

  where,

  – Credential_name is the name of the named credential.

  – Credential_owner is the credentials of the Oracle home owner on the Administration Server host.

  > **Note:**
  >
  > All the operations will be performed with the same credential if only one is provided, if each managed server requires a different credential, then a list of comma separated credentials will be matched against the list of managed servers. If no named credential is provided, the preferred host credentials will be used.

- -wls_cred

  Named credential used to access the Administration Server. This is an optional parameter. To pass the credential parameter, enter a name:value pair in the following format: `credential_name:credential_owner`.

  where,

- Credential_name is the name of the named credential.

- Credential_owner is the credentials of the Administrator of the WebLogic Domain.

> **Note:**
>
> If no named credential is provided, the preferred administrator credentials for the domain target will be used.

- -schedule

  Specify when to run the deployment procedure. If no value is entered, by default, the procedure runs immediately. To schedule a procedure, provide:

  - start_time: when the procedure should start

  - tz: the timezone ID

  - grace_period: grace period in minutes

Example 1

A single Managed Server named mServer needs to be removed from the WebLogic Domain target /Farm01_base_domain/base_domain at the specified schedule. Since the Managed Server host credentials haven't been specified, the preferred credentials for the target host and domain target are used.

```
emcli scaledown_domain
    -domain_target="/Farm01_base_domain/base_domain"
    -server_list="mServer"
    -schedule="start_time:2014/6/21
21:23;tz:America/New_York;grace_period:60"
```

Describing deploy_jvmd usage

To deploy JVMD agent in a WebLogic Domain, run the following:

Usage:

```
emcli deploy_jvmd
        -domain_name="Domain Target Name"
    [-engine="JVMD Engine URL"]
    [-clusters="Clusters Name"]
    [-servers="Servers Name"]
    [-host_cred="Oracle Home Owner Credentials"]
    [-wls_cred="WebLogic Administrator Credentials"]
    [-deploy_mode="Deploy Mode"]
    [-java_args="Client java arguments"]
    [-schedule=
                start_time:yyyy/MM/dd HH:mm;
        [tz:{java timezone ID}];
        [grace_period:xxx];
    ]
        [-workDir="Working Directory Location"]
        [-libDir="Libraries Directory Location"]

[ ] indicates that the parameter is optional.
```

Description for the options:

- -domain_name

Name of the WebLogic Domain Target where the agent will be deployed.

- -engine

  JVMD Engine URL the agent will communicate to.

- -clusters

  Name of the cluster(s) the JVMD agent will be targeted.

- -servers

  Name of the server(s) the JVMD agent will be targeted.

- -host_cred

  Named credential used to access the reference host. This is an optional parameter.To pass the credential parameter, enter a name:value pair in the following format: `credential_name:credential_owner.`

  where,

  – Credential_name is the name of the named credential.

  – Credential_owner is the credentials of the Oracle home owner on the Administration Server host.

  > **Note:**
  >
  > All the operations will be performed on the Administration Server host. If no named credential is provided, the preferred host credentials for the Oracle home target will be used.

- -wls_cred

  Named credential used to access the Administration Server. This is an optional parameter. To pass the credential parameter, enter a name:value pair in the following format: credential_name:credential_owner.

  where,

  – Credential_name is the name of the named credential.

  – Credential_owner is the credentials of the Oracle home owner on the Administration Server host.

  > **Note:**
  >
  > If no named credential is provided, the preferred administrator credentials for the domain target will be used.

- -deploy_mode

  Deployment mode of the JVMD agent. This is an optional parameter. The valid modes are deploy, redeploy and undeploy. If no mode is provided, the 'deploy' mode will be used by default.

- -java_args

  Client java arguments that will be used to connect to the Administration Server. This is an optional parameter.

- -schedule

Specify when to run the deployment procedure. If no value is entered, by default, the procedure runs immediately. To schedule a procedure, provide:

– start_time: when the procedure should start

– tz: the timezone ID

– grace_period: grace period in minutes

• -workDir

Specify the working directory to be used. This is an optional parameter.

• -libDir

Default directory for extracting native libraries. This is an optional parameter.

Example 1

A JVMD agent is deployed in the domain base_domain at the specified schedule and targeted to two clusters. Also, since the credentials haven't been specified, the preferred credentials for the target are used.

```
emcli deploy_jvmd
        -domain_name="/Farm01_base_domain/base_domain"
        -engine="protocol://myhost.mycompany.com:port"
        -clusters="Cluster1,Cluster2"
        -schedule="start_time:2016/6/21
21:23;tz:America/New_York;grace_period:60"
        -workDir="/u01/mytemp"
```

7

Middleware Profiles Using REST APIs

This chapter describes how you can use REST APIs to create, describe, list, and delete Middleware Profiles. The operations like creating/listing/describing/deleting middleware provisioning profiles, which were only possible from the Cloud Control console is now being additionally supported using a REST request/response interactions.
Profiles are like templates that you can create and store in Software Library. Once a profile is created, it can be launched numerous times to provision WebLogic Domain and/or Oracle Home. The advantage of using a profile is that you can ensure that future WebLogic installations follow a standard, consistent configuration.

In particular, this chapter covers the following:

- Creating Middleware Provisioning Profiles
- Listing Middleware Provisioning Profiles
- Describing Provisioning Profiles
- Deleting Provisioning Profiles

Creating Middleware Provisioning Profiles

This section describes how you can use the REST APIs to create the three different types of provisioning profiles that are supported in Enterprise Manager Cloud Control:

- Creating a WebLogic Domain Profile
- Creating an Oracle Home Profile
- Creating an Installation Media Profile

Creating a WebLogic Domain Profile

To create a profile from a WebLogic Domain, follow these steps:

1. Perform the GET operation on the URL to view the inputs that you need to provide to create a profile.

Table 7-1   GET Request Configuration for Creating a WebLogic Domain Profile

Feature	Description
URL	`:/em/websvcs/restful/extws/cloudservices/fmw/` `provisioning/profile/create/weblogic_domain`
Body	None
Parameters/Constraints	None
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
name: "Name of the profile to be created."
targetName: "Name of the WebLogic Domain target that will be used as reference to
create the profile."
description: "[Optional] Description of the profile that will be created."
credential: "[Optional] Named credential that will be used to access the reference
host. Format: CREDENTIAL_NAME:CREDENTIAL_OWNER. All operations will be performed on
the Administration Server host. Credentials of the Oracle Home owner on the
Administration Server host are required. If no named credential is provided, then
preferred host credentials for the Oracle Home target will be used."
wlsCredential: "[Optional] Named credential that will be used to access the
Administration Server. Format: CREDENTIAL_NAME:CREDENTIAL_OWNER. If no named
credential is provided, then preferred administrator credentials for the domain
target will be used."
includeOh: "[Optional] Whether the Oracle Home binaries have to be included in the
profile or not. Value: true/false"
schedule: "[Optional] The schedule for the Deployment Procedure. If not specified,
the procedure will be executed immediately. Format: start_time:yyyy/MM/dd HH:mm; [tz:
{java timezone ID}]; [grace_period:xxx];
}
```

2. Update the values, and then perform a POST operation.

Table 7-2   POST Request Configuration for Creating a WebLogic Domain Profile

Feature	Description
URL	em/websvcs/restful/extws/cloudservices/fmw/provisioning/ profile/create/weblogic_domain
Request header	
Body	```{ "name":"DomainProfileViaRestAPI", "targetName":"/Farm01_SoaDomain/SoaDomain", "credential":"HOSTCRED:SYSMAN", "description":"Domain Profile", "includeOh":"false" }```
Parameters	NA
Request method	POST
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
instanceName: "CreateFmwProfile-DomainProfileViaRest_SYSMAN_07_09_2014_09_47_AM"
instanceGuid: "FDBDDB0C6767690CE04373B1F00A09E8"
executionGuid: "FDBDDB0C676A690CE04373B1F00A09E8"
executionUrl: "http://<agent host name>:7802/em/faces/core-jobs-
procedureExecutionTracking?
instanceGUID=FDBDDB0C6767690CE04373B1F00A09E8&showProcActLink=yes&executionGUID=FDBDD
B0C676A690CE04373B1F00A09E8"
name: "DomainProfileViaRestAPI"
targetName: "/Farm01_SoaDomain/SoaDomain"
description: "Domain Profile"
credential: "HOSTCRED:SYSMAN"
```

```
includeOh: "false"
}
```

Creating an Oracle Home Profile

To create a provisioning profile from an Oracle Home, follow these steps:

1. Perform the GET operation on the URL to view the inputs that you need to provide to create a profile.

Table 7-3   GET Request Configuration for Creating an Oracle Home Profile

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/ provisioning/profile/create/oracle_home
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
name: "Name of the profile to be created."
targetName: "Name of the Oracle Home target that will be used as reference to create
the profile."
description: "[Optional] Description of the profile that will be created."
credential: "[Optional] Named credential that will be used to access the reference
host. Format: CREDENTIAL_NAME:CREDENTIAL_OWNER. If no named credential is provided,
then preferred host credentials for the Oracle Home target will be used."
schedule: "[Optional] The schedule for the Deployment Procedure. If not specified,
the procedure will be executed immediately. Format: start_time:yyyy/MM/dd HH:mm; [tz:
{java timezone ID}]; [grace_period:xxx];"
}
```

2. Update the values, and then perform a POST operation.

Table 7-4   POST Request Configuration for Creating an Oracle Home Profile

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/provisioning/ profile/create/oracle_home
Body	```{ "name":"OhProfileViaRestAPI", "targetName":"WebLogicServer10_3_6_0_slc00tkv.example.com_6316", "credential":"HOSTCRED:SYSMAN", "description":"OH Profile" }```
Parameters	NA
Request method	POST
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
instanceName: "CreateFmwProfile-OhProfileViaRestAPI_SYSMAN_07_09_2014_09_54_AM"
instanceGuid: "FDC6776FB9B31CCDE04373B1F00A2B1C"
executionGuid: "FDC6776FB9B61CCDE04373B1F00A2B1C"
executionUrl: "http://<agent host name>:7802/em/faces/core-jobs-
procedureExecutionTracking?
instanceGUID=FDC6776FB9B31CCDE04373B1F00A2B1C&showProcActLink=yes&executionGUID=FDC67
76FB9B61CCDE04373B1F00A2B1C"
name: "OhProfileViaRestAPI"
targetName: "WebLogicServer10_3_6_0_slc00tkv.example.com_6316"
description: "OH Profile"
credential: "HOSTCRED:SYSMAN"
}
```

Creating an Installation Media Profile

To create a provisioning profile from an Installation Media, follow these steps:

1. Perform the GET operation on the URL to view the inputs that you need to provide to create a profile.

Table 7-5   GET Request Configuration for Creating an Installation Media Profile

Feature	Description
URL	`/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/create/install_media`
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
name: "Name of the profile to be created."
targetName: "Name of the Host target that where all the installation files are
stored."
description: "[Optional] Description of the profile that will be created."
credential: "[Optional] Named credential that will be used to access the files.
Format: CREDENTIAL_NAME:CREDENTIAL_OWNER. If no named credential is provided, then
normal preferred credentials for the Host target will be used."
platform: "Platform for which the installation media is applicable."
version: "Version of the installation media."
-files: [2]
-0:
{
product: "Product1"
-files: [1]
0:  "file1"
}
-1:
{
product: "Product2"
-files: [2]
0:  "file2"
1:  "file3"
```

```
}
}
```

2. Update the values, and then perform a POST operation.

Table 7-6   POST Request Configuration for Creating an Installation Media Profile

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/provisioning/ profile/create/install_media

Body	```
	{
	  "name":"ImProfileViaRestAPI",
	  "targetName":"<agent host name>.example.com",
	  "platform":"2000",
	  "version":"11.1.1.8.0",
	  "credential":"HOSTCRED:SYSMAN",
	  "description":"IM Profile",
	  "files":
	  [
	    {
	      "product":"WebLogic",
	      "files":
	      ["/net/adcnas438/export/emgpqa/provisioning/fmwprov/
	linux64/shiphomes/upinsmed_wls/wls1036_generic.jar"
	      ]
	    },
	    {
	      "product":"WCC",
	      "files":
	      [
	"/net/slcnas478/export/farm_em_repos/emgpqa/provisioning/fmwprov/
	linux64/shiphomes/wcc_11.1.1.8.0/ecm_main1.zip",
	"/net/slcnas478/export/farm_em_repos/emgpqa/provisioning/fmwprov/
	linux64/shiphomes/wcc_11.1.1.8.0/ecm_main2.zip"
	      ]
	    },
	    {
	      "product":"WCP",
	      "files":
	      [
	"/net/slcnas478/export/farm_em_repos/emgpqa/provisioning/fmwprov/
	linux64/shiphomes/wcp_11.1.1.8.0/wc.zip"
	      ]
	    }
	  ]
	}
	``

Parameters	NA
Request method	POST
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
instanceName: "CreateFmwProfile-ImProfileViaRestAPI_SYSMAN_07_09_2014_10_07_AM"
instanceGuid: "FDC6BDD54DA70346E04373B1F00A2DBE"
executionGuid: "FDC6BDD54DAA0346E04373B1F00A2DBE"
executionUrl: "http://slc03qtn:7802/em/faces/core-jobs-procedureExecutionTracking?
```

```
instanceGUID=FDC6BDD54DA70346E04373B1F00A2DBE&showProcActLink=yes&executionGUID=FDC6B
DD54DAA0346E04373B1F00A2DBE"
name: "ImProfileViaRestAPI"
targetName: "slc03qtn.example.com"
description: "IM Profile"
credential: "HOSTCRED:SYSMAN"
platform: "2000"
version: "11.1.1.8.0"
-files: [3]
-0:
{
product: "WebLogic"
-files: [1]
0:"/net/adcnas438/export/emgpqa/provisioning/fmwprov/linux64/shiphomes/upinsmed_wls/
wls1036_generic.jar"
}
-1:
{
product: "WCC"
-files: [2]
0: "/net/slcnas478/export/farm_em_repos/emgpqa/provisioning/fmwprov/linux64/
shiphomes/wcc_11.1.1.8.0/ecm_main1.zip"
1: "/net/slcnas478/export/farm_em_repos/emgpqa/provisioning/fmwprov/linux64/
shiphomes/wcc_11.1.1.8.0/ecm_main2.zip"
}
-2:
{
product: "WCP"
-files: [1]
0: "/net/slcnas478/export/farm_em_repos/emgpqa/provisioning/fmwprov/linux64/
shiphomes/wcp_11.1.1.8.0/wc.zip"
}
}
```

Listing Middleware Provisioning Profiles

This section describes how you can list all the profiles that you have created in Enterprise Manager. The summary includes a basic link for each profile. This link can be used to view the summary of the profile with the *Describe* API. For more information on this, see Describing Provisioning Profiles.

In particular, this section includes the following topics:

- Listing All the Profiles
- Listing WebLogic Domain Profiles
- Listing Oracle Home Profile
- Listing Installation Media Profiles

Listing All the Profiles

Perform the GET operation on the URL to get the canonical link, which can be later used to describe the profile.

Table 7-7   GET Request Configuration for Listing All the Profiles

Feature	Description
URL	`/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/list`
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
-profiles: [3]
-0:
{
canonicalLink: "http://slc03qtn:7802/em/websvcs/restful/extws/cloudservices/fmw/
provisioning/profile/describe/
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C0874
E04373B1F00AEC31:0.1"
location: "Fusion Middleware Provisioning/Profiles/SoaBitlessProfile"
products: "Oracle SOA"
source: "WebLogic Domain"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C087
4E04373B1F00AEC31:0.1"
}
-1:
{
canonicalLink: "http://slc03qtn:7802/em/websvcs/restful/extws/cloudservices/fmw/
provisioning/profile/describe/
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B47
E04373B1F00AF708:0.1"
location: "Fusion Middleware Provisioning/Profiles/SoaGoldImage"
products: "Oracle SOA"
source: "Oracle Home"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B4
7E04373B1F00AF708:0.1"
}
-2:
{
canonicalLink: "http://slc03qtn:7802/em/websvcs/restful/extws/cloudservices/fmw/
provisioning/profile/describe/
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7EE
EEA369A5E04373B1F00AE77C:0.1"
description: "WC 11.1.1.8.0 and WLS 10.3.6.0 installer and RCU"
location: "Fusion Middleware Provisioning/Profiles/WebCenter Install Media"
-products: [2]
0:  "Oracle WebCenter Content"
1:  "Oracle WebCenter Portal"
source: "Installation Media"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7E
EEEA369A5E04373B1F00AE77C:0.1"
}
}
```

Listing WebLogic Domain Profiles

Perform the GET operation on the URL to get the canonical link, which can be later used to describe the profile.

Table 7-8   GET Request Configuration for Listing the WebLogic Domain Profiles

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/provisioning/ profile/list/weblogic_domain
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
-profiles:
{
canonicalLink: "http://slc03qtn:7802/em/websvcs/restful/extws/cloudservices/fmw/
provisioning/profile/describe/
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C0874
E04373B1F00AEC31:0.1"
location: "Fusion Middleware Provisioning/Profiles/SoaBitlessProfile"
products: "Oracle SOA"
source: "WebLogic Domain"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C087
4E04373B1F00AEC31:0.1"
}
}
```

Listing Oracle Home Profile

Perform the GET operation on the URL to get the canonical link, which can be later used to describe the profile.

Table 7-9   GET Request Configuration for Listing the Oracle Home Profiles

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/provisioning/ profile/list/oracle_home
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
-profiles:
```

```
{
canonicalLink: "http://slc03qtn:7802/em/websvcs/restful/extws/cloudservices/fmw/
provisioning/profile/describe/
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B47
E04373B1F00AF708:0.1"
location: "Fusion Middleware Provisioning/Profiles/SoaGoldImage"
products: "Oracle SOA"
source: "Oracle Home"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B4
7E04373B1F00AF708:0.1"
}
}
```

Listing Installation Media Profiles

Perform the GET operation on the URL to get the canonical link, which can be later used to describe the profile.

Table 7-10   GET Request Configuration for Listing the Installation Media Profiles

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/list/install_media
Request header	Is authorization required??
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
-profiles:
{
canonicalLink: "http://slc03qtn:7802/em/websvcs/restful/extws/cloudservices/fmw/
provisioning/profile/describe/
oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7EE
EEA369A5E04373B1F00AE77C:0.1"
description: "WC 11.1.1.8.0 and WLS 10.3.6.0 installer and RCU"
location: "Fusion Middleware Provisioning/Profiles/WebCenter Install Media"
-products: [2]
0:  "Oracle WebCenter Content"
1:  "Oracle WebCenter Portal"
source: "Installation Media"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7E
EEEA369A5E04373B1F00AE77C:0.1"
}
}
```

Describing Provisioning Profiles

This section describes how you can view a summary of all the profiles that you have created in Enterprise Manager. For this, you'll need to run the List API and procure the canonical link. For more information on this, see Listing Middleware Provisioning Profiles.

In particular, this section covers the following topics:

• Describing a WebLogic Domain Profile

• Describing an Oracle Home Profile

• Describing an Installation Media Profile

Describing a WebLogic Domain Profile

Use the canonical link obtained from the LIST API in the GET operation to view the summary of the selected profile.

Table 7-11   GET Request Configuration for Describing the WebLogic Domain Profile

Feature	Description
URL	`/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/describe/oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C0874E04373B1F00AEC31:0.1`
Request header	Is authorization required??
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
location: "Fusion Middleware Provisioning/Profiles/SoaBitlessProfile"
createdBy: "SYSMAN"
createdOn: "Sun, 6 Jul 2014"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C0874E04373B1F00AEC31:0.1"
-attachments: [3]
-0:
{
fileName: "nmMovePlan.xml"
size: "6.95 KB"
contentType: "text/plain"
addedBy: "SYSMAN"
addedOn: "Sun, 6 Jul 2014"
}
-1:
{
fileName: "mdm-url-resolver.xml"
size: "268 Bytes"
contentType: "text/plain"
addedBy: "SYSMAN"
addedOn: "Sun, 6 Jul 2014"
}
-2:
{
fileName: "domainMovePlan.xml"
size: "56.91 KB"
contentType: "text/plain"
addedBy: "SYSMAN"
```

```
addedOn: "Sun, 6 Jul 2014"
}
source: "WebLogic Domain"
oracleHomeIncluded: "No"
nodeManagerIncluded: "Yes"
platform: "Linux x86-64"
wlsVersion: "10.3.6.0"
-oracleHome:
{
-products: [1]
-0:
{
name: "Oracle SOA"
version: "11.1.1.7.0"
}
}
-domain:
{
name: "SoaDomain"
size: "611.45 MB"
-products: [1]
0:  "Oracle SOA"
}
-servers: [2]
-0:
{
name: "AdminServer"
host: "<agent host name>.example.com"
listendAddress: "<agent host name>.example.com"
nonSslPortEnabled: "Yes"
nonSslPort: "7001"
sslPortEnabled: "No"
machine: "LocalMachine"
maxHeap: "1365"
averageCpuUsage(%): "0.361"
}
-1:
{
name: "soa_server1"
host: "slc00tkv.example.com"
listendAddress: "<agent host name>.example.com"
nonSslPortEnabled: "Yes"
nonSslPort: "8001"
sslPortEnabled: "No"
machine: "LocalMachine"
cluster: "cluster_soa"
maxHeap: "1365"
averageCpuUsage(%): "0.717"
}
-dataSources: [7]
-0:
{
name: "EDNDataSource"
schema: "SOA_SOAINFRA"
url: "jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com"
-targets: [1]
0:  "cluster_soa"
}
-1:
{
name: "EDNLocalTxDataSource"
schema: "SOA_SOAINFRA"
```

```
url: "jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com"
targets: [1]
0:  "cluster_soa"
}
-2:
{
name: "OraSDPMDataSource"
schema: "SOA_ORASDPM"
url: "jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com"
targets: [1]
0:  "cluster_soa"
}
-3:
{
name: "SOADataSource"
schema: "SOA_SOAINFRA"
url: "jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com"
targets: [1]
0:  "cluster_soa"
}
-4:
{
name: "SOALocalTxDataSource"
schema: "SOA_SOAINFRA"
url: "jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com"
targets: [1]
0:  "cluster_soa"
}
-5:
{
name: "mds-owsm"
schema: "SOA_MDS"
url: "jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com"
targets: [2]
0:  "cluster_soa"
1:  "AdminServer"
}
-6:
{
name: "mds-soa"
schema: "SOA_MDS"
url: "jdbc:oracle:thin:@<agent host name>.example.com:1521/dbv.example.com"
targets: [2]
0:  "cluster_soa"
1:  "AdminServer"
}
-jmsServers: [4]
-0:
{
name: "BPMJMSServer_auto_1"
persistentStore: "BPMJMSFileStore_auto_1"
storeType: "fileStore"
directory: "BPMJMSFileStore_auto_1"
target: "soa_server1"
}
-1:
{
name: "PS6SOAJMSServer_auto_1"
persistentStore: "PS6SOAJMSFileStore_auto_1"
storeType: "fileStore"
directory: "PS6SOAJMSFileStore_auto_1"
target: "soa_server1"
```

```
}
-2:
{
name: "SOAJMSServer_auto_1"
persistentStore: "SOAJMSFileStore_auto_1"
storeType: "fileStore"
directory: "SOAJMSFileStore_auto_1"
target: "soa_server1"
}
-3:
{
name: "UMSJMSServer_auto_1"
persistentStore: "UMSJMSFileStore_auto_1"
storeType: "fileStore"
directory: "UMSJMSFileStore_auto_1"
target: "soa_server1"
}
}
```

Describing an Oracle Home Profile

Use the canonical link obtained from the LIST API in the GET operation to view the summary of the selected profile.

Table 7-12   GET Request Configuration for Describing the Oracle Home Profile

Feature	Description
URL	`/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/describe/oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B47E04373B1F00AF708:0.1`
Request header	Is authorization required??
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
location: "Fusion Middleware Provisioning/Profiles/SoaGoldImage"
createdBy: "SYSMAN"
createdOn: "Tue, 8 Jul 2014"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B4
7E04373B1F00AF708:0.1"
source: "Oracle Home"
platform: "Linux x86-64"
wlsVersion: "10.3.6.0"
-oracleHome:
{
size: "3.51 GB"
-products: [1]
-0:
{
name: "Oracle SOA"
version: "11.1.1.7.0"
```

```
}
}
}
```

Describing an Installation Media Profile

Use the canonical link obtained from the LIST API in the GET operation to view the summary of the selected profile.

Table 7-13   GET Request Configuration for Describing the Installation Media Profile

Feature	Description
URL	`/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/describe/oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7EEEEA369A5E04373B1F00AE77C:0.1`
Request header	Is authorization required??
Body	NA
Parameters/Constraints	NA
Request method	GET
Supported Since Release	FMW 12.1.0.7

Example Response:

```
{
location: "Fusion Middleware Provisioning/Profiles/WebCenter Install Media"
description: "WC 11.1.1.8.0 and WebLogic Server 10.3.6.0 installer and RCU"
createdBy: "SYSMAN"
createdOn: "Sun, 6 Jul 2014"
urn:
"oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7E
EEEA369A5E04373B1F00AE77C:0.1"
source: "Installation Media"
product: "Oracle WebCenter"
platform: "Generic Platform"
version: "11.1.1.8.0"
-files: [4]
-0:
{
product: "Oracle WebCenter Content"
size: "2.34 GB"
-files: [2]
-0:
{
fileName: "ecm_main1.zip"
size: "1.91 GB"
}
-1:
{
fileName: "ecm_main2.zip"
size: "437.6 MB"
}
}
-1:
{
product: "Oracle RCU"
```

```
size: "496.16 MB"
-files: [1]
-0:
{
fileName: "rcuHome.zip"
size: "496.16 MB"
}
}
-2:
{
product: "Oracle WebCenter Portal"
size: "1.96 GB"
-files: [1]
-0:
{
fileName: "wc.zip"
size: "1.96 GB"
}
}
-3:
{
product: "Oracle WebLogic Server"
size: "1,019.01 MB"
-files: [1]
-0:
{
fileName: "wls1036_generic.jar"
size: "1,019.01 MB"
}
}
}
```

Deleting Provisioning Profiles

This section describes how you can delete the profiles you have created in Enterprise Manager.

In particular, this section covers the following topics:

- Deleting a WebLogic Domain Profile
- Deleting an Oracle Home Profile
- Deleting an Installation Media Profile

Deleting a WebLogic Domain Profile

Use the canonical link obtained from the LIST API in the GET operation to view the summary of the selected profile.

Table 7-14   DELETE Request Configuration for Deleting the WebLogic Domain Profile

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/describe/oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FD8AEF47A15C0874E04373B1F00AEC31:0.1
Request header	Is authorization required??

Table 7-14   (Cont.) DELETE Request Configuration for Deleting the WebLogic Domain Profile

Feature	Description
Body	NA
Parameters/Constraints	NA
Request method	DELETE
Supported Since Release	FMW 12.1.0.7

Example Response:

After the deletion is successful, you might see something on the lines of the following message:

```
Profile Fusion Middleware Provisioning/Profiles/MyProfile deleted successfully.
```

Deleting an Oracle Home Profile

Use the canonical link obtained from the LIST API in the GET operation to view the summary of the selected profile.

Table 7-15   DELETE Request Configuration for Deleting the Oracle Home Profile

Feature	Description
URL	/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/describe/oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_FMWBundle:FDB228F176CA1B47E04373B1F00AF708:0.1
Request header	Is authorization required??
Body	NA
Parameters/Constraints	NA
Request method	DELETE
Supported Since Release	FMW 12.1.0.7

Example Response:

After the deletion is successful, you might see something on the lines of the following message:

```
Profile Fusion Middleware Provisioning/Profiles/MyProfile deleted successfully.
```

Deleting an Installation Media Profile

Use the canonical link obtained from the LIST API in the GET operation to view the summary of the selected profile.

Table 7-16   DELETE Request Configuration for Deleting the Installation Media Profile

Feature	Description
URL	`/em/websvcs/restful/extws/cloudservices/fmw/provisioning/profile/describe/oracle:defaultService:em:provisioning:1:cmp:COMP_Component:SUB_InstallationMedia:FD8AA7EEEEA369A5E04373B1F00AE77C:0.1`
Request header	Is authorization required??
Body	NA
Parameters/Constraints	NA
Request method	DELETE
Supported Since Release	FMW 12.1.0.7

Example Response:

After the deletion is successful, you might see something on the lines of the following message:

```
Profile Fusion Middleware Provisioning/Profiles/MyProfile deleted successfully.
```

8

Scaling Up / Scaling Out Fusion Middleware Domains

This chapter explains how you can scale up and scale out a SOA Domain, an Service Bus Domain, a WebLogic Domain, and a WebCenter Domain using Oracle Enterprise Manager Cloud Control (Cloud Control). In particular, this chapter covers the following:

- Getting Started
- Prerequisites
- Running the Scale Up / Scale Out Middleware Deployment Procedure
- Middleware Provisioning and Scale Up / Scale Out Best Practices

> **Note:**
>
> To scaleup multiple products in one session, you can clone the servers from each products's cluster simultaneously.

Getting Started

A WebLogic Domain consists of a set of managed servers running independently or in a cluster, sharing the distributed resources. A WebLogic Server cluster consists of multiple WebLogic managed servers running simultaneously and working together to provide increased scalability and reliability. The server instances that constitute a cluster can run on the same machine, or be located on different machines. You can increase a cluster's capacity by adding additional server instances to the cluster on an existing machine, or by adding machines to the cluster to host the new server instances. You can use the Domain Scale Up / Scale Out deployment procedure to automate the scaling up or scaling out of a domain. You can:

- Scale up a domain by adding or cloning a managed server to a host that already exists in the domain or cluster.
- Scale out a domain by adding or cloning a managed server to a host that is not present in the domain or cluster.

Prerequisites

Before running the Scale Up / Scale Out Middleware deployment procedure, you must meet the prerequisites listed in this section.

> **Note:**
>
> For information about how to setup your infrastructure for Middleware Provisioning, see Prerequisites for Provisioning from the Middleware Provisioning Profiles.

Meet the following prerequisites before you start extending the WebLogic Domain:

- The WebLogic Domain that is scaled up / scaled out must be an existing domain that has been discovered with Cloud Control.

- If you are scaling out a domain, ensure that the destination machine contains sufficient space. If the size of the Middleware Home on the source machine is 3 GB, you need approximately 3 GB in the working directory on the source and destination machines. Additionally, the destination machine should also have 3 GB of space for the Middleware Home. The working directory is cleaned up after deployment procedure has been successfully completed.

- The Middleware Home directory you specify on the destination machine must be a new directory or must be empty.

- The Management Agent must be installed on the source (where the Administration Server is running) and the destination machines. The Administration Server for the domain must be up and running.

- The Administration Server and Managed Server (being cloned) must be up and running before you run the deployment procedure.

- The Managed Server and Node Manager ports must be free.

- Ensure that the user has the necessary permission to the stage directory inside the work directory. The scale up may fail with an error in case sufficient permissions are not granted to the user. In such an event, assign the necessary *700* permission to the stage directory and retry.

- For scaling out a domain, the user must have the following permissions:

  - Read permissions on:

    * Administration Server Host Middleware Directory

    * Administration Server Host Domain Directory

  - Write permissions on:

    * Administration Server Host Working Directory

    * Working Directory of all the destination Managed Server hosts

    * Middleware Directory of all the destination Managed Server hosts

    * Domain Directory of all the destination Managed Server hosts

- For scaling up a domain, the user must have the following permissions:

  - Read permissions on:

    * Administration Server Host Working Directory

    * Domain Directory of all the destination Managed Server hosts

- The domain being scaled up / out should not be in Edit mode. Ensure that there is a running WebLogic Console for this domain.

- If you choose to associate a new manages server with an existing Node Manager or a machine, ensure that the Node Manager is up and running. If not, the deployment procedure will fail.

- Ensure that you have discovered an existing OHS target in Enterprise Manager, if you want to front end the Oracle HTTP Server.

- Ensure that the target machine which is being scaled up and Enterprise Manager host where the OMS is running are in the same timezone, before you begin the scaleup process.

- Ensure that you do not delete the Aggregation Server when you are scaling down a domain. If the Aggregation Server is deleted, then a lot of dependent applications will stop running.

Running the Scale Up / Scale Out Middleware Deployment Procedure

A WebLogic Domain consists of a set of managed servers running independently or in a cluster, sharing the distributed resources. A WebLogic Server cluster consists of multiple WebLogic managed servers running simultaneously and working together to provide increased scalability and reliability. The server instances that constitute a cluster can run on the same machine, or be located on different machines. You can increase a cluster's capacity by adding additional server instances to the cluster on existing machines, or by adding machines to the cluster to host the new server instances.

The Scale Up / Scale Out Middleware wizard allows you to increase a cluster's capacity by adding additional server instances to the cluster on an existing machine, or by adding machines to the cluster to host the new server instances.

> **Note:**
>
> Java Object Cache is always configured on a scaled out or scaled up middleware managed server whether it was available before scale up or not.

To scale up or scale out a domain, follow these steps:

1. Ensure that the prerequisites are met. See Prerequisites.
2. Specify the source domain. See WebLogic Domain Scaling Up: Scale up/Scale out Fusion Middleware Domain Page.
3. Specify when the scale up or scale out operation should be performed. Weblogic Domain Scaling Up / Scaling Out : Schedule Page.

> **Note:**
>
> For scaling out a WebCenter Domain, you must perform the following steps manually:
>
> 1. Oracle HTTP Server must be installed, discovered, monitored in Cloud Control. Additionally, you must ensure that for the scale out instance the configuration file should be manually configured.
>
> 2. If the Spaces Server is scaled out, then you must run the following commands to attach the WebService Policy:
>
> ```
> attachWebServicePolicy(application='WC_Spaces2/webcenter',
> moduleName='webcenter', moduleType='web',
> serviceName='SpacesWebService',
> subjectName='SpacesWebServiceSoapHttpPort',
> policyURI='oracle/wss11_saml_token_with_message_protection_service_policy')
> ```
>
> 3. If the Discussion Server is scaled out, then you must run the following commands to attach the WebService Policy:
>
> ```
> attachWebServicePolicy(application='WC_Collaboration2/owc_discussions',
> moduleName='owc_discussions', moduleType='web',
> serviceName='OWCDiscussionsServiceAuthenticated',
> subjectName='OWCDiscussionsServiceAuthenticated',
> policyURI='oracle/wss10_saml_token_service_policy')
> ```

WebLogic Domain Scaling Up: Scale up/Scale out Fusion Middleware Domain Page

You can automate the scaling up or scaling out of a domain or cluster using the Domain Scale Up / Out Deployment Procedure. You can add capacity to an existing WebLogic Domain and /or cluster by:

* Adding attributes of a new managed server to an existing cluster.

* Adding and copying attributes of a new managed server to an existing cluster.

* Cloning a managed server. If the source server is clustered, when you clone an existing Managed Server, another Managed Server will be created in the same cluster.

A wizard guides you through the process.

1. From the Targets menu, select **Middleware.**

2. A list of Middleware targets is displayed. Find the WebLogic Domain that you want to use as the source for the scaling up or out operation. Right click on that WebLogic Domain to access the context sensitive menu. From the menu, select **Provisioning** and then select **Scale Up / Scale Out WebLogic Domain**.

   Alternatively, you can click WebLogic Domain link. On the domain home page, from the WebLogic Domain menu, select **Provisioning**, and click **Scale Up/Scale Out WebLogic Domain.**

   The Scale up/Scale out Fusion Middleware Domain page is displayed.

   You can also launch this as a procedure from Middleware Provisioning page. To do so, from **Enterprise** menu, select **Provisioning and Patching,** then select **Middleware provisioning.** On the Middleware Provisioning page, from the deployment procedures table, select **Scale up/Scale out Middleware,** and click **Launch**. In this case you will need

to provide the source information by selecting the WebLogic domain that needs to be extended.

3. In the **Weblogic Domain** section, enter the Working Directory field details specifying the directory on the Administration Server machine where the domain scale up related files are temporarily stored. A minimum of one GB of directory space is required to store the temporary files. If this directory is not present, it will be created. When the scale up operation has been completed, the directory and its contents will be deleted.

Host Credentials: In this section, you must provide all the credentials for all the hosts on which the Managed Servers are running. To do so, click the add icon for each host, and in the Add New Credentials dialog box, enter a valid username and password. If you want the job to use these credentials for each target when the job runs, select the **Set As Preferred Credentials** check box.

Deploy JVMD agent: Deploys the JVMD agent on the servers or clusters of a Weblogic Domain. Java Virtual Machine Diagnostics (JVMD) enables administrators to diagnose performance problems in Java applications. After the JVMD Agent is deployed on the targeted JVM (the one running a production WebLogic Server), it collects real-time data and transmits it to the JVM Diagnostics Engine.

WebLogic Administrator Credentials: In this section, you must set the credentials to access WebLogic administration server. To do so, click the **Add** for each of the WebLogic Domains, and in the Add new administrator credentials dialog box, enter a valid administrator name and password. If you want the job to use these credentials for each target when the job runs, then select the **Set As Preferred Credentials** check box.

> **Note:**
>
> The Working Directory must not be created under the Middleware Home or the WebLogic Domain Home directory.

4. In the **Hosts** section, click **Add** to select the host you want to add managed servers to.

5. In the **Machines** section, you can **Add** the destination hosts and then create new machines if required.

> **Note:**
>
> To perform administrative operations such as start and stop from the Enterprise Manager Cloud Control, the Node Manager must be configured and running on the machine.

6. In the **Servers** section, you can add a new managed server to a WebLogic Domain.

   To add a new managed server to a WebLogic Domain, click **Add**. Enter configuration details for a new Managed Server like a unique name for the new Managed Server, listen address, and the SSL port.

   > **Note:**
   >
   > The **Add** button is only available for Clusterless domains. If the domain has clusters, then cloning is the preferred option.

   If the domain has the administration port enabled, **Administration Port** column will appear in the servers table so that the user can enter the administration port for the new server. If the domain does not have the administration port enabled, this column will not be visible in the servers table. When a new server is added/cloned, automatically a new port is set. You must ensure that this new port is free, if not the deployment procedure will fail.

   If you select **Custom Identity and Custom Trust**, you must provide valid inputs for all the KeyStore fields.
   Cloning an Existing Managed Server: To do so, select the host you want to add the new server to and click Clone. This option adds a new managed server to the domain, and copies a pre-determined set of the attributes from the existing server.

   Deleting a Managed Server: To do so, select the managed server and click Delete Server.

7. In the **Custom Scripts and Variables** section, you can add any custom properties that you want to pass to your scripts.

8. Click **Next**.

   > **Note:**
   >
   > If you are scaling a domain with products like SOA or OSB, then a **JMS Servers** section is displayed if the source domain has it configured.

Weblogic Domain Scaling Up / Scaling Out : Schedule Page

On the Schedule page, specify a Deployment Instance name. If you want to run the procedure immediately, retain the default selection, that is, **Immediately**.

If you want to run the procedure later, select **Later** and provide time zone, start date, and start time details.

You can set the notification preferences according to deployment procedure status.

If you want to run only prerequisites, select **Pause the procedure to allow me to analyze results after performing prerequisite checks.** This pauses the procedure execution after all prerequisite checks are performed.

Click **Next**.

Middleware Provisioning and Scale Up / Scale Out Best Practices

This section lists some of the best practices to be followed while using the Middleware Provisioning deployment procedure.

- **Configuration of the source domain should not be changed**: While executing these deployment procedures, ensure that no administrative activities (such as configuration changes on the source domain and software patching) are actively performed on the source domain. If you change the configuration, the managed server may not respond to requests and the Administration Server will have an Unknown status.

- **Provisioning on the same machine**: If you are using the Deployment Procedure to provision or scale up to the same machine as the source, the working directory on the source and target machines is populated by default. If these values are changed, you must ensure that the working directory on the source and the destination machines are different. For example, if the working directory is `/tmp/source` for the source machine, it could be `/tmp/dest` on the destination directory. You must also ensure that the listen port number and SSL port numbers (if enabled) for the Administration Server and Managed Server are different on the source and destination servers.

- **JDBC Configuration**: While configuring the JDBC data sources, the database user and schema owner must enter appropriate passwords.

- **Custom Java Applications and their Deployment Plan**: These deployment procedures support custom java applications in staged mode. Externally staged applications need to be manually deployed. For instructions on manual deployment, see the *WebLogic Administration Guide*.

- **Multi NIC Machines**: If the destination machine is a multi NIC system, enter a listen address that is accessible to both the Administration Server and Managed Server.

- **Port Conflicts**: While adding a new server on a host, you must enter ports that are unique to that server and are not used by any other existing managed server or process on that host.

9

Export and Import of Domain Partitions

This chapter provides an overview of exporting and importing Oracle WebLogic Domain Partitions. Oracle WebLogic Server supports WebLogic domain partition functionality. Partition functionality is introduced and supported through WebLogic Server Multitenancy feature. It consolidates applications into fewer domains with partition within domains and maintains secured isolation. It provides increased efficiency and reduced cost. For more information on WebLogic Server Multitenancy, see *WebLogic Server Multitenant* in the *Oracle® Fusion Middleware Using WebLogic Server Multitenant* guide. The WebLogic domain partition can be exported and imported between WebLogic Server domains. Export or import is also supported between domains residing on different Enterprise Manager deployments. In particular, this chapter covers the following:

- About Exporting and Importing WebLogic Domain Partitions
- Exporting WebLogic Domain Partition
- Importing WebLogic Domain Partition

About Exporting and Importing WebLogic Domain Partitions

A domain partition (partition for short) is an administrative and runtime slice of a WebLogic domain. Multi-Tenancy provides shared infrastructure for use by multiple organizations. These organizations are a conceptual grouping of tenants. Multiple tenants are supported in a single domain. It improves density and achieves more efficient use of resources and eliminates the following hurdles involved in sharing multiple applications:

1. Runtime Cross-Application impact
2. Security differences
3. Data Co-Mingling
4. Administrative challenges

A domain partition is an administrative portion of a domain that can be managed independently and can share runtime capacity in a domain, that is, the managed servers and clusters. Each domain partition has its own runtime copy of the applications and resources. It provides application isolation and efficiency. Multiple instances of an application can run in different domain partitions without modifying the application.

Domain partitions use fewer server and domain resources. This enables you to simplify the management of Software As a Service (SaaS) and Platform As a Service (PaaS) applications.

Oracle WebLogic Server supports WebLogic domain partition functionality. A single WebLogic domain can contain several partitions, each capable of having its own set of services like JDBC, JMS, SAF, applications, and security realm. Oracle WebLogic Multitenant Server provides resource isolation within a domain partition which is an administrative and runtime slice of a WebLogic domain. It runs application instances and related resources for a tenant. Domain partitions achieve greater density by allowing application instances and related resources to share the domain, WebLogic Server, Java virtual machine, and operating system While isolating Tenant-Specific application data, configuration, and runtime traffic.

A partition can contain one or more resource groups. These resource groups can be converted to templates. A domain partition can be exported and imported into a new or same domain. This export or import functionality moves the services and applications that are part of the partition. This functionality is primarily used in Enterprise Manager to provision partitions on demand. The key capabilities and limitations of the WebLogic domain partition functionality are:

- Partition export or import is supported.

- An empty partition cannot be created.

- One partition can be exported at a time from a domain.

- One partition can be imported into one domain at a time.

- The applications and services running in the domain are cloned along with the partition. They can neither be deleted nor can new ones be added during provisioning.

Related Topics

- Exporting WebLogic Domain Partition

- Importing WebLogic Domain Partition

Exporting WebLogic Domain Partition

> **Note:**
>
> Exporting WebLogic domain partition functionality is supported from WLS version 12.2.1.0.0 onwards.

To export a domain partition, follow these steps:

1. From the **Targets** menu, select **Middleware.**

2. Expand the **Target Type** and check the option against **WebLogic** to view a list of WebLogic targets.

3. Right click on the WebLogic Domain target, and from the **Provisioning** menu, click **Create Provisioning Profile** and select **By Exporting WebLogic Domain Partition** option and click **Next**.

4. Enter a profile name in the **Name** field under the **Profile** tab.

> **Note:**
>
> As part of the export process, the Enterprise Manager creates a profile of the partition and stores in the software library. The profile contains exported partition archive and some metadata that helps the Enterprise Manager in the importing process.

5. Enter the description of the profile created in the **Description** field.

6. In the **WebLogic Domain Partition** field select the partition.

7. Verify the values in the fields **Domain Home** and **Oracle Home.**

8. Select the values for the remaining fields **Oracle Home Credential**, **WebLogic Administrator Credential**, and **Working Directory.**

> **Note:**
>
> The temporary staging directory of the agent is used by default, to copy the script and generate archives. In case this directory does not have enough permissions or space, the user can specify another directory.

9. In the Software Library Upload Location, select the Software Library storage details. Ensure to provide a valid storage type and upload location to update the profile.

10. Click **Create.**

> **Note:**
>
> Exporting WebLogic Domain Partition operation can be performed using EMCLI verb `create_partition_profile`. See create_partition_profile in the *Oracle® Enterprise Manager Command Line Interface*.

You can view the profile created in the **Middleware Provisioning** page. The new profile will be shown in the **Profiles** table, select the name of the profile to view more details.

Related Topics

- About Exporting and Importing WebLogic Domain Partitions
- Importing WebLogic Domain Partition

Importing WebLogic Domain Partition

> **Note:**
>
> Importing WebLogic domain partition functionality is supported from WLS version 12.2.1.0.0 onwards.

To import a domain partition into an existing WebLogic domain, follow these steps:

1. From the **Targets** menu, select **Middleware.**

2. Expand the **Target Type** and check the option against **WebLogic** to view a list of WebLogic targets.

3. To import the WebLogic Domain Partition, right click on the domain where you want to import the partition.

4. From the **Provisioning** menu, select **Import WebLogic Domain Partition.**

   You can also import WebLogic Domain Partition from the **Middleware Provisioning** page. From the **Enterprise** menu, select **Provisioning and Patching** and click **Middleware Provisioning**. Select a profile under the **Profiles** table and click **Import Partition** button. The profile must have been created by either exporting a domain or by exporting a partition

5. Under the **General** tab, select a profile under the **WebLogic Domain Partition Profile** field.

6. Click on the **View** icon to view the profile details.

7. Upon selecting a profile, the values in the following fields are prefilled:

   • **WebLogic Domain Partition**

   • **Virtual Targets**

   • **Database**

   > **Note:**
   >
   > The Database field is filled only if the source partition has data sources.

8. The details of the profile can be viewed by clicking on the view icon available next to the **WebLogic Domain Partition Profile** field. The details include information on Data Sources, JMS Servers, Applications, and Virtual Targets.

   If you like to make an advanced configuration, click **Use Custom JSON file** and enter the location of custom well-formed JSON file in the **JSON File Location** field.

   > **Note:**
   >
   > You can download the JSON file from **Profile Viewer**. Click the View icon next to the profile search icon and download it from the attachments table. You can then modify it and copy it to the Administration Server host of the domain and provide that location in the **JSON File Location** field.

9. Enter the credentials in fields **Oracle Home Credential** and **WebLogic Administrator Credential** by using the search icon against the fields.

10. Enter a unique name in the **Partition Name** field.

11. Under the **Virtual Targets** tab, in the **Targets** field choose the virtual targets from the drop down menu. The host name specified must have DNS entries that resolve to the correct server or load balancer. If the host name is not specified then it is equivalent of wildcarding the host name to match all incoming requests.

    > **Note:**
    >
    > Two virtual targets cannot be mapped to the same target in a partition.

12. Choose a database under the **Database** tab against the **Connection String** field.

    > **Note:**
    >
    > This is optional and has to be executed only if the source partition has data source. Ensure that the schema is already created, the database services are up and running and the database service has the same name mentioned in the data source.

    While selecting the target in the Select target window the following database types are available:

- Cluster Database

- Database Instance

- Pluggable Database

13. Enter a password in the **Schema Password** field.

14. Click **Next** and confirm the changes.

Importing WebLogic Domain Partition operation can be performed using EMCLI verb too. Use the following steps.

1. The generic `submit_procedure` EMCLI verb is used to import WebLogic Domain Partition. Launch the import partition user interface from the desired domain target.

2. Enter all the required details.

3. Navigate to the next page.

4. Click **Save.**

5. Enter the unique `SAVED_CONFIG_NAME`.

6. Execute the following command:

   ```
   emcli describe_procedure_input -name=SAVED_CONFIG_NAME > input.properties
   ```

7. Un-comment the secret variables like *passwords* and provide values for them.

8. Submit the procedure by executing the following command:

   ```
   emcli submit_procedure -name=ProvisionPartition -
   input_file=data:input.properties [-instance_name=UNIQUE_SUBMISSION_NAME]
   ```

> **Note:**
>
> For more details on the verbs, see Deployment Procedure Verbs in the *Enterprise Manager Command Line Interface*.

Related Topics

- About Exporting and Importing WebLogic Domain Partitions
- Exporting WebLogic Domain Partition

10

Migrating a Domain to a Partition

This chapter provides an overview of exporting an existing domain and importing it as a partition into another domain with the help of Domain to Partition Conversion Tool (D-PCT). Enterprise Manager Cloud Control provides an user friendly user interface that helps you to convert domains into partitions.

The export tool component in D-PCT is used on the WebLogic Server installation that hosts the source domain. You can use this tool to create and configure partition, resource groups, and resource group templates. By default, this tool moves all applications, libraries, and resources to the new partition. Optionally, it also provides a mechanism for selecting individual applications, libraries, and resources.

In particular, this chapter covers the following:

- Pre-Requisites and Limitations
- Exporting WebLogic Domain
- Importing WebLogic Domain Partition

Pre-Requisites and Limitations

Prerequisites of Migrating a WebLogic Server Domain to a Domain Partition:

Before you configure D-PCT, you must fulfill the following prerequisites:

- The target domain must be configured on a WebLogic Server 12.2.1.1 or above installation.
- You must download and install JDK 8 on the host machine of the source domain. This is required for running the export tool on WebLogic Server 10.3.6.
- The target WebLogic Server 12.2.1.1 or above domain must be up and running.
- All servers in the domain must be up and running.
- For a straightforward conversion from a domain to a partition and to ensure correct operation of the import tool to create a virtual target based on the JavaScript Object Notation (JSON) file, it is important that the target and source domains have identical cluster and server names.
- Before using the import tool to create a new partition, you must ensure that the new domain is configured the same as the source domain with regard to servers, clusters, virtual targets, and security realms.

Limitations of Migrating a WebLogic Server Domain to a Domain Partition:

The following scenarios are not supported by Domain to Partition Conversion Tool (D-PCT) tool:

- The domain upgrade of libraries and resources to a new release is not supported at import. Administrators and users are responsible for possible necessary domain upgrades from the source domain before exporting the archive file.

- Neither the application runtime state nor the application specific runtime configuration is exported to the archive file. For example, the JMS messages in queues or users in an embedded LDAP realm are not exported.

- The remote clients compiled with WebLogic Server versions prior to 12.2.1 are not able to look up JNDI resources deployed on a partition. They need to be recompiled with the WebLogic Server releases 12.2.1 or later.

- JDBC does not support the use of the Logging Last Resource (LLR) feature in WebLogic Server Multitenant. Data sources with this option need to be converted to use a substitute setting that may or may not be an adequate replacement.

For more information on D-PCT limitations and considerations, see *Oracle Fusion Middleware Using Oracle WebLogic Server Multitenant* guide.

Exporting WebLogic Domain

To export the domain, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching** and click **Middleware Provisioning**.

2. Click **Create Profile** button.

3. Select **By Exporting a WebLogic Domain** option and click **Next**.

4. In the **Profile** tab, enter a profile name in the **Name** field.

5. Enter the description of the profile created in the **Description** field.

6. In the **Source Target** tab, enter the **Oracle Home Credential** by using the search icon against the field.

7. Enter the directory on the domain host in the **Java Home** field.

> **Note:**
>
> JDK8 is required to perform an export operation.

8. In the **Domain to Partition Conversion Tool** section, enter the WebLogic Home in the **12.2.1.1.0+ Oracle Home** field by using the search icon against the field. The **Domain to Partition Conversion Tool** is present only in version 12.2.1.1.0 and above. Thus, the Oracle WebLogic Home version should be of version 12.2.1.1.0 or above.

9. Enter the operating system credential for Oracle Home in the **12.2.1.1.0+ Oracle Home Credential** field by using the search icon against the field.

10. Click **Create**.

Importing WebLogic Domain Partition

To import a domain partition into an existing WebLogic domain, see Importing WebLogic Domain Partition.

11

Deploying / Redeploying / Undeploying Java EE Applications

This chapter explains how you can deploy, undeploy, and redeploy Java EE Applications using Oracle Enterprise Manager Cloud Control (Cloud Control).

In particular, this chapter covers the following:

- Getting Started with the Deploy/Undeploy Java EE Application Deployment Procedure
- Deploying, Undeploying, or Redeploying Java EE Applications
- Supported Releases for Deploy/Undeploy Java EE Applications Deployment Proceudre
- Prerequisites for Deploying/Undeploying Java EE Applications
- Creating a Java EE Application Component
- Java EE Applications Deployment Procedure
- Deploying / Redeploying / Undeploying Java EE Applications Using EMCLI

Getting Started with the Deploy/Undeploy Java EE Application Deployment Procedure

This section provides an overview of the steps involved in deploying, redeploying, and undeploying Java EE Applications. The Deploy / Undeploy Java EE Applications Deployment Procedure allows you to perform the following operations:

- Deploy
- Undeploy
- Redeploy

Consider this section to be a documentation map to understand the sequence of actions you must perform to successfully provision a Java EE Application. Click the reference links provided against the steps to reach the relevant sections that provide more information.

Table 11-1   Getting Started with Deploying, Undeploying, or Redeploying a Java EE Application

Step	Description	Reference Links
Step 1	**Understanding the Deployment Procedure** Understand the Deployment Procedures offered by Cloud Control to deploy, undeploy, or redeploy a Java EE Application. Know how the Deployment Procedure function, what use cases it covers, and so on.	To learn about the Deployment Procedure, see Deploying, Undeploying, or Redeploying Java EE Applications.

Table 11-1   (Cont.) Getting Started with Deploying, Undeploying, or Redeploying a Java EE Application

Step	Description	Reference Links
Step 2	**Selecting the Use Case** This chapter covers the use cases for deploying, undeploying, and redeploying Java EE Application. Select the use case that best matches your requirements.	• To deploy a Java EE Application, see Deploying a Java EE Application. • To redeploy a Java EE Application, see Redeploying a Java EE Application. • To undeploy a Java EE Application, see Undeploying a Java EE Application.
Step 3	**Meeting the Prerequisites** Before you run the Deployment Procedure, you must meet the prerequisites, such as configuring the Software Library and creating components to be provisioned as part of the Deploy / Undeploy Java EE Application deployment procedure.	To learn about the prerequisites for deploying, undeploying or redeploying Java EE Application, see Prerequisites for Deploying/Undeploying Java EE Applications.
Step 4	**Running the Deployment Procedure** Run the Deployment Procedure to successfully deploy, redeploy, or undeploy one or more Java EE applications.	To run the Deploy / Undeploy Java EE Applications Deployment Procedure, follow the steps explained in Java EE Applications Deployment Procedure.

Deploying, Undeploying, or Redeploying Java EE Applications

This deployment procedure supports deployment of Java EE Applications packaged into `.ear`, `.war`, `.jar`, `.rar` or `.gar` files as per Java EE specifications. Administrators can use Cloud Control to deploy, redeploy, and undeploy one or more Java EE applications and need not drill down into the WebLogic Server Administration Console or the Oracle Enterprise Manager Fusion Middleware Control console to perform these tasks. The Java EE applications need to be pre-configured before you add them to the Cloud Control Software Library. You can deploy a pre-configured Java EE application to one or more WebLogic domains in Cloud Control.

The Java EE Application Deployment Procedure offers GUI-rich interactive screens that allow you to deploy / redeploy to, or undeploy a pre-configured Java EE application from one or more WebLogic Domains.

The Enterprise Manager Cloud Control 13c Release 2 Plug-ins Update 1 supports deploying/ redeploying/undeploying to resource group templates, global resource groups, or partition resource groups.

Supported Releases for Deploy/Undeploy Java EE Applications Deployment Proceudre

This deployment procedure can be used to deploy, undeploy, or redeploy Java EE Applications to and from WebLogic versions 10.3, 10.3.1 and later, including 12.1.1, 12.1.2, 12.1.3, 12.2.1, 12.2.1.x, and 12.1.x.

WebLogic versions 8.x and 9.x are not supported.

Prerequisites for Deploying/Undeploying Java EE Applications

Before running the Deploy / Undeploy Java EE Applications Deployment Procedure, ensure that the following prerequisites are met:

- Ensure that the Software Library is configured. See Setting Up Oracle Software Library for details.

- The Java EE Application component must have been created in the Software Library. See Creating a Java EE Application Component for details.

- The Management Agent must be installed on the Administration Server host machine for the WebLogic Domain to which you are deploying, undeploying, or redeploying the Java EE application. Deployment commands are executed from the Administration Server host machine.

- If a target execution script is to be run as part of the deployment procedure, then the Management Agent must be installed on the Managed Server's host machine where the target execution script is to be run.

- A target execution script can be used to set up the required environment or replace tokens in additional files such as property files. The script will be executed on selected targets.

Creating a Java EE Application Component

You can create a Java EE Application component which contains the archive, deployment plan, predeploy, postdeploy, target execution scripts, and other files required for deploying the Java EE application.

> **Note:**
>
> If you create a Java EE Application component on the host where the Software Library is configured, then you must ensure that this host name and the management agent host name should match, if not, you will see the following error while creating the component:
>
> ```
> An error was encountered during saving entity samples.gar.
> Please see the log for details.
> oracle.sysman.emSDK.app.exception.EMSystemException
> ```

To create a Java EE Application component, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Software Library**.

2. Create a folder or select a folder from the Software Library, select **Create Entity**, then select **Component**.

3. From the Create Entity: Component dialog box, select Java EE Application and click **Continue**.

4. In the Create Java EE Application: Describe page, enter the Name, Description, and click **Next**.

5. In the Create Java EE Application: Select Files page, select one or more files to be associated with the Java EE Application. You can upload files from a storage location in the Software Library. For Software Library to become usable, at least one upload file location must be configured. In the Specify Destination section, click the **Browse** button in the Upload Location field. Select either of the following:

   - **OMS Shared File System**: An OMS Shared File System location is required to be shared (or mounted) across all the Oracle Management Server (OMS) hosts. This option is ideal for UNIX systems.

For single OMS environments, you can configure the Software Library either on the host where the OMS is running or in a shared location, so that it is accessible to all the OMS hosts. For multiple OMS environments, Oracle recommends that you configure the Software Library in a shared location so that the storage is accessible through NFS mount points to all Oracle Management Servers in the environment.

- **OMS Agent File System**: An OMS Agent File System location is a location that is accessible to one of the OMS host's Agent. This option is ideal for OMS installed on Windows hosts. By selecting this option for uploading files, you can avoid sharing a location between all participating OMS hosts.

  Credentials must be set before using an OMS Shared File System or OMS Agent File System. For an OMS Shared File System, normal host credentials must set before configuring a storage location. However, for OMS Agent File System location configuration, a credential (preferred or named) has to be specified.

6. In the Specify Source section, you can add the standard Java EE archive files such as `.ear`, `.war`, `.jar`, `.rar`, `.gar`, and other optional files such pre and post-deploy scripts, target execution script, execution plan and additional files. You can either upload each file separately (Individual Files) or upload a zip file (Zip File) that contains the `JavaEEAppComp.manifest` file. You can upload the files from:

   - **Local Filesystem**: Click **Browse** and upload the files from your local system.

   - **Agent Filesystem**: You can upload the files from a remote filesystem monitored by the Management Agent. Click **Browse** and select a host machine from the list and click **Select**. Click **Add**. The Remote File Browser window is displayed. Click the **Login As** button and enter the credentials for the host machine. Specify the location in which the files are present, select one or more archive related files and click **Add**. The selected files are listed in the Current Selection section. Click **OK** to return to the Create Entity: Select Files page.

7. The files are listed in the table. Specify the type of the file by selecting the options in the Type field. Click **Next**.

8. Review and verify the information entered so far. Click **Save and Upload** to upload the files and create the Java EE Application component.

Java EE Applications Deployment Procedure

This section describes the Java EE Application deployment procedure. It covers the following:

- Deploying a Java EE Application
- Undeploying a Java EE Application
- Redeploying a Java EE Application

## Deploying a Java EE Application

Follow these steps to deploy a Java EE Application:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Middleware Provisioning**.

2. Select the Java EE Application procedure from the list and click **Launch**. You can also use the following method to launch the deployment procedure:

   - Click **Middleware** from the Targets menu.

- Right click on a WebLogic Domain from the list and from the context sensitive menu, select **Provisioning**, then select Deploy / Undeploy Java EE Applications.

  - In the Deployment Procedure Manager page, select the Java EE Application Provisioning procedure and click **Launch**.

3. In the Deploy/Undeploy Java EE Applications: Select Targets page, choose the **Deploy** operation.

Figure 11-1   Deploy / Undeploy Java EE Applications: Select Target
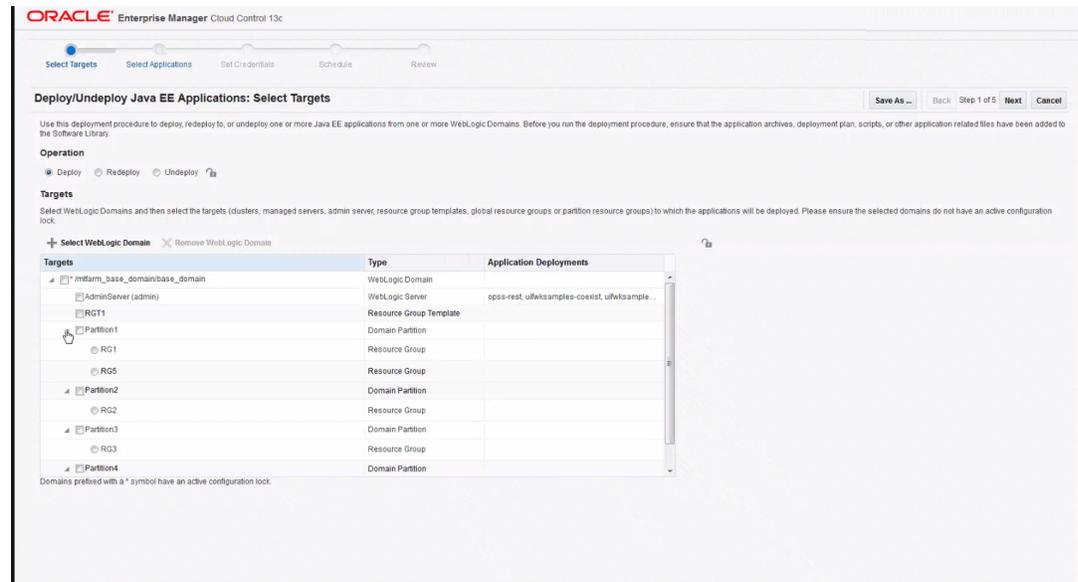
Each domain has entities like clusters, admin server, managed server, global resource group, resource group templates, and partitions.

While deploying Multi-Tenancy partitions, each partition has one or more Resource Groups. The deployment is possible for only one of the selected Resource Groups of a partition.

Click the **radio button** to select the desired Resource Group for a partition.

While deploying applications to Resource Groups and Resource Group Templates, you must ensure that application deployment meets the uniqueness criteria of application names set by WebLogic. Deployment procedure wizard validates and ensures the uniqueness in simpler cases. In case of extended resource groups from resource group templates, the uniqueness check is left to WebLogic deployer as Enterprise Manager does not have the hierarchy details. Hence, you must ensure the uniqueness before hand to avoid a deployment procedure failure.

4. Select WebLogic Domains and select the targets on which the Java EE application is to be deployed. Click **Add WebLogic Domains**. Choose one or more WebLogic domains from the list and click **Select**.

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> **Note:**
>
> You can lock an operation, a target, or an application.. Click the **Lock** icon to lock an operation or the fields you are configuring in any of the pages in the wizard. Once the fields have been locked, the Operator needs to provide minimal input while running the deployment procedure

5. The selected WebLogic domains are listed in the Targets table. Select the targets (clusters, managed servers, admin servers, Global Resource Groups, Resource Group Templates, Partitions, or Resource groups) for each domain and click **Next**.

6. In the Deploy / Undeploy Java EE Applications: Select Applications page, add the archives and other related files that are to be deployed from the Software Library. Click **Add** to select one or more archives and other application related files or components from the Software Library. The Add Application popup is displayed. In the Component Name field, enter a file name or a wild card pattern to search for and retrieve components from the Software Library. Select the **Show Java EE Application Components Only** checkbox to list only the Java EE Application components in the Components in Software Library column. Select the archives and click the right arrow to move them to the Components Selected for Deployment section.

Figure 11-2   Deploy / Undeploy Java EE Applications: Add Applications
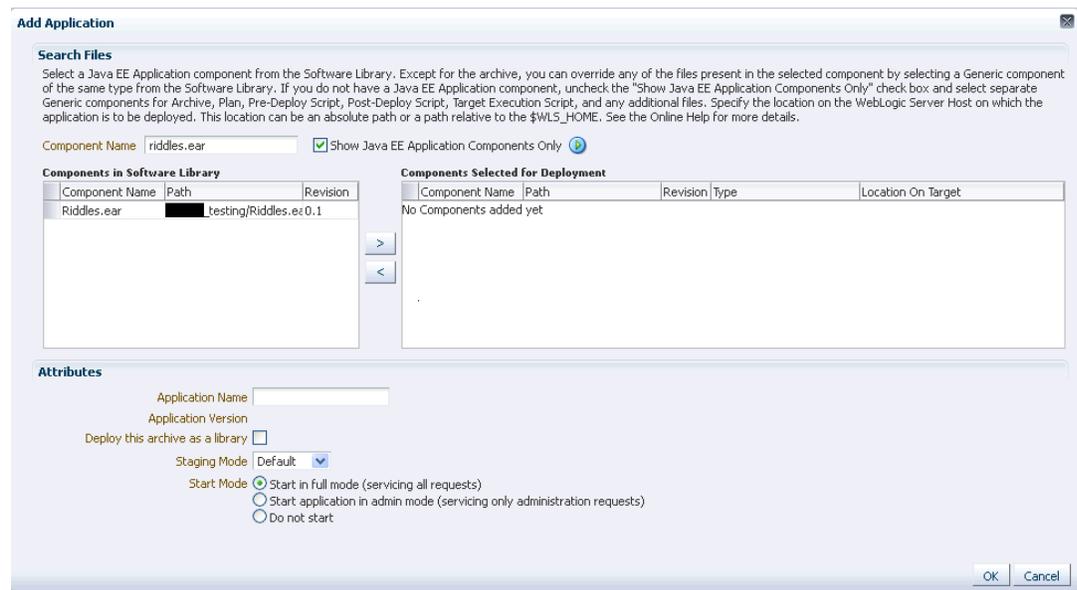
> **Note:**
>
> In the image shown above, Application Version and Plan Version will not be visible if you are redeploying non-versioned application.

7. In the Type field, the type of each component is displayed. The Type can be:

   • **Archive**: This is the archive file which can be a `.ear`, `.war`, `.jar`, `.rar`, or `.gar` file.

> **Note:**
>
> If you have selected a `.gar` archive file, the WebLogic Domain to which the application is being deployed must be 12.1.2.0.0 or higher.

- **Plan**: This is an `.xml` file containing the deployment options for this application.

- **Pre Deploy Script**: This is a script containing WLST commands. The Management Agent runs this script on the Administration Server of each WebLogic domain before the application is deployed. You can use this script to create data sources, JMS end points, and any other resources that might be needed by the application that is being deployed.

- **Post Deploy Script**: This is a WLST script that is executed by the Management Agent on the Administration Server after the application is deployed. You can use this script to perform any post deployment configuration. For example, if you need to roll back and undo the changes made by the pre deploy script, you can select this option.

> **Note:**
>
> The archive, plan, predeploy, and postdeploy scripts can be moved only to the Administration Server.

- **Additional File**: You can add one or more files that will be required by the application that are not part of the application archive. These files can be of any type and can be moved only to the selected targets (managed servers and clusters).

- **Target Execution Script**: These scripts can be used to set up the required environment or replace tokens in the additional files like property files. These scripts will be executed on selected targets.

8. In the Location On Target field, for each component, specify the location on the WebLogic Server Host on which the application is to be deployed. This can be an absolute path or relative to the `$WLS_HOME` for the selected targets.

9. After selecting the required files for deployment, enter a unique name for the application and specify the Staging Mode which can be:

    - **Default**: Each server in the WebLogic Domain maintains two attributes which are Staging Mode and StagingDirectoryName. The Staging Mode is the default staging mode for the server and StagingDirectoryName is the location on which the staged files are stored. Select this option to use the default staging mode for all the targets.

    - **Stage**: Select this option if the archive files should be moved to the destination machine.

    - **No Stage**: Select this option if the archive files should not be moved to the destination machine.

10. Select the **Deploy this archive as library** option if the application needs to be deployed as a shared library. You can select this option if one or more applications need the same set of files.

11. Select the Start Mode for deployment which can be:

    - **Start in full mode (servicing all requests)**: Select this option to make the deployed application available to all users.

- **Start application in admin mode (servicing only administration requests)**: If you select this option, the deployed application is available only to the Administrator.

- **Do not start**: The application is deployed but not started. You can select this option if any manual post-deployment configuration is required.

12. Click **OK** to add the archive and return to the Select Applications page. You can add more archives or click **Next** to proceed. If you have added more than one archive, select the **Skip on Failure** checkbox to skip any failed deployments and continue deploying the remaining applications.

13. Click the **Lock** icon to lock the fields you have configured.

> **Note:**
>
> The Designer can lock the fields after configuring them. This ensures that the Operator can run the deployment procedure with minimal input.

14. Click **Next**. Specify the credentials for each domain you have selected, the host on which the Administration Server is running, and the hosts to which the additional files or execution scripts are to be moved. You can choose:

- **Preferred Credentials**: This option is selected by default and the preferred credentials stored in the Management Repository are used. This option is available only if it has already been defined in Cloud Control.

- **Named Credentials**: A named credential specifies the authentication information for a user and can be a combination of username / password, public and private key pair, and can be used to perform provisioning, patching, run jobs, and other system management tasks.

After selecting the credentials, click **Apply.**

For more information on setting up the credentials, see Enterprise Manager Security Guide.

15. Click the **Lock** icon to lock the fields you have configured. These fields cannot be edited once they are locked.

16. In the Schedule Deployment page, you can schedule the date on which the Java EE Application deployment procedure should be executed.

17. Click **Next**. On the Review page, review the details you have provided for the Deployment Procedure. If you are satisfied with the details, then click **Submit** to run the Deployment Procedure according to the schedule set. If you want to modify the details, click the Edit link in the section to be modified or click **Back** repeatedly to reach the page where you want to make the changes.

After you submit the deployment procedure, you will return to the Procedure Activity page where you can view the status of the Deployment Procedure. After the Java EE Application has been deployed, you can search for the target and navigate to the Target Home page.

Redeploying a Java EE Application

Follow these steps to redeploy a Java EE application:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Middleware Provisioning**.

2. Select the Java EE Application procedure from the list and click **Launch**. You can also use the following method to launch the deployment procedure:

   - Click **Middleware** from the Targets menu.

   - Right click on a WebLogic Domain from the list and from the context sensitive menu, select **Provisioning**, then select Deploy / Undeploy Java EE Applications.

   - In the Deployment Procedure Manager page, select the Java EE Application Provisioning procedure and click **Launch**.

3. In the Select Targets page, choose the **Redeploy** operation.

> **Note:**
>
> Click the **Lock** icon to lock an operation or the fields you are configuring in any of the pages in the wizard. Once the fields have been locked, the Operator needs to provide minimal input while running the deployment procedure.

4. Click **Add WebLogic Domains** to add one or more WebLogic domains. In the list of targets displayed, choose a target and click Select.

5. The deployment targets are listed in the Targets table. Select the applications that need to be redeployed and click Next.

6. In the Select Applications page, a list of applications that can be redeployed are displayed. Select an application and click **Edit** to modify the archive details and other application related files. In the Application Details window, enter a file name or a wild card pattern to search for and retrieve files from the Software Library. Select the archives and click the right arrow to move them to the Components Selected for Deployment section.

7. In the Type field, the type of each component is displayed. The Type can be:

   - **Archive**: This is the archive file which can be a `.ear`, `.war`, `.jar`, or `.rar` file.

   - **Plan**: This is an .xml file containing the deployment options for this application.

   - **Pre Deploy Script**: This is a script containing WLST commands. The Management Agent runs this script on the Administration Server of each WebLogic domain before the application is deployed. You can use this script to create data sources, JMS end points, and any other resources that might be needed by the application that is being deployed.

   - **Post Deploy Script**: This is a WLST script that is executed by Management Agent on the Administration Server after the application is deployed. You can use this script to perform any post deployment configuration. For example, if you need to roll back and ndo the changes made by the pre deploy script, you can select this option.

   > **Note:**
   >
   > The archive, plan, predeploy, and postdeploy scripts can be moved only to the Administration Server.

   - **Additional File**: You can add one or more files that will be required by the application that are not part of the application archive. These files can be of any type and can be moved only to the selected targets (managed servers and clusters).

- **Target Execution Script**: These scripts can be used to set up the required environment or replace tokens in the additional files like property files. These scripts will be executed on selected targets.

8. Review the default location on the target machine on which the component will reside. This can be an absolute path or relative to the `$WLS_HOME` for the selected targets.

9. After selecting the required files for deployment, enter a unique name for the application and specify the Staging Mode which can be:

   - **Default**: Each server in the WebLogic Domain maintains two attributes which are Staging Mode and StagingDirectoryName. The Staging Mode is the default staging mode for the server and StagingDirectoryName is the location on which the staged files are stored. Select this option to use the default staging mode for all the targets.

   - **Stage**: Select this option if the archive files should be moved to the destination machine.

   - **No Stage**: Select this option if the archive files should not be moved to the destination machine.

10. Select the Start Mode for deployment which can be:

    - **Start in full mode (servicing all requests)**: Select this option to make the deployed application available to all users.

    - **Start application in admin mode (servicing only administration requests)**: If you select this option, the deployed application is available only to the Administrator.

    - **Do not start**: The application is deployed but not started. You can select this option if any post-deployment configuration is required.

11. Specify the Retirement Policy for the application. You can select:

    - **Allow the application to finish its current sessions and then retire**: Select this option if all the current sessions should be completed before retirement.

    - **Retire the previous version after retire timeout**: Specify a timeout period after which the application will be automatically retired.

    > **Note:**
    >
    > The Retirement Policy field is applicable only when you are redeploying versioned application.

12. Click **OK** to add the archive and return to the Select Applications page. You can add more archives or click **Next** to proceed. If you have added more than one archive, select the **Skip on Failure** checkbox to skip any failed deployments and continue deploying the remaining applications.

13. Click the **Lock** icon to lock the fields you have configured. These fields cannot be edited once they are locked.

14. Click **Next**. Specify the credentials for each domain you have selected, the host on which the Administration Server is running, and the hosts to which the additional files or execution scripts are to be moved. You can choose:

    - **Preferred Credentials**: This option is selected by default and the preferred credentials stored in the Management Repository are used. This option is available only if it has already been defined in Cloud Control.

- **Named Credentials**: A named credential specifies the authentication information for a user and can be a combination of username / password, public and private key pair, and can be used to perform provisioning, patching, run jobs, and other system management tasks.

  For more information on setting up the credentials, see Enterprise Manager Security Guide.

15. Click the **Lock** icon to lock the fields you have configured. These fields cannot be edited once they are locked.

16. In the Schedule Deployment page, you can schedule the date on which the Java EE Application deployment procedure should be executed.

17. Click **Next**. On the Review page, review the details you have provided for the Deployment Procedure. If you are satisfied with the details, then click **Submit** to run the Deployment Procedure according to the schedule set. If you want to modify the details, click the Edit link in the section to be modified or click **Back** repeatedly to reach the page where you want to make the changes.

    After you submit the deployment procedure, you will return to the Procedure Activity page where you can view the status of the Deployment Procedure. After the Java EE Application has been redeployed, you can search for the target and navigate to the Target Home page.

Undeploying a Java EE Application

Follow these steps to undeploy a Java EE Application:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Middleware Provisioning**.

2. Select the Java EE Application procedure from the list and click **Launch**. You can also use the following method to launch the deployment procedure:

   - Click **Middleware** from the Targets menu.

   - Right click on a WebLogic Domain from the list and from the context sensitive menu, select **Provisioning**, then select Deploy / Undeploy Java EE Applications.

   - In the Deployment Procedure Manager page, select the Java EE Application Provisioning procedure and click **Launch**.

3. In the Select Targets page, choose the **Undeploy** operation.

4. Click **Add WLS Domains** to add one or more WebLogic domains. In the list of targets displayed, choose a target and click **Select**.

5. The deployment targets are listed in the Targets table. Select the application that needs to be undeployed and click **Next**.
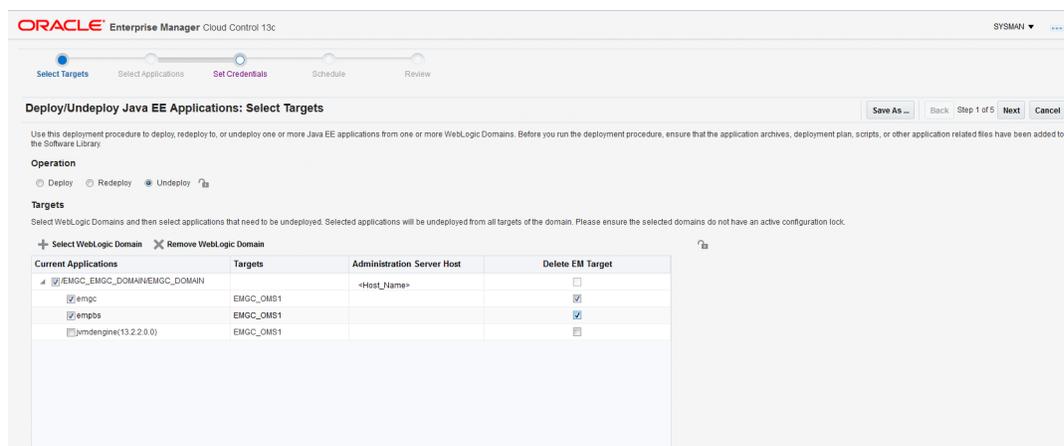
You can select the **Delete EM Target** checkbox for each selected application to automatically erase target history after the undeployment procedure.

6. Specify the credentials for each domain you have selected, the host on which the Administration Server is running, and the hosts to which the additional files or execution scripts are to be moved. You can choose:

   • **Preferred Credentials**: This option is selected by default and the preferred credentials stored in the Management Repository are used. This option is available only if it has already been defined in Cloud Control.

   • **Named Credentials**: A named credential specifies the authentication information for a user and can be a combination of username / password, public and private key pair, and can be used to perform provisioning, patching, run jobs, and other system management tasks.

   For more information on setting up the credentials, see Enterprise Manager Security Guide.

7. Specify the deployment schedule and click **Next**.

8. Review the details and click **Undeploy**. You will return to the Procedure Activity page where you can check the status.

Deploying / Redeploying / Undeploying Java EE Applications Using EMCLI

This section lists the procedures to deploy, redeploy, or undeploy a Java EE application using EMCLI:

• Deploying a Java EE Application Using EMCLI

• Undeploying a Java EE Application Using EMCLI

• Redeploying a Java EE Application Using EMCLI

Deploying a Java EE Application Using EMCLI

To deploy a Java EE application using EMCLI, run the following command:

```
emcli submit_procedure -name="JAVAEE_APPLICATION_DEPLOYMENT" -input_file=data="/input-
deploy.properties"
[instance_name="javaee_deploy"]
```

Sample Input File

This section shows the format of a sample `input-deploy.properties`file.

```
stopOnError=true
operation=Deploy

#Host Creds for all the hosts part of the domain
domains.0.domainTargetName=/Farm01_wls1213_njrf_1c1ms/wls1213_njrf_1c1ms
domains.0.wlsCredType=New
domains.0.wlsUserName=wls_username
domains.0.wlsPassword=password
#domains.0.credName=wls_creds:SYSMAN

#Host Creds for all the hosts part of the domain
domains.0.hosts.0.hostName=hostname.example.com
domains.0.hosts.0.hostCredType=New
domains.0.hosts.0.hostUserName=<USERID>
domains.0.hosts.0.hostPassword=password
#domains.0.hosts.0.hostCredName=user1_creds:<USERID>

#For each application
domains.0.javaeeApps.0.appName=MyCalender
domains.0.javaeeApps.0.isSharedLib=false
domains.0.javaeeApps.0.stageMode=DEFAULT
domains.0.javaeeApps.0.startMode=full
domains.0.javaeeApps.0.retirementPolicy=true
domains.0.javaeeApps.0.retirementTimeout=0
domains.0.javaeeApps.0.targets=Cluster_1
#domains.0.javaeeApps.0.deleteTarget=false

domains.0.javaeeApps.0.archiveSwLibPath=demo_folder/calendar_app
domains.0.javaeeApps.0.archiveFileName=Calendar.war
domains.0.javaeeApps.0.archiveStagingLocation=/my_arch/mystage

# If there is no plan, then this can be skipped
#domains.0.javaeeApps.0.planSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.planFileName=xyz.jar
#domains.0.javaeeApps.0.planStagingLocation=/my_plan/mystage

# If there is no predeploy script, this can be skipped
#domains.0.javaeeApps.0.preDeployScriptSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.preDeployScriptFileName=xyz.py
#domains.0.javaeeApps.0.preDeployScriptStagingLocation=/my_prescript/mystage

# If there is no postdeploy script, this can be skipped
#domains.0.javaeeApps.0.postDeployScriptSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.postDeployScriptFileName=xyz.py
#domains.0.javaeeApps.0.postDeployScriptStagingLocation=/my_postscript/mystage

# If there are no additional scripts, this can be skipped
#domains.0.javaeeApps.0.additionalFiles.0.swLibPath=my_folder/calpp
```

```
#domains.0.javaeeApps.0.additionalFiles.0.fileName=additional.zip
#domains.0.javaeeApps.0.additionalFiles.0.stagingLocation=/my_add/mystage

# If there is no target execution script, this can be skipped
#domains.0.javaeeApps.0.targetExecScriptSwLibPath=my_folder/my_script
#domains.0.javaeeApps.0.targetExecScriptFileName=script.pl
#domains.0.javaeeApps.0.targetExecScriptStagingLocation=/my_exec/mystage
```

Description of the Input File

- stopOnError: Set this flag to **true** if the deployment procedure should stop when an error is encountered while a Java EE application is being deployed.

- operation: The type of operation (**Deploy**) being performed.

- Domain Details: Specify the details of the WebLogic domains on which these applications are being deployed.

    – `domains.0.domainTargetName` where:

        * 0 is the index of the domain

        * domainTargetName is the name of the target in Enterprise Manager.

    – `domains.0.wlsCredType`: The credentials for the domain. Possible values are Preferred, New, or Named Credentials.

    – `domains.0.wlsUserName` (optional): If New Credentials are selected, specify the user name here.

    – `domains.0.wlsPassword` (optional): If New Credentials are selected, specify the password here.

    – `domains.0.credName` (optional): If Named Credentials are selected, specify the name of the credentials followed by the name of the credential owner in the format `<cred_name>:<owner_name>`. For example, `user1_creds:SYSMAN`.

- Host Details:

    Specify the Administration Server host details here.

    – `hosts.0.hostName`: where:

        * 0 is the index for the Administration Server host. If additional files, and target execution scripts are present, indexes 1, 2, 3, and so on must be used for all the other hosts in the domain.

        * hostName is the name of the Administration Server host.

    – `domains.0.hosts.0.hostCredType`: The credentials for the Administration server. Possible values are Preferred, New, or Named Credentials.

    – `domains.0.wlsUserName`(optional): If New Credentials are selected, specify the user name here.

    – `domains.0.wlsPassword`(optional): If New Credentials are selected, specify the password here.

    – `domains.0.credName`(optional): If Named Credentials are selected, specify the name of the credentials followed by the name of the credential owner in the format `<cred_name>:<owner_name>`. For example, `user1_creds:SYSMAN`.

- Application Details:

    Specify the details of the Java EE applications that are being deployed.

- — `javaeeApps.0.appName`: where:

  - * javaeeApps.0.appName: The name of the Java EE application being deployed. Since multiple applications can be deployed, the index (0) identifies each application being deployed.

  - * isSharedLib: Set this flag to **true** if the application is to be deployed in a shared library.

  - * stageMode The stage mode can be **Default**, **Stage**, and **No Stage**.

  - * startMode: This can be **Full**, **Admin**, or **Do not start**.

  - * retirementPolicy: Set this flag to **true** if a retirement policy is available.

  - * retirementtimeout: Specify the retirement timeout period here.

  - * targets: The target(s) on which the applications are to be deployed.

  - * archiveSwLibPath: The location in which the archive is stored in the Software Library.

  - * archiveFileName: The name of the archive file.

  - * archiveStagingLocation: The location in which the archive should be staged on the Administration Server host.

> **✎ Note:**
>
> In the remaining optional sections, you can specify the Software Library path, the file name, and the staging location as necessary.

Undeploying a Java EE Application Using EMCLI

To undeploy a Java EE application using EMCLI, run the following command:

```
emcli submit_procedure -name="JAVAEE_APPLICATION_UNDEPLOY" -input_file=data="/input-
undeploy.properties"
[instance_name="javaee_undeploy"]
```

Sample Input File

This section shows the format of a sample `input-undeploy.properties` file.

```
stopOnError=true
operation=Undeploy

#Host Creds for all the hosts part of the domain
domains.0.domainTargetName=/Farm01_wls1213_njrf_1c1ms/wls1213_njrf_1c1ms
domains.0.wlsCredType=New
domains.0.wlsUserName=wls_username
domains.0.wlsPassword=password
#domains.0.credName=wls_creds:SYSMAN

#Host Creds for all the hosts part of the domain
domains.0.hosts.0.hostName=hostname.example.com
domains.0.hosts.0.hostCredType=New
domains.0.hosts.0.hostUserName=user1
domains.0.hosts.0.hostPassword=KDsa0105
```

```
#domains.0.hosts.0.hostCredName=user1_creds:SYSMAN

#For each application
domains.0.javaeeApps.0.appName=MyCalendar
#domains.0.javaeeApps.0.isSharedLib=false
#domains.0.javaeeApps.0.stageMode=DEFAULT
#domains.0.javaeeApps.0.startMode=full
#domains.0.javaeeApps.0.retirementPolicy=true
#domains.0.javaeeApps.0.retirementTimeout=0
domains.0.javaeeApps.0.targets=Cluster_1
domains.0.javaeeApps.0.deleteTarget=true

#domains.0.javaeeApps.0.archiveSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.archiveFileName=file.jar
#domains.0.javaeeApps.0.archiveStagingLocation=/my_arch/mystage

# If there is no plan, then this can be skipped
#domains.0.javaeeApps.0.planSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.planFileName=xyz.jar
#domains.0.javaeeApps.0.planStagingLocation=/my_plan/mystage

# If there is no predeploy script, this can be skipped
#domains.0.javaeeApps.0.preDeployScriptSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.preDeployScriptFileName=xyz.py
#domains.0.javaeeApps.0.preDeployScriptStagingLocation=/my_prescript/mystage

# If there is no postdeploy script, this can be skipped
#domains.0.javaeeApps.0.postDeployScriptSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.postDeployScriptFileName=xyz.py
#domains.0.javaeeApps.0.postDeployScriptStagingLocation=/my_postscript/mystage

# If there are no additional scripts, this can be skipped
#domains.0.javaeeApps.0.additionalFiles.0.swLibPath=my_folder/calpp
#domains.0.javaeeApps.0.additionalFiles.0.fileName=additional.zip
#domains.0.javaeeApps.0.additionalFiles.0.stagingLocation=/my_add/mystage

# If there is no target execution script, this can be skipped
#domains.0.javaeeApps.0.targetExecScriptSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.targetExecScriptFileName=tscript.pl
#domains.0.javaeeApps.0.targetExecScriptStagingLocation=/my_exec/mystage
```

Description of the Input File

- stopOnError: Set this flag to **true** if the deployment procedure should stop when an error is encountered while a Java EE application is being undeployed.

- operation: The type of operation (**Undeploy**) being performed.

- Domain Details: Specify the details of the WebLogic domains on which these applications are being undeployed.

    - `domains.0.domainTargetName` where:

        * 0 is the index of the domain

        * domainTargetName is the name of the target in Enterprise Manager.

    - `domains.0.wlsCredType`: The credentials for the domain. Possible values are Preferred , New. or Named Credentials.

- `domains.0.wlsUserName`(optional): If New Credentials are selected, specify the user name here.

- `domains.0.wlsPassword`(optional): If New Credentials are selected, specify the password here.

- `domains.0.credName` (optional): If Named Credentials are selected, specify the name of the credentials followed by the name of the credential owner in the format `<cred_name>:<owner_name>`. For example, `user1_creds:SYSMAN`.

- Host Details:

  Specify the Administration Server host details here.

  - `hosts.0.hostName`: where:

    * 0 is the index for the Administration Server host. If additional files, and target execution scripts are present, indexes 1, 2, 3, and so on must be used for all the other hosts in the domain.

    * hostName is the name of the Administration Server host.

  - `domains.0.hosts.0.hostCredType`: The credentials for the Administration Server. Possible values are Preferred, New, or Named Credentials.

  - `domains.0.wlsUserName`(optional): If New Credentials are selected, specify the user name here.

  - `domains.0.wlsPassword`(optional): If New Credentials are selected, specify the password here.

  - `domains.0.credName`(optional): If Named Credentials are selected, specify the name of the credentials followed by the name of the credential owner in the format `<cred_name>:<owner_name>`. For example, `user1_creds:SYSMAN`.

- Application Details:

  Specify the details of the Java EE applications that are being undeployed.

  - `javaeeApps.0.appName`: where:

    * javaeeApps.0.appName: The name of the Java EE application being undeployed. Since multiple applications can be undeployed, the index (0) identifies each application being deployed.

    * isSharedLib: Set this flag to **true** if the application being undeployed is present in a shared library.

    * stageMode The stage mode can be **Default**, **Stage**, and **No Stage**.

    * startMode: This can be **Full**, **Admin**, or **Do not start**.

    * retirementPolicy: Set this flag to **true** if a retirement policy is available.

    * retirementtimeout: Specify the retirement timeout period here.

    * targets: The target(s) from which the applications are to be undeployed.

    * deleteTarget:

      Set this flag to **true** if the target is to be deleted after the application has been undeployed.

    * archiveSwLibPath: The location in which the archive is stored in the Software Library.

    * archiveFileName: The name of the archive file.

        *   archiveStagingLocation: The location in which the archive should be staged on the Administration Server host.

> **✎ Note:**
>
> In the remaining optional sections, you can specify the Software Library path, the file name, and the staging location as necessary.

Redeploying a Java EE Application Using EMCLI

To redeploy a Java EE application using EMCLI, run the following command:

```
emcli submit_procedure -name="JAVAEE_APPLICATION_REDEPLOYMENT" -input_file=data="/input-
redeploy.properties"
[instance_name="javaee_redeploy"
```

Sample Input File

```
stopOnError=true
operation=Redeploy

#Host Creds for all the hosts part of the domain
domains.0.domainTargetName=/Farm01_wls1213_njrf_1c1ms/wls1213_njrf_1c1ms
domains.0.wlsCredType=New
domains.0.wlsUserName=wls_username
domains.0.wlsPassword=password
#domains.0.credName=wls_creds:SYSMAN

#Host Creds for all the hosts part of the domain
domains.0.hosts.0.hostName=hostname.example.com
domains.0.hosts.0.hostCredType=New
domains.0.hosts.0.hostUserName=user1
domains.0.hosts.0.hostPassword=KDsa0105
#domains.0.hosts.0.hostCredName=user1_creds:SYSMAN

#For each application
domains.0.javaeeApps.0.appName=MyCalender
domains.0.javaeeApps.0.isSharedLib=false
domains.0.javaeeApps.0.stageMode=DEFAULT
domains.0.javaeeApps.0.startMode=full
domains.0.javaeeApps.0.retirementPolicy=true
domains.0.javaeeApps.0.retirementTimeout=0
domains.0.javaeeApps.0.targets=Cluster_1
#domains.0.javaeeApps.0.deleteTarget=false

domains.0.javaeeApps.0.archiveSwLibPath=demo_folder/calendar_app
domains.0.javaeeApps.0.archiveFileName=Calendar.war
domains.0.javaeeApps.0.archiveStagingLocation=/my_arch/mystage

# If there is no plan, then this can be skipped
#domains.0.javaeeApps.0.planSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.planFileName=xyz.jar
#domains.0.javaeeApps.0.planStagingLocation=/my_plan/mystage
```

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```
# If there is no predeploy script, this can be skipped
#domains.0.javaeeApps.0.preDeployScriptSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.preDeployScriptFileName=xyz.py
#domains.0.javaeeApps.0.preDeployScriptStagingLocation=/my_prescript/mystage

# If there is no postdeploy script, this can be skipped
#domains.0.javaeeApps.0.postDeployScriptSwLibPath=my_folder/calpp
#domains.0.javaeeApps.0.postDeployScriptFileName=xyz.py
#domains.0.javaeeApps.0.postDeployScriptStagingLocation=/my_postscript/mystage

# If there are no additional scripts, this can be skipped
#domains.0.javaeeApps.0.additionalFiles.0.swLibPath=my_folder/calpp
#domains.0.javaeeApps.0.additionalFiles.0.fileName=additional.zip
#domains.0.javaeeApps.0.additionalFiles.0.stagingLocation=/my_add/mystage

# If there is no target execution script, this can be skipped
#domains.0.javaeeApps.0.targetExecScriptSwLibPath=my_folder/my_script
#domains.0.javaeeApps.0.targetExecScriptFileName=script.pl
#domains.0.javaeeApps.0.targetExecScriptStagingLocation=/my_exec/mystage
```

> **Note:**
>
> See Deploying a Java EE Application Using EMCLI for details on the input details.

12

Provisioning SOA Artifacts and Composites

This chapter explains how you can provision SOA Artifacts and Composites using Oracle Enterprise Manager Cloud Control (Cloud Control). In particular, this chapter covers the following:

- Getting Started with SOA Artifacts Provisioning
- Understanding SOA Artifacts Provisioning
- Deployment Procedures, Supported Releases, and Core Components Deployed
- Provisioning SOA Artifacts
- Deploying SOA Composites

> **Note:**
>
> In Enterprise Manager 12c Release 4, there is support to provision SOA 11g artifacts. Note that you cannot provision SOA 12c artifacts.

Getting Started with SOA Artifacts Provisioning

This section helps you get started with this chapter by providing an overview of the steps involved in provisioning SOA Artifacts and Composites. Consider this section to be a documentation map to understand the sequence of actions you must perform to successfully provision SOA Artifacts and Composites. Click the reference links provided against the steps to reach the relevant sections that provide more information.

Table 12-1   Getting Started with Provisioning SOA Artifacts and Composites

Step	Description	Reference Links
Step 1	**Understanding the Deployment Procedure** Understand the two Deployment Procedures that are offered by Cloud Control for provisioning SOA Artifacts and Composites. Know how the two Deployment Procedures function, what use cases they cover, what releases they support, and what core components they provision.	To learn about the Deployment Procedure, see Deployment Procedures, Supported Releases, and Core Components Deployed.
Step 2	**Selecting the Deployment Procedure to Provision** This chapter covers use cases for different SOA components. Identify the component you want to provision and understand the use cases that are covered.	• To learn about provisioning SOA Artifacts, see Provisioning SOA Artifacts. • To learn about provisioning SOA Composites, see Deploying SOA Composites.

Table 12-1   (Cont.) Getting Started with Provisioning SOA Artifacts and Composites

Step	Description	Reference Links
Step 3	**Meeting the Prerequisites** Before you run any Deployment Procedure, you must meet the prerequisites, such as setting up of the provisioning environment, applying mandatory patches, and setting up of Oracle Software Library.	To learn about the prerequisites for provisioning SOA artifacts and composites, access the reference links provided for Step (2) and navigate to the *Prerequisites* subsection.
Step 4	**Running the Deployment Procedure** Run the Deployment Procedure to successfully provision SOA Artifacts and Composites.	To provision SOA Artifacts and Composites, access the reference links provided for Step (2) and navigate to the *Provisioning Procedure* subsection.

Understanding SOA Artifacts Provisioning

SOA artifacts deployment procedures support provisioning of SOA composites, Web Service policies, and policy and credential stores.

Following are some of the terms used in SOA artifacts provisioning:

SOA Composite

A SOA composite is a logical construct. Its components can run in a single process on a single computer or be distributed across multiple processes on multiple computers. A complete application might be constructed from just one composite, or it could combine several different composites. The components making up each composite might all use the same technology, or they might be built using different technologies.

SOA Infra Domain

The SOA Infrastructure domain is a WebLogic domain that contains soa-infra binaries, The SOA Infrastructure includes a set of service engines (Human Workflow, Decision Service, and Oracle Mediator) that execute the business logic of their respective components within the SOA composite application (for example, a Human Workflow process).

Web Services

A Web service is a program that can be accessed remotely using different XML-based languages. What this program can do (that is, the functionality it implements) is described in a standard XML vocabulary called Web Services Description Language (WSDL). For example, a banking Web service may implement functions to check an account, print a statement, and deposit and withdraw funds. These functions are described in a WSDL file that any consumer can invoke to access the banking Web service. As a result, a consumer does not have to know anything more about a Web service than the WSDL file that describes what it can do.

A Web service consumer (such as, a desktop application or a Java Platform, Enterprise Edition client such as a portlet) invokes a Web service by submitting a request in the form of an XML document to a Web service provider. The Web service provider processes the request and returns the result to the Web service consumer in an XML document.

WS Policies and Assertions

Policies describe the capabilities and requirements of a Web service such as whether and how a message must be secured, whether and how a message must be delivered reliably, and so on. Policies belong to one of the following categories: Reliable Messaging, Management, WS-Addressing, Security, and MTOM.

Policies are comprised of one or more assertions. A policy assertion is the smallest unit of a policy that performs a specific action. Policy assertions are executed on the request message and the response message, and the same set of assertions is executed on both types of messages. The assertions are executed in the order in which they appear in the policy. Assertions, like policies, belong to one of the following categories: Reliable Messaging, Management, WS-Addressing, Security, and MTOM.

Policy Stores

The Policy Store is a repository of system and application-specific policies and roles. Application roles can include enterprise users and groups specific to the application (such as administrative roles). A policy can use any of these groups or users as principals. A policy store can be file-based or LDAP-based. A file-based policy store is an XML file, and this store is the out-of-the-box policy store provider. An LDAP-based policy store can use either of the following LDAP servers: Oracle Internet Directory or Oracle Virtual Directory (with a local store adapter, or LSA).

Credential Stores

A Credential Store is a repository of security data (credentials) that certify the authority of users, Java components, and system components. A credential can hold user name and password combinations, tickets, or public key certificates. This data is used during authentication, when principals are populated in subjects, and, further, during authorization, when determining what actions the subject can perform.

Human Workflow

Human Workflow component is responsible for managing the lifecycle of human tasks, including creation, assignment, expiration, deadlines, and notifications, as well as its presentation to end users. It supports sophisticated dynamic task routing leveraging declarative patterns and tight integration with business rules. The three main sub-components of Human Workflow are a Task editor, Task Service Engine, and a Worklist application.

Oracle B2B

Oracle B2B provides the secure and reliable exchange of documents between businesses. For example, Retailer, Supplier, and Manufacturer. This type of eCommerce, B2B, represents mature business documents, classic business processes and industry specific messaging services and requires an architecture to manage the complete end-to-end business process. Together with the Oracle SOA Suite, Oracle B2B meets this challenge and provides an architecture enabling a unified business process platform, end-to-end instance tracking, visibility, auditing, process intelligence, governance, and security.

Deployment Procedures, Supported Releases, and Core Components Deployed

Cloud Control offers the following Deployment Procedures for provisioning SOA Artifacts and Composites:

Deployment Procedure	Supported Releases	Artifacts Migrated
SOA Artifacts Provisioning	Oracle SOA Suite 11gR1 Patch Set 1 to Patch Set 4 (11.1.1.2.0) to 11.1.1.5.0) Oracle SOA Suite 12cR2 Patch Set 1 and Patch Set 2 (12.2.1.1) and (12.2.1.2) Patch Set 3 and later are not supported	• SOA Composites • Oracle WebLogic Server Policies • Assertion Templates • JPS Policy and Credential Stores • Human Workflow • Oracle B2B
Deploy SOA Composites	Oracle SOA Suite 11gR1 Patch Set 1 to Patch Set 4 (11.1.1.2.0) to 11.1.1.5.0)	• SOA Composites

> **Note:**
>
> Provisioning of a gold image from the Software Library is not supported for Microsoft Windows Vista.

> **Note:**
>
> Cloning of human workflow artifacts and B2B artifacts are not supported. For information about cloning human workflow artifacts, see the *Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite*. For information about cloning B2B artifacts, see the *Oracle Fusion Middleware User's Guide for Oracle B2B*. For the guides, see Oracle Fusion Middleware Online Documentation Library.

> **Note:**
>
> Provisioning from installation media or an existing domain is only supported for plain WLS domains. SOA and OSB are not supported.

Provisioning SOA Artifacts

This section describes how you can provision SOA artifacts. In particular, this section covers the following:

- Provisioning SOA Artifacts from a Reference Installation
- Provisioning SOA Artifacts from Gold Image

Provisioning SOA Artifacts from a Reference Installation

This section describes how you can provision SOA artifacts from one soa-infra domain to another.

Before running the Deployment Procedure, meet the following prerequisites:

- Ensure that you meet the prerequisites described in Provisioning SOA Artifacts and Composites.
- Ensure that you have already provisioned Oracle SOA Suite 11g and its underlying Oracle WebLogic Server Domain.
- Ensure that all the components (not only the soa-infra domain) within the source and target Oracle WebLogic Server Domains are up and running.
- Ensure that the source and the destination soa-infra domains are of the same version.

To provision SOA artifacts (composites, web service policies, JPS configuration) from a reference installation, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Procedure Library**.

2. On the Deployment Procedure Manager page, in the Procedure Library subtab, from the table, select **SOA Artifacts Provisioning** deployment procedure. Select **Launch** and click **Go**. Cloud Control displays the Select Source page of the Deployment Procedure.

> **✎ Note:**
>
> You can also access this deployment procedure as follows:
>
> From the SOA Infrastructure Home page:
>
> a. From the Targets menu, click **Middleware**.
>
> b. In the Middleware page, click on a target of type **SOA Infrastructure**.
>
> c. In the SOA Infrastructure home page, from the SOA infrastructure-specific menu, select **SOA Artifacts Provisioning**.

3. On the Select Source page, do the following:

   a. Retain the default selection, that is, **Provision from reference environment**.

   b. Click on the torch icon against the **Domain Name** field. Search for the Oracle WebLogic Server Domain that you want to deploy the SOA artifacts from and select it. Ensure that the source Oracle WebLogic Server Domain is up and running.

   c. In the **Credentials** section, retain the default section, that is, **Preferred Credentials** so that the preferred credentials stored in the Management Repository can be used.

   To override the preferred credentials with another set of credentials, select **Override Preferred Credentials**. You are prompted to specify the Oracle WebLogic Server Domain credentials and the Oracle WebLogic Administration Server host credentials. In the Oracle WebLogic Server Domain Credentials section, specify the administrator credentials that can be used to access the WebLogic Server Administration Console. In the Oracle WebLogic Administration Server Host Credentials section, specify the operating system credentials of the user who installed the Admin Server.

   d. Optionally, if you want to save the SOA artifacts as an image in the Software Library, select **Save SOA Artifacts Gold Image in Software Library**.

   For example, in future, if you want to provision this particular version to other Oracle WebLogic Server Domains, then instead of using the reference installation, which could potentially be down, you can use the gold image you saved in the Software Library.

e. Click **Next**.

4. On the Select Destination page, do the following:

   a. Click on the torch icon against the **Domain Name** field. Search for the Oracle WebLogic Server Domain that you want to deploy the SOA artifacts to and select it. Ensure that the destination Oracle WebLogic Server Domain is up and running.

   b. In the **Credentials** section, retain the default selection, that is, **Preferred Credentials** so that the preferred credentials stored in the Management Repository can be used.

   To override the preferred credentials with another set of credentials, select **Override Preferred Credentials**. You are prompted to specify the Oracle WebLogic Server Domain credentials and the Oracle WebLogic Administration Server host credentials. In the Oracle WebLogic Server Domain Credentials section, specify the administrator credentials that can be used to access the WebLogic Server Administration Console. In the Oracle WebLogic Administration Server Host Credentials section, specify the operating system credentials of the user who installed the Admin Server.

   c. Click **Next**.

5. On the Select Artifacts page, do the following:

   a. In the **Choose the type of SOA artifacts to provision** section, select **SOA Composites**, **Web Services Policies**, and **Java Platform Security Configuration**.

   b. Click **Next**.

6. On the SOA Composites page, do the following:

   a. Select the composites you want to provision and specify a configuration plan from the Software Library or a directory.

   It is recommended that you place the configuration plan in a directory on destination machine. Alternatively, you can also place the configuration plan in any other shared location which is accessible from the destination machine.

   If the composite already exists on the destination host, then select **Overwrite** to overwrite that existing composite with the composite from the source domain.

   b. Click **Next**.

7. On the Web Services Policies page, do the following:

   a. In the Assertion Templates section, select the assertion templates to migrate.

   b. In the Web Services Policies section, select the policies to migrate.

   c. Click **Next**.

8. On the Java Platform Security page, do the following:

   a. In the Migrate Policy Store and Credential Store section, select **Migrate Policy Store** and **Migrate Credential Store**.

   To view a list of providers for the source and target, click **Provider details** link.

   b. Click **Next**.

9. On the Human Workflow page, select all the workflow artifacts that you want to migrate such as **Views**, **Flex Field Mappings,** and **Attribute Labels,** then click **Next.**

10. On the B2B artifacts page, select all the B2B artifacts that you want to migrate such as **Trading Partners, Trading Agreements,** and **Document Protocols,** then click **Next.**

11. On the Schedule page, schedule the Deployment Procedure to run either immediately or later.

12. On the Review page, review the details you have provided for provisioning SOA artifacts, and click **Submit**.

Provisioning SOA Artifacts from Gold Image

This section describes how you can provision SOA artifacts (composites, web service policies, JPS configuration) from a gold image stored in the Software Library. In particular, this section covers the following:

Before running the Deployment Procedure, meet the following prerequisites:

- Ensure that you meet the prerequisites described in Setting Up Your Infrastructure.
- Ensure that you have already provisioned Oracle SOA Suite 11g and its underlying Oracle WebLogic Server Domain.
- Ensure that the source and the destination soa-infra domains are of the same version.
- Ensure that you have already saved the gold image in the Software Library while provisioning the SOA artifacts from a reference installation.

To provision SOA artifacts from a gold image, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then click **Procedure Library**.

2. On the Deployment Procedure Manager page, in the Procedure Library subtab, from the table, select **SOA Artifacts Provisioning** deployment procedure. Select **Launch** and click **Go**. Cloud Control displays the Select Source page of the Deployment Procedure.

> **Note:**
>
> You can also access this deployment procedure as follows:
>
> - From the SOA Infrastructure Home page:
>   a. From the Targets menu, click **Middleware**.
>   b. In the Middleware page, click on a target of type **SOA Infrastructure**.
>   c. In the SOA Infrastructure home page, from the SOA infrastructure-specific menu, select **SOA Artifacts Provisioning**.

3. On the Select Source page, do the following:
   a. Select **Provision from Gold Image**.
   b. Click on the torch icon against the **Gold Image Name** field. Search for the gold image you want to provision the SOA artifacts from and select it.
   c. Click **Next**.

4. On the Select Destination page, do the following:
   a. Click on the torch icon against the **Domain Name** field. Search for the Oracle WebLogic Server Domain that you want to deploy the SOA artifacts to and select it.
   b. In the **Credentials** section, retain the default section, that is, **Preferred Credentials** so that the preferred credentials stored in the Management Repository can be used.

      To override the preferred credentials with another set of credentials, select **Override Preferred Credentials**. You are prompted to specify the Oracle WebLogic Server Domain credentials and the Oracle WebLogic Administration Server host credentials.

> In the Oracle WebLogic Server Domain Credentials section, specify the administrator credentials that can be used to access the WebLogic Server Administration Console. In the Oracle WebLogic Administration Server Host Credentials section, specify the operating system credentials of the user who installed the Admin Server.
>
> **c.** Click **Next**.

5. On the Select Artifacts page, do the following:

   a. In the **Choose the type of SOA artifacts to provision** section, select **SOA Composites**, **Web Services Policies**, and **Java Platform Security Configuration**.

   b. Click **Next**.

6. On the SOA Composites page, do the following:

   a. Select the composites you want to provision and specify a configuration plan from the Software Library or a directory.

   If the composite already exists on the destination host, then select **Overwrite** to overwrite that existing composite with the composite from the source domain.

   b. Click **Next**.

7. On the Web Services Policies page, do the following:

   a. In the Assertion Templates section, select the assertion templates to migrate.

   b. In the Web Services Policies section, select the policy assertions to migrate.

   c. Click **Next**.

8. On the Java Platform Security page, do the following:

   a. In the Migrate Policy Store and Credential Store section, select **Migrate Policy Store** and **Migrate Credential Store** check boxes.

   To view a list of providers for the target, click **Provider details** link.

   b. Click **Next**.

9. On the Human Workflow page, select all the workflow artifacts that you want to migrate like **Views**, **Flex Field Mappings,** and **Attribute Labels,** then click **Next.**

10. On the B2B artifacts page, select all the B2B artifacts that you want to migrate like **Trading Partners, Trading Agreements,** and **Document Protocols,** then click **Next.**

11. On the Review page, review the details you have provided for provisioning SOA artifacts, and click **Submit**.

Deploying SOA Composites

This section explains how you can deploy SOA composites. In particular, this section contains:

Before running the Deployment Procedure, meet the following prerequisites:

- Ensure that you meet the prerequisites described in Provisioning SOA Artifacts and Composites.

- Ensure that you have already provisioned Oracle SOA Suite 11g and its underlying Oracle WebLogic Server Domain.

- Ensure that the source and the destination soa-infra domains are of the same version.

  The domain should have at least one managed server with the SOA Infrastructure application running. In the case of a SOA Cluster, the composites will be deployed to any one managed server in the cluster.

- Ensure that you have the SOA Composites either in the Software Library or in a file system accessible from the Admin Server host.

To provision SOA composites, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Procedure Library**.

2. On the Deployment Procedure Manager page, in the Procedure Library subtab, from the table, select **Deploy SOA Composites** deployment procedure. Select **Launch** and click **Go**. Cloud Control displays the Select Destination page of the Deployment Procedure.

3. On the Destination page, do the following:

   a. Click on the torch icon against the **Destination Domain Name** field. Search for the Oracle WebLogic domain that you want to deploy the SOA composites to, and select it.

   b. In the **Credentials** section, retain the default section, that is, **Preferred Credentials** so that the preferred credentials stored in the Management Repository can be used.

      To override the preferred credentials with another set of credentials, select **Override Preferred Credentials**. You are prompted to specify the Oracle WebLogic Server Domain credentials and the Oracle WebLogic Administration Server host credentials. In the Oracle WebLogic Server Domain Credentials section, specify the administrator credentials that can be used to access the WebLogic Server Administration Console. In the Oracle WebLogic Administration Server Host Credentials section, specify the operating system credentials of the user who installed the Admin Server.

   c. Click **Next**.

4. On the Source page, do the following:

   a. In the Composites section, click **Add**. Select Composites Source as Software Library or File System depending on where the composites are located. Select the Plan Source location and path.

      If the composite already exists on the destination host, then select **Overwrite** to overwrite that existing composite with the composite from the source domain. If you want the composite that you are deploying now to be set as the default component, then retain the **Force Default** selection.

   b. In the Options section, select **Verify adapter dependencies** if you want to ignore the missing adapters in the destination domain and proceed with the provisioning operation. Each composite may refer to one or more adapters, and the composites may not run properly if the depending adapters are missing in the destination domain. However, if you select this option, you can ignore all such missing adapters.

   c. Click **Next**.

5. On the Schedule page, schedule the Deployment Procedure to run either immediately or later.

6. On the Review page, review the details you have provided for provisioning SOA composites, and click **Submit**.

13

Provisioning Service Bus Resources

Service Bus is an enterprise-class service bus that connects, manages, and mediates interactions between heterogeneous services. Service Bus accelerates service configuration, integration, and deployment, thus simplifying management of shared services across the Service-Oriented Architecture (SOA).

The resources of Service Bus 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.

While Oracle Enterprise Manager Cloud Control (Cloud Control) allows you to discover and monitor these Service Bus targets, it also provides Deployment Procedures that help you provision Service Bus resources.

This chapter explains how you can provision Service Bus resources. In particular, this chapter covers the following:

- Getting Started with Provisioning Service Bus Resources
- Supported Releases
- Provisioning Service Bus Resources from Service Bus Domain
- Provisioning Service Bus Resources from Oracle Software Library

Getting Started with Provisioning Service Bus Resources

This section helps you get started with this chapter by providing an overview of the steps involved in provisioning Service Bus resources. Consider this section to be a documentation map to understand the sequence of actions you must perform to successfully provision Service Bus resources. Click the reference links provided against the steps to reach the relevant sections that provide more information.

Table 13-1   Getting Started with Provisioning Service Bus Resources

Step	Description	Reference Links
Step 1	**Knowing About The Supported** Releases Know what releases of Service Bus can be provisioned by the Deployment Procedure.	To learn about the releases supported by the Deployment Procedure, see Supported Releases.
Step 2	**Selecting the Use Case** This chapter covers a few use cases for provisioning Service Bus resources. Select the use case that best matches your requirements.	• To learn about provisioning Service Bus resources from the an Service Bus domain, see Provisioning Service Bus Resources from Service Bus Domain. • To learn about provisioning Service Bus resources from the Software Library, see Provisioning Service Bus Resources from Oracle Software Library.

Table 13-1   (Cont.) Getting Started with Provisioning Service Bus Resources

Step	Description	Reference Links
Step 3	**Meeting the Prerequisites** Before you run any Deployment Procedure, you must meet the prerequisites, such as setting up of the provisioning environment, applying mandatory patches, and setting up of Oracle Software Library.	• To learn about the prerequisites for provisioning Service Bus resources from the an Service Bus domain, see Provisioning Service Bus Resources from Service Bus Domain. • To learn the prerequisites for provisioning Service Bus resources from the Software Library, see Provisioning Service Bus Resources from Oracle Software Library.
Step 4	**Running the Deployment Procedure** Run the Deployment Procedure to successfully provision Service Bus resources.	• To provision Service Bus resources from the an Service Bus domain, see Provisioning Service Bus Resources from Service Bus Domain. • To provision Service Bus resources from the Software Library, see Provisioning Service Bus Resources from Oracle Software Library.

Supported Releases

Using this Deployment Procedure, you can provision the resources for Service Bus 2.6, 2.6.1, 3.0, and 10gR3 (3.1).

Provisioning Service Bus Resources from Service Bus Domain

This section describes how you can provision Service Bus resources directly from an Service Bus domain.

Before running the Deployment Procedure, meet the following prerequisites:

Prerequisites for Designers

• Ensure that you meet the prerequisites described in Setting Up Your Infrastructure.

• Ensure that the source Service Bus (from where you want to export the resources) is already discovered and monitored in Cloud Control.

• 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, see Setting Up Oracle Software Library.

Prerequisites for Operators

• If you have PAM/LDAP enabled in your environment, then ensure that the target agents are configured with PAM/LDAP. For more information, see My Oracle Support note 422073.1.

• Ensure that you use an operating system user that has the privileges to run the Deployment Procedure, and that can switch to *root* user and run all commands on the target hosts. For example, commands such as mkdir, ls, and so on.

  If you do not have the privileges to do so, that is, if you are using a locked account, then request your administrator (a designer) to either customize the Deployment Procedure to run it as another user or ignore the steps that require special privileges.

For example, user account A might have the root privileges, but you might use user account B to run the Deployment Procedure. In this case, you can switch from user account B to A by customizing the Deployment Procedure.

For information about customization, see Setting Up Credentials.

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

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Middleware Provisioning**.

2. From the Deployment Procedures section, select the Service Bus Resource Provisioning procedure from the list and click **Launch**.

3. On the Select Source page, in the Source section, select **Service Bus Domain**.

   a. For **Domain**, click the torch icon and select the Service Bus domain from where the resources can be exported and deployed to a target Service Bus 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**.

4. 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 Service Bus domain. The selected projects are exported to a JAR file, and the JAR file is moved to the host where the target Service Bus domain is running.

   Note that the resources of the selected projects that exist in the target Service Bus 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 in Understanding the Export Modes for Service Bus Resources.

   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 protected resources 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 Service Bus 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.

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 Service Bus 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 Service Bus domain.

Note that for 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 Service Bus 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 Service Bus 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**.

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

a. Specify the login credentials of the source and target Service Bus domains.

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

7. In the Schedule page, specify a Deployment Instance name. If you want to run the procedure immediately, then retain the default selection, that is, One Time (Immediately). If you want to run the procedure later, then select One Time (Later) and provide time zone, start date, and start time details. You can set the notification preferences according to deployment procedure status. If you want to run only prerequisites, you can select **Pause the procedure to allow me to analyze results after performing prerequisite checks** to pause the procedure execution after all prerequisite checks are performed. Click **Next**.

8. On the Review page, review the details you have provided for the Deployment Procedure. If you are satisfied with the details, then click **Submit** to run the Deployment Procedure according to the schedule set. If you want to modify the details, click the **Edit** link in the section to be modified or click **Back** repeatedly to reach the page where you want to make the changes.

9. In the Procedure Activity page, view the status of the execution of the job and steps in the deployment procedure. Click the **Status** link for each step to view the details of the execution of each step. You can click **Debug** to set the logging level to Debug and click **Stop** to stop the procedure execution.

Understanding the Export Modes for Service Bus Resources

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

- Ensure that you use an operating system user that has the privileges to run the Deployment Procedure, and that can switch to *root* user and run all commands on the target hosts. For example, commands such as mkdir, ls, and so on.

  If you do not have the privileges to do so, that is, if you are using a locked account, then request your administrator (a designer) to either customize the Deployment Procedure to run it as another user or ignore the steps that require special privileges.

  For example, user account A might have the root privileges, but you might use user account B to run the Deployment Procedure. In this case, you can switch from user account B to A by customizing the Deployment Procedure.

  For information about customization, see Customizing Deployment Procedures .

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

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select Middleware Provisioning.

2. From the Deployment Procedures section, select the Service Bus Resource Provisioning procedure from the list and click **Launch**.

3. 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 Service Bus 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**. Cloud Control displays Select Target page.

4. 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 Service Bus 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 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 Service Bus domain.

      Note that for 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 Service Bus 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 Service Bus 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**.

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

    a. Specify the login credentials of the source and target Service BusService Bus domains.

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

6. In the Schedule page, specify a Deployment Instance name. If you want to run the procedure immediately, then retain the default selection, that is, One Time (Immediately). If you want to run the procedure later, then select One Time (Later) and provide time zone, start date, and start time details. You can set the notification preferences according to deployment procedure status. If you want to run only prerequisites, you can select **Pause the procedure to allow me to analyze results after performing prerequisite checks** to pause the procedure execution after all prerequisite checks are performed. Click **Next**.

7. On the Review page, review the details you have provided for the Deployment Procedure. If you are satisfied with the details, then click **Submit** to run the Deployment Procedure according to the schedule set. If you want to modify the details, click the **Edit** link in the section to be modified or click **Back** repeatedly to reach the page where you want to make the changes.

8. In the Procedure Activity page, view the status of the execution of the job and steps in the deployment procedure. Click the **Status** link for each step to view the details of the execution of each step. You can click **Debug** to set the logging level to Debug and click **Stop** to stop the procedure execution.

14

Patching Software Deployments

## Patch Management Overview

This section describes the following:

- About the Patch Management Solution
- Overview of Supported Patching Modes
- Understanding the Patching Workflow

About the Patch Management Solution

Middleware patch management solution offers:

- Integrated patching workflow with My Oracle Support (MOS), therefore, you see recommendations, search patches, and roll out patches all using the same user interface. However, Cloud Control does not upload any data to MOS. It only uses MOS to download the latest updates.

- Complete, end-to-end orchestration of patching workflow using *Patch Plans*, including analysis of the patch conflicts, therefore, there is minimal manual effort required. For more information on patch plans, see Overview of Patch Plans.

- Clear division of responsibilities between designers and operators. Designers can focus on creating patch plans, testing them on a test system, and saving them as patch templates. Operators can focus on creating patch plans out of the template for rolling out the patches on a production system.

- Easy review of patches for applicability in your environment, validation of patch plans, and automatic receipt of patches to resolve validation issues.

- Saving successfully analyzed or deployable patch plans as patch templates, which contain a predetermined set of patches and deployment options saved from the source patch plan.

Figure 14-1   Accessing the Patches & Updates Screen
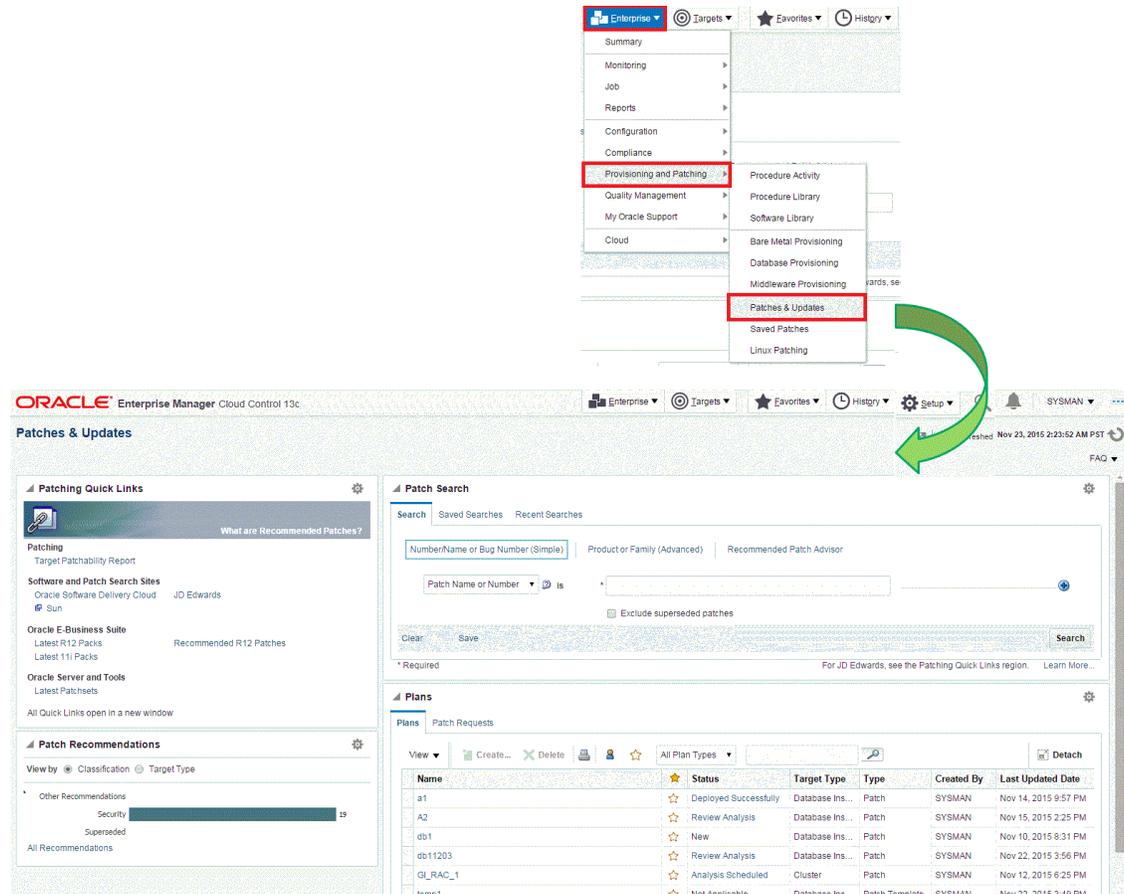
Overview of Patch Plans

This section describes the following:

- About Patch Plans
- About Types of Patch Plans
- About the Create Plan Wizard

About Patch Plans

Patch plans help you create a consolidated list of patches you want to apply as a group to one or more targets. Patch plans have states (or status) that map to key steps in the configuration change management process. Any administrator or role that has view privileges can access a patch plan.

Patch plan supports the following types of patches:

- Patches (One-Off)

  – Interim Patches that contain a single bug fix or a collection of bug fixes provided as required. It can also include customer specific security bug fixes.

  – Diagnostic Patches, intended to help diagnose or verify a fix or a collection of bug fixes.

- Patch Set Updates (PSU), contain a collection of high impact, low risk, and proven fixes for a specific product or component.

- Critical Patch Updates (CPU), contain a collection of security bug fixes.

- Patch Sets

> **Note:**
>
> - Using Oracle Enterprise Manager Cloud Control to apply Patch Sets to any Oracle Fusion Middleware software (including Oracle WebLogic Server, Oracle SOA Infrastructure, and Oracle Service Bus) and Oracle Fusion Application software is not supported. Similarly, using Oracle Enterprise Manager Cloud Control to apply Bundle Patches to Oracle Identity Management software is not supported.
>
> - You cannot add both patch sets and patches to a patch plan. Instead, you can have one patch plan for patch sets, and another patch plan for patches.

A patch can be added to a target in a plan only if the patch has the same release and platform as the target to which it is being added. You will receive a warning if the product for the patch being added is different from the product associated with the target to which the patch is being added. The warning does not prevent you from adding the patch to the plan.

You can patch any target by using a patch plan. The plan also validates Fusion Middleware and Cloud Control patches against your environment to check for conflicts with installed patches. For more information on supported middle ware targets, see: Introduction to Middleware Provisioning.

The patch plan, depending on the patches you added to it, automatically selects an appropriate deployment procedure to be used for applying the patches. For information on the patching deployment procedures used for various target types, see Supported Targets, Releases, and Deployment Procedures for Patching.

> **Note:**
>
> - Patch plans are currently not available for hardware or operating system patching.
>
> - Any administrator or role that has view privileges can access a patch plan. For information on roles and privileges required for patch plans and patch templates, see Create Administrators with the Required Roles.

About Types of Patch Plans

This section describes the types of patch plans.

A patch plan can be either deployable or non-deployable. A patch plan is deployable when:

- It contains only patches of the same product family and platform.

> **✎ Note:**
>
> – You cannot add both patch sets and patches to a patch plan. Instead, you can have one patch plan for patch sets, and another patch plan for patches.

- It contains targets that are supported for patching, similarly configured, and are of the same product type, platform, and version (homogeneous targets).

Error Plans

If your patch plan consists of Oracle Management Agent (Management Agent) targets and patches, and the analysis fails on some Management Agents, then the patch plan is split into two plans. The Management Agents and their associated patches on which the analysis was successful are retained in the original plan. The failed targets and their associated patches are moved to a new error plan. The deployment options are also copied into the error plan. The error plan is accessible from the Patches & Updates page.

About the Create Plan Wizard

Figure 14-2 shows the Create Plan Wizard that enables you to create, view, and modify patch plans.

Figure 14-2   Create Plan Wizard
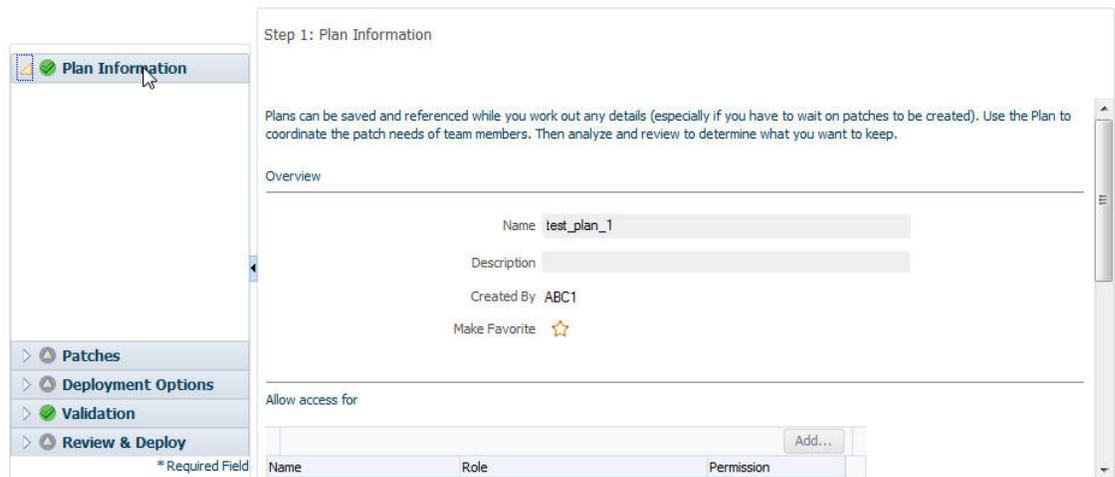
The wizard has the following screens:

Screen 1: Plan Information

Enables you to provide basic information about the plan, such as a unique name for the plan and a brief description. Also enables you to add an administrator or a role that can access the patch plan.

Screen 2: Patches

Enables you to view the patches already part of the patch plan, and manually add additional patches to the plan and corresponding targets that need to be patched.

Screen 3: Deployment Options

Enables you to configure the patch plan with deployment options that suit your needs. Although this step is common for all target types, the deployment options offered by this step depend on the target types selected in the patch plan.

For all target types, you can select a customized deployment procedure for deploying the patches, and specify the credentials to be used.

For dynamic deployment procedure, you can specify the custom steps that can be added in the generated deployment procedure. However, you cannot choose an existing procedure from the Procedure Library and customize and save it.

Screen 4: Validation

Enables you to validate the patch plan and determine whether the patches can be rolled out without any problems. Essentially, it enables you to perform the following checks using the patch information from Oracle, the inventory of patches on your system (gathered by the configuration manager), and the information from candidate patches.

- Patch Conflict Checks

  – Conflict between the patches added to the patch plan and the patches already present in the Oracle home

  – Conflict among patches within the patch plan

- Target Sanity Checks

  – Target status and configuration checks

  – OPatch and OUI checks

  – SmartUpdate checks

  – Inventory sanity checks, such as locks, access, and so on

  – Hard disk space checks

In addition to checking for conflicts, it enables you to check for patch conflicts between the patches listed in the plan.

Screen 5: Review & Deploy

Enables you to review the details you have provided for the patch plan, and then deploy the plan. After you click the **Deploy** button, a dialog box appears which allows you to confirm the deployment of patches at that time or in future. The page also enables you to review all the impacted targets so that you understand what all targets are affected by the action you are taking.

Overview of Patch Templates

This section describes the following:

- About Patch Templates
- About the Edit Template Wizard

About Patch Templates

Patch templates are another important aspect of the patch management solution. Patch templates help you create predesigned plans based on an existing successfully analyzed or deployable patch plan, however without any targets selected. A patch template contains a predetermined set of patches and deployment options saved from the source patch plan, and enables you to select a completely new set of targets.

This way, as a *Patch Designer*, you can create a patch plan with a set of patches, test them in your environment, save the successfully analyzed patch plan as a patch template, and publish them to *Patch Operators.* As a *Patch Operator*, who can create patch plans out of the templates, add another set of targets, and roll out the patches to the production environment in a recursive manner.

This way, you reduce the time and effort required to create new patch plans, and as a *Patch Designer,* you expose only the successfully analyzed and approved plans to *Patch Operators.*

> **Note:**
>
> An administrator or role that has the privileges to create a patch template and view a patch plan, which is being used to create a template, can create a patch template.

About the Edit Template Wizard

Figure 14-3 shows the Edit Template Wizard that enables you to view the contents of a patch plan template and modify its description.

Figure 14-3   Edit Template Wizard
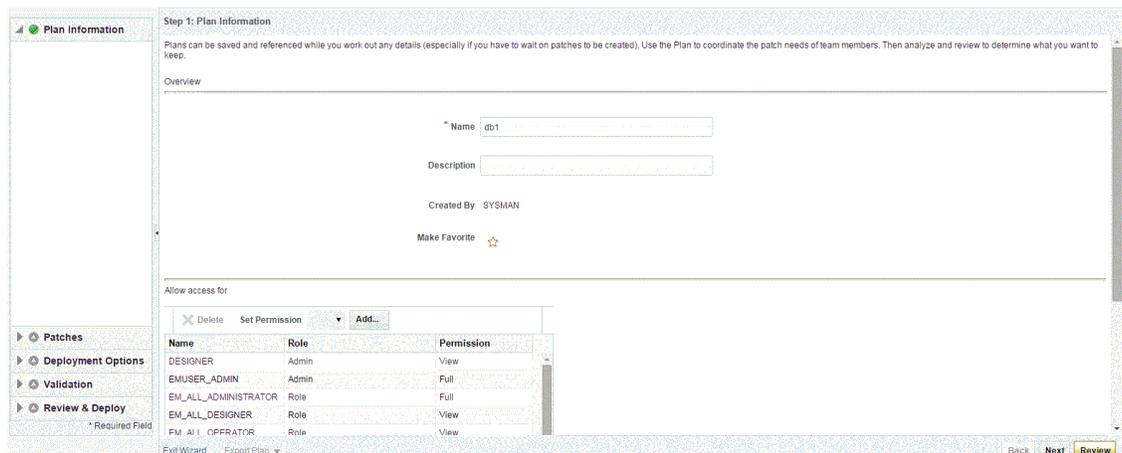
When you view or modify a patch plan template, the Edit Template Wizard opens. This wizard has the following screens:

Screen 1: Plan Information

Enables you to view general information about the template, and modify the description and the deployment date.

Screen 2: Patches

Enables you to view a list of patches part of the patch plan template. The patches listed here are the patches copied from the source patch plan that you selected for creating the template.

Screen 3: Deployment Options

Enables you to view the deployment options configured in the patch plan template.

Supported Targets, Releases, and Deployment Procedures for Patching

Table 14-1   Supported Targets and Releases for Patching target types

Supported Target Type	Supported Targets and Releases	Supported Platform	Supported Default Deployment Procedure
Oracle Service Bus	Oracle Service Bus Infrastructure 13c Release 2	All Platforms	• Patch Oracle Service Bus Infrastructure In Parallel Mode • Patch Oracle Service Bus Infrastructure In Rolling Mode
Oracle WebLogic Server	Oracle WebLogic Server 10g (10.3.1), (10.3.2), (10.3.3), (10.3.4), (10.3.5), (10.3.6), and 12c Release 1 (12.1.1), (12.1.2), (12.1.3), and 12c Release 2 (12.2.1.x)	All Platforms	• Patch Oracle WebLogic Server In Parallel Mode • Patch Oracle WebLogic Server In Rolling Mode
Oracle Service Oriented Architecture	Oracle SOA Infrastructure 11g Release 1 (11.1.1.1.0 - 11.1.1.7.0), 12c Release 1 (12.1.3.0.0), and 12c Release 2 (12.2.1.0.0)	All Platforms	• Patch Oracle SOA Infrastructure In Parallel Mode • Patch Oracle SOA Infrastructure In Rolling Mode
Oracle Identity Management (only Oracle Access Management Server and Oracle Identity Management Server targets are supported)	Oracle Identity Management 11g Release 2 (11.1.2.2.0)	All Platforms	Patching IDM
Oracle Siebel (only Siebel Server and Siebel Gateway Server targets are supported)	Oracle Siebel 8.1.1.9, 8.1.1.10, 8.1.1.11, and 8.2.x	All Platforms	Patching Siebel Targets
Oracle Fusion Applications	Oracle Fusion Applications 11g Release 1 (11.1.1.5.1) and (11.1.2.0.0) (RUP1)	All Platforms	Patch Oracle Fusion Applications

> **✎ Note:**
>
> • Shared home patching is not feasible from the EM console, because it uses OPlan.

Overview of Supported Patching Modes

This section describes the following patching modes:

• Overview of Patching in Online and Offline Mode

• Overview of Out-of-Place Patching

• Overview of Patching in Rolling and Parallel Mode

Overview of Patching in Online and Offline Mode

You have the flexibility to choose between Online and Offline patching.

Online Mode

Online mode is useful when Enterprise Manager can connect to My Oracle Support (MOS) using an Internet connection. Using this mode, search and download patches patches from MOS and create gold images to include these patches.. In addition, you can access community information, knowledge articles, service requests, and so on, and also automatically resolve patch conflicts with a merge patch directly from MOS.

Note that Cloud Control does not upload any data to MOS. It only uses MOS to download the latest updates.

Offline Mode

Offline mode is used when Enterprise Manager cannot connect to My Oracle Support. In this mode, you can search patches that were manually uploaded to the Software Library. In offline mode, you cannot do the following:

- Search and download patches from My Oracle Support.
- View additional information about the patch.
- Access community information, knowledge articles, service requests.
- View the Related Activity region.

> **Note:**
>
> By default, the patching mode is set to online. If you want to switch to offline, go to **Setup**, select **Provisioning and Patching,** and then select **Offline Patching**.

Overview of Out-of-Place Patching

Out-of-Place Mode

Is a patching mechanism where a gold image containing the required patches are deployed into a new home.

> **Note:**
>
> If you have to apply patches to address critical issues without waiting for the new gold image to be published, the patching flow will clone the existing home and apply the required patches.

If you choose to migrate only a few instances per session, make sure that you migrate the rest in the next session. This way, you can control database downtime in the data center by dividing the migration activity. This is particularly useful when you have multiple database instances running out of an Oracle home.

ORACLE

Overview of Patching in Rolling and Parallel Mode

While patching Oracle Real Application Cluster (Oracle RAC) targets, Oracle Grid Infrastructure targets (whether or not they are part of Oracle Exadata), Oracle Data Guard targets, Oracle Fusion Application targets, or Oracle SOA Infrastructure targets you can choose to patch the instances of the cluster either in rolling or parallel mode.

Rolling Mode

Is a patching methodology where the nodes of the cluster are patched individually, one by one. For example, if you are patching a clusterware target that has five nodes, the first node is shut down, patched, and restarted. Then the process is rolled over to the next node until all the nodes are patched successfully.

> **Note:**
>
> The **ReadMe** of the patch clearly states whether or not you can use Rolling Mode to apply your patches. Use this mode after ensuring that all patches in the gold image support rolling mode.

The following image illustrates how a two-node Oracle RAC target gets patched when rolling mode is used.

Figure 14-4   Rolling Mode of Patching
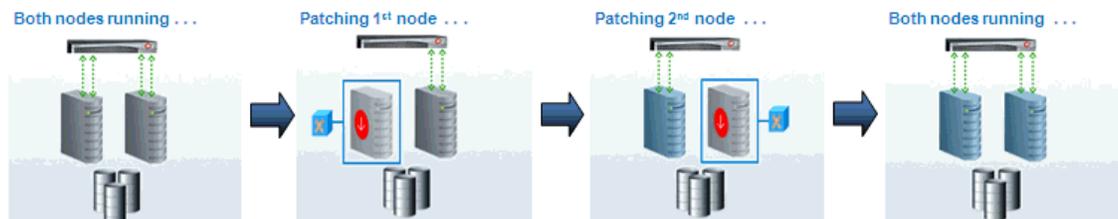
Parallel Mode

Is a patching methodology where all the nodes are patched at a time, collectively. In this methodology, all the nodes are shut down and the patch is applied on all of them at the same time.
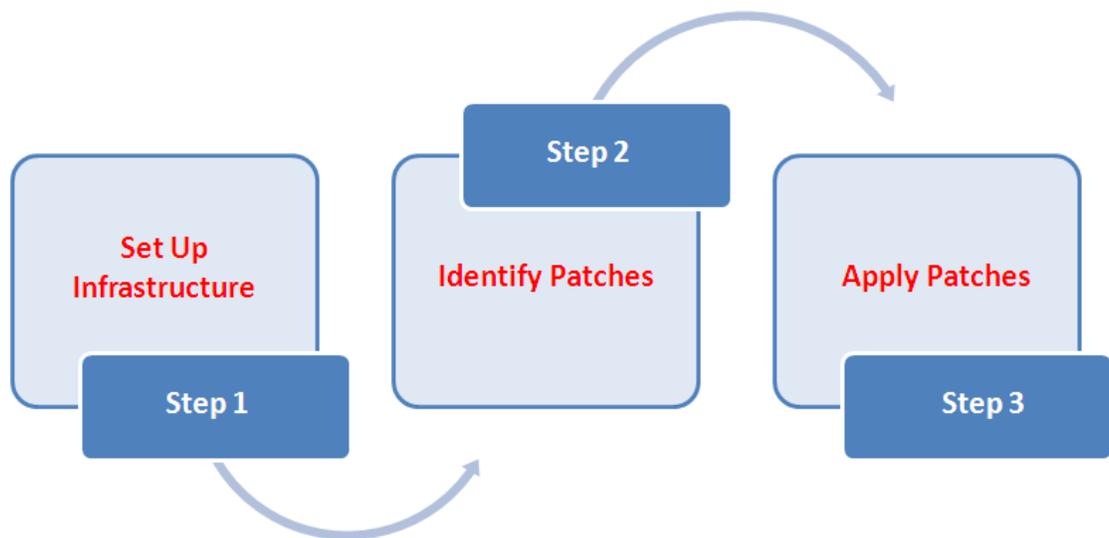
The following image illustrates how a two-node Oracle RAC target gets patched when parallel mode is used.

Figure 14-5   Parallel Mode of Patching
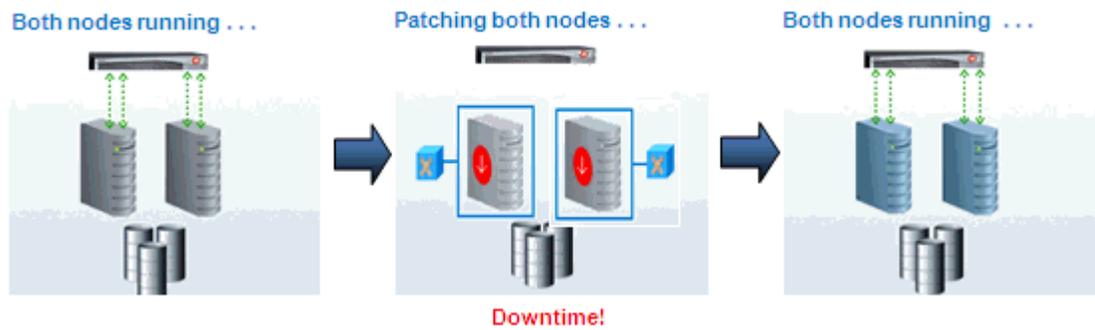
Understanding the Patching Workflow

The following illustration describes the overall workflow of the patch management solution offered through the integrated functionality within the Cloud Control console.

Step	Step Name	Description	Reference Links
Step 1	Set Up Infrastructure	Meet the prerequisites and set up the infrastructure for rolling out patches. Essentially, create admin roles for creating *Patch Plans* and *Patch Templates,* meet other mandatory and optional prerequisites, make online or offline patching settings.	Setting Up the Infrastructure
Step 2	Identify the Patches	View the recommendations made by Oracle on the patches to be applied, and identify the ones you want to apply. Access community information (from innumerous customers).	Identifying the Patches to Be Applied

Step	Step Name	Description	Reference Links
Step 3	Apply Patches	Create patch plans with patches and associated targets, perform prerequisite checks, analyze the patches for conflicts and resolve the issues, and then save the successfully analyzed plan as a patch template. Then, create a new patch plan out of the patch template and use that to deploy the patches in your environment.	Applying Patches

Setting Up the Infrastructure

This section describes how you can set up the infrastructure for patching. Meet these prerequisites before you start patching.

This section covers the following:

- Meeting Basic Infrastructure Requirements for Patching
- Setting up MOS Connection for Patch Recommendations and Patch Downloads
- What if my Enterprise Manager cannot connect to MOS?

Meeting Basic Infrastructure Requirements for Patching

Before you begin Fleet Maintenance operations, you must ensure that the following prerequisites are met:

- The Enterprise Manager Software Library has been setup and configured, see Getting Started with Setting Up Your Infrastructure .

- The database and cluster targets to be patched have been discovered in Enterprise Manager, see: Discover Autonomous Databases and Discovering and Adding Database Targets .

- A reference environment (Database and Oracle Home) representing the target state has been discovered in Enterprise Manager. This reference environment is required to create the gold image. For more information on creating reference environments see, Image Maintenance.

- Space is available on the hosts where the patching is to be carried out.

- The Agent Port on the OMS server needs to be open, allowing for communication between the target server and OMS server.

- Before attempting an Update or Upgrade remove the `glogin.sql` file from the target Oracle Home, it is located in the `/sqlplus/admin` subfolder.

Setting up MOS Connection for Patch Recommendations and Patch Downloads

In Online mode Enterprise Manager connects to MOS to download patches, release updates, monthly release patches, ARU seed data (products, platforms, releases, components, certification details, and patch recommendations). If you have setup a proxy server, register the proxy details using the My Oracle Support Proxy Settings page.

For online (connected to MOS) patching make sure you complete the following setup requirements:

Enabling Online Mode for Patching

> **Note:**
>
> Online mode is the default patching mode for Enterprise Manager. These steps are to be performed of you previously patched in Offline mode and need to revert to Online mode. Enterprise Manager does not upload data to MOS, it only downloads the latest updates.

Online mode has to be enabled to automatically download patch recommendations and to download patches to the software library. To patch the targets in Online mode, set the connection setting in Cloud Control to Online mode by logging in as a user that has the Patch Administrator role, and following these steps:

1. From the **Setup** menu, select **Provisioning and Patching,** then select **Offline Patching**.
2. For **Connection,** select **Online**.

Registering the Proxy Details for My Oracle Support

To register the proxy details for My Oracle Support (MOS), follow these steps:

> **Note:**
>
> My Oracle Support accesses support.oracle.com directly, provide network access to this URL or grant proxy access to the URL.

1. From the **Setup** menu, select **Proxy Settings**. Then select **My Oracle Support**.
2. If you want the OMS to connect to MOS directly, without using a proxy server, follow these steps:
   a. Select **No Proxy.**
   b. Click **Test** to test if the OMS can connect to MOS directly.
   c. If the connection is successful, click **Apply** to save the proxy settings to the repository.
3. If you want the OMS to connect to MOS using a proxy server, follow these steps:
   a. Select **Manual proxy configuration**.
   b. Specify the proxy server host name for **HTTPS** and an appropriate port number for **Port**.
   c. If the specified proxy server has been configured using a security realm select **Password/Advanced Setup** and provide values for **Realm**, **User Name** and **Password**.
   d. Click **Test** to verify if the OMS can connect to MOS using the specified proxy server.
   e. If the connection is successful, click **Apply** to save the proxy settings to the repository.

> **Note:**
>
> - If you are using a proxy server in your setup allow connectivity to aru-akam.oracle.com, ccr.oracle.com, login.oracle.com, support.oracle.com, and updates.oracle.com.
>   NTLM (NT LAN Manager) based Microsoft proxy servers are not supported. If you are using an NTLM based Microsoft proxy server, to enable access the requires sites, add the URLs mentioned above to the Unauthenticated Sites Properties of the proxy server.
>
> - Details specified within the MOS Proxy Settings page apply to all OMS in a multi-OMS environment.

What if my Enterprise Manager cannot connect to MOS?

For offline (disconnected to MOS) patching make sure you complete the following setup requirements:

- Download and Upload Enterprise Manager Catalog Zip File in Offline Mode
- Uploading Patches to Oracle Software Library

Download and Upload Enterprise Manager Catalog Zip File in Offline Mode

Downloading Enterprise Manager Catalog Zip File From Another Host With Internet Connectivity

In Offline mode, you must use another host that has an Internet connection, and manually download the `em_catalog.zip` file from My Oracle Support. To download the catalog file use URL: `https://updates.oracle.com/download/em_catalog.zip`.

Information about the targets affected by the latest patches, and patches that you have to download manually are available within the catalog zip file.

Uploading Enterprise Manager Catalog Zip File from your Host With No Internet Connectivity

After downloading transfer the `em_catalog.zip` file back to your local host using FTP or other file transfer methodology. Then from your local host log in to Enterprise Manager to upload the zip file, follow these steps:

1. In the **Setup** menu, select **Provisioning and Patching**, then select **Offline Patching**

2. Click **Browse** and specify the location of the latest `em_catalog.zip` file.

3. Click **Upload**.
   On clicking **Upload,** a refresh from My Oracle Support job is created and submitted.

Uploading Patches to Oracle Software Library

For patching targets in offline mode, you must have already stored the patches and their metadata files in Software Library so that they can be searched, selected, and added to the patch plans from Software Library. For this purpose, you must first manually download the patches and their metadata files from My Oracle Support, and then upload them to the Software Library.

This section describes the following:

Downloading a Patch from My Oracle Support

To download a patch and its metadata file from My Oracle Support, follow these steps:

1. Log in to My Oracle Support (`https://support.oracle.com/`), then click the **Patches & Updates** tab.

2. On the Patches & Updates page, in the Patch Search section, enter the patch number you want to search for as shown in Figure 14-6, then click **Search.**

Figure 14-6   Searching for Patches
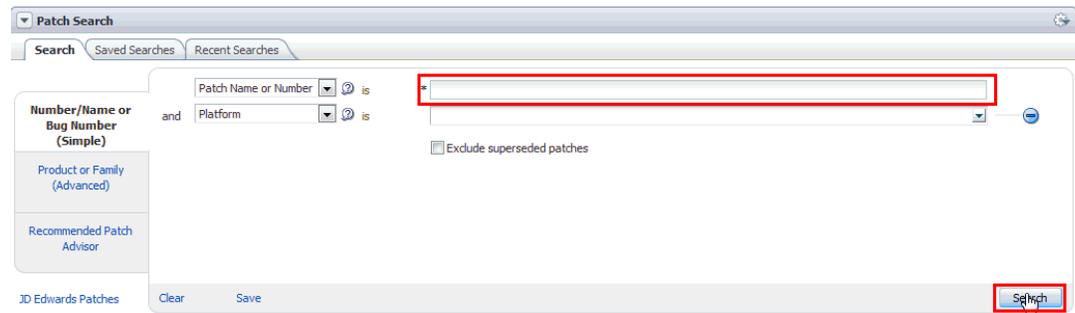
3. On the Patch Simple Search Results page, select the row that has the patch that you want to download. Click **Download.** In the File Download dialog, click the name of the patch zip file to download it to your local host. Click **Download Patch Metadata,** and then in the Download Patch Metadata dialog, click **Download** to download the patch metadata file. This step is described in Figure 14-7.

> **Note:**
>
> Oracle recommends that you transfer the patch ZIP file and the metadata XML file to the Management Agent host, where the Management Agent could be an agent on an OMS machine, or on the target host. Upload these files from the Management Agent host to Software Library.

Figure 14-7   Downloading Patches from My Oracle Support
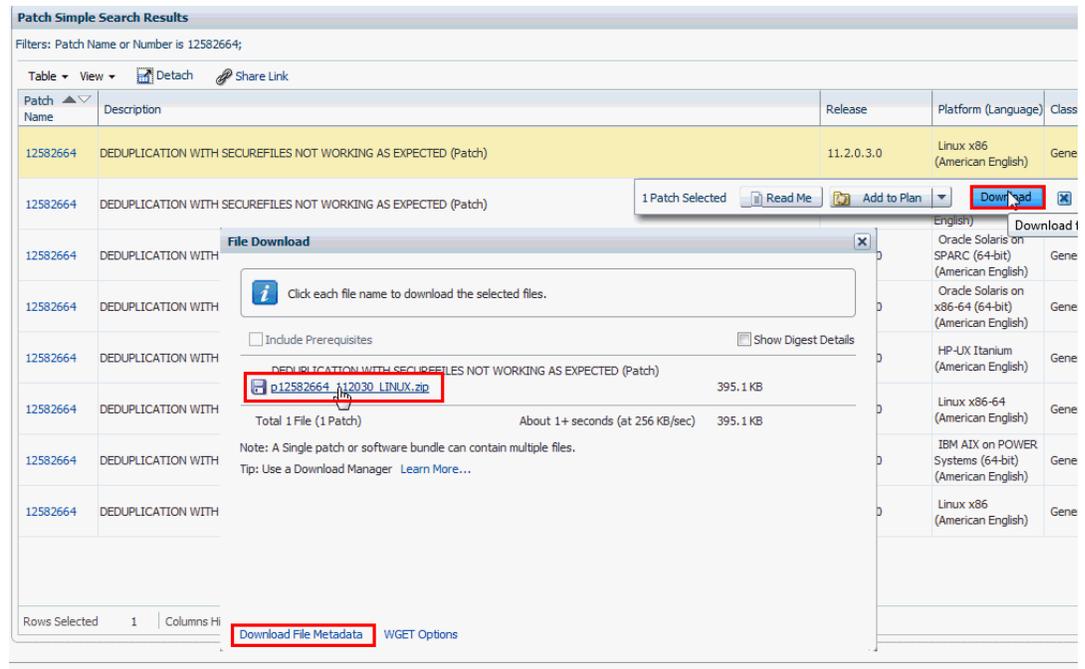
Uploading Patches to Software Library Using the Cloud Control Console

Using this method, you can upload only a single patch at a time. Therefore, use this method only when you want to upload a few patches. Also, use this method when the sizes of the patches that you want to upload are small.

To upload a patch to Software Library using the Cloud Control console, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching,** then select **Saved Patches.**

2. Click **Upload.**

3. For **Patch Zip File,** specify the location of the patch zip file you downloaded onto your local host. If the patch zip file you downloaded contains the `PatchSearch.xml` file (a file containing patch metadata information such as patch ID, product, platform, language etc.), you do not need to specify a value for **Patch Metadata.** However, if the patch zip file you downloaded does not contain the `PatchSearch.xml` file, and you downloaded the patch metadata file onto your local host separately, for **Patch Metadata,** specify the location of the patch metadata file.

   On a Unix based operating system, run the following command to verify whether the `PatchSearch.xml` file is contained within a patch zip file:

   ```
   unzip -l <patch zip file path> | grep PatchSearch.xml
   ```

   For information on how to download the patch metadata file of a patch, see Uploading Patches to Oracle Software Library.

4. Click **Upload** to upload the patch to Software Library.

> **Note:**
>
> If you encounter an error mentioning that the patch could not be uploaded as it is too large, either use EM CLI to upload the patch (as described in Uploading Patches to Oracle Software Library), or run the following command, restart the OMS, then retry the patch upload:
>
> ```
> emctl set property -name
> "oracle.sysman.emSDK.ui.trinidad.uploadedfilemaxdiskspace" -sysman_pwd
> sysman -value 2589934592
> ```
>
> Ensure that the value you specify for `-value` is in bytes, and is larger than the size of the patch that you want to upload.

Uploading Patches to Software Library Using EM CLI

Using this method, you can perform a batch upload of multiple patches. Also, this method is faster than using the Cloud Control console to upload patches. Hence, use this method when you want to upload multiple patches at one time, or the sizes of the patches that you want to upload are large.

To upload patches to Software Library using EM CLI, follow these steps:

1. Set up EM CLI on the host on which the downloaded patch files that you want to upload are located.

    EM CLI is set up by default on every OMS host. For information on how to set up EM CLI on a host that is not running the OMS, refer the Command Line Interface Concepts and Installation chapter of *Oracle Enterprise Manager Command Line Interface.*

2. From the EM CLI install location, log in to EM CLI:

    ```
    <emcli_install_location>/emcli login -username=<username> -password=<password>
    ```

    For example,

    ```
    <emcli_install_location>/emcli login -username=sysman -password=2benot2be
    ```

    > **Note:**
    >
    > Ensure that the EM CLI log in user has the `ADD_TARGET` privilege.

3. Synchronize EM CLI:

    ```
    <emcli_install_location>/emcli sync
    ```

4. Run the `upload_patches` verb to upload the required patches to Software Library:

    ```
    <emcli_install_location>/emcli upload_patches
                              -location=<patch_location> | -
    patch_files=<metadata_file_path;ZIP_file path;second_part_of_ZIP_file_path;>
                              -from_host=<host_name>
                              [-cred_name=<credential_name> [-
    cred_owner=<credential_owner>]]
    ```

    The parameters mentioned in `[ ]` are optional.

Use the `-from_host` option to specify the host on which the downloaded patch zip files and metadata files are present. You can use the `-location` option to specify the location of the downloaded patch files on the host you specified using `-from_host`. When you specify `-location`, all the patch zip files and metadata files present at the specified location are uploaded to Software Library. Hence you can use this option to perform a batch upload of multiple patches to Software Library. For example:

```
./emcli upload_patches -location=/scratch/aime/patches -from_host=h1.example.com
```

This example uploads all the patch zip files and patch metadata files present at `/scratch/aime/patches` on the `h1.example.com` host to Software Library.

Use the `-patch_files` option to provide the absolute path of a patch zip file and its patch metadata file. If you use this option, you can specify only one patch zip file. Hence, you can use this option to upload only a single patch at a time. Also, use the `-cred_name` option to specify the named credentials that must be used to access the specified host, and the `-cred_owner` option to specify the owner of the specified named credential. If you do not specify the `-cred_name` option, the preferred normal credentials are used to access the host. If you do not specify the `-cred_owner` option, the credential owner is assumed to be the current user. For example:

```
./emcli upload_patches -patch_files="/scratch/p13741363_112310_Linux-x86-64_M.xml;/
scratch/p13741363_112310_Linux-x86-64.zip" -from_host=h1.example.com -
cred_name=AIMECRED -cred_owner=SYSMAN
```

This example uploads the `p13741363_112310_Linux-x86-64.zip` patch zip file and the `p13741363_112310_Linux-x86-64_M.xml` metadata file present on the `h1.example.com` host to Software Library, using the `AIMECRED` named credential which is owned by `SYSMAN`.

> **Note:**
>
> Ensure that you specify either the `-location` option or the `-patch_files` option with the `upload_patches` verb, but not both. Specifying the `-location` option enables you to perform a batch upload of multiple patches, and is hence the recommended option.

To view more information on the syntax and the usage of the `upload_patches` verb, run the following command:

```
$<OMS_HOME>/bin/emcli help upload_patches
```

Identifying the Patches to Be Applied

This section describes how you can identify the patches to be applied.

- About Patch Recommendations
- About Knowledge Articles for Patching
- About Service Requests for Patching
- Searching for Patches on My Oracle Support
- Search and View Patches in Oracle Software Library

About Patch Recommendations

Patch recommendations are proactive notifications warning of potential system issues and recommendations that help you improve system performance and avert outages.

The Patch Recommendations region provides a portal for all recommended patches. The Recommended Patches region appears by default on the Patch & Updates page. You can edit this region to filter its contents.

From the bar graph, you can drill down to a list of recommended patches, view patch details, and download patches. A bar graph summarizes the number of issues found (one issue per recommendation for one target). These are a collection of patches offered within MOS that can be applied as a group to one or more targets. To keep the Patch Recommendation section updated with the latest patches for your environment, make sure *Config Collection* is enabled.

Enterprise Manager supports patch recommendations for the following target types:

- Oracle Database
- Oracle Real Applications Clusters
- Oracle Real Applications Clusters with Clusterware
- Oracle Data Guard

To view details of a recommended patch, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Patch Recommendations region, click on the bar graph pertaining to the desired patches.

> **✎ Note:**
>
> If you do not see the Patch Recommendations region, click **Customize Page** from the top-right corner, and then drag the Patch Recommendations region to the page.

Alternatively, click **All Recommendations** to display all recommendations in the Patch Recommendation page. The Patch Recommendations page also displays the recommended Patch Set Updates and Composite Patch Updates currently available for the targets.

3. On the Patch Recommendations page, select a recommended patch to view the context menu appears. From the context menu, click **Full Screen**.

About Knowledge Articles for Patching

Knowledge articles are announcements or workarounds to know issues published on My Oracle Support.

Workaround knowledge articles have patch numbers mentioned. Make a note of the patch number and search for it on My Oracle Support or Oracle Software Library as described in: Searching for Patches on My Oracle Support or Search and View Patches in Oracle Software Library.

You can also click the patch number in the knowledge article, taking you to the Patch Search page.

About Service Requests for Patching

Service requests are support requests raised on My Oracle Support to report and track issues, and receive online assistance from Oracle.

Workaround service requests have patch numbers mentioned. Make a note of the patch number and search for it on My Oracle Support or Oracle Software Library as described in Searching for Patches on My Oracle Support or Search and View Patches in Oracle Software Library.

You can also click the patch number in the knowledge article taking you to the Patch Search page.

Searching for Patches on My Oracle Support

The search functionality allows you to perform flexible and advanced searches. It also offers capabilities like saving a frequently used search, and searching based on existing saved searches.

To search a patch on My Oracle Support, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Patch Search region, enter the search parameters you want to use and click **Search**.

   > **Note:**
   >
   > If you do not see the Patch Search region, click **Customize Page** from the top-right corner, and then drag the Patch Search region to the page.

   Use the **Saved** tab to search any previously saved searches. Use the **Recent** tab to access any recently performed search.

   Once the patch search is complete the results appear in the **Patch Search Results** page. On this page you can select a patch and download it either to the local host (desktop) or to the Software Library.

3. To search for patches using EMCLI, you can use the following command examples:

   ```
   emcli search_patches -patch_name=<Patch number>
   ```

   ```
   emcli search_patches -patch_name=<Patch number> -swlib -script
   ```

   For more information on using the `search_patches` EM CLI verb see: search_patches in *Oracle Enterprise Manager Command Line Interface*.

Search and View Patches in Oracle Software Library

To search for a patch within the Software Library and verify it was correctly downloaded, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the **Patches & Updates** page, in the Software Library Patch Search region, enter the search parameters you want to use and click **Search**.

> **Note:**
>
> If you do not see the Patch Search region, click **Customize Page** from the top-right corner, and then drag the Patch Search region to the page.

Once the patch search is complete, the results appear in the **Patch Search Results** page.

Applying Patches

This section describes how you can create a patch plan with patches, save the patch plan as a patch template, create a new patch plan out of that template, and then apply the patches.

> **Note:**
>
> All the targets running on a host must be registered as Enterprise Manager targets for patching to be successful. Otherwise, it could result in partial patching wherein the binary bits are patched but the SQL is not applied and so on.
>
> For example, if you have a RAC system with four Oracle homes and five instances of the Database running, then all four Oracle homes and five databases must be registered Enterprise Manager targets for the patching process to be successful.

This section covers the following:

- Creating a Patch Plan
- Accessing the Patch Plan
- Analyzing, Preparing, and Deploying Patch Plans
- Saving Successfully Analyzed or Deployed Patch Plan As a Patch Template
- Creating a Patch Plan from a Patch Template and Applying Patches
- Patching Oracle Grid Infrastructure Targets
- Patching Oracle Identity Management Targets
- Patching Oracle Siebel Targets
- Patching Oracle Service Bus
- Rollback of Oracle Service Bus Patch

- Deploying WebLogic Patches Along with SOA or Oracle Service Bus Patches In A Single Patch Plan

Creating a Patch Plan

NOT_SUPPORTED:

This section is mainly for Patch Designers who want to create patch plans.

To create a patch plan, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, identify the patches you want to apply as described in Identifying the Patches to Be Applied.

3. On the Patch Recommendations page or on the Patch Search page (depending on how you identified the patch), select a patch you want to add to the Patch Plan.

4. From the context menu, click **Add to Plan,** and select **Add to New**.

> **Note:**
>
> If you have already created a patch plan, and if you want to add patches to that patch plan, then you can select **Add to Existing.**

5. In the Create a New Plan window, enter a unique name for your Patch Plan, and click **Create Plan**.

   The patch you select and the target it is associated with get added to the plan.

> **Note:**
>
> - If the patch you selected impacts other targets, then you are prompted to add the impacted targets as well.
>
> - When you create a Patch Plan, you can add a target that is a member of any system target in Cloud Control. When doing so, the other member targets of that system are automatically added to the Patch Plan. A system is a set of infrastructure components (hosts, databases, application servers, and so on) that work together to host your applications. In Cloud Control, a system and each of the components within it are modeled as individual target types that can be monitored.
>
> - If the WebLogic domain target that you add to a patch plan is a shared domain, then all the Administration Servers and the Managed Servers that are running on the domains that are shared with the domain being patched are automatically added into the same patch plan.
>
> - For Oracle SOA Infrastructure targets, all the SOA WebLogic domains that must be shutdown to patch the SOA targets are added to the patch plan as impacted targets. Therefore, the Administration Server and the Managed Servers running in each of these domains also are affected, and form the *Other impacted targets* when creating a patch plan.

Accessing the Patch Plan

NOT_SUPPORTED:

This section is mainly for Patch Designers who want to access the patch plans they have created.

To access the patch plan you created in Creating a Patch Plan, use one of the following approaches.

Approach 1: Accessing Patch Plan from Plans Region

To access the patch plan from the Plans region, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, click the Patch Plan you want to view. Alternatively, select the Patch Plan, and in the context menu, click **View**. The Create Plan Wizard appears.

To filter the plans table, select **All Plan Types** or **Patch** depending on your preference. To search for a plan, enter a plan name or partial plan name in the search box, then click the search button.

> **✎ Note:**
>
> - If you do not see the Plans region, click **Customize Page** from the top-right corner, and then drag the Plans region to the page.
>
> - To view only the plans that you created, click the icon of a person in the Plans region.

Approach 2: Accessing a Patch Plan from the Patch Recommendations Region

To access the patch plan from the Patch Recommendations region, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Patch Recommendations region, click **All Recommendations**.

> **✎ Note:**
>
> If you do not see the Patch Recommendations region, click **Customize Page** from the top-right corner, and then drag the Patch Recommendations region to the page.

3. On the Patch Recommendations page, in the table, a patch that is already part of a plan is shown with the plan icon in the **In Plan** column. Click the icon to display all plans with which the patch is associated, and then click a plan to open the Create Plan Wizard.

Analyzing, Preparing, and Deploying Patch Plans

> **NOT_SUPPORTED:**
>
>
>
> This section is mainly for Patch Designers who want to analyze the patch plans and deploy them to roll out the patches.

To analyze the patch plan you created in Creating a Patch Plan and deploy it (or save it as a patch template), follow these steps:

1. Access the patch plan using one of the approaches described in Accessing the Patch Plan. Cloud Control displays the Create Plan Wizard.

2. On the Plan Information page, do the following:

   a. In the Overview section, validate the Patch Plan name. You can choose to edit it if you want.

   b. (Optional) Enter a short description for the patch plan.

   c. (Optional) In the Allow Access For section, click **Add** to grant patch plan access permissions to administrators or roles, for the current patch plan.
   In the Add Privileges to Administrators window, select an administrator or a role, the access permission that you want to grant, then click **Add Privilege**.

   > **✎ Note:**
   >
   > - From within a patch plan, you can only grant patch plan permissions to administrators or roles that have previously been created in Cloud Control. You cannot create administrators or roles from within a patch plan. For information on the roles and privileges required for patch plans and patch templates, see Creating Administrators with the Required Roles for Patching.
   >
   > - To remove an administrator or a role, in the Allow Access For section, select the administrator or role that you want to remove, then click **Delete**.

   d. Click **Next**.

3. On the Patches page, do the following:

   a. Review the patches added to the patch plan. Any recommended patches for your configuration are automatically added to the patch plan. In addition, any patches that you added manually are listed.

      To associate additional targets to a patch that is already in your patch plan, follow the instructions outlined in Associating Additional Targets to a Patch in a Patch Plan.

      To view the details of a patch, select the patch, then from its context menu, click **View**. To temporarily remove the patch from analysis and deployment, click **Suppress**. This leaves the patch in the patch plan, but does not consider it for analysis and deployment.

   b. Click **Next**.

4. On the Deployment Options page, do the following:

   a. In the How to Patch section, select the mode of patching that you want to use. Out-of-place patching is available for Oracle RAC targets and Oracle Grid Infrastructure targets that are not a part of Oracle Exadata, only if you have the 12.1.0.5 Enterprise Manager for Oracle Database plug-in deployed. Out-of-place patching is available for Oracle Data Guard targets only if you have the 12.1.0.5 Enterprise Manager for Oracle Database plug-in deployed.

      For Oracle WebLogic Server, Oracle Fusion Applications, and Oracle SOA Infrastructure targets, the only patching mechanism offered is in-place patching. Out-of-place patching is not offered for these targets, see Overview of Out-of-Place Patching.

If you want to patch a single node of the target at a time, select **Rolling.** It is the default option, and it involves very little downtime. While patching your targets in rolling mode, you can choose to pause the execution of the patching deployment procedure after each node is patched. For information on how to do so, see Pausing the Patching Process While Patching Targets in Rolling Mode.

If you want to patch all the nodes of the target simultaneously, select **Parallel.** It involves downtime, as your entire system is shut down for a significant period. However, this process consumes less time, as all the target nodes are patched simultaneously.

b. In the Where to Stage section, do the following:
In the Stage Patches section, select **Yes** for **Stage Patches** if you want the wizard to stage the patches from Software Library to a temporary location, before the patch is applied on the target. Specify the stage location. Select **No** for **Stage Patches** if you have already manually staged the patches that you want to apply. To manually stage a patch, download the patch, navigate to the location (parent directory) where you want to stage the patch, create a subdirectory with the same name as the patch zip file, then extract the contents of the patch zip file into this subdirectory. Specify the parent directory for **Stage Location.** If the stage location is a shared location, select **Shared Location.**

For example, if you downloaded patch `699099.zip,` and the stage location, which is the parent directory, is `/u01/app/oracle/em/stagepatch`, then, in this parent directory, create a subdirectory titled `699099` and extract the contents of the zip file. Specify `/u01/app/oracle/em/stagepatch` as the stage location.

> **✎ Note:**
>
> If you are patching a WebLogic Server 10.3.6 target, or an earlier version, and you provide a custom stage location, the location you provide is disregarded, and the selected patches are staged to the default directory configured with SmartUpdate (which is `<WEBLOGIC_HOME>/utils/bsu/cache_dir`).

In the Stage Root Component section, specify whether or not you want the wizard to stage the root component. The root component is a set of scripts (which are a part of the directive steps of deployment procedures) which requires *root* privileges for execution. The root component is required for patching Oracle database targets.

Select **Yes** for **Stage Root Component,** then specify the location where you want the root component to be staged (the patch dispatcher location), if you want the wizard to stage the root component. `root_dispatcher.sh` is copied to this location. However, if you have already staged the root component, select **No** for **Stage Root Component,** then specify the location where you staged the root component, that is, the patch dispatcher location. If the patch dispatcher location is shared, select **Dispatcher Location Shared.**

For information on how to stage the patching root component manually, see Manually Staging the Patching Root Component.

c. In the Credential Information section, provide the required credentials. You can choose to use preferred credentials, or override them with different credentials.

For patching Oracle WebLogic Server targets and Oracle SOA Infrastructure targets, you need the following sets of credentials:

- **Oracle WebLogic Domain Administrator Credentials:** These credentials are required to connect to the Admin Server of the domain which monitors all the Managed Servers present in that domain.

- **Oracle WebLogic Server Home Credentials:** These credentials are required to connect to all the Oracle homes present on different hosts.

You can also choose to override the existing credentials by selecting **Override Preferred WebLogic Domain Administrator Credentials** and **Override Preferred WebLogic Home Credentials.** However, if you choose to override the preferred credentials, then you must validate the credentials. For Oracle WebLogic Server targets, you can validate only the Oracle WebLogic Server Home credentials, and not the administrator credentials.

> **Note:**
>
> The validation of credentials fails when the Management Agent is down, or when the credentials are incorrect.

If the Management Agent targets that you want to patch are not secure, then you must set the preferred Management Agent host credentials for all the Management Agent targets that you want to patch. To set the preferred host credentials for Management Agent targets, from the **Setup** menu, select **Security,** then select **Preferred Credentials.** Select the **Agent** target type, then click **Manage Preferred Credentials.** Set the preferred host credentials for the required Management Agent targets.

d. (Optional) Use the Customization section to customize the default deployment procedure used by the patch plan, and use the customized deployment procedure to patch your targets.
By default, a patch plan uses a static, Oracle-supplied deployment procedure, or an OPlan based, dynamically generated deployment procedure to apply patches.

If you do not have the Enterprise Manager for Oracle Database 12.1.0.6 plug-in deployed in your system, dynamically generated deployment procedures are only used to patch Grid Infrastructure targets (those that are a part of Oracle Exadata, as well as those that are not a part of Oracle Exadata) and Oracle RAC database targets in out-of-place patching mode. Static deployment procedures are used in all other patching operations. You can choose to customize both these types of deployment procedures, and use the customized deployment procedure to patch your targets.

If the patching procedure consists of a static deployment procedure, click **Create Like and Edit** to customize the default deployment procedure. To use a customized deployment procedure, select the customized procedure from the list displayed in the Customization section of the Deployment Options page. For more information, see Customizing a Static Patching Deployment Procedure.

If you are patching Oracle WebLogic Server or Oracle SOA Infrastructure targets, you can set a timeout value after which the server is forcefully shut down, if it was not shut down by default. By default, the shutdown time is 30 minutes. You can change this by entering a value in the **Timeout for Shutdown (in minutes)** field. Oracle recommends that you set a timeout value, and ensure that it is based on monitoring of real time systems. If the SOA Infrastructure patch that you are applying involves SQL application functionality, then you must provide the absolute path to the SQL scripts used, in the **Post-Install SQL Script Metadata** field. For information about the SQL script location, refer to the respective readme documents of each patch. Ensure that the SQL scripts that you provide are JDBC-compliant.

To patch SOA Infrastructure targets that are running on a Windows host, ensure that you use the `%FMW_ORACLE_HOME%` environment variable to provide a relative path to the SQL files present in the SOA patch, as displayed in the following graphic:

Providing an absolute path, or using the `%ORACLE_HOME%` environment variable will result in an error. Also, before patching SOA Infrastructure targets that are running on a Windows host, ensure that you shut down all the servers running from the SOA instance home being patched. Stopping just the SOA servers running out of the SOA instance home will result in an error.

e. In the Notification section, specify whether or not you want to enable email notifications when the patch plan is scheduled, starts, requires action, is suspended, succeeds, and fails.

To enable email notifications, select **Receive notification emails when the patching process,** then select the required options. If a warning message, mentioning that the sender or the receiver email address is not set up, is displayed, perform the action mentioned in the warning.

f. In the Rollback section, select **Rollback patches in the plan** to roll back the patches listed in the plan, rather than deploy them.
The roll back operation is supported only for Management Agent, Oracle WebLogic Server, and Oracle SOA Infrastructure.

For more information on how to roll back a patch, see Rolling Back Patches.

> ✎ **Note:**
>
> - For Oracle WebLogic Server targets, patching and rollback happens at domain level. When Oracle WebLogic Server targets are selected for rollback, the domain along with the Administration Server and the Managed Servers are rolled back. You cannot select the instances you want to rollback, and deselect the ones you do not want to rollback from the domain.
>
> - For SOA Infrastructure targets, patching and rollback happens at instance home level, which means, you can select the SOA Oracle home instances that you want to patch or from where you want to rollback the existing patches. If there are other servers running from the SOA home being rolled back, then all of these servers and their corresponding domains will also be rolled back along with the SQL metadata scripts that can be rolled back. Some of the SQL metadata scripts cannot be rolled back, in which case, Cloud Control will rollback the patch (bits in the Oracle Home) but the SQL remains unchanged.
> While patching a SOA setup, if the patch application fails on one of the Managed Servers, and succeeds on other Managed Servers, there will **not** be an automatic rollback operation to remove the patch from all Managed Servers where the patch was successfully applied. However, you will be notified about the failure, so you can manually rollback the patch.

Typically, you will rollback a patch for the following reasons:

- If you had forcefully applied an incoming patch that conflicted with a patch in the Oracle home, and now you want to uninstall that applied patch.

- If the applied patch does not meet your requirements satisfactorily; the patch might have fixed a bug, but at the same time, introduced other bugs in the process.

g. In the Conflict Check section, specify whether you want to enable or disable ARU Conflict Check, a check that uses Oracle Automated Release Updates (ARU) to search for patch conflicts within the patch plan during the analysis stage. Also, specify the action that the patching procedure must take when a patch conflict is encountered during deployment.
For **Conflicts,** select **Stop at Conflicts** if you want the patching procedure to stop the deployment of the plan when a conflict is encountered, select **Force Apply** if you want the patching procedure to roll back the conflicting patches and apply the incoming patches when a conflict is encountered, or select **Skip conflicts** if you want the patching procedure to apply only the non-conflicting patches, and skip the application of the conflicting patches, when a conflict is encountered.

h. Click **Next**.

5. On the Validation page, click **Analyze** to check for conflicts. For information about what checks are performed in the validation screen, see About the Create Plan Wizard .

6. On the Review & Deploy page, review the details and do one of the following:

- If you are patching your targets in out-of-place patching mode, then click **Prepare.** This operation essentially clones the source Oracle home, and patches it. While this happens, the source Oracle home and the database instances are up and running. Once you click **Prepare,** a Deploy Confirmation dialog box appears, which enables you to schedule the Prepare operation. Select **Prepare.** If you want to begin the Prepare operation immediately, select **Immediately.** If you want to schedule the Prepare operation such that it begins at a later time, select **Later,** then specify the time. Click **Submit.**

  After the Prepare operation is successful, click **Deploy.** This operation essentially switches the targets from the source Oracle home to the cloned and patched Oracle home. The Prepare and Deploy operations enable you to minimize downtime.

  Once you click **Deploy,** a Deploy Confirmation dialog box appears, which enables you to schedule the Deploy operation. Select **Deploy.** If you want to begin the Deploy operation immediately, select **Immediately.** If you want to schedule the Deploy operation such that it begins at a later time, select **Later,** then specify the time. Click **Submit.**

> **✎ Note:**
>
> Instead of patching your Oracle homes in out-of-place patching mode, you can provision an Oracle home directly from a software image stored in Software Library (that has the required patches). To do this, follow these steps:
>
> a. Use the Provision Oracle Database deployment procedure to provision the software image stored in Software Library to the required location on the host.
>
> b. Create a patch plan. Ensure that you add all the patches that are a part of the provisioned Oracle home to this plan.
>
> c. On the Deployment Options page, in the What to Patch section, specify the location of the provisioned Oracle home.
>
> d. Analyze and deploy the plan.

- If you are patching any other target in any other mode, click **Deploy.**
  Once you click **Deploy,** a Deploy Confirmation dialog box appears, which enables you to schedule the Deploy operation. Select **Deploy.** If you want to begin the Deploy operation immediately, select **Immediately.** If you want to schedule the Deploy operation such that it begins at a later time, select **Later,** then specify the time. Click **Submit.**

> **✎ Note:**
>
> - After scheduling a Prepare or Deploy operation, the **Prepare** or **Deploy** button on the Review and Deploy page is renamed to **Reschedule.** If you want to reschedule the Prepare or Deploy operation, click **Reschedule,** specify the time, then click **Submit.**
>
> - After scheduling a Prepare or Deploy operation, if you want to discard the schedule and bring the patch plan back to its last valid state, click **Stop Schedule.**
>
> - The Prepare or Deploy operation schedule is discarded if you edit a patch plan deployment option or patch target. In this case, you must validate the patch plan again.

> **✎ Note:**
>
> To save a successfully analyzed or deployed patch plan as a patch template, see Saving Successfully Analyzed or Deployed Patch Plan As a Patch Template.

Conflict Patches

When applying WebLogic Server, SOA, or Service Bus patches, there may be conflicts among the patches. This is encountered during the analysis phase. We can select the appropriate patch conflict resolution action in the **Deployment Options** page. Refer to the following table for details.

Patch Conflict resolution is supported from WebLogic Server 12.1.2.0.0 onwards.

The following tasks or actions can be performed by the user when the analysis results display any patch conflicts:

Selected action	Description
Stop at Conflicts	This can be selected if you want the patching procedure to stop the deployment of the plan when a conflict is encountered.
Force Apply	This can be selected if you want the patching procedure to roll back the conflicting patches and apply the incoming patches when a conflict is encountered.
Skip Conflicts	This can be selected if you want the patching procedure to apply only the non-conflicting patches and skip applying the conflicting patches when a conflict is encountered.

For WebLogic Server versions earlier than 12.1.2.0.0, the patch conflicts can be removed using the following steps.

1. Create a Patch Plan with a new Patch Set Update.

2. Analyze the patch. In case there are any conflicting patches, the **Run WebLogic Home Prerequisite Checks** indicates the conflicting patches with the new patches that are part of the new Patch Plan just created.

3. Make a note of the patch number that is conflicting with the newly created Patch Plan and that needs to be rolled back.

4. Create a new Rollback plan that includes the conflicting patches for all the targets.

5. Analyze the Rollback plan.

6. Apply the Rollback plan.

7. All the conflicting patches are now removed from the WebLogic Server Home. Now the Patch Plan that was initially created with the Patch Set Update can be analyzed.

8. Apply the Patch Plan.

Switching Back to the Original Oracle Home After Deploying a Patch Plan

If you had patched an Oracle RAC target, Oracle single-instance database target, Oracle Restart target, or an Oracle Grid Infrastructure target (that may or may not be a part of Oracle Exadata), in out-of-place patching mode, and you now want to switch back to the original home for some reason, then you can use the *Switchback* option available in the Create Plan Wizard. The advantage of using this option is that you do not actually roll back the patches from the cloned and patched Oracle home; you only switch back to the old, original Oracle home that exists without the patches.

> **Note:**
>
> - The *Switchback* option is available only for Oracle RAC, Oracle single-instance database, Oracle Restart, and Oracle Grid Infrastructure targets (that may or may not be a part of Oracle Exadata), and only when these targets are patched in out-of-place patching mode.
>
> - You can switch back only if you have successfully analyzed and deployed a patch plan.

To switch back to the original Oracle home after a patch plan is deployed, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, click the successfully analyzed and deployed patch plan you used for patching the Oracle RAC, Oracle Restart, Oracle single-instance database, or Oracle Grid Infrastructure targets. Alternatively, select the patch plan, and in the context menu, click **View**. The Create Plan Wizard appears.

3. In the Create Plan Wizard, on the Review & Deploy page, click **Switchback**.

Saving Successfully Analyzed or Deployed Patch Plan As a Patch Template

NOT_SUPPORTED:

This section is mainly for Patch Designers who want to save the successfully analyzed or deployed patch plans as patch templates so that operators can consume them to create fresh patch plans with the approved patches and predefined deployment options.

To save a patch plan as a patch template, follow Step (1) to Step (5) as outlined in Analyzing, Preparing, and Deploying Patch Plans, and then for Step (6), on the Review & Deploy page, click **Save as Template.** In the Create New Plan Template dialog, enter a unique name for the patch template, and click **Create Template.**

> **⚠ Important:**
>
>
>
> **Oracle recommends you to follow this as a best practice if you have to roll out in a mass scale over a period of time involving more administrators. If you have a large data center, then as a Patch Designer, create a patch plan and apply the patches on a few tagets, test if the patches are being applied successfully, then save the plan as a template. Later, have your Patch Operators create patch plans out of these templates so that they can roll out the same set of patches to the rest of the targets in the data center.**

Creating a Patch Plan from a Patch Template and Applying Patches

Once a successfully analyzed or deployed patch plan is saved as a patch template, you can create patch plans out of the template, associate targets you want to patch, and deploy the newly created patch plan.

This is purely an optional step. You do not have to save your patch plans as patch templates to roll out patches. You can roll out patches directly from a patch plan as described in Analyzing, Preparing, and Deploying Patch Plans.

> **NOT_SUPPORTED:**
>
>
>
> **This section is mainly for Patch Operators who want to create patch plans from patch templates for rolling out the patches.**

Approach 1

To create patch plans out of the patch templates, use one of the following approaches:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, select the patch template you want to use to create a patch plan out of it.

3. From the context menu, select **Create Plan**.

4. In the Create Plan from Template dialog, enter a unique name for the patch plan, select the targets on which you want to patch, and click **Create Plan.**

5. Return to the Patches & Updates page, and in the Plans region, click the patch plan you want to use. Alternatively, select the patch plan, and in the context menu, click **View**. The Create Plan Wizard appears.

6. In the Create Plan Wizard, go to the Validation page, and click **Re-Analyze** to analyze the patch plan with the newly associated targets.

7. After successfully analyzing the patch plan, on the Validation page, click **Next.**

8. On the Review & Deploy page, click **Deploy.**

Approach 2

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, do one of the following:

   • Select a patch template. From the context menu, select **View.** The Edit Template Wizard appears.

   • Click the name of a patch template. The Edit Template Wizard appears.

3. In the Edit Template Wizard, click **Create Plan**.

4. In the Create Plan from Template dialog, enter a unique name for the patch plan, select the targets on which you want to patch, and click **Create Plan.**

5. Return to the Patches & Updates page, and in the Plans region, click the patch plan you want to use. Alternatively, select the patch plan, and in the context menu, click **View**. The Create Plan Wizard appears.

6. In the Create Plan Wizard, go to the Validation page, and click **Re-Analyze** to analyze the patch plan with the newly associated targets.

7. After successfully analyzing the patch plan, on the Validation page, click **Next.**

8. On the Review & Deploy page, click **Deploy.**

Patching Oracle Grid Infrastructure Targets

You can patch Oracle Grid Infrastructure targets using patch plans. To do so, follow these steps:

1. Identify the Oracle Grid Infrastructure Patch Set Update (PSU) or one-off patches that you want to apply, as described in Identifying the Patches to Be Applied.

2. Create a patch plan as described in Creating a Patch Plan.

3. Analyze and deploy the patch plan as described in Analyzing, Preparing, and Deploying Patch Plans.

Patching Grid Infrastructure and Databases on Oracle Exadata

Using patch plans, you can patch the Oracle RAC database targets and the Oracle Grid Infrastructure targets (Oracle Clusterware) running on an Exadata Database Machine.

Exadata Patching can be performed in two modes: In Place Patching, and Out-of-place Patching, though Oracle recommends you to use the Out-of-place patching mechanism as the downtime involved is much lesser.

For information about the supported Exadata releases, see Supported Targets, Releases, and Deployment Procedures for Patching.

However, note that patch plans do not patch the Exadata Database Machine's compute node entities such as the operating system and firmware, and also its storage cells. They patch only the associated Oracle RAC database targets and the Oracle Grid Infrastructure (Oracle Clusterware) targets running on the machine.

> **Note:**
>
> Oracle Exadata Database Machine recommended bundle patches that apply to Oracle RAC and the Oracle Grid Infrastructure targets (Oracle Clusterware) are tested and certified with Cloud Control.

Therefore, when you create a patch plan with an Exadata Database Machine recommended bundle patch, make sure you add the cluster or the Oracle RAC database target running on the Exadata Database machine. The patch plan automatically recognizes their association with the Exadata Database machine, and prompts you to add all the impacted targets running on that machine. For example, if you select the cluster target, it prompts you to add all the Oracle RAC database targets and the Oracle Grid Infrastructure targets that are part of that cluster running on the Exadata Database Machine.

To patch an Exadata Database machine, follow these steps:

1. Identify the Exadata Database Machine recommended bundle patch you need to apply, as described in Identifying the Patches to Be Applied.

2. Create a patch plan as described in Creating a Patch Plan.

3. Add the cluster or the Oracle RAC database target running on the Exadata Database machine, and analyze and deploy the patch plan as described in Analyzing, Preparing, and Deploying Patch Plans.

> **✎ Note:**
>
> - You can add one Exadata Bundle Patch, and any number of one-off Grid Infrastructure and Oracle Database patches to a single patch plan, as long as you have the 12.1.0.5 Enterprise Manager for Oracle Database plug-in, or a higher version, deployed. In this scenario, ensure that you add the Exadata Bundle Patch while creating the patch plan, and then add the one-off Grid Infrastructure and Oracle Database patches as additional patches.
>
>   If you do not have the 12.1.0.5 Enterprise Manager for Oracle Database plug-in, or a higher version, deployed, then you cannot add one-off patches to a patch plan that already contains an Exadata Bundle Patch.
>
> - You can apply an Exadata Bundle Patch on a Grid Infrastructure target (that is a part of Oracle Exadata) when the RAC databases being managed are of different versions, as long as you have the 12.1.0.5 Enterprise Manager for Oracle Database plug-in, or a higher version, deployed. If you do not have this plug-in deployed, and the RAC databases being managed are of different versions, then you cannot apply an Exadata Bundle Patch on the Grid Infrastructure target.
>
>   For example, if you have the 12.1.0.5 Enterprise Manager for Oracle Database plug-in, or a higher version, deployed, and a Grid Infrastructure target (that is a part of Oracle Exadata) consists of Grid Infrastructure of version 12.1.0.2, and manages RAC databases of versions 11.2.0.4 and 12.1.0.2, you can apply a 12.1.0.2 Exadata Bundle Patch on the Grid Infrastructure target. In this case, the Grid Infrastructure binaries and the 12.1.0.2 RAC databases are patched, but not the 11.2.0.4 RAC databases. You can also apply a 11.2.0.4 Exadata Bundle Patch on the Grid Infrastructure target. In this case, the 11.2.0.4 RAC databases are patched, but not the Grid Infrastructure binaries and the 12.1.0.2 RAC databases.

Exadata Out-Of-Place Patching Of Oracle Grid Infrastructure and Oracle RAC Targets

Exadata Out-of-place patching mechanism allows you patch the Oracle Grid Infrastructure and Oracle RAC targets by making a copy of their existing Oracle homes, and patching the cloned Oracle homes. Once the cloned homes are patched, you can migrate the instances to run from the cloned home, which means there will be minimal downtime while switching over the instances, but not a significant downtime.

Figure 14-8 illustrates how Oracle Grid Infrastructure and Oracle RAC targets running on an Exadata Database Machine get patched in Out-of-place patching mode:

Figure 14-8   Out Of Place Patching Of Clusters

The migration of these instances can be performed in the following modes:

- **Full Migration:** If you choose the migrate all the database instances running in your data center in one session, then it is termed as Full Migration.

- **Partial Migration:** If you choose to migrate only some of the instances depending on the downtime you can afford in your data center in one session, then it is termed as Partial Migration. However, you must ensure that you migrate the remaining instances in the following sessions. This approach is particularly useful when you have multiple instances running out of an Oracle home.

> **Note:**
>
> For steps on how to perform Full Migration or Partial Migration of Oracle Grid Infrastructure Targets and Oracle RAC Targets running on Exadata Database Machine, see Analyzing, Preparing, and Deploying Patch Plans.

Switch Back is an option available for Oracle Grid Infrastructure targets and Oracle RAC targets running on Exadata machine, that enables you to switch the instances from the newly cloned Oracle homes back to the original Oracle homes in case of any problems.

For more information on how to perform a Switch Back, see Switching Back to the Original Oracle Home After Deploying a Patch Plan.

Patching Oracle Data Guard Targets

This section describes how to apply an Oracle Grid Infrastructure PSU or an Oracle Database PSU on various configurations of Oracle Data Guard targets. You can choose to patch your Oracle Data Guard targets in the in-place patching mode, or the out-of-place patching mode.

It consists of the following sections:

- Oracle Data Guard Patching Workflow
- Oracle Data Guard Patching Scenarios

Oracle Data Guard Patching Workflow

If the primary and the standby databases are running from the same cluster, follow these steps:

1. Search for the required patch, then create a patch plan by selecting the cluster target.

2. Specify the required deployment options.

3. Analyze and deploy the plan.

However, if the primary and the standby databases are running from different clusters, follow these steps:

1. Search for the required patch, then create a patch plan by selecting the cluster target that contains the standby database.

2. Specify the required deployment options.

3. Analyze and deploy the plan.

4. *(Optional)* Perform a database switchover, such that the standby database becomes the new primary database, and vice versa. Performing a switchover can save database downtime.

    For information on how to perform a database switchover, see Overview of Switchover and Failover in a Broker Environment in *Oracle Data Guard Broker*.

5. Search for the required patch, then create another patch plan by selecting the cluster target that contains the primary database (or the new standby database, in case you have performed a switchover).

6. Specify the required deployment options.

7. Analyze and deploy the plan.

> **Note:**
>
> - Oracle recommends that you patch the standby database first, then patch the primary database.
>
> - If your environment consists of multiple standby databases, ensure that you patch all the standby databases first, then patch the primary database. In case you want to perform a switchover, ensure that you patch a single standby database first, perform the switchover, then patch the remaining standby databases and the new standby database.

Oracle Data Guard Patching Scenarios

This section describes the steps to patch your Oracle Data Guard targets in various scenarios.
Scenario 1: The primary and standby databases are RAC databases.

Table 14-2 describes the steps to apply an Oracle Grid Infrastructure PSU or an Oracle Database PSU, when the primary and standby databases are RAC databases:

Table 14-2   Oracle Data Guard Patching (RAC - RAC)

Primary and Standby Database Configuration	How to Patch?
The primary and the standby RAC databases are running from the same cluster.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the cluster target. 2. Specify the required deployment options. 3. Analyze and deploy the plan.
The primary and the standby RAC databases are running from different clusters.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the cluster target that contains the standby RAC database. 2. Specify the required deployment options. 3. Analyze and deploy the plan. 4. *(Optional)* Perform a database switchover, such that the standby RAC database becomes the new primary database, and vice versa. For information on how to perform a database switchover, see Overview of Switchover and Failover in a Broker Environment in *Oracle Data Guard Broker*. 5. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create another patch plan by selecting the cluster target that contains the primary RAC database (or the new standby database, in case you have performed a switchover). 6. Specify the required deployment options. 7. Analyze and deploy the plan.
Two primary RAC databases, P1 and P2, are running from two different clusters, C1 and C2, respectively. Their standby RAC databases, S1 and S2, are running from C2 and C1, respectively.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the first cluster target (C1). 2. Specify the required deployment options. 3. Analyze and deploy the plan. 4. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create another patch plan by selecting the second cluster target (C2). 5. Specify the required deployment options. 6. Analyze and deploy the plan.

> **Note:**
>
> You can patch the clusters in any order, that is, C1 first and then C2, or C2 first and then C1.

Scenario 2: The primary database is a RAC database, and the standby database is a single-instance database that is managed by a Cluster Ready Services (CRS) target or a Single Instance High Availability (SIHA) target.
Table 14-3 describes the steps to apply an Oracle Grid Infrastructure PSU or an Oracle Database PSU, when the primary database is a RAC database, and the standby database is a single-instance database that is managed by a CRS target or a SIHA (Single Instance High Availability) target.

Table 14-3   Oracle Data Guard Patching (RAC - SIDB)

Primary and Standby Database Configuration	How to Patch?
The primary RAC database and the standby single-instance database are running from the same cluster.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the cluster target. 2. Specify the required deployment options. 3. Analyze and deploy the plan.
The primary RAC database and the standby single-instance database are running from different clusters.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the cluster target that contains the standby single-instance database. 2. Specify the required deployment options. 3. Analyze and deploy the plan. 4. *(Optional)* Perform a database switchover, such that the standby single-instance database becomes the new primary database, and vice versa. For information on how to perform a database switchover, see Overview of Switchover and Failover in a Broker Environment in *Oracle Data Guard Broker*. 5. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create another patch plan by selecting the cluster target that contains the primary RAC database (or the new standby database, in case you have performed a switchover). 6. Specify the required deployment options. 7. Analyze and deploy the plan.
Two primary RAC databases, P1 and P2, are running from two different clusters, C1 and C2, respectively. Their standby single-instance databases, S1 and S2, are running from C2 and C1, respectively.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the first cluster target (C1). 2. Specify the required deployment options. 3. Analyze and deploy the plan. 4. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create another patch plan by selecting the second cluster target (C2). 5. Specify the required deployment options. 6. Analyze and deploy the plan.

> **Note:**
>
> You can patch the clusters in any order, that is, C1 first and then C2, or C2 first and then C1.

Scenario 3: The primary and standby databases are single-instance databases that are managed by CRS or SIHA targets.

Table 14-4 describes the steps to apply an Oracle Grid Infrastructure PSU or an Oracle Database PSU, when the primary and standby databases are single-instance databases that are managed by CRS or SIHA targets.

> **Note:**
>
> When patching Single Instance High Availability (SIHA)12.1.0.2 Oracle Database through Enterprise Manager 13.4 and Perl 5.38 Update, the database needs to be patched at least to version 12.1.0.2.191015, with the October 2019 or later GI PSU patch applied on the target.

Table 14-4   Oracle Data Guard Patching (SIDB - SIDB)

Primary and Standby Database Configuration	How to Patch?
The primary and the standby single-instance databases are running from the same cluster.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the cluster target. 2. Specify the required deployment options. 3. Analyze and deploy the plan.
The primary and the standby single-instance databases are running from different clusters.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the cluster target that contains the standby single-instance database. 2. Specify the required deployment options. 3. Analyze and deploy the plan. 4. *(Optional)* Perform a database switchover, such that the standby single-instance database becomes the new primary database, and vice versa. For information on how to perform a database switchover, see Overview of Switchover and Failover in a Broker Environment in *Oracle Data Guard Broker*. 5. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create another patch plan by selecting the cluster target that contains the primary single-instance database (or the new standby database, in case you have performed a switchover). 6. Specify the required deployment options. 7. Analyze and deploy the plan.

Table 14-4   (Cont.) Oracle Data Guard Patching (SIDB - SIDB)

Primary and Standby Database Configuration	How to Patch?
Two primary single-instance databases, P1 and P2, are running from two different clusters, C1 and C2, respectively. Their standby single-instance databases, S1 and S2, are running from C2 and C1, respectively.	1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the first cluster target (C1). 2. Specify the required deployment options. 3. Analyze and deploy the plan. 4. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create another patch plan by selecting the second cluster target (C2). 5. Specify the required deployment options. 6. Analyze and deploy the plan. **Note:** You can patch the clusters in any order, that is, C1 first and then C2, or C2 first and then C1.

Scenario 4: A primary RAC database, P1, and a primary single-instance database, P2 (that is managed by a CRS or a SIHA target), are running from two different clusters, C1 and C2, respectively. Their standby single-instance databases, S1 and S2, that are managed by CRS or SIHA targets, are running from C2 and C1, respectively.
Follow these steps to apply an Oracle Grid Infrastructure PSU or an Oracle Database PSU on this configuration:

1. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create a patch plan by selecting the first cluster target (C1).

2. Specify the required deployment options.

3. Analyze and deploy the plan.

4. Search for the required Oracle Grid Infrastructure PSU, or the Oracle Database PSU, then create another patch plan by selecting the second cluster target (C2).

5. Specify the required deployment options.

6. Analyze and deploy the plan.

Note:

You can patch the clusters in any order, that is, C1 first and then C2, or C2 first and then C1.

Patching Oracle Identity Management Targets

Using patch plans, you can patch those Oracle Access Management Server and Oracle Identity Management Server targets that were provisioned using Identity Management Lifecycle tools. Other Oracle Identity Management targets are not supported for patching.

To patch Oracle Access Management Server and Oracle Identity Management Server targets (that were provisioned using Identity Management Lifecycle tools) using patch plans, you must have an Identity Management Pack Plus license. Also, the 12.1.0.6 Enterprise Manager for Oracle Fusion Middleware plug-in must be deployed on the OMS, and on all the Management Agents running on the hosts on which the Oracle Access Management Server and Oracle Identity Management Server targets are deployed.

To patch Oracle Access Management Server and Oracle Identity Management Server targets using a patch plan, follow these steps:

1. Identify the patches that you want to apply, as described in Identifying the Patches to Be Applied.

2. Create a patch plan, as described in Creating a Patch Plan.

3. Analyze and deploy the patch plan, as described in Analyzing, Preparing, and Deploying Patch Plans.

Patching Oracle Siebel Targets

Using patch plans, you can patch Siebel Gateway Server and Siebel Server targets. Other Oracle Siebel targets are not supported for patching. To patch Siebel Gateway Server and Siebel Server targets, you must have the 12.1.0.5 Enterprise Manager for Oracle Siebel plug-in deployed in your system.

To patch Siebel Gateway Server and Siebel Server targets using a patch plan, follow these steps:

1. Identify the patches that you want to apply, as described in Identifying the Patches to Be Applied.

2. Create a patch plan, as described in Creating a Patch Plan.

3. Analyze and deploy the patch plan, as described in Analyzing, Preparing, and Deploying Patch Plans.

Patching Oracle Service Bus

Fusion Middleware patching through Enterprise Manager is supported for targets like WebLogic Domain, SOA, and Oracle Service Bus (OSB). This topic contains the procedure to patch an Oracle Service Bus using the Enterprise Manager.

A single node of Oracle Service Bus Domain consists of Service Bus Domain Target, Service Bus Cluster Target, Service Bus Target, WebLogic Cluster Target, and WebLogic Server Targets.

The Service Bus Cluster Target comprises of all the Service Bus targets. The WebLogic Cluster Target comprises all the WebLogic Server targets. The WebLogic Server Targets comprise of a single Administration Server and a Managed Server.

This procedure of patching an Oracle Service Bus through the Enterprise Manager patching framework comprises of creating a patch plan by selecting a Service Bus Target or a Service Bus Cluster Target. The user can select a single target and the associated targets are included automatically during patching. The user can also edit the plan to add more patches, analyze, rollback, and create a template.

For more information on creating a patch plan, see Creating a Patch Plan.

Before you begin patching of Oracle Service Bus, ensure that you meet the following prerequisites:

- The user needs to ensure that Oracle Home collection is complete. Patching throws an error if one or more Oracle Homes are not discovered.

> **✎ Note:**
>
> The pre-requisite for patching WebLogic domains is that the underlying Oracle Home must be discovered as a target. For SOA 11g, 12c and Service Bus domains this is automatically handled. However, for Service Bus 11g when the domain is discovered the OH is not discovered as a target. If you attempt to patch such a domain then the following warning is displayed. To overcome this, ensure that the Middleware Home and the underlying Oracle Homes are discovered as targets and the configuration collections for Oracle Home targets are the current ones.
>
> ```
> There is no Oracle Home (OH) target associated for the patch being
> applied. To rectify this issue the user should promote the OH
> being patched, by choosing the "Discover Promote Oracle Home
> Target" job in Enterprise Manager. Ensure the OH target is
> available after this operation is completed, and the configuration
> metrics for the OH target is collected.
> ```

- The user needs to ensure to set the Oracle Homes and Domain administrator credentials.

- For offline patching, the user needs to ensure to have the necessary OPatch downloaded from MOS and manually upload to the saved patches.

  For patching WebLogic Server 12.2.1.x Enterprise Manager expects Opatch release 13.3.0.0.0 to be available in the software library. At the time of releasing Enterprise Manager, this version of OPatch was not available for download from MOS. Hence, when patching WebLogic Server 12.2.1.x, Enterprise Manager uses the Opatch installed in the WebLogic Server Oracle Home instead of trying to download the latest OPatch from MOS.

- The target selector needs metadata from **My Oracle Support** to filter the targets based on the patch types. The user must run **Refresh from My Oracle Support** job in online mode. In case of offline mode the user must upload the *catalog.zip file*.

- Patching on Oracle Service Bus is supported on the following versions:

  - 11.1.1.5.0
  - 11.1.1.6.0
  - 11.1.1.7.0
  - 11.1.1.9.0
  - 12.1.3.0.0
  - 12.2.1.0.0

- The SOA patch containing SQL script may fail if the metadata is not specified in the right format. The metadata has to be specified in the **Deployment Options** page in the field **Location of Post Install SQL Script.**

  Ensure that the SQL scripts are specified in the following format:

  ```
  <patch_number1>:<sql_script1_location>:<sql_script2_location>:<patch_number2>:
  <sql_script3_location>:...
  ```

  Example:

```
14082705:%ORACLE_HOME%/rcu/integration/soainfra/sql/createschema_soa
infra_oracle.sql
```

Additionally, this information is available in the **Post-Installation Instructions** in the *README.txt* file. In case the **Location of Post Install SQL Script** field is left blank or the right SQL script is not specified then the following error message is mentioned in the log:

One or more SQL files included in this patch are not selected for post-patch execution. To correct this, update your selection in the "Deployment options" page. To continue without making any changes, run the required SQL scripts manually after the patch is deployed successfully.

• The relevant patch, target, and domain details are displayed in the following table:

Patch	Targets
SOA	SOA Infrastructure
Oracle Service Bus	Service Bus

To apply patching for Oracle Service Bus, follow these steps:

1. Create a patch plan.

2. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Saved Patches.**

3. Click **Upload.**

4. Provide the location of the patch file and the patch metadata, and click **Upload.**

5. Once the patch has been uploaded, select the patch. This takes you to the patch home page.

6. Click **Create Plan.**

7. Enter the name of the plan in the **Plan Name** field.

8. Enter Oracle Service Bus or Service Cluster Targets As the target type.

> **Note:**
>
> In case a single Service Bus component is selected, all the associated targets are automatically picked up for patching. Ensure to select one Service Bus component.

9. Enter the host name and click **Create Plan.**

10. The patch plan is created and can be deployed.

11. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates.**

12. Select the patch plan that you created from the list of patch plans.

13. Click **Next.**

14. Enter the rest of the details in the EM User Interface, validate the credentials, and choose the customization required. Ensure that the data prefilled or selected is accurate.

15. Click **Analyze.** The deployment procedure is submitted.

16. Once analysis is complete click **Review**, for the tool to review, analyze, and validate the details.

17. Click **Next.**

18. Click **Deploy.** The deployment procedure is submitted and patching is in progress.

19. The patch is deployed.

20. The Oracle Service Bus patch is successfully applied.

> **✎ Note:**
>
> For Oracle Service Bus 11g targets patch recommendations are not displayed. The user can search for the recommended patches through the **Recommended Patch Advisor** search in the **Patches and Updates.**

Rollback of Oracle Service Bus Patch

To apply patching for Oracle Service Bus, follow these steps:

1. Create a patch plan.

2. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Saved Patches.**

3. Click **Upload.**

4. Provide the location of the patch file and the patch metadata, and click **Upload.**

5. Once the patch has been uploaded, select the patch. This takes you to the patch home page.

6. Click **Create Plan.**

7. Enter the name of the plan in the **Plan Name** field.

8. Enter Oracle Service Bus or Service Cluster Targets As the target type.

> **✎ Note:**
>
> In case a single Service Bus component is selected, all the associated targets are automatically picked up for patching. Ensure to select one Service Bus component.

9. Enter the host name and click **Create Plan.**

10. The patch plan is created and can be deployed.

11. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates.**

12. Select the patch plan that you created from the list of patch plans.

13. Click **Next.**

14. Choose the **Rollback** option. Enter the rest of the details in the EM User Interface, validate the credentials, and choose the customization required. Ensure that the data prefilled or selected is accurate.

15. Click **Analyze.** The deployment procedure is submitted.

16. Once analysis is complete click **Review**, for the tool to review, analyze, and validate the details.

17. Click **Next.**

18. Click **Rollback.**

19. The patch is rolled back.

20. The Oracle Service Bus patch is successfully rolled back.

Deploying WebLogic Patches Along with SOA or Oracle Service Bus Patches In A Single Patch Plan

This topic contains the procedure to deploy WebLogic Patches as well as SOA or Oracle Service Bus patches using a single patch plan. Using a single patch plan to deploy all the required patches would reduce down time during patching.

In case of SOA or Oracle Service Bus domain the user can apply Web Logic patches or SOA or Oracle Service Bus product patches. These patches can be applied in different sessions by creating separate patch plans. However each patch deployment session would involve down time. To reduce the system down time, you can create one patch plan by selecting the Web Logic platform patches as well as SOA or Oracle Service Bus patches and then apply this patch plan in one session.

> **Note:**
>
> • The combined patching is supported only from Oracle Service Bus or SOA release 12.1.3.0.0 onwards. This mode of combined patching is supported only from Oracle Service Bus or SOA release 12.1.3.0.0 onwards. For earlier versions of Oracle Service Bus and SOA, create separate patch plans to apply the patches.
>
> • To achieve this, first create the patch plan by selecting the desired Weblogic patches and selecting the desired domain targets. Add the Oracle Service Bus or SOA patches to the same patch plan and ensure to reselect the same domain targets in the target selector window as detailed in the steps below. This will ensure that all required patches and the targets to deploy them against are selected.

The user can apply multiple patches through a single patch plan.

For more information on creating a patch plan, see Creating a Patch Plan.

> **Note:**
>
> An Oracle Service Bus or SOA target must have an Oracle Home associated with it. Else, the following error message is displayed with the resolution:
>
> ```
> There is no Oracle Home(OH) target associated for the patch being
> applied. To rectify this issue the user should promote the OH being
> patched, by choosing the "Discover Promote Oracle Home Target" job in
> Enterprise Manager. Ensure the OH target is available after this
> operation is completed, and the configuration metrics for the OH
> target is collected.
> ```

To apply patching for Oracle Service Bus, follow these steps:

> **Note:**
>
> You can also include any SQL scripts that need to be executed while applying patch.

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Saved Patches.**

2. Click **Upload.**

3. Provide the location of the patch file and the patch metadata, and click **Upload.**

4. Once the patch has been uploaded, select the patch. This takes you to the patch home page.

5. Click **Create Plan** by selecting the WebLogic patch and WebLogic domain As the target.

6. Enter the name of the plan in the **Plan Name** field.

7. Enter WebLogic domain As the target type.

8. Click **Create Plan.**

9. The WebLogic Server patch plan is created and can be deployed along with Oracle Service Bus or SOA patch.

10. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates.**

11. Select the patch plan that you created from the list of patch plans.

12. Click **Next.**

13. In the **Patches & Updates**, under the **Patches** tab, click on **Add Patch.**

14. Search and select a SOA or Oracle Service Bus patch and select the same domain target.

15. Enter the rest of the details in the EM User Interface, validate the credentials, and choose the customization required. Ensure that the data prefilled or selected is accurate.

16. Click **Analyze.** The deployment procedure is submitted.

17. Once analysis is complete click **Review**, for the tool to review, analyze, and validate the details.

18. Click **Next.**

19. Click **Deploy.** The deployment procedure is submitted and patching is in progress.

20. The patch is deployed.

21. The WebLogic Server patch is successfully applied.

Diagnosing and Resolving Patching Issues

This section describes the following:

- Workaround for Errors
- Common Patching Issues
- Resolving Patching Issues

Workaround for Errors

This section describes the workaround for the following errors:

- Workaround for Missing Property Errors
- Workaround for Unsupported Configuration Errors

Workaround for Missing Property Errors

This section describes the possible missing property errors and the workarounds you can use to resolve them.

Table 14-5   Missing Properties Error and Workaround

Problem	Workaround
Empty target property version	The target is not properly configured or is unavailable. Reconfigure the target or check for metric collection errors.

Table 14-5   (Cont.) Missing Properties Error and Workaround

Problem	Workaround
| Inadequate or incomplete target information collected by Oracle Management Agent. | Recompute the dynamic properties and refresh the host configuration so that the Management Repository is updated with the latest configuration of the host.<br><br>1.  To recompute the dynamic properties:<br><br>   a.  Stop and restart the Management Agent (easiest method, incurrs in downtime).<br><br>```
emctl stop agent
emctl start agent
```<br><br>   > **Note:**<br>   > For clusters restart the Management Agent on all nodes.<br><br>   b.  Reload the dynamic properties of all the targets (preferred method avoids blackouts or downtime).<br><br>      i.  View the list of targets that are monitored by the Management Agent:<br><br>```
emctl config agent listtargets
```<br><br>      ii.  Reload the dynamic properties of a specific target:<br><br>```
emctl reload agent dynamicproperties
[<Target_name>:<Target_Type>]
```<br><br>2.  To update the Management Repository with the latest configuration information, from the **Enterprise** menu, select **Configuration,** and then select **Refresh Host Configuration**. On the Refresh Host Configuration page, select the hosts for which the configuration must be updated, and click **Refresh Hosts**. |
| Targets are not properly discovered because of inadequate or incomplete target information collected during discovery. | Rediscover the domain so all the targets are re-discovered effectively.

1. Log in to the Domain Home page using appropriate credentials. For example, `Farm01_base_domain`.

2. On the domain home page go to the **Farm** menu, select **Refresh WebLogic Domain,** and click **Ok** on all following pages to complete the process. After successful completion of the process the domain home page is refreshed with the targets discovered. |

Workaround for Unsupported Configuration Errors

Table 14-6   Workaround for Unsupported Configuration Errors

Problem	Workarounds
The target is not mediated by the OMS	The target discovery is not appropriate. Remove the target from Enterprise Manger, and rediscover on all the Management Agents in the cluster.

Common Patching Issues

The following situations will generate errors:

- The OMS or the Management Agent are down

- The Software Library is not properly configured

- If there is no connectivity to My Oracle Support (in online mode)

- If there is no Management Repository

- If there are no collections

- If there are host or Oracle home security issues

- If there are inherent OPatch or SQL errors

- **Oracle WebLogic Targets**: If there are inherent problems with the SmartUpdate tool.

- **Oracle WebLogic Targets**: If there is problem discovering Oracle WebLogic targets reporting to the OMS.

You will see these errors in the following places:

- In the header section of the Validation page or the Review page in the Create Plan Wizard, see: Figure 14-9.

- In the Issues to Resolve section of the Validation page, see:Figure 14-10.

- In the Plans region of the Patches & Updates page, see: Figure 14-11.

Figure 14-9   Patch Plan Errors Displayed on the Validation Page

Figure 14-10   Patch Plan Errors Displayed in the Issues to Resolve Section

Figure 14-11   Patch Plan Errors Displayed in the Plans Region

Resolving Patching Issues

Table 14-7 lists the different phases that the patch plan goes through, the different states the phases can have, and how you can diagnose and resolve the errors.

Table 14-7   Diagnosing Patching Issues

Phase	State	Diagnosis and Resolution
Analysis	Analysis In Progress	N/A
	Analysis Error	Review the following log file: `<gc_inst>/sysman/log/emoms.log`

Table 14-7   (Cont.) Diagnosing Patching Issues

Phase	State	Diagnosis and Resolution
	Issues Remain	In the Create Plan Wizard, on the Validation page, review the issues listed in the **Issues to Resolve** section.
		In the Issues to Resolve section, if an error message states that you must click **Show Detailed Results here,** then click it. On the Procedure Activity Status page, in the Status Detail table, review the status of each of the steps. Click the status to view the log details.
		In case the **Issues to Resolve** table is empty, then exit and re-enter the plan.
	Conflicts Detected	In the Create Plan Wizard, on the Validation page, review the issues listed in the **Issues to Resolve** section.
		In the Issues to Resolve section, if an error message states that you must click **Show Detailed Results here,** then click it. On the Procedure Activity Status page, in the Status Detail table, review the status of each of the steps. Click the status to view the log details.
	Ready for Deployment	N/A
Preparation	Preparation In Progress	N/A
	Preparation Error	Review the following log file: `<gc_inst>/sysman/log/emoms.log`
	Preparation Failed	On the Validation page, click **Show Detailed Results here.** On the Procedure Activity Status page, in the Status Detail table, review the status of each of the steps. Click the status to view the log details.
	Preparation Successful	N/A
Deploy	Deployment In Progress	N/A
	Deployment Error	Review the following log file: `<gc_inst>/sysman/log/emoms.log`
	Deployment Failed	On the Validation page, click **Show Detailed Results here.** On the Procedure Activity Status page, in the Status Detail table, review the status of each of the steps. Click the status to view the log details.
	Deployment Successful	N/A

Rolling Back Patches

If you want to roll back the patches, follow the roll back instructions outlined in the ReadMe that is packaged with the patch you applied.

Roll back functionality is supported on the following targets: Management Agent, Oracle WebLogic Server, Oracle SOA Infrastructure, Oracle Restart, single-instance Oracle database, Oracle RAC database, Oracle RAC One node, Oracle Grid Infrastructure, and Oracle Grid Infrastructure targets that are part of Oracle Exadata. For more information about the steps to rollback, see Rolling Back Patches. For all other targets, Cloud Control does not support the automatic rollback of patches, and therefore, you must roll back the patches manually.

Additional Patching Tasks You Can Perform

This section covers the additional tasks you can perform with patch plans. In particular, it covers the following:

- Viewing or Modifying a Patch Template
- Saving a Deployed Patch Plan as a Patch Template
- Downloading Patches from a Patch Template
- Deleting a Patch Template
- Deleting a Patch Plan
- Converting a Nondeployable Patch Plan to a Deployable Patch Plan
- Associating Additional Targets to a Patch in a Patch Plan
- Manually Staging the Patching Root Component
- Restricting Root User Access for Patching
- Resolving Patch Conflicts
- Analyzing the Results of Patching Operations
- Customizing Patching Deployment Procedures
- Rolling Back Patches

Viewing or Modifying a Patch Template

To view or modify a patch template, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, do one of the following:

   - Select a patch template. From the context menu, select **View**. The Edit Template Wizard appears.

   - Click the name of a patch template. The Edit Template Wizard appears.

> **Note:**
>
> - An administrator who created the patch template and the super administrator of Cloud Control can modify a patch template.
>
> - You can modify only the description and the deployment date in the patch template.

Saving a Deployed Patch Plan as a Patch Template

If you have already analyzed and deploy a patch plan, and if you want to save that patch plan as a patch template, then use one of the following approaches:

Approach 1

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region select a successfully analyzed deployable Patch Plan.

> **Note:**
>
> You can create a patch template only from one Patch Plan at a time.

3. Select **Create Template**. The Create New Plan Template dialog appears.

4. Enter a unique name for the template, then click **Create Template**.

> **Note:**
>
> When you select a plan, the **Create Template** option is not visible if you:
>
> • Select a nondeployable Patch Plan or a deployable Patch Plan that has either not been analyzed or resulted in errors after being analyzed.
>
> • Do not have the privileges to view the Patch Plan that you selected.
>
> • Do not have the privileges to create a template.

Approach 2

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the **Patches & Updates** page, in the **Plans** region click the name of a successfully analyzed deployable patch plan. The **Create Plan** wizard appears.

3. In the Create Plan Wizard, in the Review & Deploy page, click **Save as Template**.

4. Enter a unique name for the template, then click **Create Template**.

> **Note:**
>
> You must create patch templates only with unique names.

Downloading Patches from a Patch Template

To download a patch from a patch template, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, select a patch template.

3. From the context menu, select **View**. The Edit Template Wizard appears.

4. In the Edit Template Wizard, on the Patches page, click a patch number. The patch details page appears.

5. On the patch details page, click **Download**.

Deleting a Patch Plan

To delete a patch plan, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, click the Patch Plan you want to delete. From the context menu, click **Remove**.

> **Note:**
>
> If you do not see the Plans region, click **Customize Page** from the top-right corner, and then drag the Plans region to the page.

Deleting a Patch Template

To delete a patch template, follow these steps:

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region select one or more patch templates. The context menu appears.

3. From the context menu, select **Remove**.

> **Note:**
>
> An administrator who created the patch template and the super administrator of Cloud Control can modify a patch template.

Converting a Nondeployable Patch Plan to a Deployable Patch Plan

To make a nondeployable Patch Plan deployable, divide the Patch Plan into smaller deployable plans that contain only homogenous patches and targets.

> **Note:**
>
> For more information, see Patch Plan Becomes Nondeployable and Fails.

Associating Additional Targets to a Patch in a Patch Plan

To associate additional targets to a patch in a patch plan, use one of the following approaches:

Approach 1

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Plans region, select a Patch Plan to which the patch belongs. From the context menu that appears, select **View**.

> **Note:**
>
> If you do not see the Plans region, click **Customize Page** from the top-right corner, and then drag the Plans region to the page.

3. In the Create Plan Wizard, on the Patches page, Click **Add Patch**. The Edit Search window appears.

4. In the Edit Search window, search the patch to which you want to associate additional targets.

5. Select the patch that you want to add, then click **Add to This Plan**. The Add Patch To Plan window appears.

6. In Add Patch To Plan window, search and select the additional targets that you want to associate with the patch, and then, click **Add Patch to Plan**.

> **Note:**
>
> Ensure that you select only homogeneous targets.
>
> For Oracle WebLogic Server, using a single patch plan, you can patch only one domain. However, if it is a shared domain, then the admin servers and Managed Servers running on different domains, which are shared with the domain being patched, are automatically added into the same plan.
>
> For Oracle WebLogic Server, if you have deployed the Enterprise Manager for Oracle Fusion Middleware 12.1.0.4 plug-in, you can add any number of WebLogic domain targets to a single patch plan. If you have not deployed the Enterprise Manager for Oracle Fusion Middleware 12.1.0.4 plug-in, you can add only a single WebLogic domain target to a single patch plan. For information about how to deploy a new plug-in or upgrade an existing plug-in, see *Oracle Enterprise Manager Cloud Control Administrator's Guide.*
>
> If the WebLogic domain target that you add to a patch plan is a shared domain, then all the Administration Servers and the Managed Servers that are running on the domains that are shared with the domain being patched are automatically added into the same patch plan.

Approach 2

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Patch Recommendations region, click the graph.

> **Note:**
>
> If you do not see the Patch Recommendations region, click **Customize Page** from the top-right corner, and then drag the Patch Recommendations region to the page.

3. On the Patch Recommendations page, select a patch.

4. From the context menu, select **Add to Plan**, then **Add to Existing**, and select the plan you want to add the patch to.

   The patch you selected and the target it is associated with get added to the existing plan.

Approach 3

1. From the **Enterprise** menu, select **Provisioning and Patching**, then select **Patches & Updates**.

2. On the Patches & Updates page, in the Search region, search a patch you want to add to the patch plan.

> **Note:**
>
> If you do not see the Search region, click **Customize Page** from the top-right corner, and then drag the Search region to the page.

3. On the Patch Search page, click the patch to view its details.

4. On the patch details page, click **Add to Plan**, then **Add to Existing**, and select the plan you want to add the patch to.

   The patch you selected and the target it is associated with get added to the existing plan.

Manually Staging the Patching Root Component

For information on how to manually stage the patching root component, see Root Components for Patching.

Restricting Root User Access for Patching

For information on how to restrict the root user access, see Root Components for Patching.

Resolving Patch Conflicts

If the patches in the patch plan conflict among themselves or with patches in the Oracle home, then you can do one of the following to resolve the conflict:

- Request for a merge patch of the conflicting patches. To do so, click **Request Patch** on the Validation page.

- Roll back the conflicting patches in the Oracle home and forcefully apply the incoming patches. To do so, on the Deployment Options page, in the Advanced Patching Options section, from the **Conflict Resolution** list, select **Forcefully apply incoming patches.**

- Skip the conflicting patches. To do so, on the Deployment Options page, in the Advanced Patching Options section, from the **Conflict Resolution** list, select **Skip conflicting patches.**

Analyzing the Results of Patching Operations

If you want to analyze the results of the patching operations you have done over a period of time, then run the *EM Deployable Patch Plan Execution Summary*. The report shows the number of deployable and nondeployable plans you have had in the past, and provides a breakdown of the deployable plans indicating how many succeeded and failed, how many were analyzed and deployed, and so on.

To run the EM Deployable Patch Plan Execution Summary report, follow these steps:

1. From the **Enterprise** menu, select **Reports,** then select **Information Publisher Reports.**

2. On the Information Publisher Reports page, in the table, expand **Deployment and Configuration,** then expand **Patching Automation Reports,** and then select **EM Deployable Patch Plan Execution Summary.**

Customizing Patching Deployment Procedures

This section describes how you can customize patching deployment procedures. For information about customizing deployment procedures in general. This chapter explains in detail what customization means, the different ways of customizing a deployment procedure, and so on.

By default, a patch plan uses a static, Oracle-supplied deployment procedure, or an OPlan based, dynamically generated deployment procedure to apply patches. You can customize both these kinds of deployment procedures. This section consists of the following:

- Customizing a Static Patching Deployment Procedure
- Customizing a Dynamic Patching Deployment Procedure

Customizing a Static Patching Deployment Procedure

To customize a default, static deployment procedure, and use it to patch your targets, follow these steps:

1. Access the Deployment Options page.

2. In the Customization section, click **Create Like and Edit**.

3. Edit the deployment procedure (you can even add manual steps to the deployment procedure), then save it with a unique, custom name.

4. To use the customized deployment procedure, return to the Customization section of the Deployment Options page, then select the customized deployment procedure.

   If you want to edit a customized deployment procedure, select the customized deployment procedure in the Customization section, then click **Customize.**

Customizing a Dynamic Patching Deployment Procedure

To customize a dynamically generated deployment procedure, and use it to patch your targets, follow these steps:

1. Access the Deployment Options page.

2. In the Customization section, select **Specify custom steps to be added to generated patching deployment procedure.**

   For each placeholder step in the deployment procedure, you can add three custom steps, a directive step (which enables you to run a directive stored in Software Library), a host command step (which enables you to run a command script on the patch targets), and a manual step (which enables you to provide manual instructions to a user).

3. Select all the custom steps that you want to add under the placeholder steps, then click **Enable.**

   To disable an enabled custom step, select the custom step, then click **Disable.**

4. Select a custom step that you want to add, then click **Edit.**

   If the custom step you selected is a directive step, follow the instructions outlined in Adding Steps.

   If the custom step you selected is a host command step, an Edit Custom Step dialog box appears, which enables you to specify the details of a command script that you want to run on the patch targets. For **Script,** specify the commands that you want to run on the patch targets. For **Interpreter,** specify the complete path of the interpreter that must be used to execute the specified command script. For **Credential Usage,** select the credentials that must be used to run the custom host command step. Click **OK.**

   If the custom step you selected is a manual step, an Edit Custom Step dialog box appears, which enables you to provide manual instructions to the user during the execution of the deployment procedure. For **Instructions,** specify the instructions for the manual tasks that a user must perform in this custom step. Click **OK.** The specified instructions are displayed when this custom step of the deployment procedure is executed.

5. Repeat Step 4 for all the custom steps that you have enabled.

Pausing the Patching Process While Patching Targets in Rolling Mode

While patching your targets in rolling mode, you can choose to pause the execution of the patching deployment procedure after each node is patched. This feature is useful when you want to perform a clean up on the host having the patched node, verify whether the patch is applied successfully on the node, and so on, before starting the patching process on the next node.

> **Note:**
>
> This feature is available only if you have the 12.1.0.5 Enterprise Manager for Oracle Database plug-in, or a higher version, deployed.

To use this feature, follow these steps:

1. Create a custom static deployment procedure as described in Customizing a Static Patching Deployment Procedure. On the Create Like Procedure page, select the **Procedure Steps** tab, select the **Wait for user confirmation** option, then click **Save.**

2. Use the custom deployment procedure while creating a patch plan to patch your targets in rolling mode (by specifying this custom deployment procedure in the Customization tab of the Deployment Options page).

   The patching deployment procedure is paused after a node is patched, and you can resume its execution from the Procedure Activity page.

Rolling Back Patches

To rollback patches, you must create a new patch plan, select the relevant patches to rollback, and then select the rollback check box. To do so, perform the following steps:

> **✎ Note:**
>
> The roll back functionality is supported on the following targets:
>
> * Oracle Management Agents
> * Oracle WebLogic Server
> * Oracle SOA Infrastructure

1. In Cloud Control, from the **Enterprise** menu, select **Provisioning and Patching,** and then click **Patches and Updates.**

2. On the Patches and Updates page, in the Patch Search region, enter the patch that you want to rollback.

3. In the **Add Patch to Plan** dialog box, enter a unique name for the plan, and select all the targets from where you want to rollback the patches.

4. Click **Create Plan**.

5. In the Create Plan Wizard, select **Deployment Options.**

6. On the Deployment Options page, in the How to Patch section, select **In Place,** and in the Rollback section, select **Rollback patches in the plan.** Click **Next.**

7. On the Validation page, click **Analyze** to validate the plan. After a successful analysis, click **Next.**

8. On the Review and Deploy page, review the details you have provided for the patch plan, and then click **Rollback** to rollback the selected patch from the corresponding targets mentioned in the plan.

Patching Database as a Service Pools

To patch Database as a Service pools, use the Pool Maintenance option. For detailed information on how to patch Database as a Service pools, see *Enterprise Manager Cloud Administration Guide.*

It is recommended that you use the Software Standardization Advisor feature to standardize software, have a homogeneous software configuration across your enterprise, and perform subscription based software maintenance.

Database Patching and Upgrades

Updates (patching) and Upgrades are some of the most important activities that need to be regularly performed as part of the database lifecycle management activities. With Enterprise Manager you can manage updates and upgrades for Oracle databases.

For more information regarding updating (patching) and upgrading Oracle databases, see Database Maintenance: Updates (Patching) and Upgrades.

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Configuration and Compliance

Oracle Enterprise Manager Cloud Control simplifies the monitoring and management of the deployments in your enterprise, while Compliance Management provides the ability to evaluate the compliance of targets and systems as they relate to business best practices for configuration, security, and storage.

For more information regarding configuration and compliance of middleware targets, see Manage Configuration, Compliance and Change.

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