Oracle® Enterprise Manager Cloud Control

Oracle Database Appliance Plug-in User's Guide

Release 13.2c (13.2.2.1.0) for Linux x86-64

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Oracle Enterprise Manager Cloud Control Oracle Database Appliance Plug-in User's Guide, Release 13.2c (13.2.2.1.0) for Linux x86-64

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Preface

Oracle Enterprise Manager Cloud Control provides the tools to effectively and efficiently manage your Oracle Database Appliance. With a consolidated view of the Oracle Database Appliance, Oracle Enterprise Manager Cloud Control provides a dashboard containing all of the hardware components and their physical location with indications of status.

This document provides the installation and administration instructions to set up Oracle Enterprise Manager Cloud Control to monitor and manage your Oracle Database Appliance.

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Audience

This system monitoring installation guide is for users who perform administrative and problem-resolution tasks on Oracle Database Appliance.

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 Documents

The following documents, along with others, are published in the Oracle Enterprise Manager Cloud Control online documentation library, which is available from the following URL:

`https://docs.oracle.com/en/enterprise-manager/`:

Select Oracle Enterprise Manager Cloud Control Documentation 13.2 to view the documentation, including the following documents:

- *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*

- *Oracle Enterprise Manager Cloud Control Administrator's Guide*

The Oracle Database Appliance online documentation library is available from the following URL:

http://www.oracle.com/goto/oda/docs.

Conventions

The following text conventions are used in this document:

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

1

Introduction to the Oracle Database Appliance Plug-in

The Oracle Database Appliance plug-in enables you to monitor Oracle Database Appliance targets using Oracle Enterprise Manager Cloud Control.

Topics:

- Oracle Database Appliance Plug-in Monitoring Features (page 1-1)
  The plug-in provides seamless integration with supported Oracle Database Appliance software so that you can receive information about any Oracle Database Appliance target.

- Oracle Database Appliance Plug-in Target Discovery Features (page 1-1)
  The target discovery process is streamlined and simplified with the Oracle Database Appliance plug-in.

- Oracle Database Appliance Plug-in Supported Hardware and Software (page 1-2)
  View the Oracle Database Appliance configurations supported with the Oracle Database Appliance plug-in for Oracle Enterprise Manager Cloud Control.

1.1 Oracle Database Appliance Plug-in Monitoring Features

The plug-in provides seamless integration with supported Oracle Database Appliance software so that you can receive information about any Oracle Database Appliance target.

Monitoring features include:

- Monitoring of the Oracle Database Appliance as an Oracle Enterprise Manager target

- Monitoring a dynamic group of Oracle Database Appliance systems using customizable tags

- Monitoring Oracle Database Appliance hardware and software components (Database, ILOM, HOST, virtual machines, Hypervisor, and ASM), as a group under an Oracle Database Appliance target.

1.2 Oracle Database Appliance Plug-in Target Discovery Features

The target discovery process is streamlined and simplified with the Oracle Database Appliance plug-in.

Features include:

- Custom discovery process which collects credentials, discovers and validates configurations, and gives you the ability to group Oracle Database Appliance systems during discovery

- Discovery process checks for updates and critical configuration requirements, and prevents discovered targets from being rediscovered

- Credential validation and named credential support

- Ability to apply a custom name to the Oracle Database Appliance target

1.3 Oracle Database Appliance Plug-in Supported Hardware and Software

View the Oracle Database Appliance configurations supported with the Oracle Database Appliance plug-in for Oracle Enterprise Manager Cloud Control.

To upgrade to Enterprise Manager Cloud Control 13.2, you must upgrade the plug-in to version 13.2.2.1.0.

Oracle Appliance Manager DCS (odacli) is supported beginning with Oracle Database Appliance 12.2.1.3.0:

- Oracle Database Appliance X7-2-HA, X7-2S, X7-2M bare metal platforms

- Oracle Database Appliance X6-2S, X6-2M, and X6-2L bare metal platforms

Oracle Appliance Manager OAK (oakcli) is supported beginning with Oracle Database Appliance 12.2.1.3.0:

- Oracle Database Appliance X7-2-HA virtualized platforms

- Oracle Database Appliance X6-2-HA bare metal and virtualized platforms

- Oracle Database Appliance X5-2, X4-2, X3-2, and V1 bare metal and virtualized platforms

Table 1-1   Supported Enterprise Manager Cloud Control Releases for Oracle Database Appliance

Enterprise Manager Plug-in Release	Enterprise Manager Version	Hardware Model	Minimum Oracle Database Appliance Version
12.1.0.1.0	12.1	X5-2, X4-2, X3-2, and V1	12.1.0.4
13.1.1.1.0	13.1	X5-2, X4-2, X3-2, and V1	12.1.2.5.0
13.2.1.1.0	13.2	X5-2, X4-2, X3-2, and V1	12.1.2.7.0
13.2.2.1.0	13.2	X5-2, X4-2, X3-2, and V1	12.1.2.7.0
13.2.2.1.0	13.2	X6-2S, X6-2M, X6-2L, X6-2-HA, X7-2S, X7-2M, X7-2-HA	12.2.1.3

2

Oracle Database Appliance Plug-in Installation and Deployment

Perform these tasks to install the Oracle Enterprise Manager Agent and deploy the plug-in.

Topics:

- Overview of Tasks to Deploy and Configure the Plug-in (page 2-1)
  The following is an overview of the tasks that you need to perform to begin monitoring Oracle Database Appliance systems.

- Oracle Database Appliance Plug-in Deployment Prerequisites (page 2-1)
  Before deploying Oracle Database Appliance plug-in, ensure that you complete the prerequisites.

- Installing the Oracle Enterprise Manager Agent for Oracle Database Appliance (page 2-7)
  Use one of two methods to install the Oracle Enterprise Manager Agent for Oracle Database Appliance.

- Deploying the Oracle Database Appliance Plug-in (page 2-9)
  Import and deploy the Oracle Enterprise Manager Plug-in for Oracle Database Appliance.

2.1 Overview of Tasks to Deploy and Configure the Plug-in

The following is an overview of the tasks that you need to perform to begin monitoring Oracle Database Appliance systems.

1. Install the Oracle Enterprise Manager Agent
2. Deploy the plug-in
3. Discover Oracle Database Appliance systems to add the targets for monitoring
4. (Optional) Configure the monitoring metrics and notifications

After Oracle Enterprise Manager Cloud Control discovers the targets, the software begins monitoring the supported hardware and software components.

2.2 Oracle Database Appliance Plug-in Deployment Prerequisites

Before deploying Oracle Database Appliance plug-in, ensure that you complete the prerequisites.

Complete the following prerequisites:

- Create a Database Server Oracle ILOM Service Processor User (page 2-2)
  Create a special user for the Oracle ILOM service processor.

- [Create a Monitoring OS User on the Oracle Database Appliance Server](#)
(page 2-3)
(Optional) Create a special user for monitoring instead of using the root user.

- [Verify the Oracle Database Appliance Software Version](#) (page 2-4)
Verify that you have a supported version of Oracle Appliance Manager software
installed.

- [Validate the Storage Cable Connections](#) (page 2-4)
Validate the Oracle Database Appliance storage topology and external JBOD
connectivity before deploying Oracle Database Appliance. You should also
validate the connections after changing the cabling.

- [Verify Host Name Resolution of the Oracle ILOM Servers](#) (page 2-5)
Verify that each server node is able to resolve the host names of the Oracle ILOM
servers.

- [Verify the Firewall Configuration of Oracle Database Appliance](#) (page 2-6)
Verify the firewall configuration for Oracle Database Appliance.

2.2.1 Create a Database Server Oracle ILOM Service Processor User

Create a special user for the Oracle ILOM service processor.

For the Oracle Enterprise Manager agent to communicate with an Oracle Integrated
Lights Out Manager (Oracle ILOM) service processor, you must have a specific user
ID configured for the Oracle ILOM service processor.

> **Note:**
>
> Adding the specific user ID requires administrator level privilege on the
> Oracle ILOM service processor.

The specific Oracle ILOM user ID can be added in the Oracle ILOM service processor
web interface, Oracle ILOM CLI, or with the `ipmitool` command. This example uses the
Oracle ILOM CLI.

For security reasons, the `root` user password to the Oracle ILOM service processor is
not shown in the Oracle ILOM CLI commands in this example.

1. Log in to the Oracle ILOM Service Processor as root:

```
# ssh root@[Service Processor IP]
Password:
```

2. Change to the `users` directory:

```
-> cd /SP/users
```

3. Create the `oemuser` user and password:

```
-> create oemuser

Creating user...
Enter new password: ********
Enter new password again: ********

Created /SP/users/oemuser
```

4. Change to the new user's directory and set the role:

```
-> cd oemuser
/SP/users/oemuser

-> set role='cro'
-> Set 'role' to 'cro'
```

5. Test the Oracle ILOM user ID created in step 3 by listing the last 10 system events:

```
-> ipmitool -I lanplus -H -U oemuser -P welcome1 -L USER sel list last 10
```

Repeat steps 1 through 5 for the rest of the server node Oracle ILOM service processors in Oracle Database Appliance.

2.2.2 Create a Monitoring OS User on the Oracle Database Appliance Server

(Optional) Create a special user for monitoring instead of using the root user.

The root user can perform monitoring on Oracle Database Appliance agents. However, if the root user is not accessible for security reasons, an alternative method is to create a monitoring OS user as the monitoring user, and set the privilege delegation appropriately. If you run a virtualized ODA, please perform the following steps from ODA_BASE.

The following is an example that creates user for the purpose of monitoring Oracle Database Appliance.

1. Run the following commands:

```
#useradd username
#passwd password
```

2. Add SUDO privilege for the user.

   a. Modify the `/etc/sudoers` file on the host using the `visudo` command.

   b. Add the following commands to the `/etc/sudoers` file.

```
Cmnd_Alias  plugin_agent_script=$perl_home/bin/perl
$agent_home/plugins/$plugin_opar_version /scripts/*.pl* , \
$agent_home/sbin/nmosudo default_plugin default_functionality
default_subaction default_action perl -e exit 0
monitor_user  ALL=(ALL)  plugin_agent_script
```

   Note that:

   $*agent_home* is the absolute path to the installed agent home. The agent home directory is created during agent deployments to the hosts. For example, `/u01/app/agent_home/`

   $*perl_home* is the absolute path to the installed executable Perl. For example, `/u01/app/agent_home/core/12.1.0.5.0/perl/`

   $*plugin_opar_version* is the complete Oracle Database Appliance Plug-in OPAR file that is deployed to the Oracle Management System (OMS) and the agents. It is in the format:

```
oracle.dba.odba.agent.plugin_version
```

version is the Oracle Database Appliance plug-in version, for example, 13.2.2.1.0.

3. Set privilege delegation to the host targets.

   a. Log in to Oracle Enterprise Manager.

   b. In the **Setup** menu select **Security**, then **Privilege Delegation**.

   c. Select **Edit**.

   d. In the **Type** box, select **Sudo**.

   e. Enter `/usr/bin/sudo -u %RUNAS% %COMMAND%` in the **Sudo Command** box.

   f. Click **Save**.

2.2.3 Verify the Oracle Database Appliance Software Version

Verify that you have a supported version of Oracle Appliance Manager software installed.

- To verify the software version on Oracle Database Appliance X7-2S, X7-2M, X6-2S, X6-2M, and X6-2L, run the command:

  ```
  # odacli describe-component
  ```

- To verify the software version on Oracle Database Appliance X7-2-HA (bare metal platform) run the command:

  ```
  # odacli describe-component
  ```

  Verify the version on both nodes. The command provides details across all nodes.

- To verify the software version on Oracle Database Appliance X7-2-HA (virtualized platform), run the command:

  ```
  # oakcli show version
  ```

- To verify the software version on Oracle Database Appliance X6-2-HA, X5-2, X4-2, X3-2, and V1 (bare metal or virtualized platform), run the command:

  ```
  # oakcli show version
  ```

  Verify the version on both nodes.

2.2.4 Validate the Storage Cable Connections

Validate the Oracle Database Appliance storage topology and external JBOD connectivity before deploying Oracle Database Appliance. You should also validate the connections after changing the cabling.

Use the command-line interface to check the cable connections between the system controllers and the storage shelf, as well as the cable connection to the storage expansion shelf (if one is installed). If you have incorrect or missing cable connections, then the output displays errors.

1. Run the command on Node 0 to validate the storage topology based on the hardware model:

   - For Oracle Database Appliance X7-2-HA (bare metal platform), X7-2S, X7-2M, X6-2S, X6-2M, and X6-2L, run the command `odacli validate-storagetopology`.

```
# odacli validate-storagetopology
```

- For Oracle Database Appliance X7-2-HA (virtualized platform), run the command `odacli validate-storagetopology`.

```
# oakcli validate -c storagetopology
```

- For Oracle Database Appliance X6-2-HA, X5-2, X4-2, X3-2, and V1 (bare metal and virtualized platforms), run the command `oakcli validate storagetopology`.

```
# oakcli validate -c storagetopology
```

2. Review the output for errors. When the cabling connections are correct, the output indicates a successful configuration. The following example shows the output for an X5-2 virtualized platform.

```
# oakcli validate -c storagetopology

It may take a while. Please wait...
 INFO : ODA Topology Verification
 INFO : Running on Node0
 INFO : Check hardware type
 SUCCESS : Type of hardware found : X5-2
 INFO : Check for Environment(Bare Metal or Virtual Machine)
 SUCCESS : Type of environment found : Virtual Machine(ODA BASE)
 SUCCESS : Number of External LSI SAS controller found : 2
 INFO : Check for Controllers correct PCIe slot address
 SUCCESS : External LSI SAS controller 0 : 00:15.0
 SUCCESS : External LSI SAS controller 1 : 00:16.0
 INFO : Check if  powered on
 SUCCESS : 1 : Powered-on
 INFO : Check for correct number of EBODS(2 or 4)
 SUCCESS : EBOD found : 2
 INFO : Check for External Controller 0
 SUCCESS : Controller connected to correct ebod number
 SUCCESS : Controller port connected to correct ebod port
 SUCCESS : Overall Cable check for controller 0
 INFO : Check for External Controller 1
 SUCCESS : Controller connected to correct ebod number
 SUCCESS : Controller port connected to correct ebod port
 SUCCESS : Overall Cable check for controller 1
 INFO : Check for overall status of cable validation on Node0
 SUCCESS : Overall Cable Validation on Node0
 INFO : Check Node Identification status
 SUCCESS : Node Identification
 SUCCESS : Node name based on cable configuration found : NODE0
 INFO : Check  Nickname
 SUCCESS :  Nickname set correctly : Oracle Database Appliance - E0
 INFO : The details for Storage Topology Validation can also be found in log
file=/opt/oracle/oak/log/<hostname>/storagetopology/
StorageTopology-2018-01-03-08:57:31_7661_15914.log
```

3. For Oracle Database Appliance X7-2-HA, X6-2-HA, X5-2, X4-2, X3-2, and V1 hardware models, repeat Steps 1 and 2 on Node 1.

2.2.5 Verify Host Name Resolution of the Oracle ILOM Servers

Verify that each server node is able to resolve the host names of the Oracle ILOM servers.

If the names of those components are not registered in DNS, then entries can be added to the `/etc/hosts` file of each server node.

2.2.6 Verify the Firewall Configuration of Oracle Database Appliance

Verify the firewall configuration for Oracle Database Appliance.

1. Allow `ping`.

   System administrators typically disable the `ping` service in secure network environment. Oracle Enterprise Manager uses `ping` to establish the basic availability and status of Oracle Database Appliance.

   - Ensure that the server nodes have the `ping` service and port enabled from the Oracle Management System (OMS).

   - All other Oracle Database Appliance components (such as Oracle ILOM servers) must have the `ping` service and port enabled from the server nodes where the agents are running.

   > **Note:**
   >
   > The `ping` traffic overhead is minimal. The agent pings the targets every five minutes.

2. Open database ports.

   The database listener ports must be opened for the Oracle Enterprise Manager OMS server(s). Oracle Database Appliance databases use SCAN listeners; therefore, ports must be opened for the base server node, the node virtual IP, and the scan listeners addresses.

3. Open the Oracle Enterprise Manager upload port.

   The Oracle Enterprise Manager Cloud Control agents require access to the Oracle Enterprise Manager server's upload service. This is usually configured on port 4889 for HTTP uploads and 4900 for HTTPS. To verify the ports assigned, run the following command on the OMS server command line.

   ```
   $ emctl status oms -details
   ```

   Open these ports for each of the server nodes.

4. Open agent ports.

   The OMS servers must be able to connect to the Oracle Enterprise Manager Cloud Control Agent HTTP/HTTPS port on each server node. The agent port defaults to 3872. If port 3872 is not available, the next available port starting from port 1830 is used.

   To identify the port used:

   - Run the following command on the server node command line:

     ```
     $ emctl status agent
     ```

   - Alternatively, you can look for the value of the `EMD_URL` property in the `emd.properties` file the following directory:

     ```
     agent_home/agent_inst/sysman/config
     ```

`$agent_home` is the absolute path to the installed agent home. The agent home directory is created during agent deployments to the hosts. For example,

```
/u01/app/agent_home/
```

5. Open SSH ports.

   The Oracle Enterprise Manager Cloud Control agents require `ssh` access to the Oracle Database Appliance components they monitor. Because the agents will run on the server nodes, the `ssh` ports on each of the Oracle ILOMs (port 22) must be opened for each of the server nodes.

   > **Note:**
   >
   > The `emkit` configures `ssh` access, but still requires the ports to be opened first.

6. Allow UDP traffic (SNMP ports).

   All Oracle Database Appliance components must be able to send SNMP traps to the agents running on the server nodes. SNMP uses the UDP protocol so the agent port and port 162 need to be opened for UDP traffic between the Oracle ILOMs and the agent.

2.3 Installing the Oracle Enterprise Manager Agent for Oracle Database Appliance

Use one of two methods to install the Oracle Enterprise Manager Agent for Oracle Database Appliance.

Topics:

- About Deploying Oracle Enterprise Manager Agent for Oracle Database Appliance (page 2-7)
  Deploy the Oracle Enterprise Manager agent on ODA_BASE for Oracle Database Appliance Virtualized Platform deployments, and in Linux Hosts for Oracle Database Appliance Bare Metal deployments.

- Installing the Oracle Enterprise Manager Agent Using the Push Method (page 2-8)
  Use this procedure to install Oracle Enterprise Manager Agent using the Push method.

- Installing the Oracle Management Agent in Silent Mode (page 2-9)
  Use this procedure to install Oracle Enterprise Manager Agent using a response file.

2.3.1 About Deploying Oracle Enterprise Manager Agent for Oracle Database Appliance

Deploy the Oracle Enterprise Manager agent on ODA_BASE for Oracle Database Appliance Virtualized Platform deployments, and in Linux Hosts for Oracle Database Appliance Bare Metal deployments.

Oracle Enterprise Manager target discovery supports the use of either the management network host name or the client network host name for the server nodes. When you install the Oracle Enterprise Manager agent on the server nodes, use the same host name you used in Oracle Clusterware.

You can identify the host name of the nodes in the cluster by running the `olsnodes` command on one of the server nodes. It is recommended that a fully qualified host name, including the domain name, be used when specifying an Oracle Enterprise Manager agent host name.

> **Note:**
>
> Before deploying the agent, review the following requirements:
>
> - The Oracle Enterprise Manager agent must be deployed to all server nodes of Oracle Database Appliance. The host target name of the server node must be the fully qualified host name, for example, `dbm1db01.mydomain.com`.
>
> - A non-fully qualified host name (for example, `dbm1db01`) or IP address must *not* be used for the host target name of the server node.
>
> - The same version of the Oracle Enterprise Manager agent and the same version of the plug-ins should be deployed on all server nodes within the same Oracle Database Appliance.

2.3.2 Installing the Oracle Enterprise Manager Agent Using the Push Method

Use this procedure to install Oracle Enterprise Manager Agent using the Push method.

To install the Oracle Enterprise Manager agent using the push method, add the Oracle Database Appliance server nodes as host targets to Oracle Enterprise Manager Cloud Control 13*c*, and then start the agent deployment process.

1. From the Oracle Enterprise Manager home page, open the **Setup** menu (gear icon) in the menu bar, select **Add Target**, then **Add Targets Manually.**

2. Click **Install Agent on Host**.

3. On the Add Host Targets: Host and Platform page, specify a session name.

   Click **Add** and select **Manually** from the drop-down menu.

4. Identify the fully qualified host names and select the platform. Click **Next**.

   > **Note:**
   >
   > If the Oracle Enterprise Manager agent software is not available for your platform, go to the Extensibility page and download it first.

5. Select whether the platform should be different for each host or the same for each host.

6. Click **Next** to add the details for the host.

7. On the **Installation Details** screen, provide the following information:

    • Installation Base Directory

    • Instance Directory

    • Named Credential

    • For Port, leave this field blank. As part of the installation process, an available port will be selected automatically.

8. Click **Next** to review the details about the host.

9. Click **Deploy Agent** to start the agent deployment process.

10. As the deployment process continues, remote prerequisite checks are automatically performed. If there are no issues, you will be presented with an Agent Deployment Summary with an indication that the agent deployment has passed.

> ✎ **Note:**
>
> If the `root.sh` was not executed during deployment, then make sure to execute it on all server nodes.

2.3.3 Installing the Oracle Management Agent in Silent Mode

Use this procedure to install Oracle Enterprise Manager Agent using a response file.

You can install Oracle Management Agent in non-interactive ("silent") mode, as an alternative to installing Oracle Management Agent by using the Add Host Target wizard. You configure a response file with the information required for the installation, and then run a deployment script to install the management agent using the information supplied in the response file.

> ✎ **See Also:**
>
> Installing a Management Agent in Silent Mode in the *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide*.

2.4 Deploying the Oracle Database Appliance Plug-in

Import and deploy the Oracle Enterprise Manager Plug-in for Oracle Database Appliance.

Topics:

• About Deploying the Oracle Database Appliance Plug-in (page 2-10)
The Oracle Enterprise Manager Plug-in for Oracle Database Appliance is delivered as an Oracle plug-in archive file (`*.opar`).

- Importing the Oracle Database Appliance Plug-in Archive File Locally (page 2-11)
  Use this procedure to import the Oracle Database Appliance plug-in archive file locally.

- Importing the Oracle Database Appliance Plug-in Archive File Remotely (page 2-11)
  Use this procedure if you are running `EMCLI` on a different system than the system where you created the plug-in archive (`*.opar` file).

- Deploying Oracle Database Appliance Plug-in on Oracle Enterprise Manager Cloud Control (page 2-12)
  Use this task to deploy Oracle Database Appliance Plug-in on Oracle Enterprise Manager Cloud Control (Oracle Management System Servers).

- Deploying Oracle Database Appliance Plug-in to the Management Agents on Both Oracle Database Appliance Server Nodes (page 2-13)
  Use this task to deploy Oracle Database Appliance Plug-in to the management agents on both Oracle Database Appliance server nodes (hosts).

2.4.1 About Deploying the Oracle Database Appliance Plug-in

The Oracle Enterprise Manager Plug-in for Oracle Database Appliance is delivered as an Oracle plug-in archive file (`*.opar`).

The plug-ins belong to a specific Oracle Enterprise Manager category called `Add-on`. If you are using Oracle Enterprise Manager 12*c* to monitor Oracle Database Appliance, download the latest 13*c* compatible version of the plug-in and follow the instructions to invoke the *Enterprise Manager Cloud Control Installer in GUI Mode* before starting the Enterprise Manager 13.2 upgrade process.

The Enterprise Manager for Oracle Database Appliance plug-in archive file (`*.opar`) is named `oda_plugin_version_number_oracle.dba.odba_2000_0.opar`. The `oda_plug_in_version number` is the Oracle Database Appliance plug-in version, the plug-in version is not the same as the Oracle Database Appliance version. The latest Oracle Database Appliance plug-in version for Enterprise Manager 13.2 is named `13.2.2.1.0_oracle.dba.odba_2000_0.opar`.

Assuming you plan to use an existing Oracle Enterprise Manager installation, and that you have installed an Oracle Enterprise Manager agent, you are ready to deploy the Oracle Database Appliance plug-in.

> **Note:**
>
> Before deploying the plug-in, you must have already completed the Oracle Database Appliance deployment, and the Oracle Grid Infrastructure cluster should be up and running.

The following is a high-level overview of the steps to deploy the plug-in:

1. Download the Enterprise Manager for Oracle Database Appliance plug-in archive file from http://www.oracle.com/technetwork/oem/enterprise-manager/downloads/oem-plugins-3237574.html.

2. Either import the Oracle Database Appliance plug-in archive locally, or import the Oracle Database Appliance plug-in archive file remotely.

3. Deploy the Oracle Database Appliance plug-in on Oracle Enterprise Manager Cloud Control (Oracle Management System Servers).

4. Deploy the Oracle Database Appliance plug-in to the management agents on both Oracle Database Appliance server nodes (hosts).

2.4.2 Importing the Oracle Database Appliance Plug-in Archive File Locally

Use this procedure to import the Oracle Database Appliance plug-in archive file locally.

1. Download the Enterprise Manager for Oracle Database Appliance plug-in from http://www.oracle.com/technetwork/oem/enterprise-manager/downloads/oem-plugins-2882950.html.

2. Copy the Oracle Database Appliance Plug-in OPAR file to the Oracle Management System (OMS) host system.

3. Open a terminal (such as PuTTY) on the OMS host machine and connect as `oracle` user.

4. Copy the OPAR file to the host.

5. Log on to Oracle Management System (OMS) using `emcli`.

   ```
   $ /u01/OracleHomes/Middleware/oms/bin/emcli login -username=user_name -password=password
   ```

6. Import the OPAR file to OMS using `emcli`.

   Importing ensures the content that you have created and packaged in the plug-in is available to Oracle Enterprise Manager Cloud Control.

   ```
   $ /u01/OracleHomes/Middleware/oms/bin/emcli import_update -file=OPAR_FILE_LOCATION -omslocal
   ```

   For example,

   ```
   /u01/OracleHomes/Middleware/oms/bin/emcli import_update -file=/tmp/oda_plug-in_version number_oracle.dba.odba_2000_0.opar -omslocal
   ```

   oda_plug-in_version number is the Oracle Database Appliance plug-in version number, for example, 13.2.2.1.0.

   > **Note:**
   >
   > As shown in the example, you must append the `-omslocal` flag because the plug-in archive is on the same system where you are running this command (copied in step 4 above). Specify the absolute path name that exists on the system.

2.4.3 Importing the Oracle Database Appliance Plug-in Archive File Remotely

Use this procedure if you are running `EMCLI` on a different system than the system where you created the plug-in archive (`*.opar` file).

Run the following command to import the plug-in archive file (OPAR) remotely:

```
emcli import_update
    -file="path to the .opar file"
    -host="host name of plug-in host"
    -credential_name="credential for plug-in host"
    -credential_owner="credential owner on the plug-in host"
```

-`path to the .opar file` is the absolute path to the `*.opar` file on the system where you created the archive.

-`host name of plug-in host` is the host name for the host target where the file is available.

-`credential for plug-in host` is the name of the credentials on the remote system you are connecting to.

-`credential owner on the plug-in host` is the owner of the credentials on the host system you are connecting to.

Example 2-1   Example of How to Import the OPAR File Remotely

```
emcli import_update
    -file=/tmp/sample_plugin.opar
    -host=host1.example.com
    -credential_name=
    -credential_owner=
```

2.4.4 Deploying Oracle Database Appliance Plug-in on Oracle Enterprise Manager Cloud Control

Use this task to deploy Oracle Database Appliance Plug-in on Oracle Enterprise Manager Cloud Control (Oracle Management System Servers).

To deploy the Oracle Database Appliance plug-in on Oracle Management System (OMS) servers:

1. From the Oracle Enterprise Manager home page, open the **Setup** menu (gear icon) in the menu bar, and select **Extensibility**, then **Plug-ins**.

2. Under **Name**, click **Engineered Systems**, then select **Oracle Database Appliance.**

3. Click **Deploy On** and choose **Management Servers**. The available management servers will be listed in the Deploy Plug-ins on Management Servers: Plug-ins page.

4. Select a management server, then click **Next**.

5. Follow the wizard to complete the deployment.

   This step takes approximately 3 to 5 minutes, including stopping and restarting the OMS server. During the deployment use `/u01/OracleHomes/Middleware/oms/bin/emctl status oms -details` to check OMS status.

6. Wait until OMS is back up.

2.4.5 Deploying Oracle Database Appliance Plug-in to the Management Agents on Both Oracle Database Appliance Server Nodes

Use this task to deploy Oracle Database Appliance Plug-in to the management agents on both Oracle Database Appliance server nodes (hosts).

To deploy plug-ins on Management Agents, you must select only plug-ins that are deployed on the management server.

1. From the Oracle Enterprise Manager home page, click **Setup**, (gear icon), select **Extensibility**, and then select **Plug-ins**.

2. Under **Name**, click **Engineered Systems**, then select **Oracle Database Appliance.**

3. Click **Deploy On** and select **Management Agent** from the drop-down list.

4. Select a version from the **Version** list, and click **Continue**.

5. Select a management agent, and click **Continue**.

6. If the **Status** column has a green check mark, then click **Next**. Otherwise, fix the error displayed in the **Error Message** column.

7. Review the settings, and click **Deploy**. A confirmation window opens, and indicates the plug-in deployment is in progress. Follow the instructions on the screen to monitor the deployment progress.

   Deployment takes approximately 2 minutes, depending on how many agents are deployed at the same time. The deployment does not restart Oracle Management System (OMS).

8. Wait until OMS is back up.

3

Oracle Database Appliance Discovery

Review these topics for how to discover Oracle Database Appliance and other supported targets through Oracle Enterprise Manager Cloud Control 13*c*.

Topics:

- Oracle Database Appliance Discovery Prerequisites (page 3-1)
  Before you begin the discovery process, verify that the prerequisites are completed to ensure a smooth discovery.

- Discovering Oracle Database Appliance with Oracle Enterprise Manager (page 3-2)
  Use this procedure to add hardware components as managed targets for Oracle Enterprise Manager.

- Discovering Oracle Database Appliance Virtualized Platform with Oracle Enterprise Manager (page 3-3)
  If you have deployed Oracle Database Appliance Virtualized Platform, then complete this procedure to discover the Hypervisor and Virtual Servers.

- Discovering Oracle Grid Infrastructure and Oracle RAC Targets (page 3-4)
  To add targets to be monitored by Oracle Enterprise Manager, you must first specify the host on which those targets reside.

- Removing an Oracle Database Appliance Target (page 3-5)
  Use this procedure to remove Oracle Database Appliance targets from Oracle Enterprise Manager Cloud Control 13*c*.

> ✎ **See Also:**
>
> *Oracle Enterprise Manager Cloud Control Administrator's Guide* for more information about discovering and promoting targets.

3.1 Oracle Database Appliance Discovery Prerequisites

Before you begin the discovery process, verify that the prerequisites are completed to ensure a smooth discovery.

Ensure that the following prerequisites are completed on your appliance:

- Install agents on Oracle Database Appliance.

  – On bare-metal deployments, the agent must be deployed on each node.

  – On virtualized platform deployments, the agent must be deployed on each node in ODA_BASE.

- Deploy the Oracle Database Appliance plug-in on the agents.

- If you are using Oracle Database Appliance Virtualized Platform, then you can deploy the Oracle Virtualized Infrastructure Plug-In to monitor running virtual machines and view the Hypervisor statistics.
- Ensure that the server node host names in each individual Oracle Database Appliance have a unique name within the enterprise.

3.2 Discovering Oracle Database Appliance with Oracle Enterprise Manager

Use this procedure to add hardware components as managed targets for Oracle Enterprise Manager.

The Oracle Database Appliance discovery process enables you to add the hardware components (such as compute node ILOM) in the Oracle Database Appliance as managed targets for Oracle Enterprise Manager. The server nodes should already be added as host targets. You add these host targets as members of the Oracle Database Appliance system target after the discovery process.

1. From the Oracle Enterprise Manager home page, open the **Setup** menu (gear icon) in the menu bar, select **Add Target**, then **Add Targets Manually**.

2. Select the **Add Using Guided Process** option.

3. Under **Guided Discovery**, select **Oracle Database Appliance** and click **Add**.

    Oracle Enterprise Manager displays the Oracle Database Appliance Discovery page.

4. Click **Discover Now**.

5. On the Agent URL page, enter the following information and click **Next**:

    - Agent URL: Click the **Browse** icon and select an Oracle Database Appliance agent from the list. Click **Select**.

    - Credential: Select **New** and configure the root credentials for Oracle Database Appliance Discovery. Check the **Save As** box to give this credential a name for future use.

    The Discovered Targets page opens and shows detail about the system.

6. (Optional) On the Discovered Targets page, you can choose to edit the fields. Click **Next** when you have completed editing.

7. On the Credentials page, use the credentials you configured or used in Step 4. Uncheck the **Same as the first one** check box if the password is different on each node, and then click **Next**.

8. (Optional) On the Tag Cloud page, you can select existing tags. or create new ones to associate with the discovered system. You can also configure tags in the Oracle Database Appliance home page.

    The **Add Tag** button is located at the bottom of the page under the list of available tags.

9. On the Review page, verify each section is correct. Click **Back** to return to previous pages.

10. If the information on the **Review** page is correct, click **Submit**.

11. On the Target Creation Summary page, click **OK**.

> **See Also:**
>
> Creating an Oracle Database Appliance Group (page 5-6) for more
> information about creating tags.

3.3 Discovering Oracle Database Appliance Virtualized Platform with Oracle Enterprise Manager

If you have deployed Oracle Database Appliance Virtualized Platform, then complete this procedure to discover the Hypervisor and Virtual Servers.

1. From the Oracle Enterprise Manager home page, click**Setup** (gear icon) in the menu bar, select **Add Target**, and then select **Add Targets Manually**.

2. In the Add Targets Manually page, select **Add Using Guided Process** and choose the **Oracle Virtual Platform** target type.

3. Click **Add**.

4. On the Discover Oracle Virtual Platforms page, specify the default Monitoring Agent and Credentials for the Oracle Virtual Platforms that you want to discover.

   • In the **Monitoring Agent** field, click the search icon (magnifying glass) to search and select the default monitoring agent for monitoring targets. The default agent is typically the agent that is deployed in the `ODA_BASE` domain on Node 0. Click **Select**.

   • (Optional) Enter a failover monitoring agent. The failover monitoring agent is the standby monitoring agent for monitoring targets, which typically is the `ODA_BASE` agent on Node 1.

   • Enter the user name and password for the Oracle Database Appliance `DOM0` server.

5. Specify the host name or IP address for the Oracle Virtual Manager servers that you want to discover.

   • In the Hostname and IP Address section of the page, click **Add**.

   • In the Discover Virtual Servers dialog, enter the `Dom0` node names. Specify a long host name (fully qualified domain name, or FQDN), or specify an IP address. To enter multiple entries, enter each new host name, IP address or IP address range in a new line.

   • Click **Add**.

6. After you finish entering information on the Discover Oracle Virtual Platforms page, click **Submit**.

   After the job completes, it may take a few minutes for the targets to become visible under the Oracle Database Appliance target.

Figure 3-1   Discovering Oracle Database Appliance Virtual Platforms with Oracle Enterprise Manager

3.4 Discovering Oracle Grid Infrastructure and Oracle RAC Targets

To add targets to be monitored by Oracle Enterprise Manager, you must first specify the host on which those targets reside.

The host targets and the corresponding Oracle High Availability Service targets are added as members of the cluster during the discovery process.

- Discover Oracle Grid Infrastructure (Cluster) Targets (page 3-4)
  Use this procedure to discover Oracle Grid Infrastructure targets.

- Discover Oracle Real Application Clusters Targets (page 3-5)
  Use this procedure to add Oracle Real Application Clusters (Oracle RAC) databases as targets.

Related Topics

- Discovery

3.4.1 Discover Oracle Grid Infrastructure (Cluster) Targets

Use this procedure to discover Oracle Grid Infrastructure targets.

Oracle Clusterware and High Availability Services require that you add the targets using this Oracle Enterprise Manager Cloud Control procedure.

1. From the Oracle Enterprise Manager home page, open the **Setup** menu (gear icon) in the menu bar, select **Add Target**, then **Add Targets Manually**.

2. Select **Add Using Guided Process**.

3. Select **Oracle Cluster and High Availability Service** from the **Guided Discovery** list, and click **Add**.

4. In the **Specify Host** field, click the search icon (magnifying glass) and select a host target. Click **Select**. The selected host displays in the **Specify Host** field.

5. Click **Discover Target**. The cluster home details are displayed in the Add Target: Cluster and Oracle High Availability Service page.

6. Edit cluster target properties if needed, and click **Update**.

7. Ensure that all database nodes are shown in the Cluster Host and High Availability Services Targets section.

8. Click **Discover Target** in the upper right corner of the page.

3.4.2 Discover Oracle Real Application Clusters Targets

Use this procedure to add Oracle Real Application Clusters (Oracle RAC) databases as targets.

You can add databases, listeners, and Automated Storage Managers (ASM) as monitored targets. A monitored target is an entity that you want to monitor and administer using Oracle Enterprise Manager. Oracle Enterprise Manager will search for targets of these types on the host or cluster that you specify.

1. From the Oracle Enterprise Manager home page, click**Setup** menu (gear icon), select **Add Target**, and then **Add Targets Manually**.

2. Select **Add Using Guided Process**.

3. Select **Oracle Database, Listener and Automatic Storage Management** from the **Guided Discovery** list, and click **Add**.

4. Follow the instructions in the wizard.

5. In the wizard pages, configure Cluster Databases (`dbsnmp` password required) and Cluster ASM (`asmsnmp` password required).

3.5 Removing an Oracle Database Appliance Target

Use this procedure to remove Oracle Database Appliance targets from Oracle Enterprise Manager Cloud Control 13*c*.

Use the following procedure to remove an Oracle Database Appliance Target:

1. From the Oracle Enterprise Manager home page, Click **Target** (target icon) in the menu bar, and select **All Targets**.

2. In the All Targets page, in the navigation tree, find and expand the **Engineered Systems** category.

3. Click **Oracle Database Appliance System**.

4. In the right pane, click on the name of the target you want to remove. A context menu opens.

5. From the **Oracle Database Appliance System** drop-down menu (top left corner of page), select **Target Setup**, and then **Remove Target.** A confirmation dialog box opens so that you can confirm the target deletion. Click **Yes** to continue.

Figure 3-2   Removing an Oracle Database Appliance Target

4
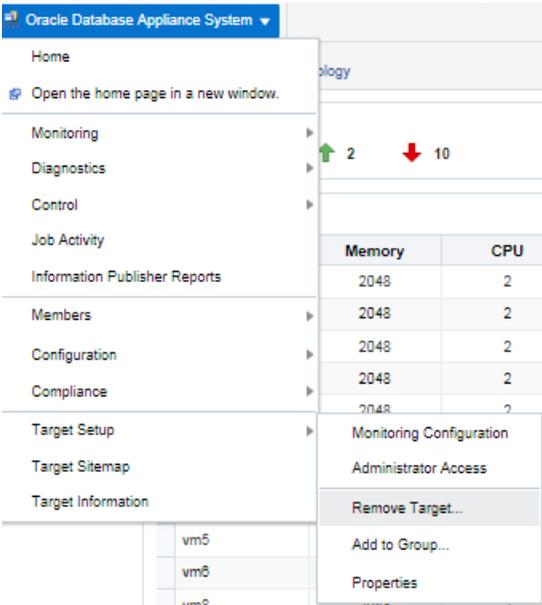
Post-Discovery Configuration for Oracle Database Appliance Plug-In

After the targets are discovered, you can set up notifications for alerts and incidents, and create blackout periods for system maintenance activities.

Topics:

- Modifying Metrics Thresholds for Oracle Database Appliance (page 4-1)
 You can modify the default thresholds for different metrics for Oracle Database Appliance based on your requirements.

- Configuring Notifications for Oracle Database Appliance (page 4-2)
  You can configure Oracle Enterprise Manager to send notifications when incidents occur on Oracle Database Appliance systems.

- Creating Blackouts for Oracle Database Appliance (page 4-3)
  Use blackouts to suspend or suppress monitoring to perform maintenance operations.

4.1 Modifying Metrics Thresholds for Oracle Database Appliance

You can modify the default thresholds for different metrics for Oracle Database Appliance based on your requirements.

You can set metrics to different values to meet service level agreements (SLAs). You can also create a set of standard threshold values that you apply across multiple Oracle Database Appliance systems. For example, you can set different threshold limits for different types of systems, such as production, test, development, and so forth.

Table 4-1   Default Thresholds for Hosts

Metric	Warning Threshold	Critical Threshold
Disk Device Busy (%)	80	95
Filesystem Space Available (%)	20	5
CPU Utilization (%)	80	95
Memory Utilization (%)	80	95
Swap Utilization (%)	80	95

You can view and modify the thresholds from the **Metric and Collection Settings** menu for the Oracle Database Appliance host.

Figure 4-1   Viewing and Modifying Metrics and Collection Settings
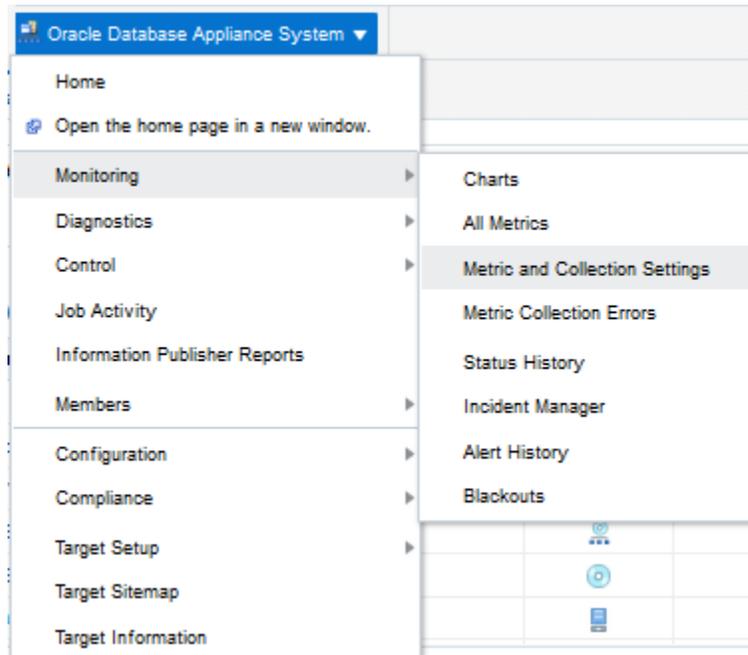
4.2 Configuring Notifications for Oracle Database Appliance

You can configure Oracle Enterprise Manager to send notifications when incidents occur on Oracle Database Appliance systems.

For example, you can configure a notification that you want sent to an Administrator's e-mail when certain events or incidents occur on Oracle Database Appliance hosts.

Set up notifications by going to the Oracle Enterprise Manager **Setup** menu (gear icon), and selecting **Notifications**.

Figure 4-2   Setting Up Notification Methods
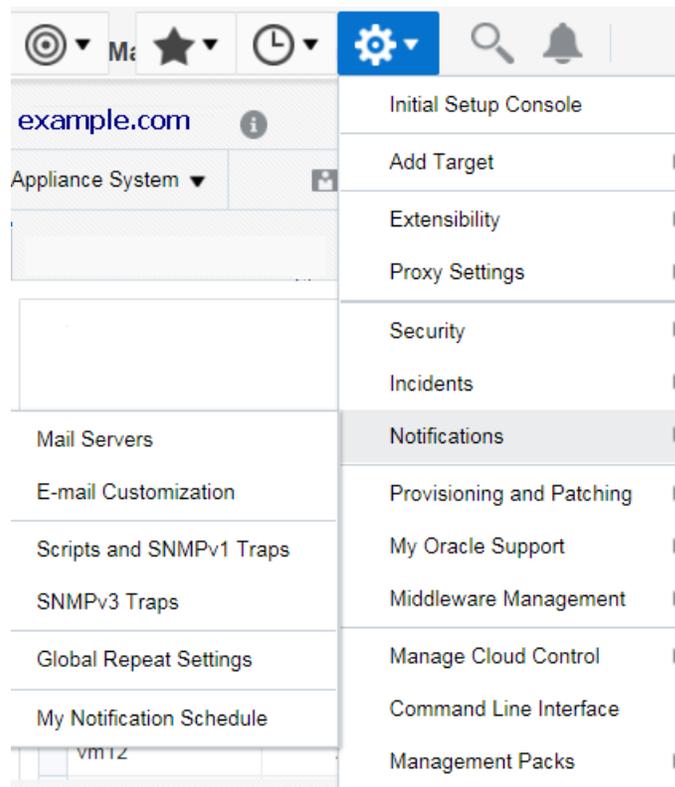
The Notifications menu options enable you to globally define different mechanisms for sending notifications. These notifications include customized e-mail messages, scripts and SNMP traps, PL/SQL procedures, and global repeat settings. After you define notifications, Oracle Enterprise Manager Incident Rules uses these settings to send notifications to administrators for events, incidents, or problems.

4.3 Creating Blackouts for Oracle Database Appliance

Use blackouts to suspend or suppress monitoring to perform maintenance operations.

Blackouts enable you to suspend monitoring on one or more targets to perform maintenance operations. For example, you can set up a blackout for the target Oracle Database Appliance system to suspend monitoring and notifications during an Oracle Database Appliance patching event. You can also create a blackout at a fine-grained level, such as at a database level, when only one of the several databases running on Oracle Database Appliance are down for maintenance.

> ✎ **Note:**
>
> To place a target under blackout or notification blackout, you need to have at least Blackout Target privileges on the target.

Notification Blackouts allow you to suppress the notifications on targets during the notification blackout duration. The Agent continues to monitor the target under notification blackout. Meanwhile, Oracle Management System (OMS) continues to show the actual target status along with an indication that the target is currently under notification blackout.

> **Note:**
>
> When an Oracle Database Appliance target is in a blackout or notification blackout state, all of its members and host targets go to the blackout or notification blackout state.

Use the following procedure to access the Blackouts page for Oracle Database Appliance:

1. From the Oracle Enterprise Manager home page, open the **Enterprise** menu (three square boxes) in the menu bar, and then select **Monitoring**.

2. Select **Blackouts**.

> **See Also:**
>
> Using Blackouts for information about how to create blackouts and notification blackouts for Oracle Database Appliance.

5

Monitoring Oracle Database Appliance

You can view all critical issues in the system, monitor performance, and drill down to individual targets from the Oracle Database Appliance home page.

Oracle Enterprise Manager Database Appliance management simplifies monitoring by integrating all hardware and software components into one entity.

Topics:

- Monitoring All Oracle Database Appliance Targets (page 5-1)
  View monitoring information for all Oracle Database Appliance targets on the Oracle Database Appliance home page.

- Monitoring Groups of Oracle Database Appliance Targets (page 5-6)
  Use tags to organize your Oracle Database Appliance systems into different monitoring groups.

- Monitoring Individual Oracle Database Appliance Targets (page 5-11)
  Use this procedure to set up monitoring Oracle Database Appliance on Oracle Enterprise Manager Cloud Control.

- Available Data for an Individual Oracle Database Appliance Target (page 5-11)
  You can monitor all components of the Oracle Database Appliance, including hosts, databases, virtualization, Oracle ASM, and more.

- Viewing Oracle Database Appliance Topology (page 5-14)
  Use the Topology Viewer to view the relationships between the components within Oracle Database Appliance.

5.1 Monitoring All Oracle Database Appliance Targets

View monitoring information for all Oracle Database Appliance targets on the Oracle Database Appliance home page.

When you open the Oracle Database Appliance home page, you will see data aggregated from all Oracle Database Appliance systems that are managed by Oracle Enterprise Manager.

To display data for all systems:

1. From the Oracle Enterprise Manager home page, open the **Targets** menu (target icon), then select **Oracle Database Appliance**.

   Oracle Enterprise Manager displays the Oracle Database Appliances page showing all the available targets.

2. Use the tabs in the Oracle Database Appliance home page to monitor the aggregated topology.

- Available Data for Oracle Database Appliance Targets (page 5-2)
  View available data for all Oracle Database Appliances or for a group of Oracle Database Appliances.

- Oracle Database Appliance Availability Tab (page 5-3)
  Use the **Availability** tab to view charts showing the status and states of Oracle Database Appliance systems.

- Oracle Database Appliance Capacity Tab (page 5-4)
  Use the **Capacity** tab to view the space, memory, and CPU capacities that are utilized by managed Oracle Database Appliance systems.

- Oracle Database Appliance Configuration Tab (page 5-5)
  Use the **Configuration** tab to view the hardware and software configurations on managed Oracle Database Appliance systems.

- Oracle Database Appliance Incidents Tab (page 5-6)
  Use the **Incidents** tab view all incidents related to all, or a subset (group) of, Oracle Database Appliance systems managed by Oracle Enterprise Manager.

- Oracle Database Appliance Topology Tab (page 5-6)
  Use the **Topology** tab of the Oracle Database Appliance home page to view the topology of all systems or a group of systems.

5.1.1 Available Data for Oracle Database Appliance Targets

View available data for all Oracle Database Appliances or for a group of Oracle Database Appliances.

Whether you are monitoring all or a subset (group) of Oracle Database Appliance systems in the topology, the information is organized and grouped in tabs on the Oracle Database Appliance home page.

Figure 5-1   Oracle Database Appliance Home Page
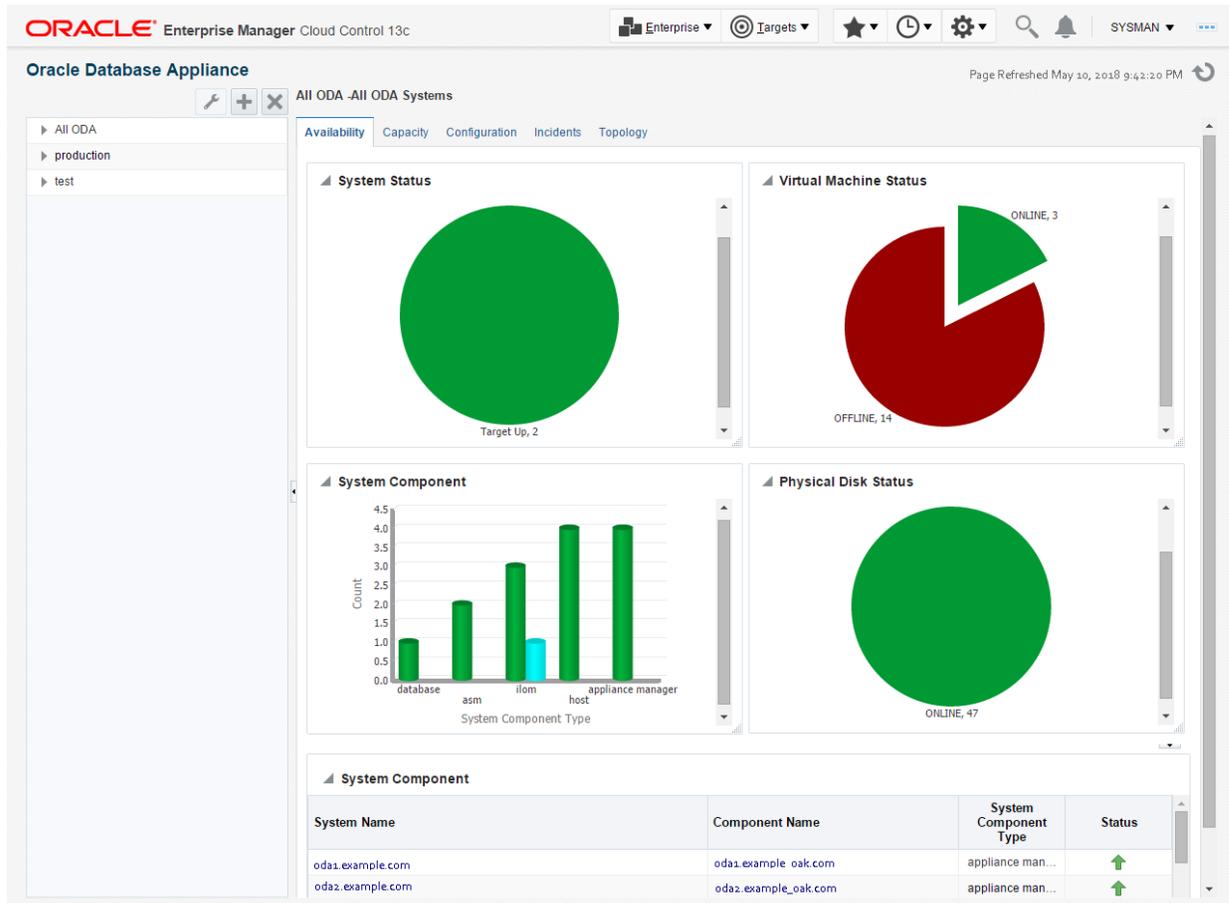
5.1.2 Oracle Database Appliance Availability Tab

Use the **Availability** tab to view charts showing the status and states of Oracle Database Appliance systems.

System Status Chart

The System Status pie chart indicates whether the Oracle Database Appliance systems in the selected group are currently online or offline.

Click the pie chart sections to view detailed information about the system availability represented by the chart. The details are displayed in the table at the bottom of the tab.

Virtual Machine Status Chart

The Virtual Machine Status chart displays the status (online, offline, or missing) of all of the virtual machines in the selected group. If Oracle Database Appliance is not deployed with the Virtualized Platform, this chart is not displayed.

Click the elements in the chart to view detailed status information about the virtual machine components. The details are displayed in the table at the bottom of the tab.

System Component Graph

The System Component graph displays the status (online, offline, or missing) of components such as Appliance Manager, Oracle Automatic Storage Management (Oracle ASM), Oracle Database, hosts, and Oracle Integrated Lights Out Manager (Oracle ILOM) for the selected group.

Click the bars in the chart to view detailed information about the components represented by the bar. The details are displayed in the table at the bottom of the tab.

Physical Disk Status Chart

The Physical Disk Status chart displays the status of all of the disks in the selected group.

Click sections of the pie chart to view detailed information about the physical disk availability represented by the chart. The details are displayed in the table at the bottom of the page.

Availability Table

The table at the bottom of the page changes based on elements you click in the other sections of the page

Click the pie chart in the System Status section to display the system status of each system in the group. The table lists all Oracle Database Appliance systems in the selected group, along with their statuses. Each Oracle Database Appliance system name is a URL link, which, if clicked, opens the Oracle Database Appliance system home page of the selected system.

The Oracle Database Appliance system home page contains detailed information for one Oracle Database Appliance system. See Monitoring Individual Oracle Database Appliance Targets (page 5-11).

5.1.3 Oracle Database Appliance Capacity Tab

Use the **Capacity** tab to view the space, memory, and CPU capacities that are utilized by managed Oracle Database Appliance systems.

Local FileSystem Space Utilization Chart

Each Oracle Database Appliance server node contains 600 GB local storage. The local file system space utilization chart displays the mount points and their space utilization. Place your mouse over the bar to display the mount point details. Click on a bar in the chart to list all systems in that utilization range in the table at the bottom of the **Capacity** tab.

CPU Load Chart

Systems are grouped in ranges of percentage of CPU utilization. Click on a bar in the chart to list all systems in that CPU load range in the table at the bottom of the **Capacity** tab.

Memory Utilization Chart

The Memory Utilization chart displays the memory utilization across the Oracle Database Appliances in the group. The bars represent the percentage of memory

utilization. Place your mouse over the bar to display the total number of nodes in this utilization range. Click on a bar in the chart to list all systems in that utilization range in the table at the bottom of the **Capacity** tab.

Shared FileSystem Space Utilization Chart

Oracle Database Appliance uses Oracle ACFS file systems to store database and non-database files, guest VM templates, and virtual disk. The chart displays the shared file space utilization groupings, and the number of mount points that fall into this utilization grouping. Place your mouse over the bar to display the utilization group and number of mount points. Click on a bar in the chart to list all systems in that utilization range in the table at the bottom of the **Capacity** tab.

Disk Group Space Utilization Chart

Disk groups (such as RECO, REDO, DATA, and FLASH) are grouped in ranges of percentage of space utilization. Click on a bar in the chart to list all systems in that utilization range in a table at the bottom of the **Capacity** tab.

5.1.4 Oracle Database Appliance Configuration Tab

Use the **Configuration** tab to view the hardware and software configurations on managed Oracle Database Appliance systems.

Configured Cores Chart

The Configured Cores pie chart displays a segment representing the number of systems with a similar number of cores configured. Click a segment to display the names of each system with that number of configured in the table at the bottom of the **Configuration** tab.

Hardware Type Chart

The Hardware Type pie chart displays a segment representing the number of systems with a similar hardware platform (such as X6-2-HA, X5-2, X4-2, and X3-2). Click a segment to display the names of the systems with that hardware platform in a table at the bottom of the **Configuration** tab.

Configuration Type Chart

The Configuration Type pie chart displays a segment representing the number of systems with a similar configuration type (such as VM-ODA_BASE). Click a segment to display the names of the systems with that configuration type in a table at the bottom of the **Configuration** tab.

Version Chart

The Version pie chart displays a segment representing the number of systems with the same software version, for example, 12.1.2.5.0. Click a segment to display the names of the systems with that software version in a table at the bottom of the **Configuration** tab.

Capacity Table

The table at the bottom of the page changes based on elements you select in the page.

5.1.5 Oracle Database Appliance Incidents Tab

Use the **Incidents** tab view all incidents related to all, or a subset (group) of, Oracle Database Appliance systems managed by Oracle Enterprise Manager.

Click a summary link to open a page with details about the selected incident.

Use the options in the **View** menu to adjust the columns and order of the table.

Using the **Category** drop-down list to filter the incidents by category.

5.1.6 Oracle Database Appliance Topology Tab

Use the **Topology** tab of the Oracle Database Appliance home page to view the topology of all systems or a group of systems.

See Viewing Oracle Database Appliance Topology (page 5-14).

5.2 Monitoring Groups of Oracle Database Appliance Targets

Use tags to organize your Oracle Database Appliance systems into different monitoring groups.

Topics:

- About Monitoring Groups (page 5-6)
  Use tags to monitor a specified groups of targets.

- Creating an Oracle Database Appliance Group (page 5-6)
  Create a tag and add your Oracle Database Appliance targets to the tag to create a group for monitoring.

- Modifying an Oracle Database Appliance Group (page 5-8)
  Modify your group by adding or removing targets at any time.

- Deleting an Oracle Database Appliance Group (page 5-9)
  To delete a group of targets, remove the tag.

5.2.1 About Monitoring Groups

Use tags to monitor a specified groups of targets.

Oracle Database Appliance systems are grouped using *tags*. When you monitor groups of targets, the Oracle Database Appliance home page only displays an aggregate of the data available for the group of targets defined by the tag. Oracle Database Appliance targets can belong to more than one group.

To monitor a group of Oracle Database Appliance systems, click on its tag in the tree on the left side of the page.

5.2.2 Creating an Oracle Database Appliance Group

Create a tag and add your Oracle Database Appliance targets to the tag to create a group for monitoring.

1. From the Oracle Enterprise Manager home page, open the **Targets** menu (target icon), then select **Oracle Database Appliance**.

   Oracle Enterprise Manager displays the Oracle Database Appliances page showing all the available system groups in the navigation tree.

2. Click the plus sign icon (Add Tag) above the navigation tree.

   Figure 5-2   Creating an Oracle Database Appliance Group

3. In the **Add Tag** dialog box, enter a display name for the tag, and (optionally) a description. Click **OK**.

   Figure 5-3   Add Target Dialog Box
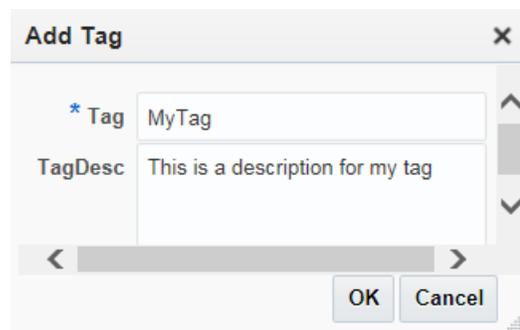
4. Select the tag in the navigation tree, and click the wrench icon (Modify Systems).

   Note that when you select the tag in the navigation tree, the **Topology** tab shows a representation of MyTag, the tag created for this example, but there are no systems branched from it.

5. In the **Modify Systems** dialog box, select systems to add to the group by moving them from the left column to the right column. Click **OK**.

Figure 5-4   Selecting Systems to Add to a Group
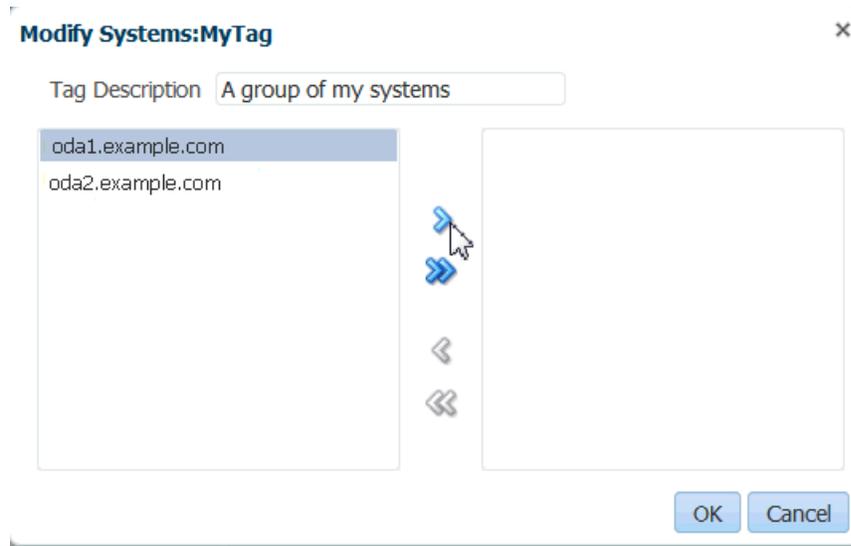
If you expand the tag in the navigation tree the selected systems appear beneath it and you can refresh the topology diagram to show the added system.

5.2.3 Modifying an Oracle Database Appliance Group

Modify your group by adding or removing targets at any time.

1. From the Oracle Enterprise Manager home page, open the **Targets** menu (target icon), then select **Oracle Database Appliance**.

   Oracle Enterprise Manager displays the Oracle Database Appliances home page showing all of the available system groups in the navigation tree.

2. Select the tag in the navigation tree, and click the wrench icon (Modify Systems).

Figure 5-5   Modifying an Oracle Database Appliance Group

3. In the **Modify Systems** dialog box, select systems to add or remove from the group by clicking the arrows to move them to the left or to the right. Click **OK**.

Figure 5-6   Modify Systems Dialog Box
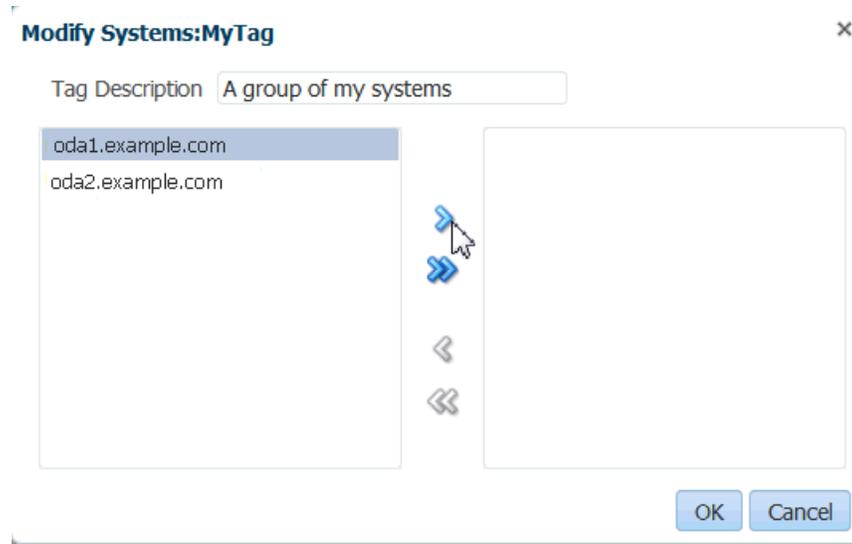
5.2.4 Deleting an Oracle Database Appliance Group

To delete a group of targets, remove the tag.

1. From the Oracle Enterprise Manager home page, open the **Targets** menu (target icon), then select **Oracle Database Appliance**.

   Oracle Enterprise Manager displays the Oracle Database Appliances page showing all the available system groups in the navigation tree.

2. Select the group you want to delete, then click the **X** icon (Remove Tag) above the navigation tree.

   The **All ODA** tag cannot be deleted because it is the default tag for all of the discovered Oracle Database Appliances.

Figure 5-7   Deleting a Tag
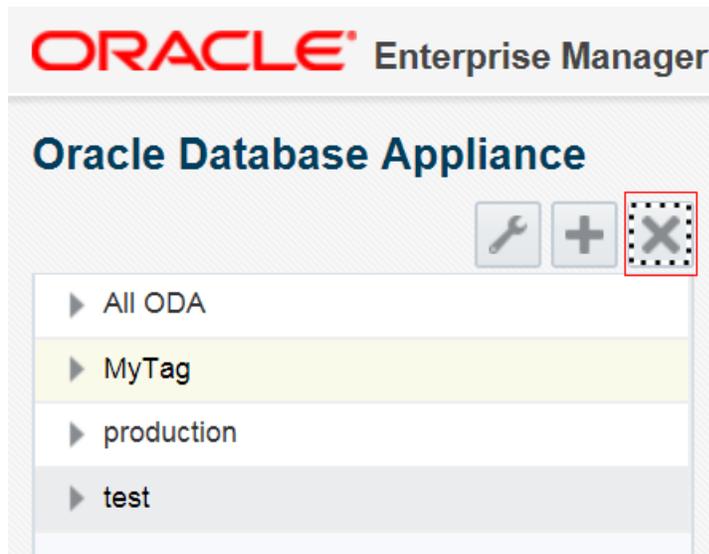
3. In the **Remove Tag** dialog box, select the check box next to the group you want to delete and click OK.

Figure 5-8   Remove Tag Dialog Box
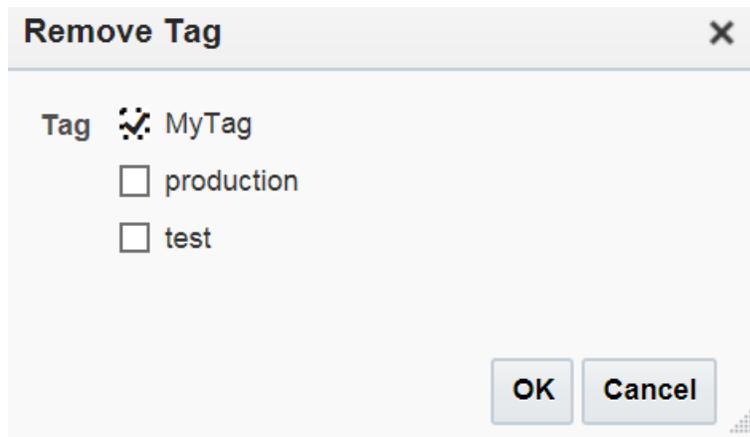
Removing the tag from the navigation tree does not remove any Oracle Database Appliance targets from Oracle Enterprise Manager.

Related Topics

*   Removing an Oracle Database Appliance Target (page 3-5)
    Use this procedure to remove Oracle Database Appliance targets from Oracle Enterprise Manager Cloud Control 13*c*.

5.3 Monitoring Individual Oracle Database Appliance Targets

Use this procedure to set up monitoring Oracle Database Appliance on Oracle Enterprise Manager Cloud Control.

Oracle Enterprise Manager Cloud Control uses URL links to display the names of the Oracle Database Appliance systems. Click a link for an Oracle Database Appliance system to open the page for monitoring that individual system.

1. From the Oracle Enterprise Manager home page, open the **Targets** menu (target icon), and then select **Oracle Database Appliance**.

   Oracle Enterprise Manager displays the Oracle Database Appliances page showing all the available targets.

2. Select **All ODA** in the navigation tree on the left side of the page.

   The systems are listed under the expanded All ODA group.

3. Select the link corresponding to the system you want to monitor.

   The target page opens. For example:

Figure 5-9   Monitoring Individual Oracle Database Appliance Targets
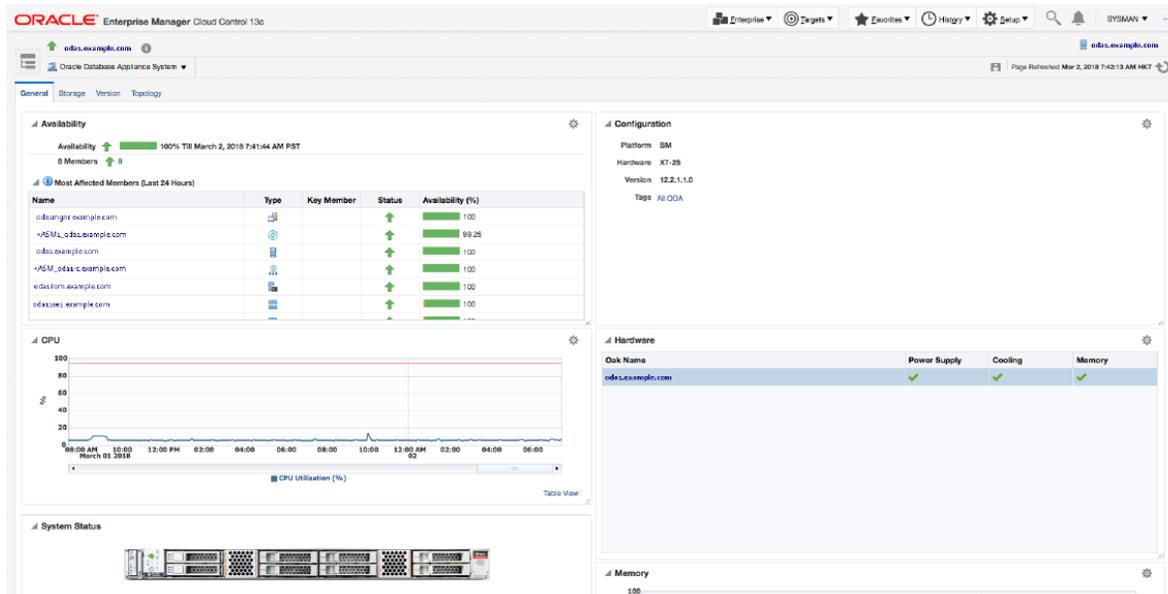
5.4 Available Data for an Individual Oracle Database Appliance Target

You can monitor all components of the Oracle Database Appliance, including hosts, databases, virtualization, Oracle ASM, and more.

After you select an individual Oracle Database Appliance in Oracle Enterprise Manager, the left pane lists the Oracle Database Appliance components. These

components are Appliance Manager, ASM, Host, Hypervisor, ILOM, Oracle Databases, and the virtualization components. The data appears in tabs.

Topics:

- Oracle Database Appliance System General Tab (page 5-12)
  View the **General** tab for general system information.

- Oracle Database Appliance Target Virtual Machine Tab (page 5-13)
  View the **Virtual Machine** tab for monitoring information about virtual machine and resources.

- Oracle Database Appliance Target Storage Tab (page 5-14)
  View the **Storage** tab to view physical disk and ASM disk information.

- Oracle Database Appliance Target Version Tab (page 5-14)
  View the **Version** tab display a list of the component versions on the Oracle Database Appliance target.

- Oracle Database Appliance Target Topology Tab (page 5-14)
  View the **Topology** tab to display the topology of the individual target.

5.4.1 Oracle Database Appliance System General Tab

View the **General** tab for general system information.

The **General** tab has the following sections:

Availability

The Availability section lists the name, type, status, and availability for the last 24 hours of all of the components in the Oracle Database Appliance. The links in the **Name** column redirect the page to the home page of the component selected.

Configuration

The Configuration section displays the platform, hardware type, software version, and tags configured for the Oracle Database Appliance.

Click a tag to display the Oracle Database Appliance home page with data pertinent to the group of systems for the selected tag.

CPU

The CPU chart shows the CPU utilization percentage of hosts for the last 24 hours.

Hardware

The Hardware table shows the status of power supply, enclosure, cooling, and memory of each oak target. Statuses include online, offline, pending, and unknown.

Move your mouse to the status icon to see a popup of the detailed status for each category. The Oak Name links redirect the page to the OakHome page.

System Status

The System Status is an illustration of the back panel of the Oracle Database Appliance. A green light indicates that a node is online; a red light means either the system is offline or the status is unknown. Hover your mouse over each of the disks to see a popup displaying the status for each disk.

Memory

The Memory chart shows the memory utilization percentage of hosts for the last 24 hours.

Incidents

The **Incidents** table lists the incidents for the selected Oracle Database Appliance. Click a Summary link to open a page with details about the selected incident.

Adjust the columns and order of the table using the options in the **View** menu.

Filter the incidents by category using the **Category** drop-down list.

5.4.2 Oracle Database Appliance Target Virtual Machine Tab

View the **Virtual Machine** tab for monitoring information about virtual machine and resources.

The **Virtual Machine** tab lists information in the following six categories: Virtual Machine, Repository, Network, Vdisk, VM Template, and CPU Pool. This tab only appears in Oracle Database Appliance targets configured with Virtualized Platform environments. It does not appear in Oracle Database Appliance targets configured with Bare Metal environments.

The **Virtual Machine** tab has several groupings of sections. Use the list of links on the left side of the **Virtual Machine** tab to view each section.

Virtual Machine

When Virtual Machine is selected, the tab displays a summary, a list of virtual machines, and further details about virtual machine metrics.

The Virtual Machine list shows summary information for all the virtual machines created by users in the Oracle Database Appliance, including virtual machine name, memory, CPU, repository, node number, and state. Select a virtual machine name to display the detailed information in the Details section to the right.

Repository

The Repository category displays a summary of all the repositories created by the Oracle Database Appliance users, including repository name, free space, node number, and state. Use the grey arrow to display the node number and state for a selected repository. Select a repository name to display detailed information in the Details section at the right of the page.

Network

When Network is selected, the tab displays a list of VLANs and related summary information, including name, interface, node number, and ID.

Select a VLAN name to display the list of virtual machines attached to the VLAN in the Details section to the right.

Vdisk

When Vdisk is selected, the tab displays summary information about vdisks created by users, including the repository, name, size, and type. You can select a vdisk name to display detailed information in the Details section to the right.

VM Template

When VM Template is selected, the tab displays summary information for all the virtual machine templates created by users in the Oracle Database Appliance, including template name, memory, CPU, and repository. You can select a template name to display detailed information in the Details section to the right.

CPU Pool

When CPU Pool is selected, the tab displays all of the CPU pools for node 1 and node 2 in the Oracle Database Appliance. Click a pool name to display details about the Node1 and Node2 CPUs in the Details section to the right.

5.4.3 Oracle Database Appliance Target Storage Tab

View the **Storage** tab to view physical disk and ASM disk information.

On the left, the pie charts and lists show the number of disks and their statuses. Select a disk name to display detailed information for an individual disk in the Details section to the right.

5.4.4 Oracle Database Appliance Target Version Tab

View the **Version** tab display a list of the component versions on the Oracle Database Appliance target.

5.4.5 Oracle Database Appliance Target Topology Tab

View the **Topology** tab to display the topology of the individual target.

The individual targets define one physical Oracle Database Appliance that consists of several components including hosts, databases, virtual machines, and more.

5.5 Viewing Oracle Database Appliance Topology

Use the Topology Viewer to view the relationships between the components within Oracle Database Appliance.

You can zoom, pan, see selection details and summary information, and evaluate aggregate components. Unique icons are used for each object type, and standardized visual indicators are used across all applications.

Select the **Topology** tab of the Oracle Database Appliance home page or system page to view the topology of the system by group or individual target. Groups are a collection of Oracle Database Appliance systems. The individual targets define one physical Oracle Database Appliance that consists of several components including hosts, databases, virtual machines, and more.

To view the topology of an existing Oracle Database Appliance target:

1. From the Oracle Enterprise Manager home page, open the **Targets** menu (target icon), then select **Oracle Database Appliance**.

   Oracle Enterprise Manager displays the Oracle Database Appliances page showing all the available targets.

2. From the Oracle Database Appliance page, select the Oracle Database Appliance target (group or individual system) whose topology you want to view.

3. Select the **Topology** tab.

4. Click an element in the Topology and view data associated with the element.

   Each Oracle Database Appliance system tree node has three children: Hosts, Databases, and Virtualization. Click the system tree node to open a popup which contains information about the system, including system name, availability, and a list of components and their statuses.

Figure 5-10   Oracle Database Appliance Topology Page

6
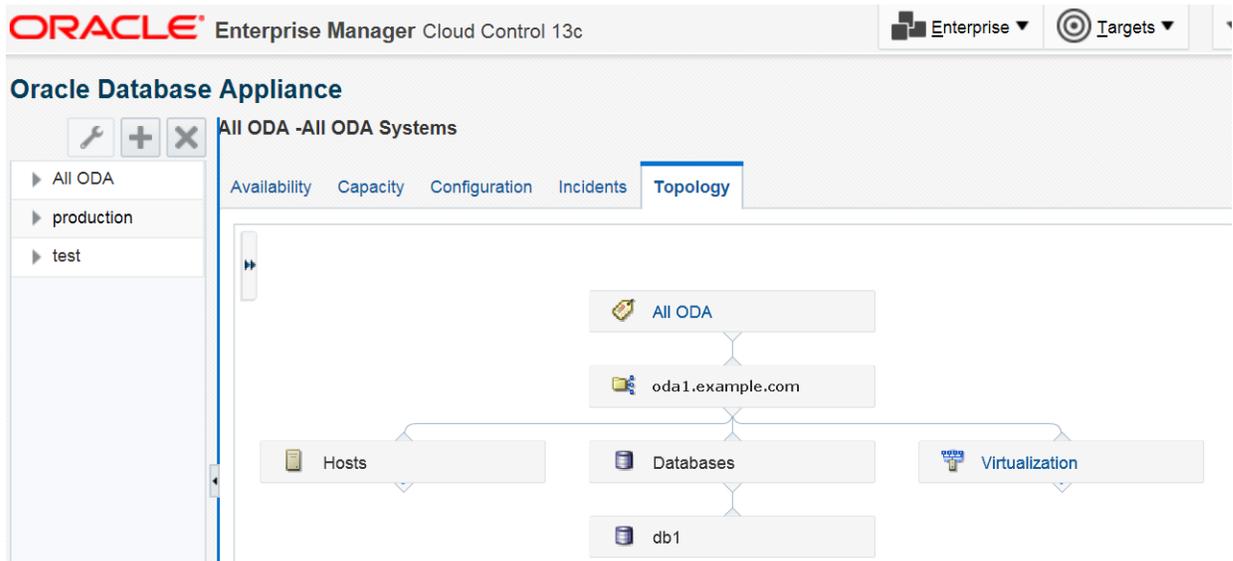
Troubleshooting Oracle Database Appliance Plug-in

Use these topics to resolve any Oracle Database Appliance Plug-in configuration issues that occur.

Topics:

- Host Discovery Troubleshooting for Oracle Database Appliance (page 6-1)
  Review these troubleshooting topics if you have problems with host discovery.

- Oracle Database Appliance Discovery Troubleshooting (page 6-4)
  Review for possible solutions to discovery error messages.

- Metric Collection Error After Discovery (page 6-4)
  For problems with metric collection found after discovery, check the following solutions.

- Oracle Database Appliance ECM Configuration Data Troubleshooting (page 6-6)
  This data is scheduled to run the collection every 24 hours, by default.

- OAK-Based Metric Collection Troubleshooting (page 6-6)
  How OAK-based metrics are collected.

6.1 Host Discovery Troubleshooting for Oracle Database Appliance

Review these troubleshooting topics if you have problems with host discovery.

Topics:

- Prerequisite Check Failure Examples (page 6-1)
  Check failures and their causes are displayed in the Agent Deployment Details Page.

- Host Discovery is Done Without Enabling the Root Privileges (page 6-2)
  These examples show what happens when the `root.sh` script is not run manually, and how you can troubleshoot the metric collection failures that result.

6.1.1 Prerequisite Check Failure Examples

Check failures and their causes are displayed in the Agent Deployment Details Page.

The following figures show examples of prerequisite errors, the causes of these errors, and the solutions that the agent provides. The examples of these error checks are from the Remote Prerequisite Check Details table, and the Agent Deployment Details table.

Figure 6-1   Remote Prerequisite Check Details Errors and Solutions

Figure 6-2   Agent Deployment Details Errors and Solutions

6.1.2 Host Discovery is Done Without Enabling the Root Privileges

These examples show what happens when the `root.sh` script is not run manually, and how you can troubleshoot the metric collection failures that result.

In this example, the Agent Deployment Details page displays an error in the Remote Prerequisite Check Details table check, "Do you have the privileges to run as root using the Privilege Delegation tool."

Figure 6-3   Agent Deployment Root Access Remote Prerequisite Check Errors and Solutions

Agent Deployment Details: rwsoda301c1n1.example.com

⊿ **Remote Prerequisite Check Details**
OMS Log Location racebox2.example.com:/u01/app/gc_inst/em/EMGC_OMS1/sysman/agentpush/2015-03-19_16-17-23-PM/logs/rwsoda301c1n1.example.com/remote_prereq.log
☐ Show only warnings and failures

Prerequisite Check Name	Status	Error	Cause	Recommendation
Is the software certified on the current operating system?	✔			
Are the required packages installed on the current operating system?	✔			
Is the software compatible with the current operating system?	✔			
Checking for sufficient disk space in the Inventory Location	✔			
Checking for write permissions on the inventory.	✔			
Checking TimeZone settings...	✔			
Checking Agent Base Directory Ownership...	✔			
Checking for port availability and hostname validity...	✔			
Checking old Oracle Home existence in the inventory...	✔			
Is the host name valid?	✔			
Is the installation base directory or the agent home already registered with the inventory?	✔			
Can the host communicate with the OMS using HTTP(S)?	✔			
Does the Privilege Delegation tool exist on the remote host?	✔			
Do you have the privileges to run as root using the Privilege Delegation tool?	⚠	The "requiretty" flag is set in the sudoers file on the remote host, and as a result, the user will not be able to run sudo over ssh.		• Either set the "oracle.sysman.prov.agentpush.enablePty" property to true in the "/u01/app/middleware_x3/oms/sysman/prov/agentpush/agentpush.properties" file, which is present on the OMS host, or disable the "requiretty" flag in the sudoers file. • You can also ignore this warning and continue in which case the root.sh, any preinstallation or postinstallation scripts specified with run as root enabled will not be run and you have to run them manually after installation.

You can ignore this warning, as indicated by the warning icon (the yellow triangle icon with the exclamation point). However, if you ignore the warning during deployment, then you receive a message that you must run root scripts manually. In this next example, the Agent Deployment Details status table shows that the remote prerequisite checks are not complete on the two remote hosts. The Agent Deployment Details table shows that this incomplete status is present because the user running the deployment did not have a sudoer privilege to run as root on that host. The recommendation the page provides is that you can run the script manually on the remote host as the root user .

Figure 6-4   Agent Deployment Details Root Access Check Errors

✔ **Agent Deployment Succeeded**   Done

Agent Deployment Summary: ADD_HOST_SYSMAN_Mar_19_2015_4:17:23_PM_EDT

Platform	Host	Initialization	Remote Prerequisite Check	Agent Deployment
Linux x86-64	rwsoda301c1n1.example.com	✔	⚠	✔
Linux x86-64	rwsoda301c1n2.example.com	✔	⚠	✔

Agent Deployment Details: rwsoda301c1n1.example.com

〉 **Initialization Details**

〉 **Remote Prerequisite Check Details**

⊿ **Agent Deployment Details**
OMS Log Location racebox2.example.com:/u01/app/gc_inst/em/EMGC_OMS1/sysman/agentpush/2015-03-19_16-17-23-PM/applogs/rwsoda301c1n1.example.com_deploy.log
☐ Show only warnings and failures

Deployment Phase Name	Status	Error	Cause	Recommendation
Installation and Configuration	✔			
Secure Agent	✔			
Root.sh	◯	The root.sh script was not run because the user did not have the privilege to run as root using the Privilege Delegation tool.		Manually run the following script(s) on the remote host as a root user • /u01/app/agent_rac05box2_7801_x3/core/12.1.0.4.0/root.sh
Collect Log	✔			
Clean up	✔			

This incomplete step warning appears if you ignore the warning during host discovery that the user running the agent deployment does not have privileges to run the

command as root. In that case, you must run the `root.sh` script manually on the remote host after agent deployment is finished.

6.2 Oracle Database Appliance Discovery Troubleshooting

Review for possible solutions to discovery error messages.

Very often, the error message itself includes the cause for the error. Look for error messages in the OMS and agent logs (case insensitive search for `odadiscovery`), or in the guided discovery flow itself.

Topics:

- Discovery Requires Root User (page 6-4)
  A root user must perform Oracle Database Appliance discovery.

- File /opt/oracle/oak/onecmd/onecommand.params Required (page 6-4)
  The `onecommand.params` file is required for guided discovery.

6.2.1 Discovery Requires Root User

A root user must perform Oracle Database Appliance discovery.

Verify that the user is logged in as a root user and is using a valid root password.

6.2.2 File /opt/oracle/oak/onecmd/onecommand.params Required

The `onecommand.params` file is required for guided discovery.

Perform the following steps to review the file for possible issues.

1. Go to the `/opt/oracle/oak/onecmd/onecommand.params` file and verify that the file is available and accessible.

2. Open the `/opt/oracle/oak/onecmd/onecommand.params` file and review for missing information.

If the file is missing, or if some of the fields are missing information, go to the Discovered Targets page and manually enter all of the required information.

6.3 Metric Collection Error After Discovery

For problems with metric collection found after discovery, check the following solutions.

Topics:

- Plug-in Versions Do Not Match (page 6-5)
  Verify that the agent-side plug-in version matches the OMS-side plug-in version.

- Plug-in Version is Not the Same on the Two Host Nodes (page 6-5)
  Verify that the plug-in version is the same on both of the host nodes.

- Monitoring Credentials Set Incorrectly (page 6-5)
  Verify that the monitoring credentials were set correctly.

6.3.1 Plug-in Versions Do Not Match

Verify that the agent-side plug-in version matches the OMS-side plug-in version.

6.3.2 Plug-in Version is Not the Same on the Two Host Nodes

Verify that the plug-in version is the same on both of the host nodes.

To check the Oracle Enterprise Manager Database Appliance Plug-in versions on the OMS and agents:

1. From the Oracle Enterprise Manager home page, open the **Setup** menu (gear icon) in the menu bar, select **Extensibility**, then **Plug-ins**.

2. On the Plug-ins page expand the **Engineered Systems** folder and find the **Oracle Database Appliance** row.

Figure 6-5   Oracle Enterprise Manager Plug-ins Page

The **Latest Downloaded** column shows the version uploaded to Oracle Enterprise Manager repository.

The **On Management Server** column shows the plug-in version deployed on the Management Server.

3. If the value in the **Management Agent with Plug-in** column is non-zero, click on the number.

A page opens which lists the agents that have the plug-in, and the **Plug-in Version on Management Agent** column shows the plug-in version deployed on the agent.

6.3.3 Monitoring Credentials Set Incorrectly

Verify that the monitoring credentials were set correctly.

1. From the Oracle Enterprise Manager home page, open the **Setup** menu (gear icon), select **Security**, then **Monitoring Credentials**.

2. On the Monitoring Credentials page, click the **Oracle Database Appliance Manager** target type, then set the monitoring credentials.

6.4 Oracle Database Appliance ECM Configuration Data Troubleshooting

This data is scheduled to run the collection every 24 hours, by default.

To check for data availability and last collected time:

1. From the Oracle Enterprise Manager home page, open the **Targets** menu (target icon), then select **All Targets**.

2. Select the target Oracle Database Appliance Manager from the list.

3. Open the **Host** menu (upper left corner), click **Configuration**, then choose the **Latest** option.

4. On the Latest Configuration page, click **Actions**, then **Refresh**.

5. From the command line run:

```
# emctl control agent runCollection
# target_name:target_type <collectionName>
```

6. You can also verify that ECM data are collected and presented in Oracle Enterprise Manager Repository using SQL plus.

6.5 OAK-Based Metric Collection Troubleshooting

How OAK-based metrics are collected.

Oracle Database Appliance is a multi-agent target like Oracle RAC. At a given point in time, Oracle Database Appliance is monitored by only one node's agent, which is the master agent. OMS determines which node's agent will do the actual monitoring, and this is referred to as the OMS mediated target. The data displayed in the Oracle Database Appliance Target Navigation page is based on the OAK metric collection from the node running the master agent.

- How to Determining Which Node Agent is Monitoring the Oracle Database Appliance Machine (page 6-6)
  View target information, including availability, the host name, and the node agent that is monitoring Oracle Database Appliance.

- Viewing OAK Metrics (page 6-7)
  View all OAK metrics or select a specific metric to view.

6.5.1 How to Determining Which Node Agent is Monitoring the Oracle Database Appliance Machine

View target information, including availability, the host name, and the node agent that is monitoring Oracle Database Appliance.

To view the information, click the information icon next to Oracle Database Appliance machine name in the Oracle Database Appliance Target Navigation page.

There are many ways to access the target navigation page. The following example starts from the Oracle Enterprise Manager Targets menu.

1. From the Oracle Enterprise Manager home page, open the **Target** menu (target icon) in the menu bar, and select **All Targets**.

2. In the All Targets page, in the navigation tree, find and expand the **Engineered Systems** category.

3. Select **Oracle Database Appliance System**.

4. Click an Oracle Database Appliance name in the left pane of the target page.

5. Click the information icon next to the Oracle Database Appliance machine name in the target page to display the Agent name.

Figure 6-6   Displaying the Agent Name
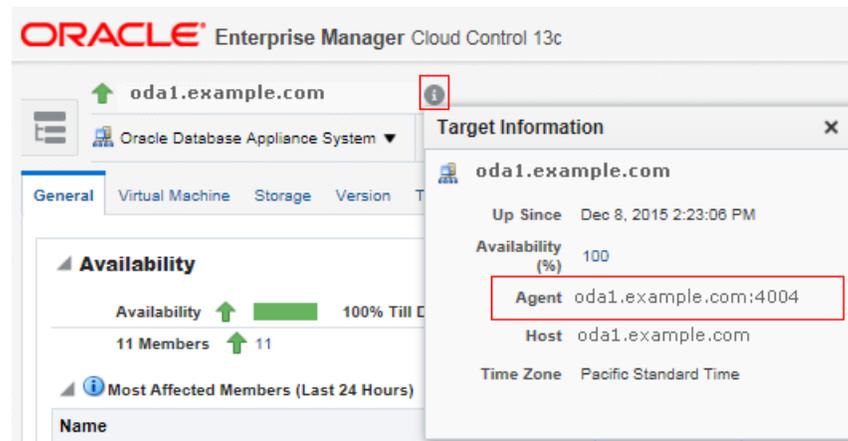
6.5.2 Viewing OAK Metrics

View all OAK metrics or select a specific metric to view.

To view OAK metrics:

1. From the Oracle Enterprise Manager home page, open the **Target** menu (target icon) in the menu bar, and select **All Targets**.

2. In the All Targets page, in the navigation tree, find and expand the **Engineered Systems** category.

3. Select **Oracle Database Appliance Manager**.

4. Right click on an Oracle Database Appliance name target in the left pane and select **Monitoring,** then **All Metrics** from the submenus. Or, choose a specific metric you want to view. The metrics page opens for the selected target.

Figure 6-7   Viewing OAK Metrics

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