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# Oracle Enterprise Manager 12c: Oracle Exadata Discovery Cookbook

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## Introduction

Oracle Enterprise Manager 12c is Oracle's integrated enterprise IT management product line that provides the industry's first complete cloud lifecycle management solution. Oracle Enterprise Manager 12c offers a holistic approach to managing Oracle Exadata Database Machine, with its comprehensive lifecycle management from monitoring to management and ongoing maintenance for the entire engineered system. One of the first steps to managing Oracle Exadata is to discover the machine in Oracle Enterprise Manager 12c. This whitepaper describes in detail what's required in order to be successful.

## Before You Begin

The following section outlines the steps that you need to complete before you launch discovery in Oracle Enterprise Manager 12c. These steps are extremely important and need to be completed in entirety to ensure a successful discovery.

### A. Create a Database Server ILOM Service Processor User

#### ✚ **Log in to the Service Processor as root:**

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

#### ✚ **Change to the users directory:**

- `cd /SP/users`

#### ✚ **Create the oemuser user and password:**

- `create oemuser`
- Creating user...
- Enter new password: \*\*\*\*\*
- Enter new password again: \*\*\*\*\*
- Created /SP/users/oemuser

#### ✚ **Change to the new user's directory and set the role:**

- `cd oemuser`
- `/SP/users/oemuser`
- `set role='aucro'`
- Set 'role' to 'aucro'

#### ✚ **Test the ILOM user ID <oemuser> created above, by listing the last 10 system events:**

- o `ipmitool -I lan -H slcb06db01-c -U oemuser -P oempasswd -L USER sel list last 10`

- ✚ **Repeat all the above steps for the rest of the compute node ILOM service processors in your Oracle Database Machine.**

### Exadata discovery prerequisite check script

We have created a Perl script that can be downloaded and executed on any compute node before actually starting the discovery process. You can run the script before or after Oracle Enterprise Manager Cloud Control 12c has been deployed on the Exadata Database Machine.

You can download the latest copy of the script from note: [1473912.1](https://support.oracle.com/ep6/faces/acespx?_afPfm=1473912.1)

### Checks covered by the prerequisite script

#### A. Verify the component versions

In this check we verify the version of the different Oracle Exadata components. You may also use the command listed in the table below to run it manually.

*Note: The versions reported here are the minimum versions supported. Depending on the version of the Exadata Compute nodes or the Exadata Storage Server software you may need to be on a specific version on one or more components. Please check support note 888828.1 for certified configurations.*

Component	Command	Versions supported
Oracle Exadata Storage Server Software	Log into any of the storage servers as root, celladmin or cellmonitor and execute command <code>Cellcli -e 'list cell detail'</code>	11.2.2.3 onwards
ILOM ipmitool	For Oracle Linux: as root on the first database server in the cluster, run: <code>dcli -g ~/dbs_group -l root ipmitool -V</code> or just <code>ipmitool -V</code>  For Oracle Solaris: as root on the first database server in the cluster, run: <code>/opt/ipmitool/bin/ipmitool -V</code>	Solaris: 1.8.10.4 or later Linux: 1.8.10.3
Infiniband Switch	Log on to the management interface for the InfiniBand Switch as nm2user (using ssh) and execute <code>nm2version</code>	# nm2version Sun DCS 36p version: 1.1.3-2

<p>PDU Firmware</p>	<p>If Oracle Exadata has a PDU cabled and you wish to monitor it proceed with this check. <i>This is not a mandatory check.</i></p> <p>The current version can be obtained by logging into the web interface of the PDU [http://&lt;PDU IP Address&gt;/]</p> <p><i>Note: There is no terminal access to the PDU - there is only a network connection. You can reset the http access by resetting the control panel.</i></p> <p>On the left side of the screen, click Module Info to view the PDU firmware version.</p> <p>Software updates for PDU are available at <a href="https://updates.oracle.com/Orion/PatchDetails/process_form?patch_num=12871297">https://updates.oracle.com/Orion/PatchDetails/process_form?patch_num=12871297</a></p>	<p>1.04 later</p>
<p>KVM Application</p>	<p>If Oracle Exadata has a keyboard, video and mouse (KVM) switch and you wish to monitor it proceed with this check. <i>This is not a mandatory check as some versions of Exadata do not have a KVM.</i></p> <p>The current version can be obtained by logging into the web interface of the KVM. [http://&lt;KVM IP Address&gt;/]. This check is not applicable to X2-8 database machines.</p> <p>On the left side of the screen under Unit View, Appliance, Appliance Settings, click Versions to view the Application software version.</p> <p>Software updates are available at <a href="http://www.avocent.com/Support_Firmware/MergePoint_Unity/MergePoint_Unity_Switch.aspx">http://www.avocent.com/Support_Firmware/MergePoint_Unity/MergePoint_Unity_Switch.aspx</a></p>	<p>1.2.8 or later</p>

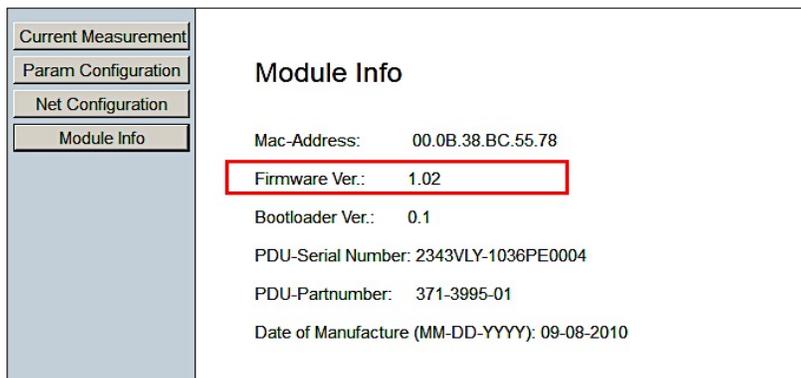


Figure 1: Image showing the PDU version from the web interface

Appliance Version Information - sclczsw-kvm	
Versions	
Description	Version
Application	1.2.8.14896
Boot	1.4.14359

Figure 2: Image showing the KVM version from the web interface

## B. Verify the permissions

- I. User running agent should have read and execute permission on `$ORACLE_HOME/bin/kfod` binaries
- II. User running agent should have read permission on

*/opt/oracle.SupportTools/onecommand/catalog.xml*

OR

*/opt/oracle.SupportTools/onecommand/databasemachine.xml*

*Note: This check is now integrated with the discovery flow.*

## C. Verify the version of the catalog.xml

Recently the Java based configurator has been released through OneCommand patch 14401706 and has replaced the previously used configuration spreadsheet. The Java based configurator generates a new configuration file called `catalog.xml` that (if available) is used by the Enterprise Manager agent during discovery to read configuration information. The Exadata prerequisite check script has been updated to verify the existence of this file and the minimum version (868) supported. If this file is not present then the `databasemachine.xml` is used. Either the `catalog.xml` or the `databasemachine.xml` file should be present to ensure successful discovery.

**DO NOT** proceed if the version is less than **868**. Please raise a *service request* with the version mismatch and get the appropriate `databasemachine.xml` from Oracle Support.

## D. Verify the version of the databasemachine.xml

The `databasemachine.xml` is the file created by the *onecommand* process during provisioning of Oracle Exadata. Oracle Enterprise Manager 12c uses the configuration information in this file during the discovery process and also uses the information to render the schematic diagram in the Exadata home page. However Oracle Exadata delivered to customers before and early parts of 2011 do not have or have unsupported versions of the schematic files required for the successful discovery of Oracle Exadata within Oracle Enterprise Manager 12c.

To make sure you have the correct file please follow the steps outlined below

- A. Login to your first (primary) Compute Node as root or oracle
- B. Change directory to /opt/oracle.SupportTools/onecommand
- C. Execute `grep -i version databasemachine.xml|grep -v xml`

```
[oracle@slcb06db03 ~]$ cd /opt/oracle.SupportTools/onecommand/
[oracle@slcb06db03 onecommand]$ ls -rtl databasemachine.xml
-rwxr-xr-x 1 root root 14770 Mar  8 12:53 databasemachine.xml
[oracle@slcb06db03 onecommand]$ grep -i version databasemachine.xml|grep -v xml
<ORACLE_CLUSTER version="506" timestamp="8-Mar-2012 08:57:57">
[oracle@slcb06db03 onecommand]$
```

**DO NOT** proceed if the version is less than 502. Please raise a *service request* with the version mismatch and get the appropriate databasemachine.xml from Oracle Support.

#### E. Verify ADMINNAME and ADMINIP in databasemachine.xml or catalog.xml

If Oracle Exadata was re-IP'ed due to a network change and the corresponding management IP addresses were not updated in the databasemachine.xml then discovery will fail. The prerequisite script has this check built-in. If you want to manually verify the ADMINNAME and ADMINIP you can do a nslookup of a host and then verify the IP address in the catalog.xml or databasemachine.xml. Repeat this check for all components.

If you find such IP address mismatch problems please log an SR with Oracle Support.

```
[oracle@slcb06db03 onecommand]$ nslookup slcb06db03.us.oracle.com
Server:          192.135.82.180
Address:         192.135.82.180#53

Name:   slcb06db03.us.oracle.com
Address: 10.245.19.225

[oracle@slcb06db03 onecommand]$ egrep "slcb06db03|10.245.19.225" databasemachine.xml
      <HOSTNAME>slcb06db03</HOSTNAME>
      <ADMINNAME>slcb06db03</ADMINNAME>
      <ADMINIP>10.245.19.225</ADMINIP>
      <ILOMNAME>slcb06db03-c</ILOMNAME>
      <IBNAME>slcb06db03-priv</IBNAME>

[oracle@slcb06db03 onecommand]$
```

#### F. Make sure root.sh has been executed

You can run this script after the Oracle Enterprise Manager agent has been installed on the Database Machine. This check ensure that the root.sh script has been successfully applied after agent installation.

The following files in <agent installation dir>/sbin should be owned by root and have the “s” bit set:

```
-rws--x--- 1 root    oinstall 22642 Apr  6 14:56 nmb
-rws--x--- 1 root    oinstall 56955 Apr  6 14:56 nmhs
-rws--x--- 1 root    oinstall 39575 Apr  5 21:51 nmo
```

#### G. Check for correct cipher:

Agent push fails with an error “*Failed to launch process: Algorithm negotiation fail*” This script checks the cipher entries and suggests if any changes are required. You can follow instruction is Support Note 1437596.1 to correct any missing entries.

#### H. Check for setup files consistency:

This check ensures that em.param and schematic files (catalog.xml / databasemachine.xml) must be consistent and contain the same cell, infiniband, kvm and pdu nodes information.

#### I. Check ping status for each component IP address found in schematic file:

- a. All components found in schematic file must be alive.
- b. When using databasemachine.xml schematic file we need to check ADMINIP responds.
- c. When using catalog.xml schematic file we need to check IP under ADMIN tree responds. If the node is a compute node we should also check that IP under CLIENT tree responds.

#### J. Check domain name setup:

The domain name obtained from the perl script using Net::Domain Perl module and the domain name at OS level obtained using domainname command must be the same, and not be empty or contain (none).

### List of credentials needed for Discovery

- Agent host credentials: the username and password of the user running the agents on the compute nodes
- Monitoring credentials:
  - Cell Root Password
  - Nm2user password of each InfiniBand switch

- ILOM username and password (see the first pre-requisite step described above)
  - InfiniBand Switch root credentials: Username and Password
- Agent owner should be in the same OS group as the CRS and Database software owners

## Launching Discovery

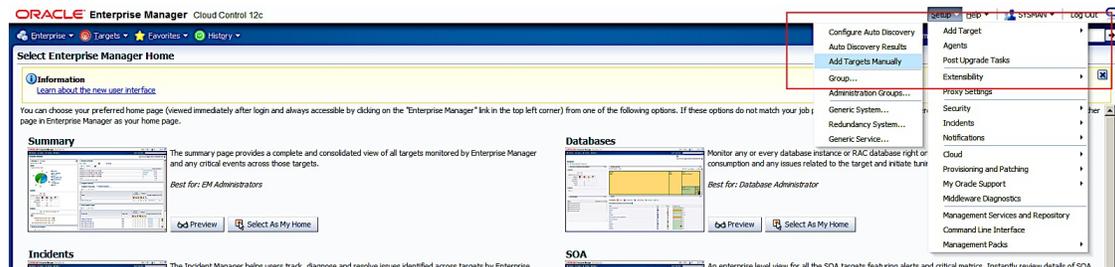
This section assumes that you already have a fully functional Oracle Enterprise Manager 12c environment. If not please refer to support note [1440951.1](#) for the latest “Exakit” that you may use to configure an Oracle Enterprise Manager 12c environment. There is also an Oracle Exadata Agent kit available which automates the agent deployment process on the compute nodes. In the following sections we will describe both the Agent push method from the OMS and the Oracle Exadata Agent Kit method. This paper used a quarter rack Oracle Exadata machine for capturing the flow, the same process listed below applies to both half and full rack machines.

## Installing the Agents on the Compute Nodes

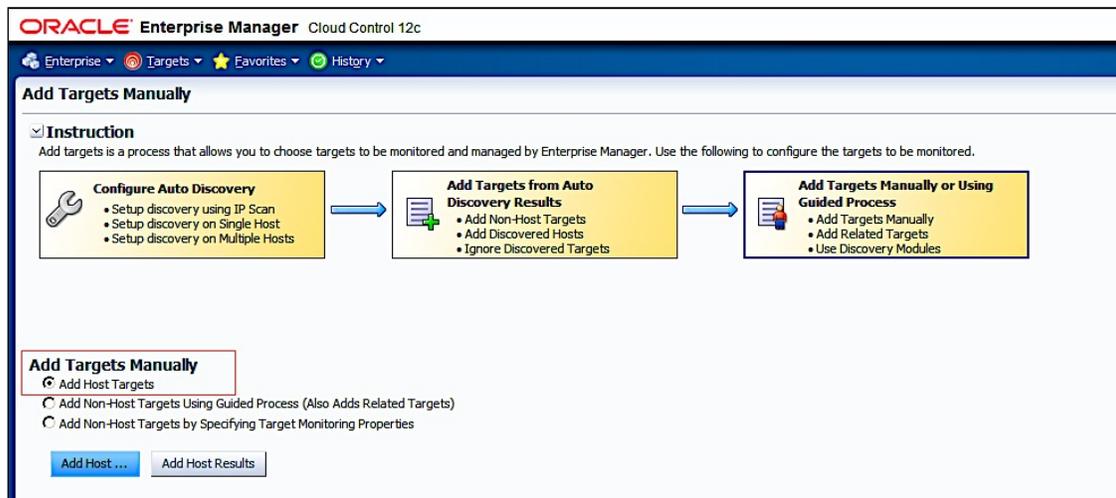
### Agent Push Method

The first step to discovery is installing the agents on the compute nodes. This is a fairly simple process and can be done in parallel on all the compute nodes from the Oracle Enterprise Manager 12c Cloud Control console.

From the setup menu select Add targets → Add targets manually



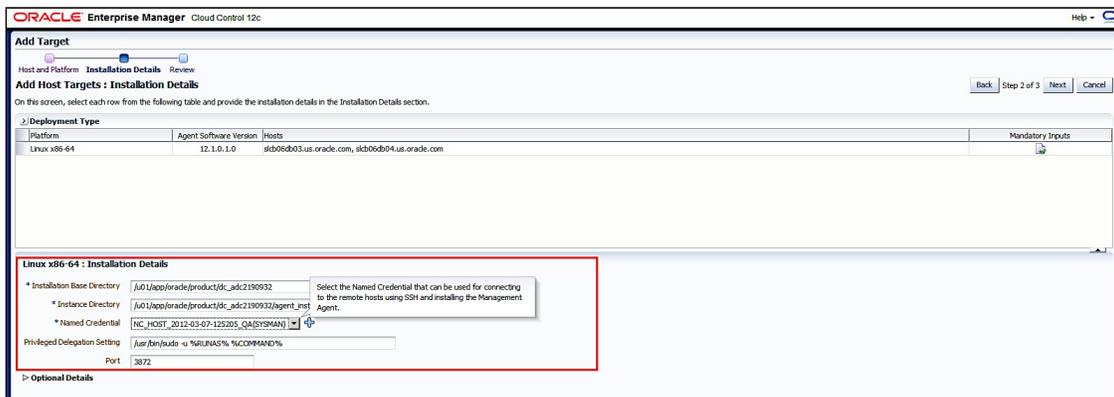
This screen leads you to the Add Hosts screen



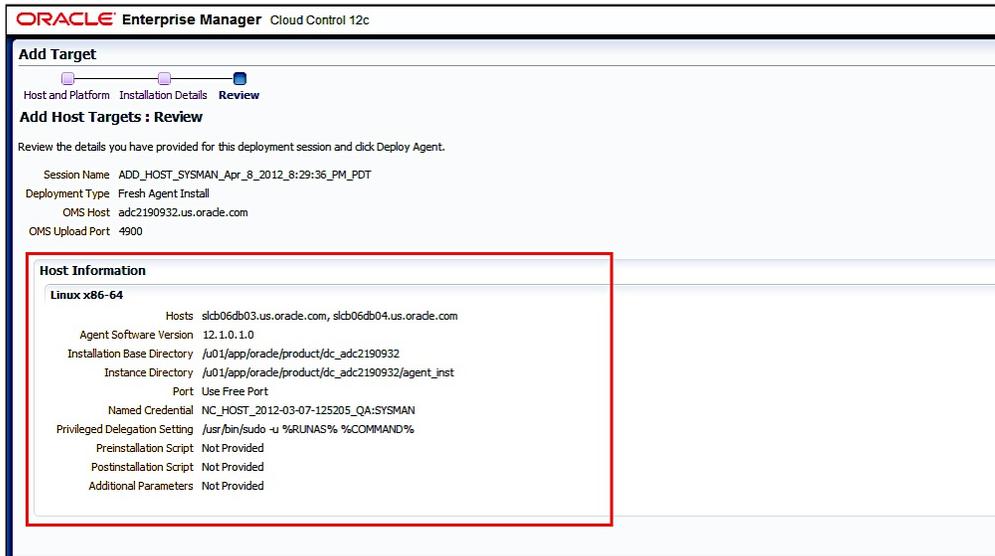
Select the Add Host targets radio button and click on the Add Host button.



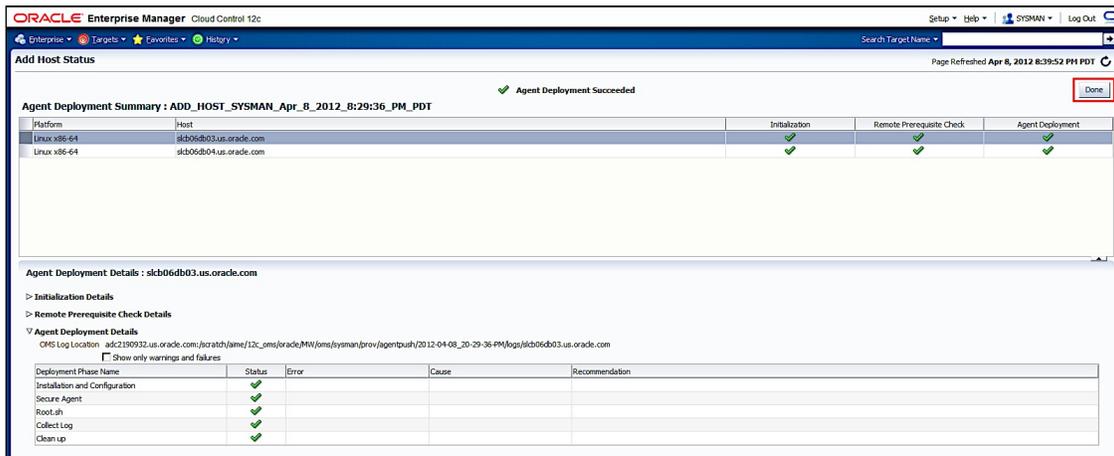
In the Add Target screen use the ADD button to add as many rows you have. For example, for a full rack you will need 8 rows for the 8 compute nodes. You need to select “Same for All Hosts” in the Platform box and Linux x86-64 or Solaris for the Operating System. Once this information is added click “Next” to move to the installation details screen.



In the installation details screen input the Installation Base Directory which automatically populates the Instance Directory. In the ‘Named Credential’ field either use a previously created credential or input the username and password of the user that will own the Agent binaries. You may leave the Port number as is, or change it to a number of your choice. Click “Next” to review inputs and deploy the agents.



In the following screen Oracle Enterprise Manager 12c copies the Agent binaries to all the compute nodes, runs several validation checks and on successful agent deployment the compute nodes are discovered as Host targets in Oracle Enterprise Manager.



Once the agents are successfully deployed, click on done to get back to the “Add” targets screen.

### Oracle Exadata Agent Kit

If you choose to use the Oracle Exadata Agent kit please refer to support note [1440951.1](https://support.oracle.com/defect/1440951.1) to download the latest version of the kit. The Oracle Exadata Agent kit automates the steps that we have described in the previous section. Once the Agent kit is downloaded please follow the instructions in the README carefully to deploy the agents. At a high level the steps involved are

- o Log in as the root user on the first database server.
- o Create the /tmp/emkit directory on the first database server on Oracle Exadata. Make sure /tmp has at least 2 GB free space.
- o Download the Oracle Enterprise Manager 12c Agent Setup Automation kit 12.1.0.X. [This version must correspond to your OMS version. Detailed version related checks are mentioned in the README file]

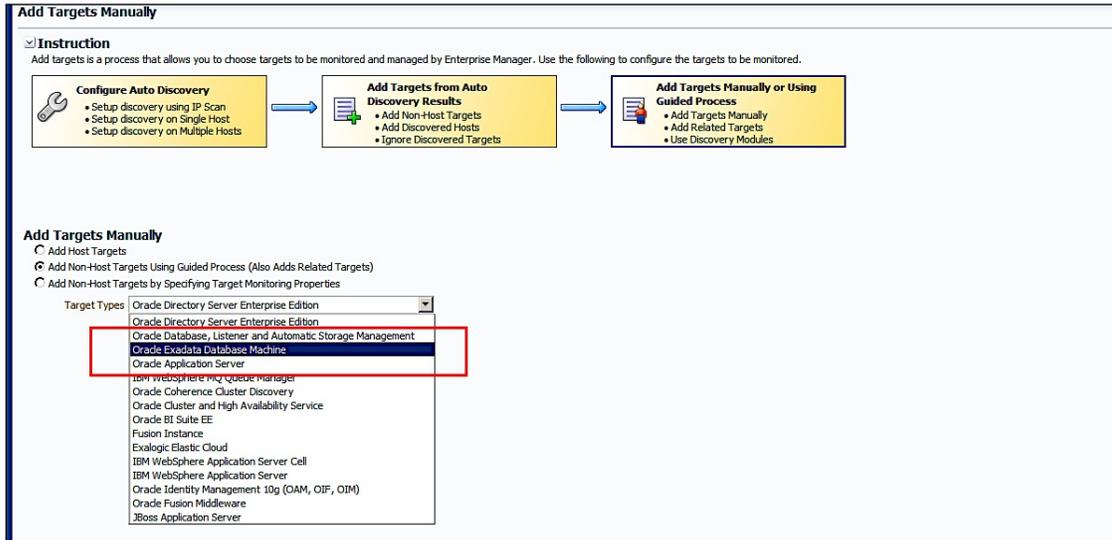
Copy the downloaded kit to /tmp/emkit. Change to the /tmp/emkit directory.

- o Run the following commands:
  - unzip pXXXX\_12XXX\_Linux-x86-64.zip
  - tar xBvpfz CloudControl\_Agent\_12.1.0.X.X\_LINUX.X64.tar.Z
  - Change the directory to /tmp/emkit/common.
  - Make sure to edit the /opt/oracle.SupportTools/onecommand/em.param file and provide the required information.
  - Run the setup script using the following command:  
(sh setupem.sh | tee /tmp/setupag.log) 3>&1 1>&2 2>&3 | tee /tmp/setupag.err

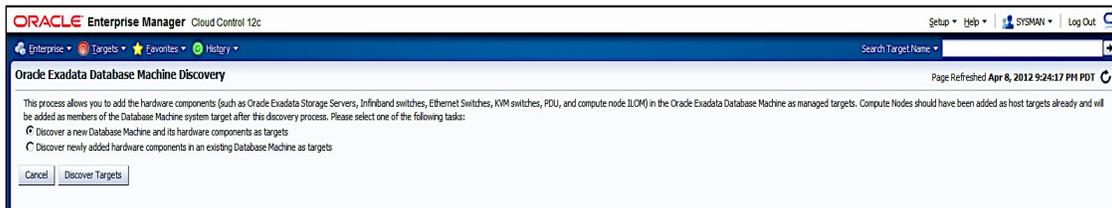
Once Agents are installed on the Compute Nodes proceed to run guided discovery described in the following section.

## Running Guided Discovery

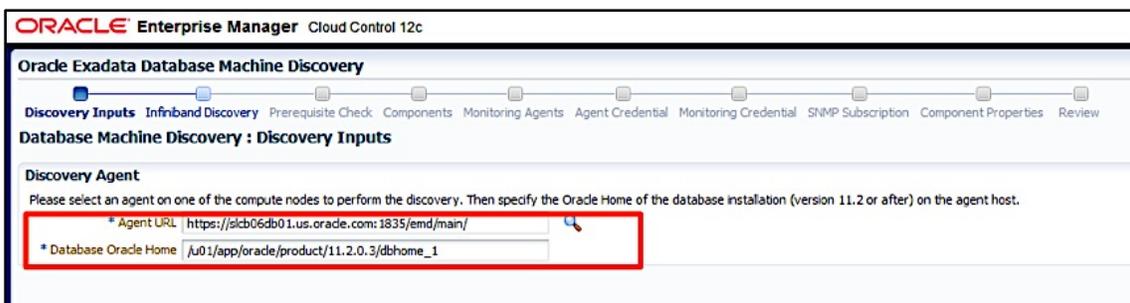
In the “Add” targets page select the “Add Non-Host” targets using Guided process and choose Oracle Exadata from the drop down and click on “Add” using Guided Discovery button.



This will launch the discovery wizard page. In this page you have the option to either discover an Oracle Database Machine as a brand new target or you can choose to add hardware components in an existing Database Machine target.



Based on your requirements select the option and click on Discover targets. This paper will focus on the new target addition flow only.



In the Discovery Inputs screen specify the agent that you would want to use for discovery. You can choose any one of the compute nodes but it is recommended to use the first node of the cluster. When

you choose the agent you want to use a corresponding Database Oracle Home is automatically picked up. The kfod binaries are located in the oracle home which are used by the discovery process.

The screenshot shows the 'Infiniband Discovery' step of the Oracle Exadata Database Machine Discovery wizard. The breadcrumb trail includes: Discovery Inputs, **Infiniband Discovery**, Prerequisite Check, Components, Monitoring Agents, Agent Credential, Monitoring Credential, SNMP Subscription, Component Properties, and Review. The main heading is 'Database Machine Discovery : Infiniband Discovery'. Below this, the 'Infiniband Discovery' section contains the following fields and options:

- A text field for '\* IB Switch Host Name' containing 'slcb06gw-ib2', with a red arrow pointing to it.
- A section for 'Infiniband switch nm2user credential' with radio buttons for 'Named' and 'New' (selected).
- A text field for '\* Username' containing 'nm2user'.
- A password field for '\* Password' with masked characters.
- A password field for '\* Confirm Password' with masked characters.
- A checked checkbox for 'Save As' with a text field containing 'NC\_ORACLE\_I\_2012-10-01-202951'.
- A 'Test Connection' button with a red arrow pointing to it.

In the next step we discover the Infiniband network. Specify one of the Infiniband switches and provide the switch credentials. We suggest using the *nm2user* credentials to verify connectivity. For any issues related to connectivity please refer to the [Infiniband documentation](#). Once connectivity is authenticated proceed to the next step.

In this step we have introduced the new prerequisite checks framework in EM12c Release 2. In this step we verify whether the KFOD executable are present and the database machine schematic files are present and readable by the EM Agent.

The screenshot shows the 'Prerequisite Check' step of the Oracle Exadata Database Machine Discovery wizard. The breadcrumb trail includes: Discovery Inputs, Infiniband Discovery, **Prerequisite Check**, Components, Monitoring Agents, Agent Credential, Monitoring Credential, SNMP Subscription, Component Properties, and Review. The main heading is 'Database Machine Discovery : Prerequisite Check'. Below this, the 'Prerequisite Check' section contains a table with the following data:

Prerequisite	Status	Help
KFOD executable	✓	
DBM Schematic exists	✓	
DBM Schematic permission	✓	

These are very basic checks and should be successful for most installations. Once satisfied click next to proceed to the next screen.

**Oracle Exadata Database Machine Discovery**

Discovery Inputs Infiniband Discovery Prerequisite Check **Components** Monitoring Agents Agent Credential Monitoring Credential SNMP Subscription Component Properties Review

**Database Machine Discovery : Components**

Below are the new components that are discovered by examining the Infiniband network, cell configuration file, and the Database Machine schematic file if it is available. Please select the different types of components components are pre-selected by default the first time you visit this page.

**Compute Node**

Please select the hosts that are compute nodes in this Oracle Exadata Database Machine. These hosts must be added as managed targets before the Oracle Exadata Database Machine target creation can proceed.

Host Name
slcb06db01.us.oracle.com
slcb06db02.us.oracle.com

**Compute Node ILOM**

Please select the Integrated Lights Out Managers (ILOM) of the compute nodes that are part of this Oracle Exadata Database Machine target.

ILOM Name	IP Address
slcb06db01-c.us.oracle.com	10.245.19.200
slcb06db02-c.us.oracle.com	10.245.19.201

**Oracle Exadata Storage Server**

Please select the Oracle Exadata Storage Servers that are part of this Oracle Exadata Database Machine target.

Cell Name	Management IP
slcb06cel01.us.oracle.com	10.245.19.216
slcb06cel02.us.oracle.com	10.245.19.217
slcb06cel03.us.oracle.com	10.245.19.218

**Infiniband Switch**

Please select the Infiniband switches that are part of this Oracle Exadata Database Machine target. If this DB Machine is partitioned, you should select all Infiniband switches in this DB Machine when you discover the Infiniband switch targets.

Infiniband Switch Name	Description
slcb06sw-ib2.us.oracle.com	SUN DCS 36P QDR
slcb06sw-ib3.us.oracle.com	SUN DCS 36P QDR

**Ethernet Switch**

Please select the Ethernet switches that are part of this Oracle Exadata Database Machine target.

Host Name	IP Address
ucf-c126-ao91-swi-1.ucf.oracle.com	10.131.240.157

**KVM**

Please select the KVM switches that are part of this Oracle Exadata Database Machine target.

KVM Switch Name	IP Address
slcb06sw-kvm.us.oracle.com	10.245.19.240

After examining the Infiniband Network, the Cell configuration files and the Database Machine Schematic file (databasemachine.xml) all the Exadata components are discovered. Once you have reviewed the IP addresses of each component discovered please proceed to the next section for Agent assignments. This is also your chance to deselect any components that you may not choose to monitor as part of Exadata Discovery.

**Oracle Exadata Database Machine Discovery**

Discovery Inputs Infiniband Discovery Prerequisite Check Components **Monitoring Agents** Agent Credential Monitoring Credential SNMP Subscription Component Properties Review

**Database Machine Discovery : Monitoring Agents**

DB Machine guided discovery has automatically assigned agents to your targets for best performance and scalability. You may change these selections in the drop-down boxes below.

Tip: Click the Reset button to return all targets to automatic assignment. Reset

Target Name	Monitoring Agent	Backup Monitoring Agent
DB Machine slcb05.us.oracle.com	<a href="https://slcb05db02.us.oracle.com:1835/emd/main/">https://slcb05db02.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db01.us.oracle.com:1835/emd/main/">https://slcb06db01.us.oracle.com:1835/emd/main/</a>
IB Network slcb06.us.oracle.com	<a href="https://slcb05db01.us.oracle.com:1835/emd/main/">https://slcb05db01.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db02.us.oracle.com:1835/emd/main/">https://slcb06db02.us.oracle.com:1835/emd/main/</a>
Cell Name	Monitoring Agent	Backup Monitoring Agent
slcb06cel01.us.oracle.com	<a href="https://slcb05db01.us.oracle.com:1835/emd/main/">https://slcb05db01.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db02.us.oracle.com:1835/emd/main/">https://slcb06db02.us.oracle.com:1835/emd/main/</a>
slcb06cel02.us.oracle.com	<a href="https://slcb05db02.us.oracle.com:1835/emd/main/">https://slcb05db02.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db01.us.oracle.com:1835/emd/main/">https://slcb06db01.us.oracle.com:1835/emd/main/</a>
slcb06cel03.us.oracle.com	<a href="https://slcb05db01.us.oracle.com:1835/emd/main/">https://slcb05db01.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db02.us.oracle.com:1835/emd/main/">https://slcb06db02.us.oracle.com:1835/emd/main/</a>
Infiniband Switch Name	Monitoring Agent	Backup Monitoring Agent
slcb06sw-ib2.us.oracle.com	<a href="https://slcb05db02.us.oracle.com:1835/emd/main/">https://slcb05db02.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db01.us.oracle.com:1835/emd/main/">https://slcb06db01.us.oracle.com:1835/emd/main/</a>
slcb06sw-ib3.us.oracle.com	<a href="https://slcb05db01.us.oracle.com:1835/emd/main/">https://slcb05db01.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db02.us.oracle.com:1835/emd/main/">https://slcb06db02.us.oracle.com:1835/emd/main/</a>
Ethernet Switch Name	Monitoring Agent	Backup Monitoring Agent
ucf-c1z6-ao91-swi-1.ucf.oracle.com	<a href="https://slcb05db02.us.oracle.com:1835/emd/main/">https://slcb05db02.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db01.us.oracle.com:1835/emd/main/">https://slcb06db01.us.oracle.com:1835/emd/main/</a>
ILOM Name	Monitoring Agent	Backup Monitoring Agent
slcb06db01-c.us.oracle.com	<a href="https://slcb05db02.us.oracle.com:1835/emd/main/">https://slcb05db02.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db01.us.oracle.com:1835/emd/main/">https://slcb06db01.us.oracle.com:1835/emd/main/</a>
slcb06db02-c.us.oracle.com	<a href="https://slcb05db01.us.oracle.com:1835/emd/main/">https://slcb05db01.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db02.us.oracle.com:1835/emd/main/">https://slcb06db02.us.oracle.com:1835/emd/main/</a>
KVM Switch Name	Monitoring Agent	Backup Monitoring Agent
slcb06sw-kvm.us.oracle.com	<a href="https://slcb05db01.us.oracle.com:1835/emd/main/">https://slcb05db01.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db02.us.oracle.com:1835/emd/main/">https://slcb06db02.us.oracle.com:1835/emd/main/</a>
PDU Name	Monitoring Agent	Backup Monitoring Agent
slcb06-pdu1.us.oracle.com	<a href="https://slcb05db02.us.oracle.com:1835/emd/main/">https://slcb05db02.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db01.us.oracle.com:1835/emd/main/">https://slcb06db01.us.oracle.com:1835/emd/main/</a>
slcb06-pdu2.us.oracle.com	<a href="https://slcb05db01.us.oracle.com:1835/emd/main/">https://slcb05db01.us.oracle.com:1835/emd/main/</a>	<a href="https://slcb06db02.us.oracle.com:1835/emd/main/">https://slcb06db02.us.oracle.com:1835/emd/main/</a>

In this screen we assign the agents that we have deployed earlier to monitor individual components. We specify a monitoring agent and a backup agent in case the monitoring agent is subjected to a planned or unplanned outage. We can either choose to use the built-in algorithm for agent assignment or manually override the assignments. You may also choose to simply use a single agent to be the primary for all components and another one as the backup agent. Once you are satisfied with the entries proceed to the next step.

**Oracle Exadata Database Machine Discovery**

Discovery Inputs Infiniband Discovery Prerequisite Check Components Monitoring Agents **Agent Credential** Monitoring Credential SNMP Subscription Component Properties Review

**Database Machine Discovery : Agent Credential**

Please specify whether the agent host users and passwords are the same for all agents. The agent users and passwords are needed to set up SSH user equivalence between the agents and the target.

Same for all agents

**Agent Host Credential**

Credential  Named  New

\* Username

\* Password

\* Confirm Password

Run Privilege:

Save As

Different for all agents

Agent URL	Agent Host User	Agent Host Password
https://slcb06db01.us.oracle.com:1835/emd/main/	<input type="text"/>	<input type="password"/>
https://slcb06db02.us.oracle.com:1835/emd/main/	<input type="text"/>	<input type="password"/>

In this step we first provide the Agent host credentials. This is the user on the compute nodes that owns the Agent binaries. If the host password is the same then you should use the first option or choose to use “Different for all agents” in case the Agent owner password is different in different nodes. It is recommended to use the Test Connection button to verify the passwords you have entered. Once the credentials are verified, click on “Next”.

**Oracle Exadata Storage Server**

Please specify whether the cell root passwords are the same for all cells. The cell root passwords are needed to set up SSH user equivalence between the agents and the cells monitored by the agents and

Same for all cells

**Cell Root Credential**

Credential  Named  New

\* Username

\* Password

\* Confirm Password

Save As

Different for all cells

Cell Name	Root Password
slcb06cel01.us.oracle.com	<input type="password"/>
slcb06cel02.us.oracle.com	<input type="password"/>
slcb06cel03.us.oracle.com	<input type="password"/>

**Infiniband Switch**

Please specify whether the Infiniband switch nm2user passwords are the same for all Infiniband switches. The Infiniband switch nm2user passwords are needed to set up SSH user equivalence between the

Same for all Infiniband switches

IB Switch Nm2user Password

Different for all Infiniband switches

Infiniband Switch Name	Nm2user Password
slcb06sw-ib2.us.oracle.com	<input type="password"/>
slcb06sw-ib3.us.oracle.com	<input type="password"/>

**ILOM**

Please specify whether the Integrated Lights Out Managers (ILOM) user names and passwords are the same for all compute nodes. The ILOM user names and passwords are needed to monitor the ILOM.

In the Monitoring Credentials screen we collect the credentials for the Storage (Cell) Server root user, Infiniband Switches and the ILOMs for creating SSH equivalence. SSH equivalence enables password less login into these components from the compute nodes. Agents login to these components periodically to collect different metrics for monitoring.

If the Storage servers' root password is different choose the "Different for all cells" option otherwise use the "same for all cells" option to validate connectivity. The Infiniband switch password is prefilled based on the input earlier but if you have different credentials for each switch enter them separately. Finally the ILOM credentials are also collected. We recommend creating a separate monitoring user for the ILOMs. The steps are described in the "Before you begin" section of this document. On validation of each user account proceed to the next step.

**Oracle Exadata Database Machine Discovery**

Discovery Inputs Infiniband Discovery Prerequisite Check Components Monitoring Agents Agent Credential Monitoring Credential **SNMP Subscription** Component Properties Review

**Database Machine Discovery : SNMP Subscription**

To best monitor component hardware and software issues, it is recommended to set up EM agent to automatically receive SNMP traps from the components. Root credentials for the components are required. Please remember to remove the SNMP subscriptions after deleting the targets from EM.

**Oracle Exadata Storage Server**

Please specify whether SNMP subscription to EM is to be set up for the cells automatically. Previously entered cell Root password will be used for the setup.

Set up SNMP subscription for cells automatically. 

**Infiniband Switch**

Please specify whether SNMP subscription to EM is to be set up for the Infiniband switches automatically.

Set up SNMP subscription for Infiniband switches automatically.

Please specify whether the Infiniband switch root passwords are the same for all Infiniband switches. The Infiniband switch root passwords are needed to set up SNMP alert notification to EM.

Same for all Infiniband switches

**IB Switch Root Credential**

Credential  Named  New

\* Username

\* Password

\* Confirm Password

Save As



Different for all Infiniband switches

Infiniband Switch Name	Root Password
slcb06sw-ib2.us.oracle.com	<input type="password"/>
slcb06sw-ib3.us.oracle.com	<input type="password"/>

The next screen guides you through configuration of SNMP subscriptions for the Oracle Enterprise Manager 12c agents to receive SNMP traps. To setup this subscription root credentials are needed for the Infiniband switches (prior to Oracle Enterprise Manager 12c Release 2 you will be prompted to provide root password for the storage servers). As recommended earlier verify the passwords you have entered using the Test Connection button. Proceed to the next screen to enter the component properties.

**Oracle Exadata Database Machine Discovery**

Discovery Inputs Infiniband Discovery Prerequisite Check Components Monitoring Agents Agent Credential Monitoring Credential SNMP Subscription **Compo**

**Database Machine Discovery : Component Properties**

Please specify the target properties of the different components.

**Oracle Exadata Storage Server**

Cell Name	ILOM IP Address
slcb06cel01.us.oracle.com	10.245.19.193
slcb06cel02.us.oracle.com	10.245.19.194
slcb06cel03.us.oracle.com	10.245.19.195

**Ethernet Switch**

Ethernet Switch Name	SNMP Timeout (seconds)	SNMP Community String
ucf-c1z6-ao91-swi-1.ucf.oracle.com	10	public

**PDU**

PDU Name	PDU Module	SNMP Port	SNMP Timeout (seconds)	SNMP Community String
slcb06-pdu1.us.oracle.com	Module 1	161	5	public
slcb06-pdu2.us.oracle.com	Module 1	161	5	public

**ILOM**

ILOM Name	Compute Node Host Name
slcb06db01-c.us.oracle.com	slcb06db01
slcb06db02-c.us.oracle.com	slcb06db02

In this screen you should see the Storage Server ILOM IP addresses. Make sure the addresses are correct by manually verifying it against your configuration. You are also required to enter the SNMP community string which is commonly set to “public”. It is recommended to set the SNMP Timeout to 10 seconds.

**Oracle Exadata Database Machine Discovery**

Discovery Inputs Infiniband Discovery Prerequisite Check Components Monitoring Agents Agent Credential Monitoring Credential SNMP Subscription Component Properties **Review**

**Database Machine Discovery : Review**

Please verify the following information. You can click on Back to revise the inputs or click on Submit to complete the discovery process.

The following options are selected:

- The monitoring agents have the same credential.

**System Target**

The following system targets will be added in EM. It is recommended that you keep the pre-filled system target names. If you choose to use your own system target names, please make sure that 1) the system target names are unique systems so that you can easily identify systems that are in the same DB Machine.

Target Name	Target Type	Monitoring Agent	Backup Monitoring Agent
DB Machine slcb06.us.oracle.com	Oracle Exadata Database Machine	https://slcb06db02.us.oracle.com:1835/emd/main/	https://slcb06db01.us.oracle.com:1835/emd/main/
Exadata Grid slcb06.us.oracle.com	Oracle Exadata Storage Server Grid	Agent not needed for repository target	Agent not needed for repository target
IB Network slcb06.us.oracle.com	Oracle Infiniband Network	https://slcb06db01.us.oracle.com:1835/emd/main/	https://slcb06db02.us.oracle.com:1835/emd/main/

**Compute Node**

The following compute nodes will be added as members of the Database Machine target.

Host Name
slcb06db01.us.oracle.com
slcb06db02.us.oracle.com

**Oracle Exadata Storage Server**

The following Exadata Storage Servers will be added as managed targets. The cells have the same credential. SNMP will be setup automatically on cells.

Cell Name	Management IP	Monitoring Agent	Backup Monitoring Agent
slcb06ce01.us.oracle.com	10.245.19.216	https://slcb06db01.us.oracle.com:1835/emd/main/	https://slcb06db02.us.oracle.com:1835/emd/main/
slcb06ce02.us.oracle.com	10.245.19.217	https://slcb06db02.us.oracle.com:1835/emd/main/	https://slcb06db01.us.oracle.com:1835/emd/main/
slcb06ce03.us.oracle.com	10.245.19.218	https://slcb06db01.us.oracle.com:1835/emd/main/	https://slcb06db02.us.oracle.com:1835/emd/main/

**Infiniband Switch**

The following Infiniband switches will be added as managed targets. The Infiniband switches have the same nm2user credential. SNMP will be setup automatically on IB switches. The Infiniband switches have the same root credential.

Infiniband Switch Name	Description	Monitoring Agent	Backup Monitoring Agent
slcb06sw-ib2.us.oracle.com	SUN DCS 36P QDR	https://slcb06db02.us.oracle.com:1835/emd/main/	https://slcb06db01.us.oracle.com:1835/emd/main/
slcb06sw-ib3.us.oracle.com	SUN DCS 36P QDR	https://slcb06db01.us.oracle.com:1835/emd/main/	https://slcb06db02.us.oracle.com:1835/emd/main/

**Ethernet Switch**

The following Ethernet switches will be added as managed targets.

Ethernet Switch Name	IP Address	Monitoring Agent	Backup Monitoring Agent
ucf-c126-ae91-sw-1.ucf.oracle.com	10.131.240.157	https://slcb06db02.us.oracle.com:1835/emd/main/	https://slcb06db01.us.oracle.com:1835/emd/main/

Now that all the information is collected the final review screen helps you to go through them before submitting the target for promotion. You also have the option to change the target names auto generated by the discovery process to a name more convenient to remember. It is also recommended that you take a screen shot in case you want to go back and check the monitoring agent assignments or IP addresses at a later point in time. Once you click on submit the target promotion process kicks in. It takes a little while (about a minute or two) and on successful target promotion we get the status screen.

Enterprise Targets Favorites History

### Target Creation Summary

**Information**  
Target promotion succeeded.

The tables below show the result of target creation and setup. You can click on the discovery status to see the detailed messages.

#### System Target

The following system targets are added in EM.

Target Name	Target Type	Discovery Status
Dev DB Machine slcb06.us.oracle.com	Oracle Exadata Database Machine	Successful
Dev Exadata Grid slcb06.us.oracle.com	Oracle Exadata Storage Server Grid	Successful
IB Network slcb06.us.oracle.com	Oracle Infiniband Network	Successful

#### Compute Node

The following compute nodes will be added as members of the Database Machine target.

Host Name	Discovery Status
slcb06db01.us.oracle.com	Successful
slcb06db02.us.oracle.com	Successful

#### Oracle Exadata Storage Server

The following Exadata Storage Servers are added as managed targets.

Cell Name	Management IP	Discovery Status
slcb06cel01.us.oracle.com	10.245.19.216	Successful
slcb06cel02.us.oracle.com	10.245.19.217	Successful
slcb06cel03.us.oracle.com	10.245.19.218	Successful

#### Infiniband Switch

The following Infiniband switches are added as managed targets.

Infiniband Switch Name	Description	Discovery Status
slcb06sw-b2.us.oracle.com	SUN DCS 36P QDR	Successful
slcb06sw-b3.us.oracle.com	SUN DCS 36P QDR	Successful

#### Ethernet Switch

The following Ethernet switches are added as managed targets.

Ethernet Switch Name	IP Address	Discovery Status
ucf-c1z6-ao91-swi-1.ucf.oracle.com	10.131.240.157	Successful

At this point your discovery is complete. You will notice a new menu option has been added to the targets menu if this is the first Oracle Exadata machine you are discovering.

ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History

Select Enter

- All Targets
- Groups
- Systems
- Services
- Hosts
- Databases
- Middleware
- Composite Applications
- Fusion Applications
- Spool
- Administrators
- Exadata**

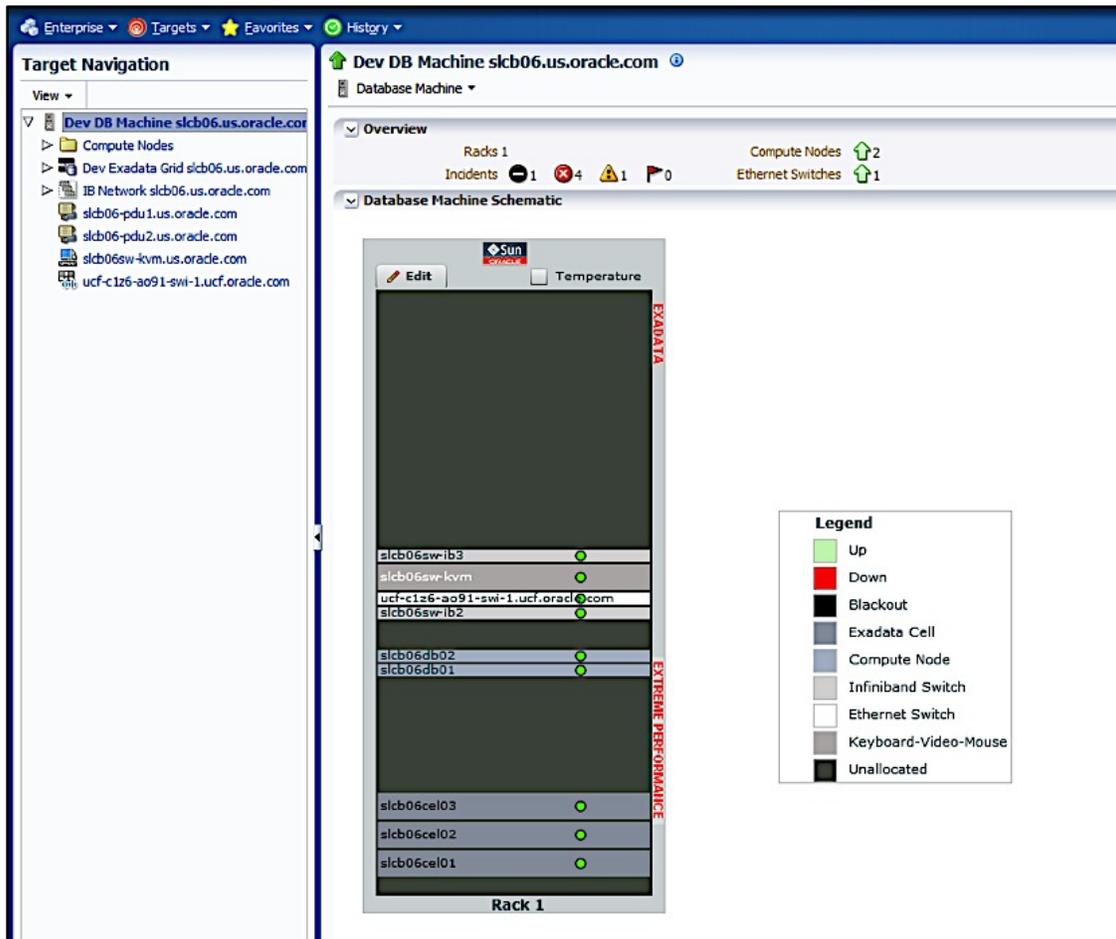
Information

Summary

Databases

Best for: Database Administrator

Click on the Oracle Exadata target and you can go to the Oracle Exadata Schematic page from the Oracle Exadata page.



## Post Discovery Setups

### Cisco Ethernet Switch

#### Configure Cisco Ethernet Switch SNMP for Oracle Enterprise Manager 12c Monitoring

The Cisco Ethernet Switch needs to be configured to allow the Agents that monitor it to be able to both poll the switch for SNMP data and to receive SNMP traps from the switch. To allow this, perform the following steps (swapping the example switch name 'edbm01sw-ip' with the name of the Cisco Ethernet Switch target being configured)

**Login to the Cisco switch and enter Configure mode:**

```
# telnet edbm01sw-ip
User Access Verification Password:
dm01sw-ip> enable
Password:
dm01sw-ip# configure terminal
Enter configuration commands, one per line. End with
CNTL/Z.
dm01sw-ip(config)#
```

**Enable access to allow the Agents monitoring Cisco Switch targets to poll the switch.**

```
dm01sw-ip(config)# access-list 1 permit <EMagentIPaddr>
```

Issue the above command for each Agent that monitors the Cisco switch, substituting the IP address of the Agent for <EMagentIPaddr>

**Configure the SNMP community.**

The SNMP community specified must match the value specified in the Oracle Enterprise Manager 12c Monitoring Configuration page for the Cisco Switch target: and is generally 'public'

```
dm01sw-ip(config)# snmp-server community
<community_string> ro 1
```

**Set the monitoring Agent as the location where SNMP traps are delivered.**

Again, the SNMP community specified must match the value provided during Oracle Enterprise Manager 12c Cisco Switch Management Plug-In setup:

```
dm01sw-ip(config)# snmp-server host <EMagentIPaddr>
version 1 <community string> udp-port
<EMagentRecvltListenPort>
```

*- Where EMagentRecvltListenPort is the EMD\_URL port of the agent or the value of the property SmpRecvletListenNIC from the emd.properties file of the agent, if specified.*

Issue the above command for each Agent that monitors the Cisco switch, substituting the IP address of the Agent for <EMagentIPaddr>

**Configure the switch to send only environmental monitor SNMP traps:**

```
dm01sw-ip(config)# snmp-server enable traps envmon
```

**Verify the settings and save the configuration:**

```
dm01sw-ip(config)# end
dm01sw-ip# show running-config
dm01sw-ip# copy running-config startup-config
```

### Verify the Cisco Switch SNMP configuration for Oracle Enterprise Manager 12c Monitoring

To verify that SNMP is configured and running for the Cisco Ethernet Switch, use the `snmpget` command line utility or an equivalent tool, as the agent software owner, from the compute nodes whose agents are configured to monitor the Cisco Ethernet Switch.

Running the following command should fetch and display data from the Cisco switch:

```
snmpget -v 1 -c <community_string>
<hostname_of_cisco_switch> 1.3.6.1.4.1.9.2.1.56.0
```

For example,

```
$ snmpget -v 1 -c public edbm01sw-ip.us.oracle.com
1.3.6.1.4.1.9.2.1.56.0
SNMPv2-SMI::enterprises.9.2.1.56.0 = INTEGER: 14
```

Note: If the Timeout message is displayed as a output for the above command, then it means that the Cisco switch is not yet configured for SNMP.

## Power Distribution Unit

### Configure PDU SNMP for Oracle Enterprise Manager 12c Monitoring

To enable Oracle Enterprise Manager to collect metric data and raise events for the PDU target, you must configure the PDU to accept SNMP queries from the Agents that monitor the PDU target. Also, appropriate threshold values for different Phase values needs to be set on the PDU.

This section assumes that this is a first time configuration of the PDU. SNMP must be enabled and the trap section completed. Granting SNMP access to a different monitoring Agent IP address is an example where only the "Trap Host Setup" section needs to be changed.

- Access the PDU network interface via a browser using the URL `http://<pdu-hostname>.</span>`
- Click **Net Configuration**, and then log in using root credentials.
- Scroll down until you reach the **SNMP** section of the frame.
- If the PDU is not SNMP-enabled, select the **SNMP Enable** check box then click **Submit**.
- Scroll to the "NMS" region of the frame.

- Add the IP address of each Oracle Enterprise Manager agent that monitors the PDU in the NMS table:
- **IP:** Enter the IP address of the first monitoring Agent
- **Community:** Enter "public"
- Click **Submit**.
- For details on configuring the PDU thresholds settings, see Note 1299851.1 “PDU Threshold Settings for Oracle Exadata” in My Oracle Support.

### Verify the PDU SNMP configuration for Oracle Enterprise Manager 12c Monitoring

It is possible to verify that SNMP requests can be made by the agent software owner on the compute nodes whose agents are configured to monitor the PDU using the `snmpget` command line utility or an equivalent tool.

Running the following command should fetch and display data from the PDU:

```
snmpget -v 1 -c <community_string> <hostname_of_pdu> 1.3.6.1.4.1.2769.1.2.3.1.1.1.0
```

### SNMP

SNMP enable

### NMS

Host	IP	Community
1.	<input type="text" value="10.245.10.88"/>	<input type="text" value="public"/>
2.	<input type="text" value="10.245.10.89"/>	<input type="text" value="public"/>
3.	<input type="text" value="10.245.10.90"/>	<input type="text" value="public"/>
4.	<input type="text" value="10.245.10.91"/>	<input type="text" value="public"/>

For example,

```
# snmpget -v 1 -c public scab01-pdu1
1.3.6.1.4.1.2769.1.2.3.1.1.1.0
```

```
SNMPv2-SMI::enterprises.2769.1.2.3.1.1.1.0 = INTEGER: 255
```

Note: If the Timeout message is displayed as a output for the above command, then it means that the PDU is not yet configured for SNMP.

## KVM

### Configure Keyboard Video and Mouse SNMP for Oracle Enterprise Manager 12c Monitoring

The keyboard video and mouse (KVM) needs to be configured to send SMNP traps to the Agents that monitor it.

Configure the KVM to send traps to the monitoring agent host recvlet listening port. This is normally the port value of EMD\_URL property from \$ORACLE\_HOME/sysman/config/emd.properties, e.g: 3872 unless overridden by the property SnmpRecvletListenNIC in the same file.

- Login to the KVM management console via a browser using the URL: https://<kvm-hostname>.</span>
- Click on the **SNMP** link under **Unit View > Appliance > Appliance Settings** in the left-hand navigation bar.
- Select the **Enable SNMP check box** and enter the appropriate community name in the "Read" "Write" and "Trap" fields ("public", for example).
- Click **Save**.
- Click the **Destinations** link under **Unit View > Appliance > Appliance Settings > Auditing > Destinations** in the left-hand navigation bar.
- Enter the IP address of each Agent monitoring the KVM target.
- Click **Save**.

System	
<input checked="" type="checkbox"/> Enable SNMP	
Name:	sciczsw-kvm
Description:	MPU4032DAC 1.2.8.14896
Contact:	support@avocent.com
Community	
Read:	public
Write:	public
Trap:	public

Event Destinations	
<b>SNMP Trap Destinations</b>	
Destination 1:	<input type="text" value="10.245.19.223"/>
Destination 2:	<input type="text" value="10.245.19.224"/>
Destination 3:	<input type="text" value="10.245.19.225"/>
Destination 4:	<input type="text" value="10.137.40.122"/>

### Verify KVM SNMP Configuration for Oracle Enterprise Manager 12c Monitoring (Base SNMP Configuration)

The KVM SNMP configuration can be verified by running `snmptrapd` within a terminal session:

Follow the below steps on each monitoring Agent host, logged in as root:

Run the following command to temporarily stop the `snmptrapd` service:

```
# service snmptrapd stop
```

Rename the file `/etc/snmp/snmptrapd.conf` to be `/etc/snmp/snmptrapd.conf_bk`

Run the following command to start the `snmptrapd` process in the terminal session:

```
# snmptrapd -p 162
```

Reboot the KVM (to generate SNMP traps) - see next section for details.

The terminal where the `snmptrapd` command was run should display the received trap which is generated by the KVM due to the reboot.

If the above step is confirmed, the KVM has been configured correctly.

After the test has been performed, rename the back-up file and restart the `snmptrapd` service:

1. Stop the `snmptrapd` command that was started in step 3 above (use `Ctrl+c` to stop the command).
2. Rename the file `/etc/snmp/snmptrapd.conf_bk` to be `/etc/snmp/snmptrapd.conf`
3. Run the following command to start the `snmptrapd` process as a service once again:

```
# service snmptrapd start
```

Verify KVM SNMP Configuration for Oracle Enterprise Manager 12c Monitoring (SNMP forwarding to Agent)

This section provides the steps to validate that the monitoring Agent can receive SNMP traps that are generated by the KVM and convert the received traps to Enterprise Manager events.

1. Log in to the KVM.
2. On the left side of the screen under **Unit View > Appliance**, click **Overview**.
3. Click **Reboot**.

4. Confirm KVM reboot by clicking **OK** in the window that asks if you want to continue.
5. In the Oracle Enterprise Manager 12c console, go to the **KVM target page**. An Incident should be displayed for the KVM reboot event in the Incidents and Problems section of the page.

## Discovering the Cluster and Oracle Databases

Once Oracle Exadata has been discovered, the next step would be to discover the cluster and the databases running on this machine. Navigate to Setup → Add targets → Add targets manually; select the option Add Non-Host Targets Using Guided Process and click on the Add Using Guided Discovery button.

### Add Targets Manually

**Instruction**  
Add targets is a process that allows you to choose targets to be monitored and managed by Enterprise Manager. Use the following to configure the targets to be monitored.

**Configure Auto Discovery**

- Setup discovery using IP Scan
- Setup discovery on Single Host
- Setup discovery on Multiple Hosts

→

**Add Targets from Auto Discovery Results**

- Add Non-Host Targets
- Add Discovered Hosts
- Ignore Discovered Targets

→

**Add Targets Manually or Using Guided Process**

- Add Targets Manually
- Add Related Targets
- Use Discovery Modules

**Add Targets Manually**

Add Host Targets

**Add Non-Host Targets Using Guided Process (Also Adds Related Targets)**

Add Non-Host Targets by Specifying Target Monitoring Properties

Target Types: Oracle Cluster and High Availability Service

In the following screen enter the details of the cluster

**Add Target: Cluster**

\* Cluster Name

Oracle Home   
Provide the Clusterware home path if it is installed on the cluster. Otherwise, leave it blank.

SCAN Name   
Specify SCAN VIP name (applicable to Oracle Clusterware version 11.2 or higher)

SCAN Port   
Specify SCAN listener port (applicable to Oracle Clusterware version 11.2 or higher)

ONS Port   
Specify port number to subscribe to Oracle Notification Service for receiving CRS events (applicable to Oracle Clusterware version 11.2 or higher)

Select the hosts that are part of this cluster.

Available Hosts	Selected Hosts
adc2190932.us.oracle.com	slcb06db03.us.oracle.com
slcb06db01.us.oracle.com	slcb06db04.us.oracle.com
slcb06db02.us.oracle.com	

Only the Cluster Name is mandatory but for the sake of completeness you should input the SCAN Name, SCAN Port, ONS Port and also the selected hosts. Since this is a Quarter Rack we have two compute nodes in the cluster. Click on the Add button and after a minute the cluster will be added to the list of targets.

**Add Target: Cluster**  
Target Addition is in progress.

This operation may take some time. This page will automatically forward to the next page when done.

Target Addition is in progress.

**TIP** This operation cannot be cancelled. It will continue even if the browser window is closed.

After the cluster is added it is now turn of the database targets which include the databases, listeners and the ASM instances.

Navigate to Setup → Add Targets → Add Targets manually and now select Oracle Database, Listener and Automatic Storage Management from the dropdown.

**Add Targets Manually**

**Instruction**  
Add targets is a process that allows you to choose targets to be monitored and managed by Enterprise Manager. Use the following to configure the targets to be monitored.

```

graph LR
    A[Configure Auto Discovery  
• Setup discovery using IP Scan  
• Setup discovery on Single Host  
• Setup discovery on Multiple Hosts] --> B[Add Targets from Auto Discovery Results  
• Add Non-Host Targets  
• Add Discovered Hosts  
• Ignore Discovered Targets]
    B --> C[Add Targets Manually or Using Guided Process  
• Add Targets Manually  
• Add Related Targets  
• Use Discovery Modules]
  
```

**Add Targets Manually**

Add Host Targets

Add Non-Host Targets Using Guided Process (Also Adds Related Targets)

Add Non-Host Targets by Specifying Target Monitoring Properties

Target Types: Oracle Database, Listener and Automatic Storage Management

Add Using Guided Discovery ...

Click on Add Using Guided Discovery button.

In the next screen you will be prompted to select one of the agents on the compute nodes.

Search and Select: Host - Oracle Enterprise Manager - Mozilla Firefox

Search

Search  Go

Results

Select	Name	Agent
<input type="radio"/>	adc2190932.us.oracle.com	https://adc2190932.us.oracle.com:3872/emd/main/
<input type="radio"/>	slcb06db01.us.oracle.com	https://slcb06db01.us.oracle.com:3872/emd/main/
<input type="radio"/>	slcb06db02.us.oracle.com	https://slcb06db02.us.oracle.com:1831/emd/main/
<input checked="" type="radio"/>	slcb06db03.us.oracle.com	https://slcb06db03.us.oracle.com:1975/emd/main/
<input type="radio"/>	slcb06db04.us.oracle.com	https://slcb06db04.us.oracle.com:1975/emd/main/

Cancel Select

After selecting the agent on the first compute node click on select and then click next. Since this host is part of a cluster the next screen provides the option of discovering databases either on this host or on all hosts in the cluster. Select the latter as you want to discover all databases on Oracle Exadata.

Add Target: Database > Add Database: Specify Source

### Add Database: Specify Source

The host 'slcb06db03.us.oracle.com' is a member of the cluster 'slcb06-cluster'. This cluster has the following members:

- slcb06db03.us.oracle.com
- slcb06db04.us.oracle.com

Where would you like to look for databases to add to Enterprise Manager?

only on the host slcb06db03.us.oracle.com  
Only single instance databases and listeners on the host will be discovered.

on all hosts in the cluster  
All cluster databases, single instance databases and listeners on the cluster will be discovered.

**Advanced Options**

Click on the Continue button and now the agent searches for all databases running on this cluster. Soon all databases running on Oracle Exadata are discovered.

Discovering targets on cluster: slcb06-cluster

Databases

The following databases have been discovered on this cluster. Administrator can configure the database system name for each of the discovered databases. If user specifies group, Enterprise Manager will add the discovered target(s) to the specified group. Global target properties can be specified on following page for selected targets. Monitor password for default user 'dbmon' can be specified and continue with the add of database to Enterprise Manager. Additional properties can be provided for discovered databases by clicking "Configure" button.

Cluster Databases		Database System	Group	Monitor Password	Configure
Cluster Databases					
db.us.oracle.com	db.us.oracle.com_sys				
db.us.oracle.com_dbn1					
db.us.oracle.com_dbn2					
dbn	dbn_sys				
dbn_dbn1					
dbn_dbn2					

Single Instance Databases

No items found

Cluster ASM

The following Cluster ASM have been discovered on this cluster.

Cluster ASM		Oracle Home	Monitor Password	Configure
Cluster ASM				
+ASM_slcb06-cluster	AU1/app/11.2.0.3/gra			
+ASM_slcb06db03.us.oracle.com				
+ASM_slcb06db04.us.oracle.com				

Listeners

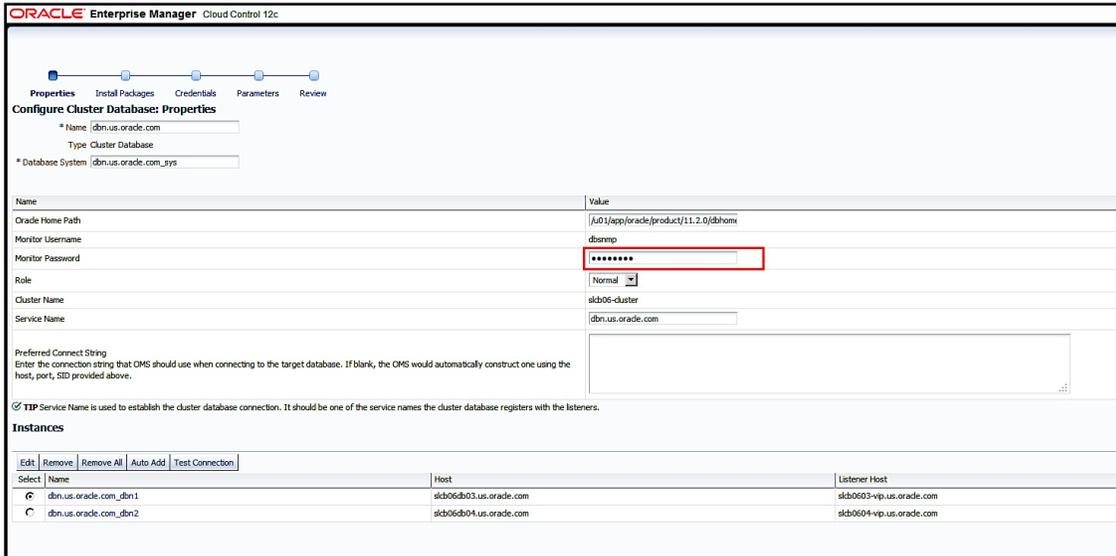
The following listeners have been discovered on this cluster.

Name	Host	Listener Name	Oracle Home	Group	Port	Listener Directory
LISTENER_slcb06db03.us.oracle.com	slcb06db03-us.oracle.com	LISTENER	AU1/app/11.2.0.3/gra		1521	AU1/app/11.2.0.3/gra/network/admin
LISTENER_SCAN1_slcb06-cluster	slcb06-scan3.us.oracle.com	LISTENER_SCAN1	AU1/app/11.2.0.3/gra		1521	AU1/app/11.2.0.3/gra/network/admin
LISTENER_slcb06db04.us.oracle.com	slcb06db04-us.oracle.com	LISTENER	AU1/app/11.2.0.3/gra		1521	AU1/app/11.2.0.3/gra/network/admin
LISTENER_SCAN2_slcb06-cluster	slcb06-scan3.us.oracle.com	LISTENER_SCAN2	AU1/app/11.2.0.3/gra		1521	AU1/app/11.2.0.3/gra/network/admin
LISTENER_SCAN3_slcb06-cluster	slcb06-scan3.us.oracle.com	LISTENER_SCAN3	AU1/app/11.2.0.3/gra		1521	AU1/app/11.2.0.3/gra/network/admin

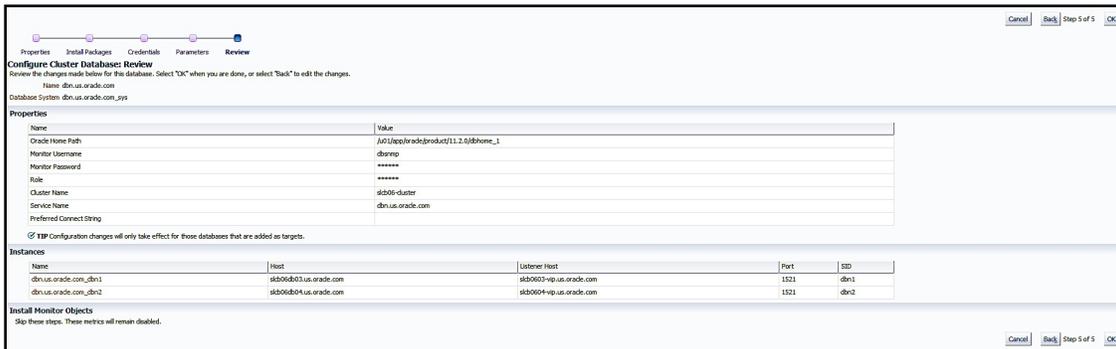
Targets that have this configuration icon are only partially configured. In order to add one of these targets, click on this icon in the configuration column and complete the configuration.

In the next step you need to provide the monitoring credentials. This is the database user account that will be used to monitor the databases. Click on the setup icon on the extreme right.





Provide the Monitor password and click on test connection on the right. Notice you do not need to input the password for each instance individually. The password is accepted at the cluster level. If you wish to change the name of the database you can change the name and then click “Next”.



This is the review screen. Once you have reviewed the information click “OK” to proceed to the next step.

**Success**  
The connection test was successful.

**Configure Cluster ASM: Properties**

\* Name: +ASM\_isk06-cluster  
Type: Cluster ASM

Name	Value
Oracle home path	/u01/app/11.2.0.3/grid
Username	asmadmin
Password	*****
Role	SYSDBA
Cluster Name	skb06-cluster
Service Name	+ASM

**TIP** Service Name is used to establish the cluster ASM connection. It should be one of the service names the cluster ASM registers with the listeners.

**Instances**

Select	Name	Host	Listener Host	Port
<input checked="" type="checkbox"/>	+ASM1_skb06b03.us.oracle.com	skb06b03.us.oracle.com	skb0603-vip.us.oracle.com	1521
<input checked="" type="checkbox"/>	+ASM2_skb06b04.us.oracle.com	skb06b04.us.oracle.com	skb0604-vip.us.oracle.com	1521

Repeat the above steps for all the discovered databases including the ASM instances.

**Discovering 1 targets on Cluster: skb06-cluster**

**Databases**  
The following databases have been discovered on this cluster. Administrator can configure the database system name for each of the discovered databases. If user specifies group, Enterprise Manager will add the discovered target(s) to the specified group. Global target properties can be specified on following page for selected targets. Monitor password for default user 'dbimp' can be specified and continue with the add of database to Enterprise Manager. Additional properties can be provided for discovered databases by clicking "Configure" button.

Select All	Name	Database System	Group	Monitor Password	Configure
<input type="checkbox"/>	Cluster Database				
<input checked="" type="checkbox"/>	db.us.oracle.com	db.us.oracle.com_ys		*****	
<input type="checkbox"/>	db.us.oracle.com_dbn1				
<input type="checkbox"/>	db.us.oracle.com_dbn2				
<input checked="" type="checkbox"/>	dbm	dbm_ys		*****	
<input type="checkbox"/>	dbm_dbn1				
<input type="checkbox"/>	dbm_dbn2				

**Single Instance Databases**

Select	Name	Host	Database System	Group	Monitor Password	Configure	Metric
	No items found						

**TIP** Configuration changes will only take effect for those databases that are added as targets.

**Cluster ASM**  
The following Cluster ASM have been discovered on this cluster.

Select All	Name	Oracle Home	Monitor Password	Configure
<input checked="" type="checkbox"/>	+ASM	/u01/app/11.2.0.3/grid	*****	
<input type="checkbox"/>	+ASM1_skb06b03.us.oracle.com			
<input type="checkbox"/>	+ASM2_skb06b04.us.oracle.com			

**Listeners**  
The following listeners have been discovered on this cluster.

Select	Name	Host	Listener Name	Oracle Home	Group	Port	Listener Directory
<input checked="" type="checkbox"/>	LISTENER_skb06b03.us.oracle.com	skb06b03.us.oracle.com	LISTENER	/u01/app/11.2.0.3/grid		1521	/u01/app/11.2.0.3/grid/network/admin
<input checked="" type="checkbox"/>	LISTENER_skb06b04.us.oracle.com	skb06b04.us.oracle.com	LISTENER_SCAN1	/u01/app/11.2.0.3/grid		1521	/u01/app/11.2.0.3/grid/network/admin
<input checked="" type="checkbox"/>	LISTENER_skb06b04.us.oracle.com	skb06b04.us.oracle.com	LISTENER	/u01/app/11.2.0.3/grid		1521	/u01/app/11.2.0.3/grid/network/admin
<input checked="" type="checkbox"/>	LISTENER_SCAN2_skb06-cluster	skb06-scan3.us.oracle.com	LISTENER_SCAN2	/u01/app/11.2.0.3/grid		1521	/u01/app/11.2.0.3/grid/network/admin
<input checked="" type="checkbox"/>	LISTENER_SCAN3_skb06-cluster	skb06-scan3.us.oracle.com	LISTENER_SCAN3	/u01/app/11.2.0.3/grid		1521	/u01/app/11.2.0.3/grid/network/admin

\* Indicates the Monitor User with SYSDBA role.

Once all the passwords are provided, you can click on the “Finish” button to complete the discovery. In the next screen you will be prompted to input additional target properties. This is an optional step and can be skipped if you have not decided on these values.

**Discovering Targets on Cluster: slcb06-cluster**

**Targets Global Properties**  
Specify global target properties for selected targets

Name	Value
Comment	QA Cluster Databases
Contact	joe.smith@mycompany.com
Cost Center	Finance
Department	Payables
Lifecycle Status	Test
Line of Business	Finance
Location	California

Click “Next”. Once discovery is complete and the target information saved in the repository you will get the following confirmation screen.

**Target Configuration Results**

**dbn.us.oracle.com:**  
Saving ...Saving ...Properties for database target have been updated.  
Database System **dbn.us.oracle.com\_sys** has been created

**dbm:**  
Saving ...Saving ...Properties for database target have been updated.  
Database System **dbm\_sys** has been created

**+ASM\_slcb06-cluster:**  
Cluster ASM target has been added.

**LISTENER\_slcb06db03.us.oracle.com:**  
Listener target has been added.

**LISTENER\_SCAN1\_slcb06-cluster:**  
Listener target has been added.

**LISTENER\_slcb06db04.us.oracle.com:**  
Listener target has been added.

**LISTENER\_SCAN2\_slcb06-cluster:**  
Listener target has been added.

**LISTENER\_SCAN3\_slcb06-cluster:**  
Listener target has been added.

Now you can navigate to Targets → Databases to check the status of all discovery targets. The All targets page (Targets → All targets) will list the status of all the targets discovered in this process.

## Conclusion

Discovering Oracle Exadata in Oracle Enterprise Manager 12c is now more than 10 times faster from previous version of Oracle Enterprise Manager—helping administrators save both valuable time and effort. The typically discovery process now takes as little as 15 to 30 minutes if all the prerequisite steps are completed before you launch the discovery process.

To learn more about Oracle Exadata manageability, be sure to watch the following:

- [VIDEO: Managing Oracle Exadata with Oracle Enterprise Manager 12c](#)
- [VIDEO: Oracle Enterprise Manager 12c—Monitor an Oracle Exadata Environment](#)



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