

# **Oracle® Enterprise Manager Cloud Control Plug-In for Oracle Hardware User's Guide**

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# Using This Documentation

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This section describes product information, documentation and feedback, and a document change history.

- “Documentation and Feedback” on page 5
- “About This Documentation” on page 5
- “Change History” on page 6

## Documentation and Feedback

The following documentation is available related to the Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware Cloud Control.

Documentation	Link
All Oracle products	<a href="http://www.oracle.com/documentation">http://www.oracle.com/documentation</a>
Oracle Integrated Lights Out Manager 3.0	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ilom30">http://www.oracle.com/pls/topic/lookup?ctx=ilom30</a>

Provide feedback on this documentation at:

<http://www.oracle.com/goto/docfeedback>.

## About This Documentation

This documentation is available as PDF. The information is presented in topic-based format (similar to online help) and therefore does not include chapters, appendixes, or section numbering.

## Change History

The following changes have been made to the documentation set.

- December 2011, initial publication for version 12.1.0.1.0.
- April 2012, updated for features in version 12.1.0.2.0 such as support for SPARC processor based servers and Oracle Solaris operating system; additional information on sudo.
- July 2012, updated for features in version 12.1.0.3.0 such as support for Microsoft Windows Server, changes to sudo configuration and Privilege Delegation set up; clarified UNIX specific information.

# Overview of the Plug-In

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This section provides an overview of Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware Cloud Control and the features it provides. This documentation applies to Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware Cloud Control version 12.1.1.0.3.0.

- [“Features of the Plug-In” on page 7](#)

## Features of the Plug-In

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware Cloud Control extends Oracle Enterprise Manager Cloud Control 12c with the ability to monitor the basic hardware configuration and status of your Oracle Sun servers.

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware Cloud Control provides the following functionality:

- general information about a hardware system such as server model, type and serial number; system firmware version; host primary MAC, IP and MAC address of the Oracle Integrated Lights Out Manager (ILOM) service processor
- a link to the Oracle ILOM web interface is provided if the Oracle ILOM service processor is connected to the network
- basic hardware inventory such as the maximum and actual number of installed fans, processors, DIMMs, power supplies, disks, flash storage modules and disk controllers; total size of installed memory and disks, number of logical volumes
- a user-centric view of hardware system health, both of the entire system and the functional subsystems, such as cooling, processors, memory, power, storage
- meaningful error messages if there are problems with the system or its components
- alerts raised when system or subsystem health states indicate problems
- current and historical readings of inlet and exhaust air temperature, also available as charts
- current and historical readings of system's power consumption, also available as charts





# Installing and Uninstalling the Plug-In

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This section explains how to install and uninstall the Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware Cloud Control 12.1.0.3.0 (Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware) on your Oracle Enterprise Manager management server, as well as the servers you want to monitor.

- [“Deploying Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware” on page 9](#)
- [“Undeploying the Plug-In” on page 17](#)

## Deploying Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware provides a set of tools that you deploy to the servers you want to monitor. These tools then supply Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware with the information required to monitor your servers in Oracle Enterprise Manager.

You must configure the servers you want to monitor before deploying Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware. Once you have prepared your servers for monitoring, you deploy Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware to your Oracle Enterprise Manager management server, and then to each server you want to monitor.

This section provides the following information:

- [“Management Server Prerequisites” on page 10](#)
- [“Monitored Server Prerequisites” on page 10](#)
- [“Preparing Servers for Monitoring” on page 11](#)
- [“Deploying the Plug-In to Enterprise Manager” on page 13](#)
- [“Deploying the Plug-in to your Servers” on page 15](#)

## Management Server Prerequisites

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware has been tested with Oracle Enterprise Manager 12c Cloud Control (Oracle Enterprise Manager) version 12.1.0.1.0. For more information on Oracle Enterprise Manager 12c Cloud Control, see the following web page:

<http://www.oracle.com/technetwork/oem/extensions/index.html>.

## Monitored Server Prerequisites

The servers you want to monitor using Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware must be supported and in addition the operating system running on the server must be supported.

The following operating systems are supported by Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware version 12.1.0.1.0:

- Oracle Enterprise Linux 5 64-bit
- Oracle Linux 6 64-bit
- Red Hat Enterprise Linux 5 64-bit
- Red Hat Enterprise Linux 6 64-bit
- SUSE Linux Enterprise Server 11 64-bit

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware version 12.1.0.2.0 supports the above operating systems and these additional operating systems:

- Oracle Solaris 10 operating system for SPARC and x86
- Oracle Solaris 11 operating system for SPARC and x86

The Oracle Solaris 10 operating system requires `sudo` to be installed. The Oracle Solaris 11 operating system requires `gcc-45-runtime` to be installed.

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware version 12.1.0.3.0 supports the above operating systems and these additional operating systems:

- Microsoft Windows Server 2008 64-bit
- Microsoft Windows Server 2008 R2 64-bit

The following servers are supported by Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware version 12.1.0.1.0:

- Sun Fire X2270 M2 Server
- Sun Fire X4170 M2 Server
- Sun Fire X4270 M2 Server
- Sun Fire X4470 Server
- Sun Fire X4800 Server

- Sun Blade X6270 M2 Server Module
- Sun Blade X6275 M2 Server Module

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware version 12.1.0.2.0 supports the above servers and these additional servers:

- SPARC T3-1 Server
- Netra SPARC T3-1 Server
- SPARC T3-1B Server
- SPARC T3-2 Server
- SPARC T3-4 Server
- SPARC T4-1 Server
- SPARC T4-1B Server
- SPARC T4-2 Server
- SPARC T4-4 Server

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware version 12.1.0.3.0 supports the above servers and these additional servers:

- Sun Server X2-4 (formerly Sun Fire X4470 M2)
- Sun Server X2-8 (formerly Sun Fire X4800 M2)
- Sun Server X3-2 (formerly Sun Fire X4170 M3)
- Sun Server X3-2L (formerly Sun Fire X4270 M3)
- Sun Blade X3-2B (formerly Sun Blade X6270 M3) Server Module

Your server's service processor must be running a recent version of Oracle Integrated Lights Out Manager 3 (ILOM). For more information on using the service processor for monitoring and managing your Oracle Sun servers, see:

<http://www.oracle.com/goto/system-management>

## Preparing Servers for Monitoring

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware communicates with your target server's Oracle Integrated Lights Out Manager (ILOM) service processor for hardware inventory, health and configuration data. An IPMI interface is required between the host operating system and the server's service processor. By default this interface is configured on the following operating systems:

- Oracle Solaris 11
- Microsoft Windows Server 2008

On Linux based operating systems the IPMI interface might need to be configured manually. The following sections describe the configuration procedures you should follow on each server you want to monitor by enabling communication with the Oracle ILOM service processor.

## Configuring the IPMI Interface (Linux)

For each server you want to monitor, an IPMI interface needs to be enabled in the running operating system. Processes that need to read from and write to the IPMI interface must run with administrator privileges. For security reasons, configuration of the `sudo` command is required on each server running Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware.

### ▼ Enabling the IPMI Interface

**Before You Begin** You must have administrator privileges on the server to be able to follow this configuration procedure.

- **Enable the IPMI interface using the following command:**

```
# chkconfig --level 2345 ipmi on
```

---

**Note** – After making this change, you might need to start or restart the IPMI service.

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### Configuring Administrator Privileges (UNIX)

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware contains a utility called `hwmgmtcli` that is responsible for getting information from the Oracle ILOM service processor. Running the `hwmgmtcli` utility on a the following operating systems requires configuration of `sudo`:

- Oracle Solaris
- Linux based operating systems

On servers running these operating systems, the `sudo` command needs to be granted Administrator privileges to successfully communicate with the Oracle ILOM service processor using the IPMI interface.



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**Caution** – The following procedure impacts on the use of `sudo` on the server.

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### ▼ Granting sudo Administrator Privileges

- 1 **Open the `sudoers` file for editing.** The `sudoers` file is usually found at `/etc/sudoers`.
- 2 **Add the following line to the `sudoers` file:**

```
oracle ALL=(root) SETENV:AGENT_HOME/agent/sbin/nmosudo *
oracle ALL=(root)
SETENV:AGENT_HOME/agent/core/AGENT_VERSION/perl/bin/perl
```

```
AGENT_HOME/agent/core/AGENT_VERSION/plugins/
oracle.sun.ossb.agent.plugin_12.1.0.3.0/scripts/emx/oracle_hardware/collect.pl
*
```

where *AGENT\_VERSION* is the version number of Oracle Enterprise Manager agent you are using, for example 12.1.0.1.0, and where *AGENT\_HOME* is the root directory of the Oracle Enterprise Manager agent installation.

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**Note** – If `sudo` is not correctly configured, or supplied with an incorrect password, collection of metrics might not function correctly.

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## Deploying the Plug-In to Enterprise Manager

Once you have configured your servers for monitoring, you download and then import Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware to your Oracle Enterprise Manager management server. Then you deploy Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware to the servers you want to monitor.

The latest version of Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware is available from:

<http://www.oracle.com/technetwork/oem/extensions/index.html>

The following procedures explain how to import and deploy Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware. For more information on this process, see your Oracle Enterprise Manager documentation for details on Importing an External Archive into Enterprise Manager.

### ▼ Importing the Plug-in to your Management Server

#### Before You Begin

- You must configure the servers you want to monitor before deploying Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware. See “[Preparing Servers for Monitoring](#)” on page 11.
- You must have administrator rights on your Oracle Enterprise Manager management server to deploy the Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware.
- You must be able to access the `emcli` command, installed by default to the `bin` directory inside the Oracle Enterprise Manager install directory.

- 1 Copy the file you have downloaded to your Oracle Enterprise Manager management server.
- 2 Use the `emcli` command to log in to the Oracle Enterprise Manager management server as the `sysman` user:

```
emcli login -username="sysman"
```

When prompted, provide the password for the sysman user.

- 3 Use the `emcli` command to import Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware:**

```
emcli import_update -file="path/plugin_version_oracle.sun.ossb_2000_0.opar"  
-omslocal
```

where *path* is the path to the file you saved in step 1, and *plugin\_version* is the version number of the plug-in, for example 12.1.0.3.0.

Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware is imported to your Oracle Enterprise Manager management server.

## ▼ **Deploying the Plug-in to your Oracle Enterprise Manager Management Server**

### **Before You Begin**

- You must import the Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware before following this procedure. See [“Importing the Plug-in to your Management Server” on page 13](#).

- 1 Log in to the Oracle Enterprise Manager management server as an administrator. In the Setup menu, click Extensibility, click Self-Update and then click Plug-ins.**
- 2 In the list of plug-ins, click Oracle Hardware Plug-in.**  
The Deploy On button becomes activated.
- 3 From the Deploy On button's drop-down menu, click Management Server.**  
The Deploy Plug-in on Management Servers dialog box opens.
- 4 Click Add.**  
The Search and Select: Targets window opens.
- 5 Choose one of the following options:**
  - **If the server you want to deploy to is listed in the Search and Select: Targets window, click the server's row and then click Select.**
  - **If the server you want to deploy to is not listed in the Search and Select: Targets window, use the search at the top of the window. When the server is listed, click the server's row and then click Select.**
- 6 Type the Repository SYS password and click Continue.**  
Oracle Hardware Plug-in is installed to your Management Server.

## Deploying the Plug-in to your Servers

Once you have deployed the Plug-in to your EM Management Server, you deploy the Plug-in to the EM Management Agent running on each target server. In addition, you must configure Privilege Delegation on each target server running the following UNIX based operating systems:

- Oracle Solaris
- Linux based operating systems

### ▼ Privilege Delegation Configuration (UNIX)

The following procedure is necessary only for target servers running UNIX based operating systems.

- 1 **Log in to the Oracle Enterprise Manager management server as an administrator. Go to Setup, select Security and then Privilege Delegation.**
- 2 **For each target you want to monitor, click on the pencil to edit the configuration.**  
The target's configuration settings open.
- 3 **Select the sudo radio button. Then set the Sudo Command field to:**  
*path to sudo/sudo -E -u %RUNAS% %COMMAND%*  
where *path to sudo* is the path to the sudo binary on the target.
- 4 **Click the Update button.**  
The changes to the target's configuration are saved.
- 5 **Repeat this process for each target you want to monitor.**

### ▼ Specifying Monitoring Credentials (UNIX)

The following procedure is necessary only for target servers running UNIX based operating systems.

**Before You Begin** You must have Privilege Delegation set up for the target before following this procedure. See [“Privilege Delegation Configuration \(UNIX\)”](#) on page 15.

- 1 **Log in to the Oracle Enterprise Manager management server as an administrator.**
- 2 **Go to Setup, select Security and then Monitoring Credentials.**
- 3 **Select Oracle Hardware System and click Manage Monitoring Credentials.**  
A list of your target servers opens.

- 4 For each target you want to monitor, select the target and then click Set Credentials.**  
The enter monitoring credentials dialog opens.
- 5 Type the User Name and Password that should be used for running the Enterprise Manager agent.**
- 6 Type root in the Run as field.**
- 7 Click Test and Save.**
- 8 Repeat this procedure for each target you want to monitor.**

## ▼ **Deploying the Plug-in**

**Before You Begin** ■ You must deploy the Plug-in to your Oracle Enterprise Manager management server before following this procedure. See [“Deploying the Plug-in to your Oracle Enterprise Manager Management Server”](#) on page 14.

- 1 Log in to the Oracle Enterprise Manager management server as an administrator. In the Setup menu, click Extensibility, and then click Plug-ins.**  
The Plug-in Updates screen opens.
- 2 From the Deploy On button's drop-down menu, click Management Agent.**  
The Deploy Plug-in on Management Agent Window opens.
- 3 Click Add.**  
The Search and Select: Targets window opens.
- 4 Choose one of the following options:**
  - **If the server you want to deploy to is listed in the Search and Select: Targets window, click the server's row and then click Select.**
  - **If the server you want to deploy to is not listed in the Search and Select: Targets window, use the Target Name and On Host text boxes to search for a target server. When the server is listed, click the server's row and then click Select.**
- 5 Click Continue.**  
Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware is deployed to the selected server.
- 6 Repeat this procedure for each of the servers you want to monitor in Oracle Enterprise Manager.**



## ▼ **Creating Oracle Hardware System Targets for Monitored Servers**

Once you have deployed Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware to your servers, you create Oracle Hardware System targets for the servers. Repeat the following procedure of creating Oracle Hardware System targets for every target server you want to monitor.

- 1 Log in to the Oracle Enterprise Manager management server as an administrator.**
- 2 Click Setup, select Add Target, then click Add Targets Manually.**
- 3 Under Add Targets Manually, select Add Non-Host Targets by Specifying Target Monitoring.**
- 4 In the Target Type drop-down menu, select Oracle Hardware System.**
- 5 In the Monitoring Agent section, click the magnifying glass.**  
The Search and Select: Targets window opens.
- 6 Choose one of the following options:**
  - **If the target server you want to monitor is listed in the Search and Select: Targets window, click the server's row and then click Select.**
  - **If the target server you want to monitor is not listed in the Search and Select: Targets window, use the search at the top of the window. When the server is listed, click the server's row and then click Select.**
- 7 With the target server you want to add listed in the Monitoring Agent text box, click Add Manually.**  
The Add Oracle Hardware System page opens.
- 8 Enter the name for the hardware system being added in the Target Name field.**
- 9 Click OK.**

## **Undeploying the Plug-In**

The process of undeploying Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware consists of reversing the steps taken during installation and removing the Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware from your Oracle Enterprise Manager management server and monitored servers.

## ▼ **Removing Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware**

### **Before You Begin**

- You must have administrator rights on your Oracle Enterprise Manager management server.
- You must undeploy Oracle Hardware Plug-in from all server management agents before undeploying from the Oracle Enterprise Manager management server.

**1 Log in to the Oracle Enterprise Manager management server.**

**2 In the Setup menu, select Extensibility and then click Plug-ins.**

The list of Plug-ins page opens.

**3 In the list of Plug-ins Name, click Oracle Hardware Plug-in.**

The Oracle Hardware Plug-in row becomes selected.

**4 From the Undeploy From drop-down menu, click Management Agent.**

The Undeploy Plug-in From Management Agent page opens.

**5 Click Add.**

The Search and Select: Targets window opens.

**6 Choose one of the following options:**

- **If the server you want to undeploy from is listed in the Search and Select: Targets window, click the server's row and then click Select.**
- **If the server you want to undeploy from monitor is not listed in the Search and Select: Targets window, use the search at the top of the window. When the server is listed, click the server's row and then click Select.**

**7 Click Select.**

The selected target is listed in the Undeploy Plug-in From Management Agent page.

**8 Click Continue, then Next and finally Undeploy.**

The Oracle Hardware Plug-in is undeployed from the target server.

**9 Repeat Steps 4 to 8 for each Management Agent server where you had Oracle Hardware Plug-in deployed.**

**10 Repeat Steps 4 to 8 for Oracle Enterprise Manager management server where you had Oracle Hardware Plug-in deployed.**

# Monitoring Oracle Hardware System Targets

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Once you have installed Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware and created Oracle Hardware System targets for your servers, you can start to monitor the servers in Oracle Enterprise Manager. The information collected from your monitored servers is available as reports and you can also access the specific metric data for a target. In addition, any alerts generated by the plug—in are received by Oracle Enterprise Manager and displayed with a description.

## Oracle Hardware System Target Home Page

The target home page of servers that are being monitored as Oracle Hardware System targets provide additional information about the monitored server. The following information is available:

- a time series chart of the actual power consumption over the period of last 12 hours
- a time series chart of the inlet air temperature over the period of last 12 hours
- a time series chart of the exhaust air temperature over the period of last 12 hours
- a list of active alerts for the selected Oracle Hardware System target
- a link to the server's Oracle ILOM service processor web user interface (only available if the Oracle ILOM service processor is connected to the network)

In addition, the Oracle Hardware System target home page provides a list of recently received alerts from the system and links to pages providing more information about the system.

### ▼ Viewing the Oracle Hardware System Target Home Page

**1 Click Targets and then select Host.**

The list of currently monitored hosts opens.

**2 In the Name column, click the host you want to view.**

The host page opens.

**3 On the host page, click the targets link.**

The list of targets opens.

- 4 **Click Hosts and then Related Targets.**
- 5 **From the list of targets, click the Oracle Hardware System target you want to view.**  
The Oracle Hardware System target page opens.

## Metrics Available for Oracle Hardware System Targets

This section provides an overview of the metrics that are collected from each Oracle Hardware System target. You view the current values of the metrics by navigating to an Oracle Hardware System target's home page and selecting the All Metrics link in the Related Links section in the bottom part of the page. For more information on the Oracle Hardware System target's home page, see [“Viewing the Oracle Hardware System Target Home Page” on page 19](#).

The following sections explain the different metrics and how often they are collected.

- [“Response Metric” on page 20](#)
- [“System Information Metrics” on page 20](#)
- [“System Configuration Metrics” on page 21](#)
- [“System Health Metrics” on page 21](#)
- [“Meter Metrics” on page 22](#)
- [“System Inventory Metrics” on page 23](#)
- [“System Inventory Limits” on page 24](#)

### Response Metric

The Response metric is collected from an Oracle Hardware System target every 10 minutes. The metric column Status indicates if data can be obtained from the Oracle ILOM service processor or not. If there is a communication problem, the target availability is marked as Down by Oracle Enterprise Manager.

### System Information Metrics

The System Information metrics are collected from an Oracle Hardware System target every 1 hour. The metrics provide an overview of the Oracle Hardware System target's hardware. The following table explains the different metrics.

**TABLE 1** System Information Metrics Provided by an Oracle Hardware System Target

Metric Column	Description
Model	Server model identifier
System Type	Rack Mount or Blade

**TABLE 1** System Information Metrics Provided by an Oracle Hardware System Target *(Continued)*

Metric Column	Description
Chassis Model	The chassis that the Blade is in. Only shown on relevant Blades.
Serial Number	System Serial Number
Model ID	Unique Model ID (for service purposes)
System Identifier	Custom server identifier as configured in the ILOM Service Processor
Processor Architecture	Architecture of installed CPUs, for example x86 64-bit
Processor Summary	Summary of installed CPUs models
System Firmware Version	Summary of installed system firmware, for example BIOS and ILOM

## System Configuration Metrics

The System Configuration metrics are collected from an Oracle Hardware System target every 1 hours. The metrics provide an overview of the Oracle Hardware System target's configurable parameters. The following table explains the different metrics.

**TABLE 2** Metrics Provided by an Oracle Hardware System Target

Metric Column	Description
ILOM Address	IP address of the ILOM Service Processor (if connected to network)
ILOM MAC Address	MAC address of the ILOM Service Processor
Chassis Address	IP address of the chassis, only relevant for Blade server modules
Host Primary MAC Address	MAC address of server's primary network interface
Permitted Power Consumption	Actual value of the server's maximum permitted power consumption as configured in the ILOM Service Processor

## System Health Metrics

The System Health metrics are collected from an Oracle Hardware System target every 10 minutes. The metrics provide an overview of the Oracle Hardware System target's health and any problems that have been detected. The following table explains the different metrics.

**TABLE 3** System Health Metrics Provided by an Oracle Hardware System Target

Metric Column	Description
Health	Overall health status of the entire system. Possible values: OK, Warning, Service Required
Health Details	Explanation of the current overall health status
Open Problems	Number of hardware-related problems diagnosed on the system
Cooling Health	Health status of the cooling subsystem (fan modules, fans, temperatures). Possible values: OK, Warning, Service Required
Cooling Health Details	Explanation of the current cooling health status
Processors Health	Health status of the CPUs. Possible values: OK, Warning, Service Required
Processors Health Details	Explanation of the current processors health status
Memory Health	Health status of the memory subsystem (DIMMs). Possible values: OK, Warning, Service Required
Memory Health Details	Explanation of the current memory health status
Power Health	Health status of the power subsystem (power supplies, input power). Possible values: OK, Warning, Service Required
Power Health Details	Explanation of the current power health status
Storage Health	Health status of the storage subsystem (disks, controllers, logical volumes, flash modules). Possible values: OK, Warning, Service Required
Storage Health Details	Explanation of the current storage health status

## Meter Metrics

The Meter metrics are collected from an Oracle Hardware System target every 10 minutes. The metrics provide an overview of actual values detected on the Oracle Hardware System target. The following table explains the different metrics.

**TABLE 4** Meter Metrics Provided by an Oracle Hardware System Target

Metric Column	Description
Actual Power Consumption	Actual value of the total server's power consumption in Watts

TABLE 4 Meter Metrics Provided by an Oracle Hardware System Target (Continued)

Metric Column	Description
Exhaust Air Temperature	Actual value of the server chassis exhaust air in degrees Celsius
Inlet Air Temperature	Actual value of the server chassis inlet air temperature in degrees Celsius

## System Inventory Metrics

The System Inventory Metrics are collected from an Oracle Hardware System target every 4 hours. The metrics provide an overview of the hardware in the Oracle Hardware System target. The following table explains the different metrics.

TABLE 5 System Inventory Metrics Provided by an Oracle Hardware System Target

Metric Column	Description
Disk Controllers	The number of detected disk controllers.
Ethernet NICs	The number of detected Ethernet NICs.
InfiniBand HCAs	The number of detected InfiniBand host channel adapters.
Installed Add-on Cards	The number of detected add-on cards.
Installed Chassis Fans	The number of detected chassis fans.
Installed CPUs	The number of detected central processing units.
Installed DIMMs	The number of detected dual in-line memory modules.
Installed Disks	The number of detected disk drives.
Installed Disk Size	The size of the detected disk drives.
Installed FMODs	The number of detected flash modules.
Installed Memory	The size of the total detected memory.
Installed Power Supplies	The number of detected power supplies.
Installed Power Supply Fans	The number of detected power supply fans.
Logical Volumes	The number of logical volumes present.
Operational Memory	The size of the operational memory.

## System Inventory Limits

The System Inventory limits are collected from an Oracle Hardware System target every 24 hours. The limits provide an overview of the maximum hardware amounts that can be installed on the Oracle Hardware System target. The following table explains the different limits.

**TABLE 6** System Inventory Limits Provided by an Oracle Hardware System Target

Metric Column	Description
Maximum Chassis Fans	Maximum number of server chassis fans that can be installed in the chassis
Maximum Power Supply Fans	Maximum number of power supply fans that can be installed in the chassis
Maximum CPUs	Maximum number of processors that can be installed in the chassis
Maximum DIMMs	Maximum number of memory modules that can be installed in the chassis
Maximum Power Supplies	Maximum number of power supplies that can be installed in the chassis
Maximum Disks	Maximum number of hard drives that can be installed in the chassis
Maximum FMODs	Maximum number of flash storage modules that can be installed in the chassis

## Understanding the Reports

This section provides information on the two default reports provided by Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware, the System Overview report and the Power Consumption and Cooling report. You navigate to the reports associated with a selected Oracle Hardware System target by clicking on the Reports tab in the top part of the target home page. The reports are also accessible on the global Enterprise Manager Reports tab. For more information on the Oracle Hardware System target's home page, see [“Viewing the Oracle Hardware System Target Home Page”](#) on page 19.

The section contains the following:

- [“System Overview Report”](#) on page 25
- [“Power Consumption and Cooling Report”](#) on page 26



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## System Overview Report

The System Overview report provides a central location for the information received from a monitored Oracle Hardware System target.

The System Overview report is divided into four parts, explained in the following sections:

- “General Information Section” on page 25
- “Integrated Lights Out Manager Section” on page 25
- “Overall Status” on page 25
- “Subsystems Status” on page 26

### General Information Section

The General Information section of the report provides a basic set of information about the selected Oracle Hardware System target. The properties displayed are as follows:

- Model
- Serial Number
- System Type
- System Firmware Version
- System Identifier
- Host Primary MAC address

For more information on the General Information section, see [“System Information Metrics” on page 20](#).

### Integrated Lights Out Manager Section

The Integrated Lights Out Manager section of the report provides information about the current settings of the Oracle ILOM service processor on the Oracle Hardware System target. The properties displayed are as follows:

- ILOM Address
- ILOM MAC Address

For more information on the Integrated Lights Out Manager section, see [“System Configuration Metrics” on page 21](#).

### Overall Status

The Overall Status section of the report provides a summary of overall system health of a Oracle Hardware System target. The properties displayed are as follows:

- Health Status
- Health Details
- Open Problems

Health Status is a graphical representation of the states OK, Warning or Service Required. Health Details is a text representation of the states OK, Warning or Service Required.

For more information on the Overall Status section, see [“System Health Metrics” on page 21](#).

## Subsystems Status

This Subsystems Status section provides a tabular summary for each functional subsystem, that is cooling, processors, memory, power and storage. The table contains information about health, temperature and power consumption values as well as an inventory summary.

## Power Consumption and Cooling Report

The Power Consumption and Cooling report provides two charts, a Power Consumption chart and a Cooling Air Temperature chart. By default, the charts display values for the period of past 12 hours.

If you want to display values for a longer or custom time interval, you need to navigate to the global Reports tab in Enterprise Manager and expand the Oracle Hardware System category. From there, you can select the Power Consumption and Cooling report, specify a target for which you want to run the report and then set the time period for which you want to display data. For more information on the Reports tab, see the Oracle Enterprise Manager documentation.

The Power Consumption and Cooling report is divided into the following parts:

- [“Power Consumption Chart” on page 26](#)
- [“Cooling Air Temperature Chart” on page 26](#)

### Power Consumption Chart

The Power Consumption chart displays hourly roll-ups of the actual power consumption of an Oracle Hardware System target, measured in Watts. In addition, the value of permitted power consumption is also displayed. The combined chart provides information about the power capacity utilization of the entire hardware system.

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**Note** – On some system types, one or both values might not be available. For more information, see your hardware documentation

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### Cooling Air Temperature Chart

The Cooling Air Temperature chart displays hourly roll-ups of the inlet and exhaust air temperatures an Oracle Hardware System target, measured in degrees Celsius.

**Note** – On some system types, the value of exhaust air temperature might not be available. For more information, see your hardware documentation

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## Understanding Oracle Hardware System Alerts

This section provides an overview of the alerts that Oracle Hardware System targets can generate when they are being monitored in Oracle Enterprise Manager. The section contains the following:

- [“Default Oracle Hardware System Alerts” on page 27](#)
- [“User Definable Alerts” on page 27](#)

## Default Oracle Hardware System Alerts

The default metrics that trigger an alert are as follows:

- Health
- Cooling Health
- Memory Health
- Power Health
- Processors Health
- Storage Health

For more information on these metrics, see [“Metrics Available for Oracle Hardware System Targets” on page 20](#).

Alerts are generated if any of the following conditions are met:

- metric has a value of Warning
- metric has a value of Service Required

A critical alert is also generated when the Health Status metric has a value of Down indicating that there is a problem communicating with the Oracle ILOM service processor on the Oracle Hardware System target.

## User Definable Alerts

In addition to the default set of defined alerts, you can define additional alerts for the following rules:

- Actual Power Consumption is greater than a specified value
- Exhaust Air Temperature is greater than a specified value

- Inlet Air Temperature is greater than a specified value

You enable alerts for these metrics from the target home page of an Oracle Hardware System. For more information, see [“Oracle Hardware System Target Home Page”](#) on page 19.

## ▼ **Defining Alerts for an Oracle Hardware System Target**

- 1** Navigate to the Oracle Hardware System target home page.
- 2** In the Related Links section of the Oracle Hardware System target home page, select Metric and Collection Settings.
- 3** In the View combo box, select the All Metrics option.  
A list of all metrics enabled for alert generation opens.
- 4** In the list of metrics enabled for alert generation, define the Warning and Critical thresholds for the metrics you want to generate an alert.
- 5** When you have defined the alerts you want this Oracle Hardware System target to generate, click OK to save your alert definition.

# Troubleshooting Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware

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This section provides tips and solutions for the most common problems you may encounter when installing and using Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware. This section contains the following:

- “Issues Adding an Oracle Hardware System Target” on page 29
- “Oracle ILOM Service Processor IP Address Changed” on page 29
- “Target Not Configured for Privilege Delegation Propagation Error” on page 30
- “Storage Information Missing on Sun Server X3-2L (CR 7184898)” on page 31

## Issues Adding an Oracle Hardware System Target

This section describes potential causes of issues you might encounter when adding an Oracle Hardware System Target.

On targets running UNIX based operating system, verify that:

- `sudo` is configured correctly on the target. See “[Configuring Administrator Privileges \(UNIX\)](#)” on page 12.
- you entered the correct path to `sudo` for the target during the Privilege Delegation Configuration. See “[Privilege Delegation Configuration \(UNIX\)](#)” on page 15.

## Oracle ILOM Service Processor IP Address Changed

If you change the IP address of the Oracle ILOM Service Processor, you need to then update the link to the Oracle ILOM service processor web user interface on the Oracle Hardware System target home page.

### ▼ Updating the IP address of an Oracle Hardware System Target's Oracle ILOM Service Processor

- 1 Using the Oracle Enterprise Manager agent user account, log in to the server you want to update.

- 2 **Navigate to the directory *AGENT\_HOME/agents\_inst/bin*, where *AGENT\_HOME* is the root directory of the Oracle Enterprise Manager agent installation.**

- 3 **Run the following command:**

```
$ ./emctl config agent listtargets
```

You should receive output similar to the following:

```
[MyNode:3872, oracle_emd]
```

```
[MyNode, host]
```

```
[MyNode Hardware, oracle_hardware]
```

The final row in the example output corresponds with the Oracle Hardware System target instance on the server you want to update.

- 4 **Run the following command:**

```
$ ./emctl reload agent dynamicproperties "MyNode Hardware":oracle_hardware
```

Where *oracle\_hardware* corresponds to the final row output in step 3.

You should see output similar to the following:

```
EMD recompute dynprops completed successfully
```

The IP address of the Oracle ILOM service processor is re-read and stored in a dynamic variable that is used to construct the URL to the Oracle ILOM web user interface that the link on the target home page points to.

## Target Not Configured for Privilege Delegation Propagation Error

When adding an Oracle Hardware Server target, you might encounter a “Target not configured for privilege delegation propagation” error. This is caused by trying to configure the Run Privilege setting during this process. The work around for this problem is to specify the Run Privilege as None. Then configure Run as privilege as described in [“Deploying the Plug-in to your Servers”](#) on page 15.

## **Storage Information Missing on Sun Server X3-2L (CR 7184898)**

When running Oracle Enterprise Manager Cloud Control Plug-In for Oracle Hardware on a Sun Server X3-2L (formerly Sun Fire x4270 m3) the storage information might be missing. This is a known issue.





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