

SPARC and Netra SPARC S7-2 Series Servers Administration Guide



Part No: E73202-04
June 2017

Part No: E73202-04

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Using This Documentation

- **Overview** – Describes how to configure and administer the SPARC and Netra SPARC S7-2 series servers from Oracle.
- **Audience** – System administrators of SPARC and Netra SPARC S7-2 series servers.
- **Required knowledge** – Working knowledge of computer network concepts and terms, and advanced familiarity with the Oracle Solaris Operating System (Oracle Solaris OS).

Note - This document applies to several server products. Specific examples used in this document are based on one of these servers. Your output might vary from the examples based on your product.

Product Documentation Library

Documentation and resources for this product and related products are available at:

- <http://www.oracle.com/goto/s7-2/docs>
- <http://www.oracle.com/goto/s7-2l/docs>
- <http://www.oracle.com/goto/netra-s7-2/docs>

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Understanding System Administration Resources

These topics provide a summary of common tools and features involved in administering the server.

Note - For an overview of your specific server, refer to the "Understanding The Server" section of the installation guide for that server.

- [“Oracle ILOM Overview” on page 11](#)
- [“OpenBoot Overview” on page 16](#)
- [“Oracle Solaris OS Overview” on page 17](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)
- [“Multipathing Software Overview” on page 19](#)
- [“Oracle Hardware Management Pack Overview” on page 20](#)
- [“Oracle Enterprise Manager Ops Center Overview” on page 20](#)
- [“Oracle Auto Service Request Software Overview” on page 21](#)
- [“Trusted Platform Module Overview” on page 22](#)

Related Information

- [“Updating the Firmware” on page 87](#)

Oracle ILOM Overview

Oracle Integrated Lights Out Management (ILOM) is system management firmware that is preinstalled on all the servers. This firmware enables you to actively manage and monitor components installed in the server. Oracle ILOM provides a web interface and a CLI, as well as Simple Network Management Protocol (SNMP) and Intelligent Platform Management Interface (IPMI) interfaces.

Oracle ILOM runs in the service processor (SP) independently of the server, regardless of the server power state, while AC power is connected to the server. The SP immediately starts and begins monitoring the server when you connect the server to AC power. All environmental monitoring and control are handled by Oracle ILOM.

You can log in to the SP from a serial console connected to the SER MGT port or using `ssh` through the network connected to the NET MGT port. In each case, you see the `->` prompt of the CLI for Oracle ILOM. This prompt enables you to interact with the SP through Oracle ILOM commands.

You can log into the Oracle ILOM web interface to the SP through the network connected to the NET MGT port using the address `http://ip-address-of-SP` in your web browser.

The SP supports concurrent Oracle ILOM sessions per server. Multiple SSH or web connections are available through the NET MGT port, and one connection is available through the SER MGT port.

Oracle ILOM operates on many platforms. Most features are common to all platforms, but some Oracle ILOM features belong to only a subset of platforms.

For more information about how to work with Oracle ILOM features that are common to all platforms managed by Oracle ILOM, refer to the Oracle ILOM documentation at:

<http://www.oracle.com/goto/ilom/docs>

To perform some procedures documented in the Oracle ILOM core documentation, you must create a serial connection to the server and activate the Physical Presence switch on the server. For information about creating a serial connection, refer to the installation guide for the server.

Related Information

- [“Log In to Oracle ILOM” on page 25](#)
- [“Configuring Policy Settings” on page 61](#)
- [“OpenBoot Overview” on page 16](#)

User Accounts on the SP

The Oracle ILOM software that is pre-installed on the SP is preconfigured with two user accounts (`root` and `default`). The `root` user can then create additional user accounts as needed.

The default user is limited to password recovery of the root account and requires proof of physical presence at the server.

The servers support up to 10 user accounts for logging into the SP.

Note - You can verify these platform-specific numbers in the Oracle ILOM web interface.

For a secure login method, enable an SSH service. Refer to the Oracle ILOM documentation for more information.

Related Information

- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#)
- [“Oracle ILOM Overview” on page 11](#)
- [“User Roles on the SP” on page 13](#)

User Roles on the SP

User roles are configured for the server SP using Oracle ILOM. For a complete description of the available roles, refer to the Oracle ILOM documentation.

Each user account is assigned specific roles that allow a user to execute certain Oracle ILOM commands and perform certain actions on a specific set of components. By specifying roles for each user, you can control which operations each user is allowed to perform.

Configure user roles from `/SP/users/user-ID/role=value`, as documented in the Oracle ILOM documentation.

Related Information

- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* at <http://www.oracle.com/goto/ilom/docs>
- [“Oracle ILOM Overview” on page 11](#)
- [“User Authentication on the SP” on page 14](#)

User Authentication on the SP

Users or management agents can access the SP and its components only through authorized user interfaces. Users and agents cannot access any of the underlying operating system interfaces, and users cannot install individual software components on the SP.

Oracle ILOM can authenticate user accounts through local accounts that you configure, or against a remote user database such as Active Directory or LDAP/SSL. With remote authentication, you can use a centralized user database rather than configuring local accounts on each Oracle ILOM instance.

You can also remotely authenticate and authorize user access based on a user's membership in a host group. A user can belong to more than one host group, and on these servers, you can configure up to 10 host groups using the Oracle ILOM web interface, the CLI, or SNMP.

You can use Active Directory or LDAP/SSL to configure host groups for remote user authentication.

The tasks involved in configuring host groups include managing certificates (LDAP/SSL), administrator groups, operator groups, custom groups, and user domains.

Related Information

- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#)
- [“Oracle ILOM Overview” on page 11](#)
- [“Active Directory” on page 15](#)
- [“LDAP/SSL Security” on page 16](#)

Time Synchronization and NTP Service

When the server is powered on, the clock synchronizes to the NTP server when the system is configured to listen to NTP multicast (the default). If the server and SP use the same NTP server, events logged in Oracle Solaris and on the SP can be correlated based on their time stamps. If the server and SP use different NTP servers, their times might drift, and correlating events in log files could become difficult. If you connect a domain to an NTP server other than the one used by the SP, ensure that both are low-stratum NTP servers that provide the same degree of accuracy.

Related Information

- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#)
- [“Oracle ILOM Overview” on page 11](#)
- [“SNMP Service” on page 15](#)

SNMP Service

The SNMP agent is preinstalled on these servers and runs on the SP, so all SNMP management occurs through Oracle ILOM. To monitor and manage the server directly using SNMP commands, you can use an SNMP management application such as Oracle HMP or Net-SNMP.

The Oracle ILOM MIB file SUN-ILOM-CONTROL-MIB provides objects for configuring and managing all Oracle ILOM functions. The MIB file SUN-HW-CTRL-MIB allows control for Oracle Sun server platform devices, and SUN-PLATFORM-MIB provides extensions to the standard entity MIB objects. The MIB files containing the extensions are available under /SP/services/snmp/mibs in the Oracle ILOM CLI and also downloadable through the web interface.

Related Information

- *Oracle ILOM Protocol Management Reference for SNMP and IPMI Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#)
- [“Oracle ILOM Overview” on page 11](#)

Active Directory

Oracle ILOM supports Active Directory, the distributed directory service included with Microsoft Windows Server operating systems. Like an LDAP directory service implementation, Active Directory can be used to authenticate user credentials of users logging into Oracle ILOM.

You can also optionally create groups that are assigned roles and contain users who are granted privileges based on those roles of the group.

Related Information

- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#)
- [“Log In to Oracle ILOM”](#) on page 25
- [“User Authentication on the SP”](#) on page 14
- [“LDAP/SSL Security”](#) on page 16

LDAP/SSL Security

LDAP over Secure Sockets Layer (LDAP/SSL) offers enhanced security to LDAP users by using SSL encryption for user credentials as they are transmitted across the network. LDAP/SSL provides both authentication of user credentials and authorization of user access levels. Authentication verifies the identity of a user before that user can access system resources. Authorization grants specific privileges to a user to control and access system resources.

To configure LDAP/SSL in an SP, you enter basic data such as the roles users are assigned, LDAP server address and port number, timeout limit, and certificate mode. You can also optionally create groups that are assigned roles and contain users who are granted privileges based on those roles of the group.

You can use the LDAP/SSL configuration page of the Oracle ILOM web interface, the CLI, or SNMP to enable and configure LDAP/SSL.

Related Information

- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#)
- [“Log In to Oracle ILOM”](#) on page 25
- [“Oracle ILOM Overview”](#) on page 11

OpenBoot Overview

The OpenBoot firmware determines the hardware configuration of a system or virtual machine, prepares memory, and initializes I/O devices by executing their device drivers. OpenBoot also boots the operating system from a storage device or a network if configured to automatically boot.

OpenBoot can be used for other server administration tasks below the OS level. Some devices contain firmware written in the FCode language that enables additional commands which you can enter at the OpenBoot prompt (ok).

The OpenBoot firmware is based on the IEEE Standard 1275-1994 for Boot (Initialization Configuration) Firmware: Core Requirements and Practices specification.

OpenBoot operating characteristics are controlled by configuration variables that are stored in nonvolatile memory (NVRAM). You can change the configuration variable values to tailor operating characteristics to your environment.

New OpenBoot properties are available on this server to accommodate booting an iSCSI device over IB. Also, a new OpenBoot variable has been added.

<code>boot-pool-list</code>	Lists device paths to OpenBoot accessible storage devices that comprise a boot pool. These are the devices that Oracle Solaris will use when booting. You can view this property with the <code>.properties</code> command under the <code>/chosen</code> node at the OpenBoot prompt.
<code>tboot-list</code>	Lists storage devices that include fall back images. You can view this property with the <code>.properties</code> command under the <code>/chosen</code> node at the OpenBoot prompt.
<code>os-root-device</code>	Defines devices and root file systems for root pools. This is a nonvolatile variable that you can view using the <code>printenv</code> command at the OpenBoot prompt or using the <code>eepram</code> command at the Oracle Solaris prompt.

For more information about OpenBoot commands, refer to the OpenBoot documentation at:

<http://www.oracle.com/goto/openboot/docs>

Related Information

- [“Oracle Solaris OS Overview” on page 17](#)

Oracle Solaris OS Overview

The Oracle Solaris OS provides commands and utilities for administration of the operating system and server. Use the following links to find the documentation appropriate for your Oracle Solaris release.

Oracle Solaris 11 <http://www.oracle.com/pls/topic/lookup?ctx=solaris11>

Oracle Solaris 10 <http://www.oracle.com/pls/topic/lookup?ctx=solaris10>

Note - Oracle Solaris 10 can only be used in Oracle VM Server for SPARC guest domains on these servers.

Oracle Solaris software includes Oracle Validation Test Suite (VTS) software. Oracle VTS tests and validates Oracle hardware by verifying the connectivity and functionality of hardware devices, controllers, and peripherals.

In addition to the Oracle VTS information in the Oracle Solaris documentation, Oracle VTS documentation collections are available at:

<http://www.oracle.com/goto/vts/docs>

Oracle Solaris 11.3 also includes Oracle VM Server for SPARC and the Oracle Hardware Management Pack.

Related Information

- [“OpenBoot Overview” on page 16](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)
- [“Oracle Hardware Management Pack Overview” on page 20](#)

Oracle VM Server for SPARC Overview

A *logical domain* is a discrete logical grouping with its own OS, resources, and identity within a single computer system. Application software can run in logical domains. Each logical domain can be created, destroyed, reconfigured, and rebooted independently.

Oracle VM Server for SPARC software enables you to create and manage numerous logical domains on a server, depending on the hardware configuration of the server. You can virtualize resources and define network, storage, and other I/O devices as services that can be shared between domains.

The Oracle VM Server for SPARC configurations are stored on the SP. Use the Oracle VM Server for SPARC `ldm` command to add a configuration, list the configurations on the SP,

and specify a configuration to be used. You can also specify an Oracle VM Server boot configuration with an Oracle ILOM command, as explained in [“Configure the Host Boot Mode \(Oracle VM Server for SPARC\)” on page 54](#).

Oracle VM Server for SPARC has been included in Oracle Solaris since Oracle Solaris 11.1. If you use Oracle Enterprise Manager Ops Center, you can provision that management environment with a version of Oracle VM Server for SPARC that is compatible with your hardware.

Related Information

- [Oracle VM Server for SPARC documentation \(http://www.oracle.com/goto/vm-sparc/docs\)](http://www.oracle.com/goto/vm-sparc/docs)
- [“Oracle Enterprise Manager Ops Center Overview” on page 20](#)
- [“Power On a Server With Multiple Active Domains \(Oracle VM Server for SPARC\)” on page 32](#)
- [“Power Off a Server With Multiple Active Domains \(Oracle VM Server for SPARC\)” on page 33](#)
- [“Configuring Boot and Restart Behavior” on page 47](#)

Multipathing Software Overview

Multipathing software enables you to define and control redundant physical paths to I/O devices such as storage devices and network interfaces. If the active path to a device becomes unavailable, the software can automatically switch to an alternate path to maintain availability. This capability is known as *automatic failover*. To take advantage of multipathing capabilities, you must configure the server with redundant hardware, such as redundant network interfaces or two host bus adapters (HBAs) connected to the same dual-ported storage array.

For the servers, different types of multipathing software are available:

- Oracle Solaris IP Network Multipathing (IPMP) software provides multipathing and load-balancing capabilities for IP network interfaces. This software includes commands and other software resources for server administration. For information about Oracle Solaris IPMP, refer to [Administering TCP/IP Networks, IPMP, and IP Tunnels in Oracle Solaris 11.3](#).
- Oracle Solaris Multipathed I/O (MPxIO) enables I/O devices to be accessed through multiple host controller interfaces from a single instance of the I/O device. For information about Oracle Solaris I/O multipathing, refer to [Managing SAN Devices and Multipathing in Oracle Solaris 11.3](#).

- Oracle Solaris Datalink Multipathing (DLMP) is a type of network datalink aggregation that provides high availability across multiple switches without requiring switch configuration. DLMP aggregation supports link-based failure detection and probe-based failure detection to ensure continuous availability of the network to send and receive traffic. For information about DLMP refer to [Managing Network Datalinks in Oracle Solaris 11.3](#).

Related Information

- [“Oracle Solaris OS Overview” on page 17](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)

Oracle Hardware Management Pack Overview

The Oracle Hardware Management Pack provides management agents and command line tools to manage and configure Oracle servers from the host OS. Oracle Solaris has included Oracle Hardware Management Pack since Oracle Solaris 11.2. For example, you can use several CLI tools to configure RAID volumes, view hardware configuration and status information, and upgrade your server components' firmware. The tools include a utility for managing NVMe devices (nvmeadm) and for updating firmware in various hardware devices in the server (fwupdate).

Find installation information and other documentation in the [Oracle Hardware Management Pack for Oracle Solaris 11.3 Documentation Library](#).

For more information, see the product page at <http://www.oracle.com/technetwork/server-storage/servermgmt/tech/hardware-management-pack/index.html>.

Related Information

- [“Managing Server Drives” on page 81](#)
- [“Update the System Firmware” on page 88](#)

Oracle Enterprise Manager Ops Center Overview

Oracle Enterprise Manager Ops Center is a comprehensive system management solution for managing physical and virtual systems and devices. Through a single user interface, use the

Oracle Enterprise Manager Ops Center software to monitor, patch, provision, virtualize, and support assets, such as OSs, virtualization technologies, Oracle servers, storage, and networks.

Oracle Enterprise Manager Ops Center can discover a server, its SP, the OS, and logical domains already created by Oracle VM Server for SPARC. You can use the Oracle Enterprise Manager Ops Center to perform managing tasks on discovered assets, including creating logical domains and setting up RAID5s.

For more information about the software see the following locations:

- [Product page for Oracle Enterprise Manager Ops Center](#)
- [Oracle Enterprise Manager Ops Center Documentation](#)

Enterprise Manager Ops Center documentation includes How To guides to help you deploy and manage the server using this software. Select the How to Deploy link on the documentation library page and then find the document relevant to your server.

For example, see [How to Deploy](#) for Oracle Enterprise Manager Ops Center 12c Release 3 documentation and find the document [Discover and Manage SPARC T5 Series Servers and SPARC T7 Series Servers](#) in the Hardware area.

Related Information

- [“Hardware RAID Support” on page 81](#)

Oracle Auto Service Request Software Overview

When you have completed initial installation and Oracle Solaris configuration, you can activate Oracle Auto Service Request (Oracle ASR) software for the server.

Oracle ASR software provides the ability to resolve problems faster by automatically opening service requests for Oracle's qualified server, storage, and Engineered Systems products when specific faults occur.

Parts are dispatched upon receipt of a service request sent by Oracle ASR. In many cases, Oracle engineers are already working to resolve an issue before you're even aware that a problem exists.

Oracle products with Oracle ASR securely transport electronic fault telemetry data to Oracle automatically to help expedite the diagnostic process. The one-way event notification requires no incoming internet connections or remote access mechanism. Only the information needed to solve a problem is communicated to Oracle.

Oracle ASR is a feature of the Oracle hardware warranty and Oracle Premium Support for Systems. See the following for more information:

- Oracle Hardware and Systems Support Policies at <http://www.oracle.com/us/support/policies/index.html>
- Oracle Premier Support for Systems at <https://www.oracle.com/support/premier/systems/index.html>

Oracle ASR is integrated with [My Oracle Support \(https://support.oracle.com\)](https://support.oracle.com). You must use My Oracle Support to activate your ASR assets, such as a new server.

To activate automated support for a server, download software and find additional information at <http://www.oracle.com/us/support/auto-service-request/index.html>.

Some resources available for Oracle ASR through that site are:

- [Oracle Auto Service Request Documentation \(http://docs.oracle.com/cd/E37710_01/index.htm\)](http://docs.oracle.com/cd/E37710_01/index.htm)
- [How to Approve Pending ASR Assets In My Oracle Support \(https://support.oracle.com/rs?type=doc&id=1329200.1\)](https://support.oracle.com/rs?type=doc&id=1329200.1)

Related Information

- [Oracle Auto Service Request Documentation \(http://docs.oracle.com/cd/E37710_01/index.htm\)](http://docs.oracle.com/cd/E37710_01/index.htm)
- “Oracle Enterprise Manager Ops Center Overview” on page 20

Trusted Platform Module Overview

The server includes a Trusted Platform Module (TPM) as part of the SP. TPM refers to the hardware component and software that provides protected key storage and reliable measurements of software used to boot the operating system.

Oracle Solaris uses TPM to securely store encryption keys. TPM, together with the other measures that are described in the Oracle Solaris documentation, secures the system from unauthorized access by users of applications.

The platform owner must initialize TPM by setting an owner password that is used to authorize privileged operations. The platform owner, also called the TPM owner, differs from the traditional superuser.

Related Information

- [Securing Systems and Attached Devices in Oracle Solaris 11.3](#)
- [tpmadm\(1M\) man page](#)

Accessing the Server

These topics include information on establishing low-level communication with the server using Oracle ILOM and the system console.

- [“Log In to Oracle ILOM” on page 25](#)
- [“Start the Host Console” on page 26](#)
- [“Access the OpenBoot Prompt” on page 27](#)
- [“Display the Oracle ILOM Prompt” on page 27](#)
- [“Oracle ILOM Remote System VNC Console” on page 27](#)

Related Information

- [“Accessing the Server” on page 25](#)
- [“Booting and Shutting Down the OS” on page 37](#)

▼ Log In to Oracle ILOM

This procedure assumes that the SP is in the default configuration as described in the server's installation guide.

- **Open an SSH session and connect to the SP by specifying its IP address.**

The Oracle ILOM default username is root, and the default password is changeme.

```
% ssh root@xxx.xxx.xxx.xxx
Password: password (nothing displayed as you type)
...
Oracle(R) Integrated Lights Out Manager
Version 3.2.x.x
Copyright (c) 2016, Oracle and/or its affiliates. All rights reserved.
...
```

->

You are now logged in to Oracle ILOM. Perform tasks as needed by entering commands at the Oracle ILOM prompt.

Note - The server is provided with a default Administrator account (root) and a default password (changeme) to enable first-time login and access to Oracle ILOM. To build a secure environment, you must change the default password of the default Administrator account as soon as possible after your initial login to Oracle ILOM. If you find this default Administrator account has already been changed, contact your system administrator to obtain an Oracle ILOM user account with Administrator privileges.

Related Information

- [“Oracle ILOM Overview” on page 11](#)
- [“Start the Host Console” on page 26](#)

▼ Start the Host Console

- **At the Oracle ILOM prompt, type:**

-> **start /HOST/console [-option]**

where *option* can be:

-f | -force Enables a user with a console (c) role to take control of the console from any current user and force that user into view mode. If you use this option, other users receive warnings that their connections have been forced into read-only mode. When a user ends a console session that used the force option, read-write status is restored to the next user in line, with the most recent user’s read-write status being restored first.

-script Bypasses the confirmation prompt to start the console.

After the host console has started you see system console output if Oracle Solaris is running. The OpenBoot ok prompt displays if Oracle Solaris is not running.

Related Information

- [“Display the Oracle ILOM Prompt” on page 27](#)
- [“Oracle ILOM Remote System VNC Console” on page 27](#)
- [“Log In to Oracle ILOM” on page 25](#)

Access the OpenBoot Prompt

You can access the OpenBoot CLI in several ways, and the method you use is determined by the state of the server.

See [“Obtaining the OpenBoot Prompt” on page 42](#) for instructions.

▼ Display the Oracle ILOM Prompt

- Display the Oracle ILOM prompt in one of these ways:
 - From the system console, type the Oracle ILOM escape sequence `#.` (Hash-Dot).
 - Log in to Oracle ILOM directly from a device connected to the SER MGT port.
 - Log in to Oracle ILOM through an SSH connection if a network is connected to the NET MGT port.
See [“Log In to Oracle ILOM” on page 25](#).

Related Information

- [“Oracle ILOM Overview” on page 11](#)
- [“Log In to Oracle ILOM” on page 25](#)

Oracle ILOM Remote System VNC Console

Oracle ILOM Remote System VNC Console is an implementation of the Virtual Network Computing (VNC) system. It enables you to remotely redirect the host server keyboard, video, and mouse (KVM) events to a graphical shared desktop display.

Note - Oracle ILOM also provides Oracle ILOM Remote System Console Plus, but the servers only support this for serial line redirection. The servers do not support the older Oracle ILOM Remote System Console and Oracle ILOM Storage Redirection CLI features.

To connect to the Oracle ILOM Remote System VNC Console, refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#).

Related Information

- [“Oracle ILOM In-Band \(Sideband\) Management” on page 70](#)

Controlling the Server

These topics describe how to control basic server operations.

- [“Powering the Server On and Off” on page 29](#)
- [“Resetting the Server and SP” on page 34](#)

Related Information

- [“Booting and Shutting Down the OS” on page 37](#)

Powering the Server On and Off

There are several ways to power the server on and off. Use the tasks that best suit your situation.

Description	Links
Power the server on or off using the Oracle ILOM CLI.	“Power On the Server (Oracle ILOM CLI)” on page 30
	“Power Off the Server (Oracle ILOM CLI)” on page 30
Power the server on or off using the Oracle ILOM web interface.	“Power On the Server (Oracle ILOM Web Interface)” on page 31
	“Power Off the Server (Oracle ILOM Web Interface)” on page 32
Power the server on or off when the server is running Oracle VM for SPARC.	“Power On a Server With Multiple Active Domains (Oracle VM Server for SPARC)” on page 32
	“Power Off a Server With Multiple Active Domains (Oracle VM Server for SPARC)” on page 33

Related Information

- [“Resetting the Server and SP” on page 34](#)

▼ Power On the Server (Oracle ILOM CLI)

Note - By default, the host automatically attempts to boot when the host is reset or powered on. To learn about the parameters that control this action, see [“Configuring Boot Parameters” on page 47](#).

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM” on page 25](#).

2. At the Oracle ILOM prompt, type:

```
-> start /System
Are you sure you want to start /System (y/n) ? y
Starting /System
```

Note - To skip being prompted for confirmation, use the `start -script /System` command.

3. Start the host console to view host output.

```
-> start /HOST/console
Are you sure you want to start /HOST/console (y/n)? y
```

Related Information

- [“Power On the Server \(Oracle ILOM CLI\)” on page 30](#)
- [“Reset the Server \(Oracle Solaris\)” on page 35](#)
- [“Reset the Server \(Oracle ILOM\)” on page 35](#)

▼ Power Off the Server (Oracle ILOM CLI)

1. Log in to Oracle Solaris as a user with root privileges.

2. Shut down Oracle Solaris.

See one of these procedures:

- [“Shut Down the OS \(init Command\)” on page 40](#)
- [“Shut Down the OS \(shutdown Command\)” on page 41](#)

3. Switch from the system console prompt to the SP console prompt.

```
{0} ok #.  
->
```

4. From the Oracle ILOM prompt, type:

```
-> stop /System  
Are you sure you want to stop /System (y/n)? y  
Stopping /System  
  
->
```

Note - To perform an immediate shutdown, use the `stop -force /System` command. Ensure that all data is saved before typing this command.

Related Information

- [“Power On the Server \(Oracle ILOM Web Interface\)” on page 31](#)
- [“Reset the Server \(Oracle Solaris\)” on page 35](#)
- [“Reset the Server \(Oracle ILOM\)” on page 35](#)

▼ Power On the Server (Oracle ILOM Web Interface)

Note - By default, the host automatically attempts to boot when the host is reset or powered on. To learn about the parameters that control this action, see [“Configuring Boot Parameters” on page 47](#).

1. **Log in to the Oracle ILOM web interface.**
See [“Log In to Oracle ILOM” on page 25](#).
2. **On the Summary page, in the Actions panel, click the Power State Turn On button.**
3. **When prompted, click OK to confirm the action.**

Related Information

- [“Power On the Server \(Oracle ILOM CLI\)” on page 30](#)
- [“Reset the Server \(Oracle Solaris\)” on page 35](#)
- [“Reset the Server \(Oracle ILOM\)” on page 35](#)

▼ Power Off the Server (Oracle ILOM Web Interface)

1. **Log in to Oracle Solaris as a user with root privileges.**
2. **Shut down Oracle Solaris.**
See:
 - [“Shut Down the OS \(init Command\)” on page 40](#)
 - [“Shut Down the OS \(shutdown Command\)” on page 41](#)
3. **Log in to the Oracle ILOM web interface.**
4. **On the Summary page, in the Actions panel, click the Power State Turn Off button.**
5. **When prompted, click OK to confirm the action.**

Related Information

- [“Power On the Server \(Oracle ILOM CLI\)” on page 30](#)
- [“Reset the Server \(Oracle Solaris\)” on page 35](#)
- [“Reset the Server \(Oracle ILOM\)” on page 35](#)

▼ Power On a Server With Multiple Active Domains (Oracle VM Server for SPARC)

If the server is configured with multiple Oracle VM Server for SPARC domains, use this procedure to power on the server and restart the domains.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM” on page 25](#).
2. **Power on the host.**

```
-> start /System
Are you sure you want to start /System (y/n) ? y
Starting /System
-> start /HOST/console
Are you sure you want to start /HOST/console (y/n)? y
```
3. **Log in to Oracle Solaris as a user with root privileges.**

4. Start all of the nonprimary domains.

Starting a domain automatically binds the domain.

```
# ldm start-domain domain-name
< . . . >
```

5. Boot all of the nonprimary domains.

The method you use to access a domain depends on how you have configured the consoles for your domains.

Boot each domain the same way you boot a server. See [“Boot the OS \(Oracle ILOM\)” on page 39](#).

Related Information

- [“Power Off a Server With Multiple Active Domains \(Oracle VM Server for SPARC\)” on page 33](#)

▼ Power Off a Server With Multiple Active Domains (Oracle VM Server for SPARC)

If the server is configured with multiple Oracle VM for SPARC domains, use this procedure to shut down the domains and power off the server.

1. If needed, ensure that the domain configurations are saved to the SP.

```
# ldm add-config config-name
```

2. Access and shut down the OS in all of the nonprimary domains.

The method you use to access a domain depends on how you have configured the consoles for your domains.

To shut down the OS, see [“Shut Down the OS \(init Command\)” on page 40](#) or [“Shut Down the OS \(shutdown Command\)” on page 41](#).

a. From the primary domain, list the domains and their states.

```
# ldm ls
```

Note which domains are non-I/O domains or active I/O domains.

b. Stop and unbind all the non-I/O domains.

```
# ldm stop-domain domain-name
```

```
. . .
```

```
# ldm unbind domain-name
```

c. Stop and unbind any active I/O domains.

```
# ldm stop-domain domain-name
```

```
. . .
```

```
# ldm unbind domain-name
```

d. Verify that the nonprimary domains are inactive.

```
# ldm ls
```

3. Shut down the primary domain.

To shut down the OS, see [“Shut Down the OS \(init Command\)” on page 40](#) or [“Shut Down the OS \(shutdown Command\)” on page 41](#).

4. Switch from the system console prompt to the Oracle ILOM prompt.

```
{0} ok #.
```

```
->
```

5. From the Oracle ILOM prompt, type:

```
-> stop /System
```

```
Are you sure you want to stop /System (y/n)? y
```

```
Stopping /System
```

```
->
```

Note - To perform an immediate shutdown, use the `stop -force /System` command. Ensure that all data is saved before typing this command.

Related Information

- [“Power On a Server With Multiple Active Domains \(Oracle VM Server for SPARC\)” on page 32](#)

Resetting the Server and SP

Use these topics to reset the server or SP.

- [“Reset the Server \(Oracle Solaris\)” on page 35](#)
- [“Reset the Server \(Oracle ILOM\)” on page 35](#)
- [“Reset the SP” on page 36](#)

Related Information

- [“Powering the Server On and Off” on page 29](#)

▼ Reset the Server (Oracle Solaris)

It is not necessary to power the server off and on to perform a reset.

Note - By default, the host automatically attempts to boot when the host is reset or powered on. To learn about the parameters that control this action, see [“Configuring Boot Parameters” on page 47](#).

1. **Log in to Oracle Solaris as a user with root privileges.**
2. **Reset the server from the Oracle Solaris prompt, by typing one of these commands:**

- `# shutdown -g0 -i6 -y`
- `# reboot`

Related Information

- [“Power Off the Server \(Oracle ILOM CLI\)” on page 30](#)
- [“Power On the Server \(Oracle ILOM Web Interface\)” on page 31](#)
- [“Reset the Server \(Oracle ILOM\)” on page 35](#)

▼ Reset the Server (Oracle ILOM)

The Oracle ILOM reset command generates a graceful or forced hardware reset of the server. By default, the reset command gracefully resets the server.

Note - By default, the host automatically attempts to boot when the host is reset or powered on. To learn about the parameters that control this action, see [“Configuring Boot Parameters” on page 47](#).

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM” on page 25](#).

2. Type one of these commands to reset the server.

■ **Perform a graceful reset.**

```
-> reset /System
```

■ **If a graceful reset is not possible, perform a forced hardware reset.**

```
-> reset -force /System
```

Related Information

- [“Power On the Server \(Oracle ILOM CLI\)” on page 30](#)
- [“Power On the Server \(Oracle ILOM Web Interface\)” on page 31](#)
- [“Reset the Server \(Oracle Solaris\)” on page 35](#)
- [“Override OpenBoot Settings to Reset the Server” on page 57](#)

▼ **Reset the SP**

After the reset, your login session to the SP is terminated.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM” on page 25](#).

2. Reset the SP.

```
-> reset /SP
```

Related Information

- [“Log In to Oracle ILOM” on page 25](#)

Booting and Shutting Down the OS

These topics include instructions for booting and shutting down the OS. Instructions for obtaining the OpenBoot prompt are included, because some of these procedures are performed at that prompt.

- [“Booting and Shutting Down Oracle Solaris” on page 37](#)
- [“Obtaining the OpenBoot Prompt” on page 42](#)

Related Information

- [“Controlling the Server” on page 29](#)

Booting and Shutting Down Oracle Solaris

There are several ways to boot and shut down the OS.

Description	Links
Learn about the boot sequence.	“Boot Sequence” on page 38
Boot a server that is configured to boot at power-on (the default configuration) using Oracle ILOM.	“Boot the OS (Oracle ILOM)” on page 39
Boot a server that is at the OpenBoot prompt.	“Boot the OS Manually (OpenBoot)” on page 39
Shut down the OS using an Oracle Solaris command.	“Shut Down the OS (init Command)” on page 40
	“Shut Down the OS (shutdown Command)” on page 41

Related Information

- [“Powering the Server On and Off” on page 29](#)
- [“Obtaining the OpenBoot Prompt” on page 42](#)

Boot Sequence

In addition to controlling the power state of the host, you can also control how and when the OS is booted.

When the host is powered on, it can be in one of these states:

- **Booted** – The OS is running in one of these levels:
 - **3** – The OS is running in multiuser mode with all resources enabled.
 - **S** – The OS is running in single-user mode, and some resources are not enabled.
- **At the OpenBoot prompt** – The OS is not running. You communicate with the OpenBoot firmware on the host. See [“OpenBoot Prompt” on page 42](#).

By default, the host automatically attempts to boot when the host is reset or powered on. The host first seeks a local boot drive. If the host cannot boot from the drive, the host attempts to boot from the network. See [“Boot the OS \(Oracle ILOM\)” on page 39](#).

These steps describe the high-level boot sequence:

1. A host reset is initiated.
2. OpenBoot runs and OpenBoot parameters are read.

These are the primary OpenBoot parameters and default values that determine how the server boots (see [“View All OpenBoot Parameters” on page 51](#)):

 - `diag-switch? false`
 - `auto-boot? true`
 - `boot-device disk net`
3. A boot block is read from the boot device to locate a boot program.
4. The boot program loads the kernel into memory.
5. The kernel is executed and takes control.

You can configure booting parameters from the OS or at the ok prompt. You can also affect the boot behavior through Oracle ILOM.

Note - Each logical domain provides a virtualized form of OpenBoot commands.

These resources provide more information about the boot process and how to configure booting in Oracle Solaris:

- Oracle Solaris 11 – *Booting and Shutting Down Oracle Solaris on SPARC Platforms*
- Oracle Solaris 10 – *System Administration Guide: Basic Administration*

Note - Oracle Solaris 10 can only be used in guest domains on these servers.

Related Information

- [“Boot the OS \(Oracle ILOM\)” on page 39](#)
- [“Boot the OS Manually \(OpenBoot\)” on page 39](#)

▼ Boot the OS (Oracle ILOM)

By default, the host automatically attempts to boot when the host is reset or powered on.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM” on page 25](#).
2. **If the OpenBoot parameters are configured with default values, boot the host using one of these methods:**
 - **Oracle ILOM web interface – In Host Management > Power Control, select any of the reset, power on, or power cycle actions, and click Save.**
 - **Oracle ILOM CLI – Type:**

```
-> reset /System
```

Note - If the OpenBoot parameters are not configured with default values, when you reset the host, the host might stop at the OpenBoot prompt. To boot from the OpenBoot prompt, see [“Boot the OS Manually \(OpenBoot\)” on page 39](#).

Related Information

- [“Boot the OS Manually \(OpenBoot\)” on page 39](#)
- [“Boot Sequence” on page 38](#)

▼ Boot the OS Manually (OpenBoot)

Use this procedure when you are at the OpenBoot prompt, and you want to boot the OS.

1. **Obtain the OpenBoot prompt.**

See [“Obtaining the OpenBoot Prompt” on page 42.](#)

2. **Boot the host using one of these methods:**

- **Boot from the devices specified in the OpenBoot `boot-device` parameter.**

```
ok boot
```

- **Specify a device to boot from.**

```
ok boot boot_device
```

where `boot_device` is a valid device from which to boot. For a list of valid devices, see [“OpenBoot Configuration Parameters” on page 51.](#)

Related Information

- [“Boot the OS \(Oracle ILOM\)” on page 39](#)
- [“Boot Sequence” on page 38](#)

▼ Shut Down the OS (`init` Command)

The `init` command is an executable shell script that terminates all active processes on a system and then synchronizes the disks before changing run levels. Specifying run level `0` shuts down the OS and displays the OpenBoot prompt.

1. **Log in to Oracle Solaris as a user with root privileges.**
2. **Shut down the OS.**

Note - This document applies to several server products. The following example is based on the SPARC S7-2 server. Your output might vary from the examples based on your product.

```
# init 0
# svc.startd: The system is coming down. Please wait.
svc.startd: 126 system services are now being stopped.
Sep 21 13:31:31 systemA.xxxxx.com syslogd: going down on signal 15
svc.startd: Killing user processes.
Sep 21 13:31:37 The system is down. Shutdown took 23 seconds.
syncing file systems... done
Program terminated
```



```
SPARC S7-2, No Keyboard
...
{0} ok
```

Related Information

- [“Shut Down the OS \(shutdown Command\)” on page 41](#)

▼ Shut Down the OS (shutdown Command)

The shutdown command sends a warning message, then terminates active processes on a system to reach a specified run level. Specifying run level 0 shuts down the OS and displays the OpenBoot prompt.

1. **Log in to Oracle Solaris as a user with root privileges.**
2. **Shut down the OS.**

In this example, these command options shut down the OS to the OpenBoot prompt:

- `-g0` – Specifies a grace period of 0 seconds.
- `-i0` – Specifies the run level 0, which is equivalent to the `init 0` command.
- `-y` – Pre-answers the confirmation question so that the command runs without user intervention.

Note - This document applies to several server products. The following example is based on the SPARC S7-2 server. Your output might vary from the examples based on your product.

```
# shutdown -g0 -i0 -y
# svc.startd: The system is coming down. Please wait.
svc.startd: 106 system services are now being stopped.
Sep 12 17:52:11 systemA syslogd: going down on signal 15
svc.startd: The system is down.
syncing file systems...done
Program terminated
```

```
SPARC S7-2, No Keyboard
...
{0} ok
```

Related Information

- [“Shut Down the OS \(init Command\)” on page 40](#)

Obtaining the OpenBoot Prompt

There are several ways to reach the OpenBoot prompt (ok).

Note - If you have any problems reaching the OpenBoot Prompt by your chosen method, refer to the *Oracle OpenBoot 4.x Administration Guide* at <http://www.oracle.com/goto/openboot/docs>.

- “OpenBoot Prompt” on page 42
- “Obtain the OpenBoot Prompt (Oracle Solaris)” on page 43
- “Obtain the OpenBoot Prompt (Oracle ILOM CLI)” on page 44
- “Obtain the OpenBoot Prompt (Oracle ILOM Web Interface)” on page 45

Related Information

- “Log In to Oracle ILOM” on page 25
- “Booting and Shutting Down Oracle Solaris” on page 37

OpenBoot Prompt

When the host is powered on but the OS is not booted, you communicate with the OpenBoot firmware. OpenBoot firmware displays ok as its prompt.

For more details about OpenBoot, refer to the *Oracle OpenBoot 4.x Administration Guide* at <http://www.oracle.com/goto/openboot/docs>.

This table lists the common tasks that are performed at the ok prompt.

Task	For More Information
Boot the host.	“Boot the OS Manually (OpenBoot)” on page 39
Configure OpenBoot parameters.	“View All OpenBoot Parameters” on page 51 “Change the Default Boot Device (OpenBoot)” on page 48
Run diagnostics.	Refer to the service manual for your server, detecting and managing faults.
Reset and power off the host.	At the OpenBoot prompt, type help reset to display details about the reset command.

Task	For More Information
Eject media.	At the OpenBoot prompt, type help eject to display details about the eject command.

Related Information

- [“Obtain the OpenBoot Prompt \(Oracle Solaris\)” on page 43](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM CLI\)” on page 44](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM Web Interface\)” on page 45](#)

▼ Obtain the OpenBoot Prompt (Oracle Solaris)

Use this procedure when you want to shut down the OS and reach the ok prompt.

1. **Log in to Oracle Solaris as a user with root privileges.**
2. **Shut down the OS.**

```
# shutdown -g0 -i0 -y
```

```
Shutdown started.    Wed Sep 19 15:17:45 PDT 2012
```

```
Changing to init state 0 - please wait
Broadcast Message from root (console) on systemA.com Wed Sep 19 15:17:45...
THE SYSTEM systemA.com IS BEING SHUT DOWN NOW ! ! !
Log off now or risk your files being damaged
```

```
root@systemA:~# svc.startd: The system is coming down. Please wait.
svc.startd: 126 system services are now being stopped.
Sep 19 15:18:01 systemA.com syslogd: going down on signal 15
svc.startd: Killing user processes.
Sep 19 15:18:07 The system is down. Shutdown took 22 seconds.
syncing file systems... done
Program terminated
...
{0} ok
```

The OS is shut down and the OpenBoot prompt (ok) is displayed.

Related Information

- [“OpenBoot Overview” on page 16](#)

- [“Configuring Boot and Restart Behavior” on page 47](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM CLI\)” on page 44](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM Web Interface\)” on page 45](#)

▼ Obtain the OpenBoot Prompt (Oracle ILOM CLI)

Use this procedure when the host is powered down and you are logged into Oracle ILOM.

- 1. Log in to Oracle ILOM.**

See [“Log In to Oracle ILOM” on page 25](#).

- 2. Change the auto-boot? parameter to false.**

```
-> set /HOST/bootmode script="setenv auto-boot? false"
```

This command temporarily prevents the OS from booting before you obtain the OpenBoot prompt. This change applies only to a single reset and expires in 10 minutes if the power on the host is not reset.

- 3. Reset the host.**

```
-> reset /System
```

- 4. Switch communication to the host.**

```
-> start /HOST/console
```

```
Are you sure you want to start /HOST/console (y/n)? y  
Serial console started. To stop, type #.
```

The server might take several minutes to complete POST and then displays the OpenBoot prompt.

Related Information

- [“OpenBoot Overview” on page 16](#)
- [“Configuring Boot and Restart Behavior” on page 47](#)
- [“Obtain the OpenBoot Prompt \(Oracle Solaris\)” on page 43](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM Web Interface\)” on page 45](#)

▼ Obtain the OpenBoot Prompt (Oracle ILOM Web Interface)

Use this procedure when the host is powered down, and you want to get to the ok prompt when the host is powered on.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM” on page 25](#).

2. In the Oracle ILOM web interface, in the left navigation pane, choose Host Management → Host Boot Mode.

The Host Boot Mode page is displayed.

3. For Script, type: `setenv auto-boot? false`

This setting configures the host to stop at the OpenBoot prompt instead of automatically booting the preinstalled OS.

Click Save to save this new setting.

4. In the left navigation panel, choose Host Management → Power Control.

5. Choose Reset from the pull-down menu, and click Save.

6. In the left navigation panel, choose Remote Control → Redirection.

7. Select Use Serial Redirection, and click Launch Remote Console.

As the host resets, messages are displayed in the serial console. The OpenBoot prompt is displayed when the reset activity completes.

Related Information

- [“OpenBoot Overview” on page 16](#)
- [“Configuring Boot and Restart Behavior” on page 47](#)
- [“Obtain the OpenBoot Prompt \(Oracle Solaris\)” on page 43](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM CLI\)” on page 44](#)

Configuring Boot and Restart Behavior

Use OpenBoot and Oracle Solaris commands to reconfigure the server's boot and restart behavior permanently or temporarily. Oracle ILOM boot mode properties can help specify how the host boots, enabling you to correct a problem with the current settings in OpenBoot or Oracle VM Server for SPARC.

- [“Configuring Boot Parameters” on page 47](#)
- [“Boot Mode Overview \(Oracle ILOM\)” on page 54](#)
- [“Configure the Host Boot Mode \(Oracle VM Server for SPARC\)” on page 54](#)
- [“Change the Host Boot Mode Behavior at Reset \(Oracle ILOM\)” on page 55](#)
- [“Manage the Host Boot Mode Script \(Oracle ILOM\)” on page 56](#)
- [“Display the Host Boot Mode Expiration Date \(Oracle ILOM\)” on page 57](#)
- [“Override OpenBoot Settings to Reset the Server” on page 57](#)
- [“Server Restart Behavior Configuration \(Oracle ILOM\)” on page 58](#)

Related Information

- [“Booting and Shutting Down the OS” on page 37](#)

Configuring Boot Parameters

These topics describe how to change the default boot configuration.

For more comprehensive information about customizing how the server boots, refer to the Oracle Solaris documentation for your release.

- [“Change the Default Boot Device \(OpenBoot\)” on page 48](#)
- [“Enable or Disable Automatic Booting \(OpenBoot\)” on page 49](#)

- [“Enable or Disable Automatic Booting \(Oracle Solaris\)” on page 50](#)
- [“View All OpenBoot Parameters” on page 51](#)
- [“OpenBoot Configuration Parameters” on page 51](#)
- [“printenv Output” on page 52](#)

Related Information

- [“Booting and Shutting Down the OS” on page 37](#)

▼ Change the Default Boot Device (OpenBoot)

Use this procedure to configure OpenBoot to boot from a specific device. This change is permanent but only takes effect after a reset.

- 1. Obtain the ok prompt.**

See one of these tasks:

- [“Obtain the OpenBoot Prompt \(Oracle Solaris\)” on page 43](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM Web Interface\)” on page 45](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM CLI\)” on page 44](#)

- 2. Determine the name of the desired boot device.**

To see names of devices, type:

```
ok devalias
```

- 3. Configure the boot-device parameter with your desired boot device.**

```
ok setenv boot-device boot_device
```

where *boot_device* is a valid device from which to boot.

- 4. Reset the host.**

```
ok reset-all
```

Related Information

- [“printenv Output” on page 52](#)

▼ Enable or Disable Automatic Booting (OpenBoot)

Use this procedure to configure OpenBoot so that a host reset or power on either attempts to boot automatically, or not. This change is permanent but only takes effect after a host reset.

Note - To enable automatic booting of the OS, the Oracle ILOM auto-boot property also must be enabled. You can change the Oracle ILOM auto-boot property at `/HOST/domain/control`.

1. Obtain the ok prompt.

See one of these tasks:

- [“Obtain the OpenBoot Prompt \(Oracle Solaris\)” on page 43](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM Web Interface\)” on page 45](#)
- [“Obtain the OpenBoot Prompt \(Oracle ILOM CLI\)” on page 44](#)

2. Set the OpenBoot auto-boot? parameter to true or false.

`true` (Default) The host automatically attempts to boot from the devices specified in boot-device.

`false` The host does not automatically boot. You can boot manually.

For example:

```
ok setenv auto-boot? false
```

3. Verify the change.

```
ok printenv auto-boot?
auto-boot? = false
```

4. Reset the host.

```
ok reset-all
```

The host resets. After initialization the host attempts to boot or not, based on your configuration.

Related Information

- [“printenv Output” on page 52](#)
- [“Enable or Disable Automatic Booting \(Oracle Solaris\)” on page 50](#)

▼ Enable or Disable Automatic Booting (Oracle Solaris)

While running Oracle Solaris, use this procedure to configure OpenBoot so that a host reset or power on either attempts to boot automatically, or not. This change is permanent but only takes effect after a host reset.

Note - To enable automatic booting of the OS, the Oracle ILOM auto-boot property also must be enabled. You can change the Oracle ILOM auto-boot property at `/HOST/domain/control`.

1. **Log in to Oracle Solaris and assume the root role.**
2. **Set the OpenBoot `auto-boot?` parameter to `true` or `false` using the `eeeprom` command.**

`true` (Default) The host automatically attempts to boot from the devices specified in `boot-device`.

`false` The host does not automatically boot. You can boot manually.

For example:

```
# eeeprom auto-boot?=false
```

3. **Verify the change.**

```
# eeeprom auto-boot?
auto-boot?=false
```

4. **Reset the host.**

```
# init 6
```

The host resets. After initialization the host attempts to boot or not, based on your configuration.

Related Information

- [“Enable or Disable Automatic Booting \(OpenBoot\)” on page 49](#)

▼ View All OpenBoot Parameters

1. View all of the OpenBoot parameters.

- From the OpenBoot prompt, type:

```
ok printenv
```

- From Oracle Solaris, type:

```
$ eeprom
```

2. View the value for an individual OpenBoot parameter.

- From the OpenBoot prompt, type:

```
ok printenv parameter
```

where *parameter* is a valid OpenBoot parameter.

- From Oracle Solaris, type:

```
$ eeprom parameter
```

where *parameter* is a valid OpenBoot parameter.

Related Information

- [“OpenBoot Configuration Parameters” on page 51](#)
- [“printenv Output” on page 52](#)

OpenBoot Configuration Parameters

Parameter	Default Value	Description
auto-boot-on-error?	false	Controls whether or not the host attempts to boot after POST detects a nonrecoverable error. <ul style="list-style-type: none"> ■ false – Host does not attempt to boot and stops at the ok prompt. ■ true – Host automatically attempts to boot.
auto-boot?	true	Controls whether or not the host automatically boots after a system reset or when the power is turned on.

Parameter	Default Value	Description
boot-command	boot	<ul style="list-style-type: none"> ■ <code>true</code> – Host automatically attempts to boot from the devices specified in <code>boot-device</code>. ■ <code>false</code> – Host does not attempt to boot and stops at the ok prompt.
		Specifies the command to be executed when <code>auto-boot?</code> is <code>true</code> . Valid boot commands: <ul style="list-style-type: none"> ■ <code>boot</code> – Boots kernel from devices specified in <code>boot-device</code>. ■ <code>boot net</code> – Boots kernel from the network. ■ <code>boot cdrom</code> – Boots kernel from the CD-ROM. ■ <code>boot disk1:h</code> – Boots from disk 1 partition h. ■ <code>boot tape</code> – Boots default file from tape. ■ <code>boot device-path</code> – Boots from the device specified as <i>device-path</i>. See “Locate Device Paths (OpenBoot)” on page 77.
boot-device	disk net	Contains the name of the default boot device that is used when OpenBoot is not in diagnostic mode.
boot-file		An optional parameter that provides boot arguments that are used when OpenBoot is not in diagnostic mode.
diag-switch?	false	If the value is <code>true</code> , runs in the Diagnostic mode.
network-boot-arguments		An optional parameter that enables you to set configuration parameters to be used by OpenBoot when you perform a WAN boot. Setting this parameter takes precedence over any default boot parameter values. Refer to the <code>eeeprom(1M)</code> man page for details.

Related Information

- [“printenv Output” on page 52](#)

printenv Output

This output is a sample from the OpenBoot command `printenv` on a SPARC S7-2 server. The output for each server might be different.

```
{0} ok printenv
```

Variable Name	Value	Default Value
<code>ttya-rtts-dtr-off</code>	<code>false</code>	<code>false</code>
<code>ttya-ignore-cd</code>	<code>true</code>	<code>true</code>
<code>keyboard-layout</code>		
<code>reboot-command</code>		
<code>security-mode</code>	<code>none</code>	No default
<code>security-password</code>		No default

security-#badlogins	0	No default
verbosity	min	min
diag-switch?	false	false
local-mac-address?	true	true
fcode-debug?	false	false
scsi-initiator-id	7	7
oem-logo		No default
oem-logo?	false	false
oem-banner		No default
oem-banner?	false	false
ansi-terminal?	true	true
screen-#columns	80	80
screen-#rows	34	34
ttya-mode	9600,8,n,1,-	9600,8,n,1,-
output-device	virtual-console	virtual-console
input-device	virtual-console	virtual-console
auto-boot-on-error?	false	false
load-base	16384	16384
auto-boot?	false	true
os-root-device		
network-boot-arguments		
boot-command	boot	boot
boot-file		
boot-device	/pci@300/pci@2/pci@0/pci ...	disk net
multipath-boot?	false	false
boot-device-index	0	0
use-nvramrc?	false	false
nvramrc		
error-reset-recovery	boot	boot

If any value in the printenv output is truncated, you can see the full entry by typing printenv followed by the variable name. For example:

```
{0} ok printenv boot-device
boot-device = /pci@302/pci@2/pci@0/pci@17/LSI,sas@0/disk@p2 disk net
```

Related Information

- [“OpenBoot Configuration Parameters” on page 51](#)

Boot Mode Overview (Oracle ILOM)

Boot mode (bootmode) properties enable you to override the default method the server uses when it boots. This ability is useful to override particular OpenBoot or Oracle VM Server for SPARC settings that might be incorrect, to set up OpenBoot variables using a script, or to perform similar tasks.

For example, if the OpenBoot settings have become corrupt, you can set the bootmode state property to `reset_nvram`, then reset the server to its factory default OpenBoot settings.

Service personnel might instruct you to use the bootmode script property for problem resolution. The full extent of script capabilities are not documented and exist primarily for debugging.

The bootmode command is intended only to correct a problem with the OpenBoot or Oracle VM Server for SPARC settings, so the new properties specified in this command take effect for a single boot only. Additionally, to prevent an administrator from setting a bootmode state property and forgetting about it, a bootmode state property expires if the host is not reset within 10 minutes of the bootmode state property being set.

Related Information

- [“Reset the Server \(Oracle Solaris\)” on page 35](#)
- [“Reset the Server \(Oracle ILOM\)” on page 35](#)
- [“OpenBoot Overview” on page 16](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)

▼ Configure the Host Boot Mode (Oracle VM Server for SPARC)

Note - You must use a valid Oracle VM Server for SPARC configuration name for this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM” on page 25](#).
2. **Determine the valid Oracle VM Server configurations on your SP.**

```
-> show /HOST/domain/configs
```

3. Set the boot mode configuration at the Oracle ILOM prompt.

```
-> set /HOST/bootmode config=configname
```

where *configname* is a valid named logical domain configuration.

For example, if you created a Oracle VM Server configuration called `ldm-set1`:

```
-> set /HOST/bootmode config=ldm-set1
```

To return the boot mode config to the factory default configuration, specify `factory-default`:

```
-> set /HOST/bootmode config=factory-default
```

4. Stop and start the system for the configuration change to take effect.

```
-> stop /System
```

```
-> start /System
```

Related Information

- [“Reset the Server \(Oracle ILOM\)” on page 35](#)
- [“Boot Mode Overview \(Oracle ILOM\)” on page 54](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)

▼ Change the Host Boot Mode Behavior at Reset (Oracle ILOM)

The `/HOST/bootmode` state property controls how OpenBoot NVRAM variables are used. Normally the current settings of these variables are retained. Setting `/HOST/bootmode state=reset_nvram` changes the OpenBoot NVRAM variables to their default settings at the next reset.

● At the Oracle ILOM prompt, type:

```
-> set /HOST/bootmode state=value
```

where *value* is one of the following:

`normal` At next reset, retains current NVRAM variable settings.

`reset_nvram` At next reset, returns OpenBoot variables to default settings.

Note - The `state=reset_nvram` property returns to normal after the next server reset or 10 minutes. (See [“Display the Host Boot Mode Expiration Date \(Oracle ILOM\)” on page 57.](#)) The `config` and `script` properties do not expire. Those two properties are cleared when the server resets or when you clear them manually by setting *value* to "" (empty quotes which indicates an empty script).

Related Information

- [“Reset the Server \(Oracle ILOM\)” on page 35](#)
- [“Boot Mode Overview \(Oracle ILOM\)” on page 54](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)

▼ Manage the Host Boot Mode Script (Oracle ILOM)

- **At the Oracle ILOM prompt, type:**

```
-> set /HOST/bootmode script=value
```

where `script` controls the host server's firmware OpenBoot method of booting. Note that `script` does not affect the current `/HOST/bootmode` setting.

value can be up to 64 bytes in length.

You can specify a `/HOST/bootmode` setting and set the script within the same command. For example:

```
-> set /HOST/bootmode state=reset_nvram script="setenv diag-switch? true"
```

After the server resets and OpenBoot reads the value of the `state` property, all OpenBoot variables are set to the default values. Then OpenBoot reads the value of the `script` property, and sets the `diag-switch?` variable to the user-requested value of `true`.

Note - If you set `/HOST/bootmode script=""`, Oracle ILOM sets the script to empty.

Related Information

- [“Reset the Server \(Oracle ILOM\)” on page 35](#)
- [“Boot Mode Overview \(Oracle ILOM\)” on page 54](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)

▼ Display the Host Boot Mode Expiration Date (Oracle ILOM)

- At the Oracle ILOM prompt, type:

```
-> show /HOST/bootmode expires
Properties:
    expires = Tue May 10 18:24:16 2016
```

The value shown for expires is the date and time when the current boot mode will expire. The expires property is not set unless bootmode state was changed to reset_nvram.

Related Information

- [“Reset the Server \(Oracle ILOM\)” on page 35](#)
- [“Boot Mode Overview \(Oracle ILOM\)” on page 54](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)

▼ Override OpenBoot Settings to Reset the Server

Use this procedure to override the OpenBoot settings and initiate reboot of the control domain, which results in the host booting to the OpenBoot prompt.

- At the Oracle ILOM prompt, type:

```
-> set /HOST/domain/control auto-boot=disabled
-> reset /HOST/domain/control [-force] [-script]
```

The host reboots and stops at the OpenBoot prompt.

Related Information

- [“Change the Host Boot Mode Behavior at Reset \(Oracle ILOM\)” on page 55](#)
- [“Configuring Boot and Restart Behavior” on page 47](#)
- [“Boot Mode Overview \(Oracle ILOM\)” on page 54](#)
- [“Oracle VM Server for SPARC Overview” on page 18](#)

Server Restart Behavior Configuration (Oracle ILOM)

In addition to making temporary changes in boot behavior, you can also use Oracle ILOM to set how the host behaves when an error is encountered. For details about these options, refer to the section on setting boot behavior on a SPARC server in the *Configuration and Maintenance Guide* for your Oracle ILOM release.

Related Information

- [“Resetting the Server and SP” on page 34](#)

Changing Server Identification Information

This topic describes how to store information (for purposes such as inventory control or site resource management) on the SP using the Oracle ILOM CLI interface.

- [“Change Server Identifier Information” on page 59](#)

Related Information

- [“Turn On the Locator LED” on page 83](#)

▼ Change Server Identifier Information

Use the `/SP system_identifier` property to store customer identification information. This identifier string is encoded in all trap messages generated by SNMP. Assigning unique system identifiers to your servers can be useful in distinguishing which system generates each SNMP message.

- **At the Oracle ILOM prompt, type:**

```
-> set /SP system_identifier="data"
```

Note - You must enclose the identifier data string (*data*) in quote marks.

Related Information

- [“Log In to Oracle ILOM” on page 25](#)

Configuring Policy Settings

These topics describe managing configuration policies using Oracle ILOM.

- [“Specify Cooldown Mode” on page 61](#)
- [“Restore the Host Power State at Restart” on page 62](#)
- [“Specify the Host Power State at Restart” on page 63](#)
- [“Disable or Enable the Host Power-On Delay” on page 63](#)
- [“Specify Parallel Boot of the SP and Host” on page 64](#)
- [“Specify Host Virtual Keyswitch Behavior” on page 64](#)
- [“Reset the Values in the SP to Default Values” on page 65](#)

Related Information

- [“Configuring Boot and Restart Behavior” on page 47](#)

▼ Specify Cooldown Mode

Some servers support the host cooldown mode, but not all. Setting the `HOST_COOLDOWN` property to `enabled` causes the server to enter cooldown mode while the host is powering off. The cooldown mode directs Oracle ILOM to monitor certain components to ensure that they are below a minimum temperature, to prevent harm to the user if internal components are accessed.

Once the components are below the threshold temperature, power is removed from the server, which enables the cover interlock switch to release. If the monitored temperatures take longer than four minutes to reach the threshold, the host turns off.

● At the Oracle ILOM prompt, type:

```
-> set /SP/policy HOST_COOLDOWN=value
```

where *value* can be:

enabled	Server cools certain components before powering off.
---------	--

disabled

Component temperatures are not monitored during power off.

Related Information

- [“Power Off the Server \(Oracle ILOM Web Interface\)” on page 32](#)
- [“Power Off the Server \(Oracle ILOM CLI\)” on page 30](#)

▼ Restore the Host Power State at Restart

Use the `/SP/policy HOST_LAST_POWER_STATE` property to control the behavior of the server after an unexpected power outage. When external power is restored, Oracle ILOM starts to run automatically. Normally, the host power is not turned on until you use Oracle ILOM to turn it on.

Oracle ILOM records the current power state of the server in nonvolatile storage. If the `HOST_LAST_POWER_STATE` policy is enabled, Oracle ILOM can restore the host to the previous power state. This policy is useful in the event of a power failure, or if you physically move the server to a different location.

For example, if the host server is running when power is lost and the `/SP/policy HOST_LAST_POWER_STATE` property is set to disabled, the host server remains off when power is restored. If the `/SP/policy HOST_LAST_POWER_STATE` property is set to enabled, the host server restarts when the power is restored.

● At the Oracle ILOM prompt, type:

```
-> set /SP/policy HOST_LAST_POWER_STATE=value
```

where *value* can be:

enabled

When power is restored, returns the server to the state it was in before the power was removed.

disabled

(Default) Keeps the server off when power is applied.

If you enable `HOST_LAST_POWER_STATE`, you should also configure `/SP/policy HOST_POWER_ON_DELAY`. See [“Disable or Enable the Host Power-On Delay” on page 63](#).

Related Information

- [“Disable or Enable the Host Power-On Delay” on page 63](#)

- [“Specify the Host Power State at Restart” on page 63](#)

▼ Specify the Host Power State at Restart

Use the `/SP/policy HOST_AUTO_POWER_ON` property to power on the host when external power is applied to the server. If this policy is set to enabled, the SP sets `HOST_LAST_POWER_STATE` to disabled.

- **At the Oracle ILOM prompt, type:**

```
-> set /SP/policy HOST_AUTO_POWER_ON=value
```

where *value* can be:

enabled	When power is applied, automatically powers on the server when the SP has been booted.
disabled	(Default) Keeps the server powered off when power is applied.

Related Information

- [“Restore the Host Power State at Restart” on page 62](#)
- [“Disable or Enable the Host Power-On Delay” on page 63](#)

▼ Disable or Enable the Host Power-On Delay

Use the `/SP/policy HOST_POWER_ON_DELAY` property to cause the server to wait for a short time before powering on automatically. The delay is a random interval of one to five seconds. Delaying the server power-on helps minimize current surges on the main power source. This power-on delay is important when multiple servers in racks power on after a power outage.

- **At the Oracle ILOM prompt, type:**

```
-> set /SP/policy HOST_POWER_ON_DELAY=value
```

where *value* can be:

enabled	Causes the server to wait for a short time before powering on automatically.
disabled	(Default) Server powers on automatically without a delay.

Related Information

- [“Specify the Host Power State at Restart” on page 63](#)

▼ Specify Parallel Boot of the SP and Host

The `/SP/policy PARALLEL_BOOT` property enables the host to boot and power on in parallel with the SP. When enabled, parallel booting occurs if an auto-power policy (`HOST_AUTO_POWER_ON` or `HOST_LAST_POWER_STATE`) was on or if a user presses the power button while the SP is in the process of booting. Oracle ILOM must be running in order to enable the host to power on in these situations. When this property is set to disabled, the SP boots first, then the host boots.

- **At the Oracle ILOM prompt, type:**

```
-> set /SP/policy PARALLEL_BOOT=value
```

where *value* can be:

enabled	SP and host boot concurrently.
---------	--------------------------------

disabled	SP and host boot serially.
----------	----------------------------

Related Information

- [“Power On the Server \(Oracle ILOM Web Interface\)” on page 31](#)
- [“Power On the Server \(Oracle ILOM CLI\)” on page 30](#)
- [“Power Off the Server \(Oracle ILOM Web Interface\)” on page 32](#)
- [“Power Off the Server \(Oracle ILOM CLI\)” on page 30](#)

▼ Specify Host Virtual Keyswitch Behavior

Use the `/HOST keyswitch_state` property to control the position of the virtual keyswitch.

- **At the Oracle ILOM prompt, type:**

```
-> set /HOST keyswitch_state=value
```

where *value* can be:

normal	(Default) The server can power itself on and start the boot process.
--------	--

standby	Powers off the host and disables power-on.
diag	Host power-on is allowed. This value overrides the settings of /HOST/ diag <i>target</i> , resulting in Max POST being executed.
locked	Host power-on is allowed but you are prohibited from updating flash devices or setting /HOST send_break_action=break.

Related Information

- [“Power On the Server \(Oracle ILOM Web Interface\)” on page 31](#)
- [“Power On the Server \(Oracle ILOM CLI\)” on page 30](#)
- [“Power Off the Server \(Oracle ILOM Web Interface\)” on page 32](#)
- [“Power Off the Server \(Oracle ILOM CLI\)” on page 30](#)

▼ Reset the Values in the SP to Default Values

If your SP becomes corrupt, or you want to reset the SP to the factory default values, you must change the /SP reset_to_defaults setting, then power off the host to implement the changes. This behavior is different than in some past products, where you did not have to power off the host to reset default values to the SP.

You need administrator permissions to perform this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM” on page 25](#).

2. Reset the SP to the default values.

```
-> set /SP reset_to_defaults=value
```

where *value* can be:

all	Removes all of the SP configuration data.
factory	Changes SP and OpenBoot to factory default configuration and clears all SP log files.

3. Power off and restart the host to complete the setting change.

```
-> stop /System
```

-> **reset /SP**

Related Information

- [“Power Off the Server \(Oracle ILOM CLI\)” on page 30](#)

Configuring SP and Host Network Addresses

These topics describe managing network addresses with Oracle ILOM.

- [“SP Network Address Options” on page 67](#)
- [“Disable or Enable Network Access to the SP” on page 68](#)
- [“Display the SP Network Parameters” on page 68](#)
- [“Display the Host MAC Address” on page 69](#)
- [“Connecting to the SP \(In-Band\)” on page 70](#)

Related Information

- [“Matching Devices to Device Names” on page 73](#)

SP Network Address Options

You can access the SP on your server in multiple ways. Consider the following options and choose the access method that is best for your environment.

You can physically connect to the SP using a serial connection or a network connection. The network connection can be configured to use a static IP address or DHCP (the default). Optionally, the servers can use an in-band network connection to the SP, rather than the default out-of-band NET MGT port.

For more information on each option, refer to this documentation:

- To use a serial connection to the SP, refer to the information about connecting a terminal or emulator to the SER MGT port in the installation guide for the server.
- To assign a static IP address to the SP, refer to the information about assigning a static IP address to the NET MGT port in the installation guide for the server.
- To use an in-band connection to the SP, see [“Oracle ILOM In-Band \(Sideband\) Management” on page 70](#).

Related Information

- [Oracle ILOM Documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)
- “Oracle ILOM Overview” on page 11
- “Log In to Oracle ILOM” on page 25

▼ Disable or Enable Network Access to the SP

By default, network access to the SP is enabled and DHCP is used to obtain an IP address for the SP. You can disable or enable network access.

- **At the Oracle ILOM prompt, type:**

```
-> set /SP/network state=value
```

where *value* can be:

enabled	(Default) The SP can be accessed from the network.
disabled	The SP cannot be accessed from the network. You can only use the SER MGT serial connection.

Related Information

- “Log In to Oracle ILOM” on page 25
- “SP Network Address Options” on page 67

▼ Display the SP Network Parameters

This procedure displays information such as the network address for the SP.

1. **At the Oracle ILOM prompt, type:**

```
-> show /SP/network
```

To display IPv6 properties:

```
-> show /SP/network/ipv6
```

2. **Find the relevant property in the output.**

- For the IP address of the SP, find the `ipaddress` property in the output. For example:

```
ipaddress = 10.15.153.17
```

- For the IP address of the DHCP server that provided the dynamic IP address requested by the SP, find the `dhcp_server_ip` property in the output. For example:

```
dhcp_server_ip = 10.15.117.2
```

3. (Optional) Display the value of a single property:

```
-> show /SP/network property-name
```

For example:

```
-> show /SP/network ipgateway
```

```
/SP/network
Properties:
  ipgateway = 10.15.153.1
```

Related Information

- [“Log In to Oracle ILOM” on page 25](#)
- [“Display the Host MAC Address” on page 69](#)

▼ Display the Host MAC Address

The `/HOST macaddress` property is automatically configured by the server software, so you cannot set or change the property. The value is read and determined from the server's removable system configuration card (SCC PROM) and then stored as a property in Oracle ILOM.

The value displayed for `/HOST macaddress` is for the server's NET 0 port. For each additional port, the MAC addresses increments from that NET 0 value. For example, the MAC address for NET 1 is the NET 0 MAC address plus one (1).

- **At the Oracle ILOM prompt, type:**

```
-> show /HOST macaddress
```

Related Information

- [“Log In to Oracle ILOM” on page 25](#)
- [“Display the SP Network Parameters” on page 68](#)

Connecting to the SP (In-Band)

These topics describe how to use an in-band, or sideband connection, to the SP.

- [“Oracle ILOM In-Band \(Sideband\) Management” on page 70](#)
- [“Configure SP In-Band \(Sideband\) Access” on page 71](#)

Related Information

- [“Accessing the Server” on page 25](#)

Oracle ILOM In-Band (Sideband) Management

By default, you connect to the server's SP from the network using the dedicated out-of-band NET MGT port. The Oracle ILOM sideband management feature enables you to select one of the server's 10 Gigabit Ethernet ports to send and receive Oracle ILOM commands to and from the server SP. These in-band ports, also called sideband ports, are named NET 0, NET 1, NET 2, and NET 3.

The advantage of using a sideband management port to connect to the server's SP is that one fewer cable connection and one fewer network switch port are needed. In configurations where numerous servers are being managed, such as data centers, sideband management can represent a significant savings in hardware and network utilization.

When sideband management is enabled in Oracle ILOM, these conditions might occur:

- Connectivity to the server SP might be lost when the SP management port configuration is changed while you are connected to the SP using a network connection, such as SSH, web, or Oracle ILOM Remote Console.
- In-chip connectivity between the SP and the host OS might not be supported by the on-board host 10 Gigabit Ethernet controller. If this condition occurs, use a different port or route to transmit traffic between the source and destination targets instead of using L2 bridging or switching.
- Server host power cycles might cause a brief interruption of network connectivity for server 10 Gigabit Ethernet ports that are configured for sideband management. If this condition occurs, configure the adjacent switch or bridge ports as host ports.

Related Information

- [“Configure SP In-Band \(Sideband\) Access” on page 71](#)

- [“SP Network Address Options” on page 67](#)

▼ Configure SP In-Band (Sideband) Access

This procedure describes how to change the SP management port to an in-band (or sideband) host network port.

- 1. Connect to Oracle ILOM through the SER MGT port.**

Refer to the installation guide for your server to connect to the SER MGT port.

- 2. Log in to Oracle ILOM.**

See [“Log In to Oracle ILOM” on page 25](#).

- 3. If you logged in using the serial port, assign a static IP address to the SP.**

For instructions, refer to the information about assigning a static IP address in the installation guide for the server.

- 4. View the current network settings.**

```
-> show /SP/network
```

For example, in the output, you might find these properties:

```
managementport = MGMT
...
pendingmanagementport = MGMT
...
```

MGMT indicates the NET MGT port is the current port for the SP.

- 5. Set the SP management port to a sideband port.**

Specify a sideband port that has an active LAN connection.

```
-> set /SP/network pendingmanagementport=port
```

where *port* can be NET0, NET1, NET2, or NET3 for a sideband port.

- 6. Commit the network configuration change.**

```
->set /SP/network commitpending=true
```

- 7. Verify the change.**

-> **show /SP/network**

For example, in the output, you might find these new properties:

```
managementport = NET0  
...  
pendingmanagementport = NET0
```

Related Information

- [“Oracle ILOM In-Band \(Sideband\) Management” on page 70](#)
- [“SP Network Address Options” on page 67](#)

Matching Devices to Device Names

These topics explain how to identify drives and other devices on the server with names that are recognized by or displayed by software and firmware. The same physical device is known by different types of names in different contexts.

- [“Importance of Matching a Physical Device to a Name” on page 73](#)
- [“WWN Syntax” on page 74](#)
- [“Display Server Components \(Oracle ILOM\)” on page 74](#)
- [“Locate Device Paths \(OpenBoot\)” on page 77](#)
- [“probe-scsi-all Device Naming \(OpenBoot\)” on page 78](#)
- [“Correlate WWN Device Names With Physical Locations \(probe-scsi-all Command\)” on page 79](#)

Related Information

- [“Configuring SP and Host Network Addresses” on page 67](#)

Importance of Matching a Physical Device to a Name

You must correlate a logical device name with the device's physical location in the following situations:

- When downloading the OS over a network, you must specify the logical device name of the drive in slot 0 (the default boot device).
- When you run the Oracle Solaris `format` command, you must select one of the logical device names presented in the output. To ensure that you select the correct drive for an operation, you must correlate these logical device names with the physical drives.
- When you see a system message that lists a drive's logical device name, you might need to identify the physical slot in which the drive is installed.

Related Information

- [“WWN Syntax” on page 74](#)

WWN Syntax

Oracle Solaris uses the WWN (World Wide Name) syntax in place of the locally unique `tn` (target ID) field in logical device names. This change affects how device names can be mapped to specific SCSI devices. The following points are key to understanding the impact of this change:

- Before the change to WWN nomenclature, Oracle Solaris identified the default boot device as `c0t0d0`.
- With the change, the device identifier for the default boot device is now referred to as `c0tWWNd0`, where *WWN* is a hexadecimal value that is unique to this device throughout the world.
- This WWN value is assigned by the manufacturer of the device and, therefore, has a random relationship to the server's device tree structure.

Because WWN values do not conform to the traditional logical device name structure, you cannot directly identify a target device from its `cntWWNdn` value. Instead, you can use one of the following alternative methods to map WWN-based device names to physical devices.

- When the OS is not running, you can analyze the output of the OpenBoot command `probe-scsi-all`.
For example, you would analyze `probe-scsi-all` output when you want to identify a boot device.
- When the OS is running, you can analyze the output of the command `prtconf -v`.

Related Information

- [“probe-scsi-all Device Naming \(OpenBoot\)” on page 78](#)

▼ Display Server Components (Oracle ILOM)

The Oracle ILOM `show components` command displays real-time information about the components installed in the server. This information includes the target name for each component.

● **At the Oracle ILOM prompt, type:**

Note - This document applies to several server products. The following example is based on the SPARC S7-2 server. Your output might vary from the examples based on your product.

```
-> show components
```

Target	Property	Value
-----+-----		
+-----+-----		
/SYS/MB/CMP0	current_config_state	Enabled
/SYS/MB/CMP0/CLX/CLINK0	current_config_state	Enabled
/SYS/MB/CMP0/CLX/CLINK1	current_config_state	Enabled
/SYS/MB/CMP0/CLX/CLINK2	current_config_state	Enabled
/SYS/MB/CMP0/CLX/CLINK3	current_config_state	Enabled
/SYS/MB/CMP0/DAX0	current_config_state	Enabled
/SYS/MB/CMP0/DAX1	current_config_state	Enabled
/SYS/MB/CMP0/DAX2	current_config_state	Enabled
/SYS/MB/CMP0/DAX3	current_config_state	Enabled
/SYS/MB/CMP0/IOS0	current_config_state	Enabled
/SYS/MB/CMP0/IOS1	current_config_state	Enabled
/SYS/MB/CMP0/MCU0	current_config_state	Enabled
/SYS/MB/CMP0/MCU0/CH0	current_config_state	Enabled
/SYS/MB/CMP0/MCU0/CH0/D0	current_config_state	Enabled
/SYS/MB/CMP0/MCU0/CH0/D1	current_config_state	Enabled
/SYS/MB/CMP0/MCU0/CH1	current_config_state	Enabled
/SYS/MB/CMP0/MCU0/CH1/D0	current_config_state	Enabled
/SYS/MB/CMP0/MCU0/CH1/D1	current_config_state	Enabled
/SYS/MB/CMP0/MCU1	current_config_state	Enabled
/SYS/MB/CMP0/MCU1/CH0	current_config_state	Enabled
/SYS/MB/CMP0/MCU1/CH0/D0	current_config_state	Enabled
/SYS/MB/CMP0/MCU1/CH0/D1	current_config_state	Enabled
/SYS/MB/CMP0/MCU1/CH1	current_config_state	Enabled
/SYS/MB/CMP0/MCU1/CH1/D0	current_config_state	Enabled
/SYS/MB/CMP0/MCU1/CH1/D1	current_config_state	Enabled
/SYS/MB/CMP0/SCC0	current_config_state	Enabled
/SYS/MB/CMP0/SCC0/CORE0	current_config_state	Enabled
/SYS/MB/CMP0/SCC0/CORE1	current_config_state	Enabled
/SYS/MB/CMP0/SCC0/CORE2	current_config_state	Enabled
/SYS/MB/CMP0/SCC0/CORE3	current_config_state	Enabled
/SYS/MB/CMP0/SCC0/L2D0	current_config_state	Enabled
/SYS/MB/CMP0/SCC0/L2D1	current_config_state	Enabled
/SYS/MB/CMP0/SCC1	current_config_state	Enabled
/SYS/MB/CMP0/SCC1/CORE0	current_config_state	Enabled
/SYS/MB/CMP0/SCC1/CORE1	current_config_state	Enabled
/SYS/MB/CMP0/SCC1/CORE2	current_config_state	Enabled
/SYS/MB/CMP0/SCC1/CORE3	current_config_state	Enabled

/SYS/MB/CMP0/SCC1/L2D0	current_config_state	Enabled
/SYS/MB/CMP0/SCC1/L2D1	current_config_state	Enabled
/SYS/MB/CMP1	current_config_state	Enabled
/SYS/MB/CMP1/CLX/CLINK0	current_config_state	Enabled
/SYS/MB/CMP1/CLX/CLINK1	current_config_state	Enabled
/SYS/MB/CMP1/CLX/CLINK2	current_config_state	Enabled
/SYS/MB/CMP1/CLX/CLINK3	current_config_state	Enabled
/SYS/MB/CMP1/DAX0	current_config_state	Enabled
/SYS/MB/CMP1/DAX1	current_config_state	Enabled
/SYS/MB/CMP1/DAX2	current_config_state	Enabled
/SYS/MB/CMP1/DAX3	current_config_state	Enabled
/SYS/MB/CMP1/IOS0	current_config_state	Enabled
/SYS/MB/CMP1/IOS1	current_config_state	Enabled
/SYS/MB/CMP1/MCU0	current_config_state	Enabled
/SYS/MB/CMP1/MCU0/CH0	current_config_state	Enabled
/SYS/MB/CMP1/MCU0/CH0/D0	current_config_state	Enabled
/SYS/MB/CMP1/MCU0/CH0/D1	current_config_state	Enabled
/SYS/MB/CMP1/MCU0/CH1	current_config_state	Enabled
/SYS/MB/CMP1/MCU0/CH1/D0	current_config_state	Enabled
/SYS/MB/CMP1/MCU0/CH1/D1	current_config_state	Enabled
/SYS/MB/CMP1/MCU1	current_config_state	Enabled
/SYS/MB/CMP1/MCU1/CH0	current_config_state	Enabled
/SYS/MB/CMP1/MCU1/CH0/D0	current_config_state	Enabled
/SYS/MB/CMP1/MCU1/CH0/D1	current_config_state	Enabled
/SYS/MB/CMP1/MCU1/CH1	current_config_state	Enabled
/SYS/MB/CMP1/MCU1/CH1/D0	current_config_state	Enabled
/SYS/MB/CMP1/MCU1/CH1/D1	current_config_state	Enabled
/SYS/MB/CMP1/SCC0	current_config_state	Enabled
/SYS/MB/CMP1/SCC0/CORE0	current_config_state	Enabled
/SYS/MB/CMP1/SCC0/CORE1	current_config_state	Enabled
/SYS/MB/CMP1/SCC0/CORE2	current_config_state	Enabled
/SYS/MB/CMP1/SCC0/CORE3	current_config_state	Enabled
/SYS/MB/CMP1/SCC0/L2D0	current_config_state	Enabled
/SYS/MB/CMP1/SCC0/L2D1	current_config_state	Enabled
/SYS/MB/CMP1/SCC1	current_config_state	Enabled
/SYS/MB/CMP1/SCC1/CORE0	current_config_state	Enabled
/SYS/MB/CMP1/SCC1/CORE1	current_config_state	Enabled
/SYS/MB/CMP1/SCC1/CORE2	current_config_state	Enabled
/SYS/MB/CMP1/SCC1/CORE3	current_config_state	Enabled
/SYS/MB/CMP1/SCC1/L2D0	current_config_state	Enabled
/SYS/MB/CMP1/SCC1/L2D1	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH0/PCIE_LINK0	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH0/PCIE_LINK2	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH0/PCIE_LINK4	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH0/PCIE_LINK6	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH0/PCIE_LINK8	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH0/PCIE_LINK12	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH1/PCIE_LINK0	current_config_state	Enabled

/SYS/MB/PCIE_SWITCH1/PCIE_LINK2	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH1/PCIE_LINK4	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH1/PCIE_LINK5	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH1/PCIE_LINK6	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH1/PCIE_LINK7	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH1/PCIE_LINK8	current_config_state	Enabled
/SYS/MB/PCIE_SWITCH1/PCIE_LINK12	current_config_state	Enabled
/SYS/MB/RISER1/PCIE1	current_config_state	Enabled
/SYS/MB/RISER2/PCIE2	current_config_state	Enabled
/SYS/MB/RISER3/PCIE3	current_config_state	Enabled
/SYS/MB/RISER3/PCIE4	current_config_state	Enabled
/SYS/MB/USB_CTRL	current_config_state	Enabled
/SYS/MB/XGBE	current_config_state	Enabled

->

Related Information

- [“Locate Device Paths \(OpenBoot\)” on page 77](#)

▼ Locate Device Paths (OpenBoot)

1. **Display the OpenBoot prompt.**

See [“Obtaining the OpenBoot Prompt” on page 42.](#)

2. **From the OpenBoot prompt, type:**

Note - This document applies to several server products. The following example is based on the SPARC S7-2 server. Your output might vary from the examples based on your product.

```
ok devalias
fallback-miniroot    /pci@300/pci@1/pci@0/pci@2/usb@0/hub@2/storage@1/disk@0
rcdrom                /pci@300/pci@1/pci@0/pci@2/usb@0/hub@2/storage@1/disk@0
disk7                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p4
disk6                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p5
disk5                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p7
disk4                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p6
disk3                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p0
disk2                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p1
disk1                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p3
disk                  /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p2
disk0                 /pci@302/pci@2/pci@0/pci@14/LSI,sas@0/disk@p2
sas0                  /pci@302/pci@2/pci@0/pci@14/LSI,sas@0
sas                    /pci@302/pci@2/pci@0/pci@14/LSI,sas@0
```

```
nvme3          /pci@302/pci@2/pci@0/pci@7/nvme@0/disk@1
nvme2          /pci@302/pci@2/pci@0/pci@6/nvme@0/disk@1
nvme1          /pci@300/pci@2/pci@0/pci@5/nvme@0/disk@1
nvme0          /pci@300/pci@2/pci@0/pci@4/nvme@0/disk@1
net3           /pci@300/pci@1/pci@0/pci@1/network@0,3
net2           /pci@300/pci@1/pci@0/pci@1/network@0,2
net1           /pci@300/pci@1/pci@0/pci@1/network@0,1
net            /pci@300/pci@1/pci@0/pci@1/network@0
net0           /pci@300/pci@1/pci@0/pci@1/network@0
virtual-console /virtual-devices/console@1
name           aliases
```

Related Information

- [“Obtaining the OpenBoot Prompt” on page 42](#)

probe-scsi-all Device Naming (OpenBoot)

The output displayed by `probe-scsi-all` lists all SCSI devices in the server and provides a basic set of information about each device. When analyzing the `probe-scsi-all` output, look for the following data fields that are different names for the same device. You must use a specific type of name in different commands.

Entity Name	Definition
Target	Each SAS drive is assigned a unique target ID.
SASDeviceName	WWN value assigned to a SAS drive by the manufacturer. Oracle Solaris recognizes this name.
SASAddress	WWN value assigned to a SCSI device that is recognized by the OpenBoot firmware.
PhyNum	Hexadecimal ID of the controller port that is attached to the target drive.

At a high level, the WWN mapping process consists of the following stages:

1. Identify the physical location of the hard drive that is to be the target of the operation.
2. Identify the controller port that is attached to that physical location.
3. Find the WWN-based device name of the drive attached to that controller port.

Note - Refer to the server's service manual for a description of the physical drive slot organization.

Related Information

- [“WWN Syntax” on page 74](#)

▼ Correlate WWN Device Names With Physical Locations (probe-scsi-all Command)

1. At the OpenBoot prompt, type:

```
ok probe-scsi-all
/pci@302/pci@2/pci@0/pci@14/LSI,sas@0

FCode Version 1.00.65, MPT Version 2.05, Firmware Version 9.00.00.00

Target 9
  Unit 0   Disk   HGST       H101860SFSUN600G A3T0    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f0256b8 SASAddress 5000cca02f0256b9 PhyNum 0
Target a
  Unit 0   Disk   HGST       H101860SFSUN600G A3T0    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f02564c SASAddress 5000cca02f02564d PhyNum 1
Target b
  Unit 0   Disk   HGST       H101860SFSUN600G A770    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f1390f4 SASAddress 5000cca02f1390f5 PhyNum 2
Target c
  Unit 0   Disk   HGST       H101860SFSUN600G A770    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f1376d8 SASAddress 5000cca02f1376d9 PhyNum 3
Target d
  Unit 0   Disk   HGST       H101860SFSUN600G A3T0    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f027838 SASAddress 5000cca02f027839 PhyNum 4
Target e
  Unit 0   Disk   HGST       H101860SFSUN600G A3T0    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f02e798 SASAddress 5000cca02f02e799 PhyNum 5
Target f
  Unit 0   Disk   HGST       H101860SFSUN600G A3T0    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f02b138 SASAddress 5000cca02f02b139 PhyNum 6
Target 10
  Unit 0   Disk   HGST       H101860SFSUN600G A3T0    1172123568 Blocks, 600 GB
  SASDeviceName 5000cca02f028fd0 SASAddress 5000cca02f028fd1 PhyNum 7

/pci@300/pci@1/pci@0/pci@2/usb@0/storage@1
  Unit 0   Disk   smiMICRON  eUSB DISK      1112

/pci@300/pci@1/pci@0/pci@2/usb@0/hub@2/storage@1
  Unit 0   Removable Read Only device  SUNRemote ISO CDR0M1.01
```

2. In the `probe-scsi-all` output, find the following disk identifiers:
 - `LSI, sas@0` – Disk controller, followed by its associated target drives with their Target IDs. If the server has more than one disk controller, the target drives associated with each controller are listed following that controller's information.
 - `SASDeviceName` – WWN that Oracle Solaris recognizes.
 - `SASAddress` – WWN that OpenBoot references.
 - `PhyNum` – Physical slot that the drive occupies (the value 0 indicates a drive in HDD slot 0).
3. **Use the values in the `probe-scsi-all` output to construct a logical device name in the `cn tWWN dn` format that is recognized by Oracle Solaris.**

For the example output, you can construct an Oracle Solaris device name for the drive in slot 0, indicated with `PhyNum 0`, as follows:

- `cn = c0`
`n` is the SAS disk controller number.
- `tWWN = t5000cca02f0256b8`
`WWN` is the `SASDeviceName` value.
- `dn = d0`
`n` is 0 for all embedded SCSI devices.

The completed logical device name is `c0t5000cca02f0256b8d0`.

Related Information

- [“probe-scsi-all Device Naming \(OpenBoot\)” on page 78](#)

Managing Server Drives

These topics describe how to configure and manage server drives.

- [“Hardware RAID Support” on page 81](#)
- [“Managing NVMe Devices” on page 81](#)

Related Information

- [“Matching Devices to Device Names” on page 73](#)

Hardware RAID Support

These servers, unlike some past SPARC servers, do not provide built-in hardware RAID support. You cannot use the hardware RAID functions that were provided through FCode-based RAID utilities and commands such as `create-raid1-volume`.

In place of hardware RAID, consider using the ZFS capabilities provided in Oracle Solaris. For information about creating Oracle Solaris ZFS storage pools and root pools, refer to [Managing ZFS File Systems in Oracle Solaris 11.3](#).

Related Information

- [“Managing NVMe Devices” on page 81](#)

Managing NVMe Devices

NVMe drives and cards will work with most commands available for a SAS or SATA drive or SSD. In addition, on NVMe devices, you can use the `nvmeadm` command that is provided in the Oracle Hardware Management Pack, which is included in Oracle Solaris 11.3.

If nvmeadm is not available on your server, see [Oracle Hardware Management Pack for Oracle Solaris 11.3 Installation Guide](#) for installation information.

For information about using nvmeadm, refer to the [Oracle Server CLI Tools for Oracle Solaris 11.3 User's Guide](#).

Related Information

- [“Hardware RAID Support” on page 81](#)

Monitoring the Server

The servers provide many ways to monitor system activity and faulty behavior, including LEDs, Oracle ILOM, and POST. Log files, including system console activity, are maintained by Oracle Solaris and Oracle ILOM. For specific information about LEDs, fault reports, and log files, refer to the topics for Detecting and Managing Faults in the service manual for the server.

Note - You can use Oracle Enterprise Manager Ops Center to monitor this server along with other servers and assets. For more information, see [“Oracle Enterprise Manager Ops Center Overview” on page 20](#).

When a problem is detected on a server, you can use the Locator button and LED to identify the server that needs service attention at its physical location.

- [“Turn On the Locator LED” on page 83](#)
- [“Turn Off the Locator LED” on page 84](#)
- [“Display the Locator LED State of the Server” on page 84](#)

Related Information

- Detecting and Managing Faults, in the service manual for your server
- [“Matching Devices to Device Names” on page 73](#)

▼ Turn On the Locator LED

When a server must be serviced, lighting the server Locator LED assists in easily identifying the correct server. You do not need administrator permissions to use the `set /System locator_indicator` and `show /System locator_indicator` commands.

You can also turn on the Locator LED by physically pressing the Locator button on the server.

1. **Log in to Oracle ILOM.**

See [“Log In to Oracle ILOM” on page 25](#).

2. Illuminate the Locator LED.

```
-> set /System locator_indicator=on
```

Related Information

- [“Turn Off the Locator LED” on page 84](#)
- [“Display the Locator LED State of the Server” on page 84](#)

▼ Turn Off the Locator LED

After service of a server is completed, the Locator LED can be turned off. You do not need administrator permissions to use the `set /System locator_indicator` command.

You can also turn off the Locator LED by physically pressing the Locator button on the server.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM” on page 25](#).

2. Turn off the Locator LED.

```
-> set /System locator_indicator=off
```

Related Information

- [“Turn On the Locator LED” on page 83](#)
- [“Display the Locator LED State of the Server” on page 84](#)

▼ Display the Locator LED State of the Server

You do not need administrator permissions to use the `show /System/locator_indicator` command.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM” on page 25](#).

2. Display the state of the Locator LED:

```
-> show /System locator_indicator
```

Related Information

- [“Turn On the Locator LED” on page 83](#)
- [“Turn Off the Locator LED” on page 84](#)

Updating the Firmware

These topics describe how to update the system firmware and view current versions of firmware for Oracle's SPARC and Netra SPARC S7-2 series servers.

- [“Display the Firmware Versions” on page 87](#)
- [“Update the System Firmware” on page 88](#)

Related Information

- [“Understanding System Administration Resources” on page 11](#)

▼ Display the Firmware Versions

The `/HOST` property displays information about the firmware versions on the host. The output includes the overall system firmware version and the versions of firmware components, such as Oracle ILOM, OpenBoot, and POST.

Note - You also can determine the versions of firmware in the server and of specific components, such as a drive controller, with the `fwupdate` command. The `fwupdate` command is provided in the Oracle Hardware Management Pack, which is included in Oracle Solaris 11.3. For information about using `fwupdate`, refer to the [Oracle Server CLI Tools for Oracle Solaris 11.3 User's Guide](#).

1. Display the current host property values.

```
-> show /HOST
```

Refer to the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x* in [Oracle ILOM 3.2 Documentation Library](#) for more information about the `show /HOST` command.

2. Examine the output to find the version listed for the system firmware or firmware component you wanted.

Related Information

- [“Update the System Firmware” on page 88](#)

▼ Update the System Firmware

The Live Firmware update feature of the SPARC M7, T7, and S7 series servers supports updating Sun System firmware while the SPARC host is powered on. The Oracle ILOM firmware update goes into immediate effect. However, the host components update is delayed until the affected host is power cycled. Because Oracle ILOM can be updated while the host is powered on, this feature reduces the total system down time.

Note - For SPARC T7 servers the Live Firmware Update feature requires a minimum Sun System Firmware version of 9.5.2.g.

1. **Check the current system firmware version. From the Oracle ILOM command prompt, type:**

-> `show /HOST`
2. **Download the latest available system firmware version from My Oracle Support at:**
<https://support.oracle.com>
Then place the SysFW image in a shared location the host can access, for example, a local or network share or on a TFTP, FTP, HTTP or HTTPS server.
3. **Notify SP users of the scheduled firmware update and ask them to close all client sessions until after the firmware update is complete. Do not perform any other Oracle ILOM tasks during the firmware update.**
4. **Update the firmware through the Oracle ILOM CLI.**
For information about performing firmware updates using the web interface, see [Update the Server SP or CMM Firmware Image](#) in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x*.
 - a. **Log in to Oracle ILOM using an account with Admin privileges.**
See [“Log In to Oracle ILOM” on page 25](#).
 - b. **Load the firmware image from the shared location. Type:**

-> `load -source protocol://username:password@server_ip/path_to_image/image.pkg`

A series of prompts display.

- c. **Type `y` to load the image file, then type `y` to enable the Preserve Configuration option, which saves the existing Oracle ILOM firmware settings and restores them after the firmware update is complete.**

Note - All firmware update options for your server are enabled (`y`) by default when using a script (`-script`) to perform the firmware update.

- d. **Oracle ILOM displays a status message when the firmware process is complete. The system will reboot to apply the new firmware image.**

Related Information

- [“Display the Firmware Versions” on page 87](#)

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