

SPARC M8 and SPARC M7 Servers Administration Guide

ORACLE

Part No: E55214-06
September 2017

Part No: E55214-06

Copyright © 2015, 2017, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

Access to Oracle Support

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

Référence: E55214-06

Copyright © 2015, 2017, Oracle et/ou ses affiliés. Tous droits réservés.

Ce logiciel et la documentation qui l'accompagne sont protégés par les lois sur la propriété intellectuelle. Ils sont concédés sous licence et soumis à des restrictions d'utilisation et de divulgation. Sauf stipulation expresse de votre contrat de licence ou de la loi, vous ne pouvez pas copier, reproduire, traduire, diffuser, modifier, accorder de licence, transmettre, distribuer, exposer, exécuter, publier ou afficher le logiciel, même partiellement, sous quelque forme et par quelque procédé que ce soit. Par ailleurs, il est interdit de procéder à toute ingénierie inverse du logiciel, de le désassembler ou de le décompiler, excepté à des fins d'interopérabilité avec des logiciels tiers ou tel que prescrit par la loi.

Les informations fournies dans ce document sont susceptibles de modification sans préavis. Par ailleurs, Oracle Corporation ne garantit pas qu'elles soient exemptes d'erreurs et vous invite, le cas échéant, à lui en faire part par écrit.

Si ce logiciel, ou la documentation qui l'accompagne, est livré sous licence au Gouvernement des Etats-Unis, ou à quiconque qui aurait souscrit la licence de ce logiciel pour le compte du Gouvernement des Etats-Unis, la notice suivante s'applique :

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

Ce logiciel ou matériel a été développé pour un usage général dans le cadre d'applications de gestion des informations. Ce logiciel ou matériel n'est pas conçu ni n'est destiné à être utilisé dans des applications à risque, notamment dans des applications pouvant causer un risque de dommages corporels. Si vous utilisez ce logiciel ou ce matériel dans le cadre d'applications dangereuses, il est de votre responsabilité de prendre toutes les mesures de secours, de sauvegarde, de redondance et autres mesures nécessaires à son utilisation dans des conditions optimales de sécurité. Oracle Corporation et ses affiliés déclinent toute responsabilité quant aux dommages causés par l'utilisation de ce logiciel ou matériel pour des applications dangereuses.

Oracle et Java sont des marques déposées d'Oracle Corporation et/ou de ses affiliés. Tout autre nom mentionné peut correspondre à des marques appartenant à d'autres propriétaires qu'Oracle.

Intel et Intel Xeon sont des marques ou des marques déposées d'Intel Corporation. Toutes les marques SPARC sont utilisées sous licence et sont des marques ou des marques déposées de SPARC International, Inc. AMD, Opteron, le logo AMD et le logo AMD Opteron sont des marques ou des marques déposées d'Advanced Micro Devices. UNIX est une marque déposée de The Open Group.

Ce logiciel ou matériel et la documentation qui l'accompagne peuvent fournir des informations ou des liens donnant accès à des contenus, des produits et des services émanant de tiers. Oracle Corporation et ses affiliés déclinent toute responsabilité ou garantie expresse quant aux contenus, produits ou services émanant de tiers, sauf mention contraire stipulée dans un contrat entre vous et Oracle. En aucun cas, Oracle Corporation et ses affiliés ne sauraient être tenus pour responsables des pertes subies, des coûts occasionnés ou des dommages causés par l'accès à des contenus, produits ou services tiers, ou à leur utilisation, sauf mention contraire stipulée dans un contrat entre vous et Oracle.

Accès aux services de support Oracle

Les clients Oracle qui ont souscrit un contrat de support ont accès au support électronique via My Oracle Support. Pour plus d'informations, visitez le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> ou le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> si vous êtes malentendant.

Contents

| | |
|--|----|
| Using This Documentation | 11 |
| Initial Administration Tasks | 13 |
| Understanding System Administration Resources | 15 |
| Understanding Oracle ILOM | 15 |
| Oracle ILOM Overview | 16 |
| Oracle ILOM Versions and Feature Updates | 17 |
| User Accounts on the SP | 18 |
| User Authentication on the SP | 19 |
| User Roles on the SP | 20 |
| Oracle ILOM Remote System Console Plus on SPARC M7 Servers | 21 |
| Oracle ILOM Remote System VNC Console | 21 |
| Time Synchronization and NTP Service | 22 |
| SNMP Service | 23 |
| Active Directory | 24 |
| LDAP/SSL Security | 24 |
| DIMM Sparing | 25 |
| Understanding OpenBoot | 26 |
| OpenBoot Overview | 26 |
| OpenBoot Properties and Variables | 27 |
| Understanding Oracle Solaris | 28 |
| Oracle Solaris Overview | 28 |
| Deferred Dump | 29 |
| iSCSI Devices Using IPoIB | 30 |
| Oracle VTS | 31 |
| Oracle Hardware Management Pack | 32 |
| Understanding Oracle VM Server for SPARC | 32 |

| | |
|--|-----------|
| Oracle VM Server for SPARC Overview | 33 |
| Dynamic PCIe Bus Assignment | 34 |
| I/O Domain Resiliency | 35 |
| Understanding Oracle Enterprise Manager Ops Center | 36 |
| Oracle Enterprise Manager Ops Center Overview | 36 |
| Oracle Enterprise Manager Ops Center Resources | 37 |
| Understanding Multipathing Software | 37 |
| Multipathing Software Overview | 38 |
| Multipathing Resources | 38 |
| Understanding Oracle Auto Service Request | 39 |
| Oracle ASR Overview | 39 |
| Oracle ASR Activation | 40 |
| Accessing the Server | 41 |
| Logging In to Oracle ILOM | 41 |
| Oracle ILOM Root Password | 42 |
| ▼ Log In to Oracle ILOM (Web Interface) | 42 |
| ▼ Log In to Oracle ILOM (CLI) | 43 |
| ▼ Log Out of Oracle ILOM | 45 |
| ▼ Start the Host Console | 45 |
| Accessing the OpenBoot Prompt | 48 |
| OpenBoot Prompt Overview | 49 |
| Obtaining the OpenBoot Prompt | 49 |
| Redirecting KVMs Devices | 50 |
| ▼ Configure KVMs Settings | 51 |
| ▼ Enable Video Redirection From Oracle Solaris | 52 |
| ▼ Enable a Local Display Monitor | 54 |
| KVMs Connections After a Reboot | 54 |
| Understanding How Oracle Solaris Manages Multiple Display Devices on the SPARC M7 Servers | 55 |
| ▼ Enable Dynamic X Sessions | 55 |
| ▼ Add a Dynamic X Session | 57 |
| ▼ Delete a Dynamic X Session | 58 |
| ▼ Restart a Dynamic X Session | 59 |
| Controlling the System, Hosts, and SPs | 61 |
| Controlling the System or Host State | 61 |

| | |
|---|-----------|
| Server, System, and Host States | 62 |
| ▼ Start a Host | 63 |
| ▼ Start a Host With Guest Domains | 67 |
| ▼ Stop a Host | 68 |
| ▼ Stop a Host With Guest Domains | 70 |
| ▼ Specify the Host State at Restart | 71 |
| ▼ Restore the Host State at Restart | 72 |
| ▼ Specify Host Virtual Keyswitch Behavior | 73 |
| ▼ Specify the Autorestart Behavior | 74 |
| ▼ Specify the Restart Behavior Upon a Fatal Error | 74 |
| Booting and Shutting Down the OS | 75 |
| Boot Sequence | 76 |
| ▼ Boot the OS Manually (OpenBoot Prompt) | 77 |
| ▼ Shut Down the OS (init Command) | 78 |
| ▼ Shut Down the OS (shutdown Command) | 79 |
| Resetting the System, Host, or SP | 80 |
| ▼ Reset the System | 80 |
| ▼ Reset a Host | 81 |
| ▼ Reset a SP | 82 |
| Monitoring the Server | 85 |
| ▼ Locate the Server | 86 |
| ▼ Obtain the Server Serial Number | 87 |
| ▼ Display the Server Model Type | 87 |
| ▼ Display RFID Serial Number (SPARC M8-8) | 88 |
| ▼ View the Power State of the System | 89 |
| ▼ View the Status of the System | 91 |
| ▼ View Host Properties | 92 |
| ▼ View DCU Properties | 94 |
| Monitoring CMIOUTs and DIMMs | 97 |
| CMIOUT and DIMM Configuration Overview | 97 |
| ▼ Display Summary of Installed CMIOUTs | 98 |
| ▼ View the State and Health of a CMIOUT | 100 |
| ▼ View DIMM Locations | 101 |
| ▼ View the Health and State of a DIMM | 102 |
| Monitoring the System Power | 102 |
| ▼ View System Power Consumption | 103 |

| | |
|---|------------|
| ▼ View Individual Power Supply Properties | 104 |
| Monitoring the Cooling System | 105 |
| ▼ View the Cooling Details | 105 |
| ▼ View the Health and Location of a Fan | 106 |
| Monitoring Faults | 107 |
| ▼ Discover Faults (FMA) | 108 |
| ▼ Discover Faults (Oracle ILOM) | 110 |
| ▼ View Disabled Components | 113 |
| ▼ View Status and Faults in Chassis View (Oracle ILOM) | 113 |
| Managing the Platform | 115 |
| Configuring the SP Network | 115 |
| SP Network Overview | 116 |
| ▼ Determine Which SP Is the Active SP | 117 |
| ▼ Change the Current Role of the SP Pair | 118 |
| ▼ Determine the Status of a Specific SP, SPM, or Host | 119 |
| ▼ Configure the IPv4 and IPv6 Static IP Addresses for a Specific SP or Host | 120 |
| ▼ Configure the Subnet Gateway | 122 |
| ▼ Configure the Netmask for the SP Network | 123 |
| ▼ Configure the Host IP Address for rKVMS | 124 |
| ▼ Configure the Dedicated SP Interconnect Mode | 126 |
| ▼ Change Server Identifier Information | 127 |
| ▼ Manage Single Sign-On Service Network Deployment State | 128 |
| Updating the Firmware | 129 |
| ▼ Display the Firmware Version | 130 |
| ▼ Update the Firmware from Oracle ILOM | 130 |
| Managing the Host Console | 132 |
| ▼ View the Current Console Settings | 132 |
| Host Console Log Property Guidelines | 133 |
| ▼ Display Console History | 135 |
| Configuring PDomains and Hosts | 137 |
| PDomain Overview | 137 |
| Managing DCUs (SPARC M7-16) | 138 |
| ▼ Determine the Current Assignment of DCUs | 138 |
| ▼ Determine the Availability of DCUs | 140 |

| | |
|---|-----|
| ▼ Unassign DCUs From a Host | 141 |
| ▼ Specify Which DCUs Can Be Assigned to a Host | 142 |
| ▼ Assign a DCU to a Host | 143 |
| ▼ Disable and Enable Automatic Failover for a DCU | 146 |
| Configuring Boot and Restart Behavior | 147 |
| Boot and Restart Overview | 147 |
| Configuring Boot Variables | 148 |
| Configuring the Boot Mode | 157 |
| Configuring the Power Budget and Consumption | 162 |
| Power Management Overview | 162 |
| ▼ Configure the Power Allocation for a PDomain | 163 |
| Creating Virtualized Environments | 167 |
| Understanding the I/O Architecture | 167 |
| I/O Assignments | 168 |
| Physical I/O Architecture | 169 |
| ▼ Identify the Root Complex of a Device | 180 |
| Understanding Core Assignments | 182 |
| Core Assignments | 182 |
| ▼ Display Core Assignments | 185 |
| Understanding the Memory Resources | 187 |
| Memory Assignments | 187 |
| Memory Naming | 188 |
| ▼ Display Memory Assignments | 188 |
| Understanding Virtualization Examples | 190 |
| Virtualization Guidelines and Restrictions | 190 |
| Understanding Basic Virtualization Configurations | 192 |
| Glossary | 205 |
| Index | 211 |

Using This Documentation

- **Overview** – Describes how to configure and administer the SPARC M8 and SPARC M7 servers from Oracle.
- **Audience** – Technicians, system administrators, and authorized service providers
- **Required knowledge** – Advanced experience configuring and administering hardware

Product Documentation Library

Documentation and resources for these products and related products are available at <http://www.oracle.com/goto/m7/docs>.

Feedback

Provide feedback about this documentation at <http://www.oracle.com/goto/docfeedback>.

Initial Administration Tasks

This list of tasks can be used as a guide for the initial steps to take after your server is installed. Some tasks are described in the [SPARC M8 and SPARC M7 Servers Installation Guide](#) so might already have been performed.

| Tasks | Description | Links |
|-------|--|---|
| 1 | <p>Setup and management of service processor (SP) which runs Oracle ILOM.</p> <p>The SP must be accessed through its serial port when the server is initially powered on to see the console output. You can then assign an IP address and set related network properties for the SP so you can access Oracle ILOM on the SP through the network.</p> <p>Become familiar with security practices for Oracle ILOM and the server.</p> | <ul style="list-style-type: none"> ■ Oracle ILOM Getting Started Guide Firmware Release 4.0.x ■ “SP Network Addresses” in SPARC M8 and SPARC M7 Servers Installation Guide ■ “Setting Oracle ILOM Network Addresses” in SPARC M8 and SPARC M7 Servers Installation Guide ■ “SP Network Overview” on page 116 ■ SPARC M8 and SPARC M7 Servers Security Guide ■ Oracle ® ILOM Security Guide for Firmware Releases 3.x and 4.x |
| 2 | <p>Configure boot devices</p> <p>The server does not include integrated storage devices like drives or disk arrays. Each server PDomain must have access to a bootable storage device so that it can run the Oracle Solaris OS, run applications, and store data.</p> <p>After you power on a server PDomain for the first time, you can set the boot device for the PDomain. Procedures are different for different types of storage devices.</p> | <ul style="list-style-type: none"> ■ “Planning Storage Devices” in SPARC M8 and SPARC M7 Servers Installation Guide ■ “Power On a Server PDomain for the First Time” in SPARC M8 and SPARC M7 Servers Installation Guide ■ “Configure the Oracle Flash Accelerator PCIe Card” in SPARC M8 and SPARC M7 Servers Installation Guide ■ “Configure External Storage Devices” in SPARC M8 and SPARC M7 Servers Installation Guide ■ “How To Set the Boot Disk From OBP” in Installing Oracle Solaris 11.3 Systems |
| 3 | <p>Start HOST</p> <p>You must start the host that resides in a PDomain before you can install the OS.</p> | <ul style="list-style-type: none"> ■ “Server, System, and Host States” on page 62 ■ “Start a Host” on page 63 |
| 4 | <p>Set OpenBoot variables</p> <p>A number of boot characteristics are controlled by configuration variables that are stored in nonvolatile memory. If needed, you can</p> | <ul style="list-style-type: none"> ■ “Configuring Boot Variables” on page 148 ■ “Setting Configuration Variables” in Oracle OpenBoot 4.x Administration Guide ■ “Setting Security Variables” in Oracle OpenBoot 4.x Administration Guide |

| Tasks | Description | Links |
|-------|--|---|
| | <p>change the configuration variables default values to tailor operating characteristics to your environment.</p> <p>You should in particular consider setting variables that increase security.</p> | |
| 5 | <p>Install the OS</p> <p>If your server has Oracle Flash Accelerator PCIe Cards installed, the OS is preinstalled at the factory on one drive per PDomain.</p> <p>You must install the OS on any other storage devices</p> <p>If you are using Automated Installation, consider implementing secure practices.</p> | <ul style="list-style-type: none"> ■ “Oracle Solaris Installation Considerations” in SPARC M8 and SPARC M7 Servers Installation Guide ■ Installing Oracle Solaris 11.3 Systems ■ “Increasing Security for Automated Installations” in Installing Oracle Solaris 11.3 Systems |
| 6 | <p>Configure and boot the OS</p> <p>Become familiar with security practices for Oracle Solaris.</p> | <ul style="list-style-type: none"> ■ “Oracle Solaris OS Configuration Parameters” in SPARC M8 and SPARC M7 Servers Installation Guide ■ Booting and Shutting Down Oracle Solaris 11.3 Systems ■ Securing Systems and Attached Devices in Oracle Solaris 11.3 ■ Oracle Solaris 11 Security and Hardening Guidelines in the Oracle Solaris 11.3 documentation |
| 7 | <p>Monitor the system for faults and other issues</p> | <ul style="list-style-type: none"> ■ “Monitoring the Server” on page 85 ■ “Monitoring Faults” on page 107 ■ “Oracle Auto Service Request Software” in SPARC M8 and SPARC M7 Servers Installation Guide ■ “Detecting and Managing Faults” in SPARC M8 and SPARC M7 Servers Service Manual |

Related Information

- [“Understanding System Administration Resources” on page 15](#)
- [“Accessing the Server” on page 41](#)

Understanding System Administration Resources

These topics provide an overview of the tools you can use to administer the server.

- “Understanding Oracle ILOM” on page 15
- “Understanding Oracle Solaris” on page 28
- “Understanding OpenBoot” on page 26
- “Understanding Oracle VM Server for SPARC” on page 32
- “Understanding Oracle Enterprise Manager Ops Center” on page 36
- “Understanding Multipathing Software” on page 37
- “Understanding Oracle Auto Service Request” on page 39

Related Information

- “Understanding the Servers” in *SPARC M8 and SPARC M7 Servers Installation Guide*
- “Understanding Server Configurations and Failover Behavior” in *SPARC M8 and SPARC M7 Servers Service Manual*
- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)
- Oracle Solaris documentation (<http://www.oracle.com/pls/topic/lookup?ctx=solaris11>)
- OpenBoot documentation at <http://www.oracle.com/goto/openboot/docs>
- Oracle VM Server for SPARC documentation (<http://www.oracle.com/goto/vm-sparc/docs>)

Understanding Oracle ILOM

These topics describe how Oracle ILOM runs on these servers.

- “Oracle ILOM Overview” on page 16
- “User Accounts on the SP” on page 18
- “User Roles on the SP” on page 20
- “User Authentication on the SP” on page 19
- “Oracle ILOM Remote System Console Plus on SPARC M7 Servers” on page 21
- “Oracle ILOM Remote System VNC Console” on page 21
- “Time Synchronization and NTP Service” on page 22
- “SNMP Service” on page 23
- “Active Directory” on page 24
- “LDAP/SSL Security” on page 24
- “DIMM Sparing” on page 25

Related Information

- “Logging In to Oracle ILOM” on page 41
- “Log Out of Oracle ILOM” on page 45
- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)

Oracle ILOM Overview

Oracle Integrated Lights Out Manager (ILOM) is system management firmware that is pre-installed on Oracle servers. The firmware enables you to actively manage and monitor components that are installed in the server. Oracle ILOM provides a web interface and a command-line interface (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 power-on 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 an 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 by 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. For the M7 and M8 servers, you can have up to 25 concurrent SP sessions.

Certain Oracle ILOM tasks can be performed for the platform and for any available PDomain. This means that user roles must be properly assigned at the platform or domain level, and that specific commands must be provided for either the platform or PDomain.

The Oracle ILOM properties that affect power on self test (POST) behavior have changed. For information about specific properties, refer to the service manual for your platform. For more information on enabling SPARC diagnostic tests to run at boot, refer to the Oracle ILOM documentation in [“Related Information” on page 17](#).

Oracle ILOM 4.0.x is included on M8 servers. On M7 servers, Oracle ILOM 3.2 is included and can be upgraded to version 4.0.x.

Related Information

- [Oracle ILOM Getting Started Guide Firmware Release 4.0.x](#)
- [Oracle ILOM Getting Started Guide Firmware Release 3.2.x](#)
- [“Checking Server and Component Health With POST” in SPARC M8 and SPARC M7 Servers Service Manual](#)
- [“Setting Diagnostic Tests to Run” in Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x](#)
- [“Setting Diagnostic Tests to Run” in Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 3.2.x](#)
- [“User Accounts on the SP” on page 18](#)

Oracle ILOM Versions and Feature Updates

SPARC M8 servers and SPARC M7 servers might include different versions of Oracle ILOM. The SPARC M8 servers and the latest SPARC M7 servers include Oracle ILOM 4.0.x.

SPARC M7 servers were shipped initially with Oracle ILOM 3.2 and can be updated to Oracle ILOM 4.0.x. See [“Updating the Firmware” on page 129](#) for more information.

Tip - To identify the Oracle ILOM firmware version installed on your Oracle server, click System Information → Firmware in the web interface, or type `version` in the command-line interface.

Oracle ILOM 4.0.x includes the following changes:

- Updated more secure kernel built with newer compiler
- Enhanced security by removing support of SNMPv1, the ILOM control MIB, and SSL/TLSv1.0
- REST API added for web services oriented programmatic access to Oracle ILOM
- New properties for DCU failover and boot timeout
- Support for Trusted Platform Module (TPM) 2.0
- Oracle ILOM Remote System VNC Console support for SPARC M8 servers
- Chassis View in web interface lets you view status of components and get information by clicking on server illustration

See *Oracle ILOM Feature Updates and Release Notes Firmware Release 4.0.x* in the [Oracle Integrated Lights Out Manager \(ILOM\) 4.0 Documentation Library](#) for more information about the updates in Oracle ILOM 4.0.x.

User Accounts on the SP

Oracle ILOM software on the SPARC M8 and SPARC M7 servers is preconfigured with two user accounts (`root` and `default`). The `root` user can 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 M8 and M7 servers support up to 60 user accounts for logging into the SP. However, these servers support only 25 simultaneous login sessions.

Note - You can verify the maximum number of user accounts in the Oracle ILOM web interface using the More details link in the ILOM Administration → User Management → User Account page.

For a secure login method, the SSH service is enabled by default.

Related Information

- “Setting Up a Management Connection to Oracle ILOM and Logging In” in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*
- “Setting Up and Maintaining User Accounts” in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*

- [“Setting Up a Management Connection to Oracle ILOM and Logging In”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 3.2.x*
- [“Setting Up and Maintaining User Accounts”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 3.2.x*
- [“Oracle ILOM Overview”](#) on page 16
- [“User Roles on the SP”](#) on page 20

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.

- Active Directory provides both authentication of user credentials and authorization of user access levels to networked resources.
- LDAP/SSL offers enhanced security to LDAP users.

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

Related Information

- [“Managing User Credentials”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*
- [“Managing User Credentials”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 3.2.x*
- [“Oracle ILOM Overview”](#) on page 16

- [“Oracle ILOM Remote System Console Plus on SPARC M7 Servers” on page 21](#)

User Roles on the SP

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

You can assign specific roles to a user account to allow a user to execute certain Oracle ILOM commands and perform certain actions on a specific set of components. Those components can be physical components, domains, or physical components within a domain. By specifying roles for each user, you can control which operations each user is allowed to perform.

When you assign user roles to a user account for a specific component such as a PDomain, you grant capabilities that mirror the capabilities of the user roles assigned for the platform, but they are restricted to commands executed on the given component. Tasks in this document specify the user roles required and commands used to perform certain tasks on the server and on individual domains.

Note - Only user roles of administrator (a), console (c), and reset (r) can be assigned for individual PDomains.

Roles that apply to the platform differ from roles that apply to a host as follows:

| | |
|---------------------------|---|
| Platform-level user roles | Specify a user's access to all hosts on the server and components that are shared by all hosts. Configure these user roles from <code>/SP/users/user-ID/role=value</code> , as documented in the Oracle ILOM documentation. |
| Host-level user roles | Specify a user's access to a specific host on the server and components that are specific to that host. Host-specific components are located under <code>/Servers/PDomains/PDomain_x/HOST</code> . Configure these user roles from <code>/SP/users/user-ID/host_roles/hostx_role=value</code> . |

Related Information

- [“Configuring Local User Accounts” in Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x](#)
- [“Configuring Local User Accounts” in Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 3.2.x](#)
- [“Oracle ILOM Overview” on page 16](#)

- [“User Authentication on the SP” on page 19](#)

Oracle ILOM Remote System Console Plus on SPARC M7 Servers

Oracle ILOM Remote System Console Plus is a Java application that you launch from the Oracle ILOM web interface. The application enables you to work on your desktop system or laptop and remotely redirect and control the following devices on SPARC M7 servers.

- Keyboard
- Video display
- Mouse
- Storage devices or images (CD/DVD)

This group of devices is commonly abbreviated as *KVMS*. When you redirect these devices, you can interact with the system console using your desktop system's keyboard, video display, and mouse as if they were locally connected to the server.

Note - SPARC M8 servers do not support Oracle ILOM Remote System Console Plus. You can use VNC for remote redirection as described in [“Oracle ILOM Remote System VNC Console” on page 21](#).

Related Information

- [“Redirecting KVMS Devices” on page 50](#)
- [“Understanding How Oracle Solaris Manages Multiple Display Devices on the SPARC M7 Servers” on page 55](#)
- [“Using the Oracle ILOM Remote System Console Plus” in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*](#)
- [“Oracle ILOM Overview” on page 16](#)
- [“Time Synchronization and NTP Service” on page 22](#)

Oracle ILOM Remote System VNC Console

Oracle ILOM Remote System VNC Console is an implementation of the Virtual Network Computing (VNC) system. The VNC Console enables you to work on your desktop system

and remotely redirect the keyboard, video, and mouse (KVM) events of the server to your local graphical desktop display.

Note - Oracle ILOM also provides Oracle ILOM Remote System Console *Plus*, but the SPARC M8 and M7 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.

You can use a VNC client that supports TLS 1.1 such as Tiger VNC to connect to the SP of the server through port 5900. If your server is configured with multiple PDomains and have assigned IP address to the HOSTs, you can connect to the SP for each PDomain using ports assigned to each HOST instead of specifying each HOST's IP address:

| | |
|-------|-----------|
| HOST0 | port 5920 |
| HOST1 | port 5921 |
| HOST2 | port 5922 |
| HOST3 | port 5923 |

For example, to connect to the SP of HOST3 specify the hostname or IP address of the system and port 5923 (10.102.123.44:5923).

For more information about requirements for using and connecting t to the Oracle ILOM Remote System VNC Console, refer to [“Connecting to the Oracle ILOM Remote System VNC Console”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*.

Related Information

- [“Connecting to the Oracle ILOM Remote System VNC Console”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*
- [“Connecting to the Oracle ILOM Remote System VNC Console”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 3.2.x*

Time Synchronization and NTP Service

When hosts are powered on, their clocks synchronize to the NTP server when the system is configured to listen to NTP multicast (the default). If the hosts and SPs use the same NTP

server, events logged in Oracle Solaris and on the SP can be correlated based on their time stamps. If the hosts and SPs use different NTP servers, their times might drift, and correlating 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 documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)
- [“Oracle ILOM Overview” on page 16](#)
- [“SNMP Service” on page 23](#)

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 SNMP agent is active only on the active PDomain SP. In the event of failover, the SNMP agent is restarted on the newly assigned PDomain SP.

The Oracle ILOM MIB file SUN-ILOM-CONTROL-MIB provides objects for configuring and managing Oracle ILOM functions. The MIB file SUN-HW-CTRL-MIB allows power management 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.

The SUN-ILOM-CONTROL-MIB file was removed in Oracle ILOM 4.0. You can use REST APIs to programmatically configure and manage Oracle ILOM resources on systems with Oracle ILOM 4.0. See [Oracle ILOM Web Service Rest API User Guide and Security Reference for Firmware Release 4.0.x](#).

Related Information

- [Oracle ILOM Protocol Management Reference for SNMP and IPMI Firmware Release 3.2.x](#) in the [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)
- [Oracle ILOM Web Service Rest API User Guide and Security Reference for Firmware Release 4.0.x](#)
- [“Oracle ILOM Overview” on page 16](#)

- [“Active Directory” on page 24](#)

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.

Related Information

- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)
- [“Logging In to Oracle ILOM” on page 41](#)
- [“User Authentication on the SP” on page 19](#)
- [“LDAP/SSL Security” on page 24](#)

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 documentation \(http://www.oracle.com/goto/ilom/docs\)](http://www.oracle.com/goto/ilom/docs)
- [“KVMS Connections After a Reboot” on page 54](#)

- [“Logging In to Oracle ILOM” on page 41](#)
- [“Oracle ILOM Overview” on page 16](#)

DIMM Sparing

DIMM sparing provides a mechanism on SPARC M8 and SPARC M7 servers to unconfigure a failed DIMM with minimal performance loss. This feature allows deferred maintenance for DIMMs that are faulted and thus reduces the need for downtime. DIMM sparing is supported only on systems whose memory slots are fully-populated with DIMMs.

If a DIMM is diagnosed to be faulty during boot time or run time, the memory dynamically switches from 16-way to 15-way interleave by remapping all of the physical addresses to the remaining 15 DIMMs. To enable this remapping, the platform firmware must initially reserve space for the contents of one DIMM. Consequently, only 15 DIMMs worth of physical address space is made available to the system, even when 16 DIMMs are functioning.

DIMM sparing is enabled on individual CPU nodes (that is, CMIOUs) and can tolerate one DIMM failure per CMIOU. On a fully loaded SPARC M8-8 or SPARC M7-8 server with two PDomains, up to 4 DIMMs can be faulted per PDomain for a total of 8 faulted DIMMs on the server. For a SPARC M8-8 or SPARC M7-8 server with one PDomain, up to 8 DIMMs can be faulted, and for the SPARC M7-16 multihost server, up to 4 DIMMs can be faulted per DCU for a total of 16 faulted DIMMs on the server. These totals presume one DIMM per CMIOU is faulty. If a second DIMM fails in a single CMIOU, a service notification is issued and both DIMMs must then be replaced.

Note - DIMM sparing is enabled by default on fully populated CMIOUs. DIMM sparing is not enabled on half-populated CMIOUs. If the system has to unconfigure a DIMM, either at boot time or at run time, the associated fault is treated as a nonserviceable fault, so a service notification is not issued. Consequently, if a DIMM is unconfigured, you do not need to replace the DIMM until another DIMM becomes faulty. If the system has to unconfigure a DIMM on a half-populated CMIOU, a service notification is issued.

See [“DIMM Configuration” in *SPARC M8 and SPARC M7 Servers Service Manual*](#) for more information about memory configuration..

Related Information

- [“Memory Assignments” on page 187](#)
- [“Memory Naming” on page 188](#)
- [“Display Memory Assignments” on page 188](#)

- [“Servicing DIMMs” in SPARC M8 and SPARC M7 Servers Service Manual](#)
- My Oracle Support article [SPARC T7 / M7 Servers : DIMM sparing FAQ \(Doc ID 2037793.1\)](#)

Understanding OpenBoot

These topics describe how OpenBoot is used on these servers.

- [“OpenBoot Overview” on page 26](#)
- [“OpenBoot Properties and Variables” on page 27](#)

Related Information

- OpenBoot documentation at <http://www.oracle.com/goto/openboot/docs>
- [“Accessing the OpenBoot Prompt” on page 48](#)
- [“Booting and Shutting Down the OS” on page 75](#)

OpenBoot Overview

The OpenBoot firmware determines the hardware configuration of a system or virtual machine, provides interactive debugging facilities, 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 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 okprompt.

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

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.

For information about OpenBoot commands and variables, refer to the [Oracle OpenBoot 4.x Administration Guide](#) and *IEEE Standard 1275-1994 for Boot (Initialization Configuration) Firmware: Core Requirements and Practices*.

Related Information

- [Oracle OpenBoot 4.x Administration Guide](#)
- [“Booting and Shutting Down the OS” on page 75](#)
- [“OpenBoot Properties and Variables” on page 27](#)

OpenBoot Properties and Variables

The boot process has been enhanced to enable booting from devices that are not directly accessible to OpenBoot and new OpenBoot properties have been added to support this. A new OpenBoot variable has also been added. This list gives an overview of the new properties and variable:

| | |
|---|---|
| <code>boot-pool-list</code> property | 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 by using the command <code>show-props /chosen</code> or the <code>.properties</code> command under the <code>/chosen</code> node at the OpenBoot prompt. |
| <code>tboot-list</code> property | Lists storage devices that include fall back images. You can view this property by using the command <code>show-props /chosen</code> or the <code>.properties</code> command under the <code>/chosen</code> node at the OpenBoot prompt. |
| <code>os-root-device</code> variable | Defines devices and root file systems for root pools. This is a non-volatile variable that you can view using the <code>printenv</code> command at the OpenBoot prompt or using the <code>eeprom</code> command at the Oracle Solaris prompt. |

See [“Boot Sequence” in Oracle OpenBoot 4.x Administration Guide](#) for more information about booting and boot properties.

See [“Boot Pools and Fallback Boot Images” in Oracle OpenBoot 4.x Administration Guide](#) for more information about these features.

Related Information

- [“Boot Sequence” on page 76](#)
- [“OpenBoot Overview” on page 26](#)
- [“iSCSI Devices Using IPoIB” on page 30](#)

- [SPARC M8 and SPARC M7 Servers Product Notes](#)
- [Oracle Solaris 11 documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)

Understanding Oracle Solaris

These topics describe how Oracle Solaris runs on these servers.

- [“Oracle Solaris Overview” on page 28](#)
- [“Deferred Dump” on page 29](#)
- [“iSCSI Devices Using IPoIB” on page 30](#)
- [“Oracle VTS” on page 31](#)
- [“Oracle Hardware Management Pack” on page 32](#)

Related Information

- [Oracle Solaris 11 documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [Oracle Solaris 10 documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris10\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris10)

Oracle Solaris Overview

Each PDomain runs its own installation of Oracle Solaris, which provides commands and utilities for administration of the operating system and server. In addition, if you use Oracle VM Server for SPARC, you can create logical domains that can run their own installations of Oracle Solaris 10 or Oracle Solaris 11. 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.

Refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for information about specific versions, guidelines, and restrictions for these releases.

The M8 and M7 servers also include a fallback miniroot image. A miniroot is a minimal root file system consisting of the Oracle Solaris software that is required to boot the OS to either install or upgrade the OS on a storage device. The fallback image is not part of the OS or firmware image. It is located in a USB device associated with the SP. For more information, see [“Boot Pools and Fallback Boot Images” in Oracle OpenBoot 4.x Administration Guide](#).

The fallback image is important for systems that use IPoIB which do not have firmware that is accessible to the server. See [“iSCSI Devices Using IPoIB” on page 30](#) for more information.

Related Information

- [Oracle Solaris 11 Information Library](#)
- [Oracle Solaris 10 Information Library](#)
- [“Deferred Dump” on page 29](#)

Deferred Dump

When a system crashes, the crash dump files can be preserved in memory until after the OS reboots. When the OS is rebooting, the crash dump files are extracted from memory to the filesystem that is defined in the dump configuration. After these files are written, the OS automatically reboots to the normal multiuser configuration. This process is referred to as a deferred dump. Deferred dumps enable the OS to return to a running state more quickly after a kernel panic.

In addition, deferred dumps specifically benefit systems such as the M8 and M7 systems that ship without a local disk. With deferred dumps, you can instead use network-connected boot devices, such as iSCSI targets, which normally cannot store crash dump data on a disk during a panic. Deferred dump enables the crash dump data to be stored in memory instead of on a disk while the OS is crashing and rebooting. After the OS reboots, the crash dump data is extracted from memory and put into dump files on a network-connected boot device. Thus, deferred dump enables systems with network-connected boot devices to save a crash dump in the event of a panic.

Related Information

- [About Deferred Dump and System Crash Dumps in Managing Devices in Oracle Solaris 11.3](#)

- [“iSCSI Devices Using IPoIB” on page 30](#)

iSCSI Devices Using IPoIB

On the servers, the Oracle Solaris boot process has been enhanced to:

- Allow the root pool to reside on an iSCSI device accessed using IP over Infiniband (IPoIB). This storage is not accessible from OpenBoot. The root pool is a dataset that is a complete Oracle Solaris image or a boot environment (BE). When a root pool is created on an iSCSI device using IPoIB, a new dataset called the *boot pool* is automatically created on emulated USB devices, which are OpenBoot-accessible devices.
- Access boot archives in a special pool on firmware-accessible devices. This new pool is called the boot pool. The boot archive includes the set of files needed to boot the Oracle Solaris kernel for the BE that is associated with the boot dataset. In addition to the boot archives, the boot pool includes boot loader data files, as well as recovery data. Each dataset in the boot pool is linked to a boot environment.
- Boot from a fallback image if no devices in the boot pool are accessible from OpenBoot. The fallback miniroot image is located on the SP-emulated USB device. The fallback image is directly available to any domain that has access to the SP and its associated rKVMS services. You can also use a virtual disk connection from the control domain to a guest domain to provide the fallback option.

Related Information

- [“Fallback Images for iSCSI Devices Using IPoIB” on page 30](#)
- [“Boot Pools and Fallback Boot Images” in *Oracle OpenBoot 4.x Administration Guide*](#)
- [Appendix A, “Oracle Solaris Boot Process,” in *Booting and Shutting Down Oracle Solaris 11.3 Systems*](#)

Fallback Images for iSCSI Devices Using IPoIB

If you replace a faulty SP, the Active SP automatically updates the fallback boot image, or miniroot.

When you apply Oracle Solaris support repository updates (SRUs) you must also update the fallback boot image that is on the Active SP's emulated USB device. You can download the fallback boot image from My Oracle Support and load it onto the Active SP.

Note - If the system has both M7 and M8 DCUs, the fallback boot image must match the Oracle Solaris version running on the M8 DCUs.

See [Oracle Solaris 11.3 Support Repository Updates \(SRU\) Index \(Doc ID 2045311.1\)](#) for download links to the Fallback Boot Images for each SRU.

For information about how to update the Oracle Solaris fallback boot image, see “[How to Update the Fallback Image](#)” in *Booting and Shutting Down Oracle Solaris 11.3 Systems*.

For information about loading the new miniroot, see “[Uploading a New Solaris Miniroot Package From SP to Host](#)” in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*.

Related Information

- “OpenBoot Properties and Variables” on page 27
- “Boot Sequence” on page 76
- “Boot the OS Manually (OpenBoot Prompt)” on page 77
- “Configuring Boot and Restart Behavior” on page 147
- Oracle Solaris 11 documentation (<http://www.oracle.com/pls/topic/lookup?ctx=solaris11>)

Oracle VTS

Oracle Solaris software includes the 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.

Related Information

- Oracle VTS documentation (<http://www.oracle.com/goto/vts/docs>)
- Oracle Solaris 11 documentation (<http://www.oracle.com/pls/topic/lookup?ctx=solaris11>)
- Oracle Solaris 10 documentation (<http://www.oracle.com/pls/topic/lookup?ctx=solaris10>)
- “Oracle Solaris Overview” on page 28

- [“Oracle Hardware Management Pack” on page 32](#)

Oracle Hardware Management Pack

Oracle Hardware Management Pack (HMP) provides management agents and command line tools that enable you to manage and configure Oracle servers from the host OS. Oracle Solaris 11.3 comes with many Oracle Hardware Management Pack tools preinstalled and ready for use. You can install additional HMP tools from the Oracle Solaris software package repository.

Oracle Hardware Management Pack tools enable you to do the following:

- Monitor Oracle hardware with the host IP address.
- Monitor storage devices.
- Query, update, and validate firmware versions on supported I/O devices.
- Restore, set, and view Oracle ILOM configuration settings.
- Use the IPMI tool to access and manage Oracle servers.

Find installation information and other HMP documentation in the [Oracle Hardware Management Pack for Oracle Solaris 11.3 Documentation Library \(https://docs.oracle.com/cd/E64576_01/\)](https://docs.oracle.com/cd/E64576_01/).

For more information about what you can do with HMP, see <http://www.oracle.com/technetwork/server-storage/servermgmt/tech/hardware-management-pack/index.html>.

Related Information

- [Oracle Hardware Management Pack for Oracle Solaris 11.3 Documentation Library \(https://docs.oracle.com/cd/E64576_01/\)](https://docs.oracle.com/cd/E64576_01/)
- [Oracle Solaris 11 documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [“Oracle Solaris Overview” on page 28](#)

Understanding Oracle VM Server for SPARC

These topics describe how Oracle VM Server for SPARC runs on these servers.

- [“Oracle VM Server for SPARC Overview” on page 33](#)

- “Dynamic PCIe Bus Assignment” on page 34
- “I/O Domain Resiliency” on page 35

Related Information

- Oracle VM Server for SPARC documentation (<http://www.oracle.com/goto/vm-sparc/docs>)
- “Start a Host With Guest Domains” on page 67
- “Stop a Host With Guest Domains” on page 70
- “Creating Virtualized Environments” on page 167

Oracle VM Server for SPARC Overview

Oracle VM Server for SPARC software enables you to create and manage logical domains (also known as guest domains). You can virtualize resources and define network, storage, and I/O devices as services that can be shared between guest domains. The Oracle VM Server for SPARC configurations are stored on the SP. You can add a configuration, specify a configuration to be used, and list the configurations on the SP.

The number of logical domains you can create depends on the hardware configuration of the server. By default, one domain, the primary domain (also known as the control domain), is configured when you install the OS on a host. The primary domain cannot be removed or renamed, and all of the resources are assigned to the primary domain when the domain is configured. The primary domain should have at least one or two CPU cores and 16 to 64 GB of memory to operate properly. You can have as many as 128 guest domains per physical domain (also known as a PDomain), and each guest domain can operate on only one CPU thread. However, most workloads require more than one CPU thread.

Note - You cannot assign cores or threads from one PDomain to a guest in another PDomain.

For high-RAS configurations, you should align guest domains on core boundaries to avoid issues that can occur when two or more guest domains share threads from a single core. Aligning the guest domains on core boundaries does affect the total number of guest domains that you can create. In addition, the primary domain should retain at least one or two cores to operate properly and to isolate it from any other guest domain.

Note - The most important factor in assigning resources is the workload requirements for the applications that you plan to run in the guest domains.

Nevertheless, the number of available cores, the amount of available memory, and the number of available PCIe slots also affect the total number of possible guest domains. For more information about assigning resources to guest domains, see the following:

- *Oracle VM Server for SPARC Best Practices* white paper at <http://www.oracle.com/technetwork/server-storage/sun-sparc-enterprise/documentation/whitepapers-2158892.html>.
- “I/O Assignments” on page 168
- “Core Assignments” on page 182
- “Memory Assignments” on page 187

Related Information

- Oracle VM Server for SPARC documentation (<http://www.oracle.com/goto/vm-sparc/docs>)
- “Dynamic PCIe Bus Assignment” on page 34

Dynamic PCIe Bus Assignment

The dynamic PCIe bus assignment feature enables you to dynamically assign a PCIe bus to or remove a PCIe bus from a root domain. The dynamic PCIe bus assignment feature is enabled when your system runs the required firmware and software. If your system does not run the required firmware and software, the `ldm add-io` and `ldm remove-io` commands fail gracefully. When enabled, you can run the `ldm add-io` and `ldm remove-io` commands without stopping the root domain or putting the root domain in delayed reconfiguration.

Dynamic PCIe bus assignment has these restrictions:

- PCIe bus containing rKVMS devices is restricted to the primary domain only. This is enforced by the Logical Domains Manager.
- Direct I/O is not supported. All PCIe slots are directly connected to a PCIe root port.

Related Information

- Oracle VM Server for SPARC documentation (<http://www.oracle.com/goto/vm-sparc/docs>)
- “Oracle VM Server for SPARC Overview” on page 33

- [“I/O Domain Resiliency” on page 35](#)

I/O Domain Resiliency

I/O domain resiliency improves the availability and performance of an I/O domain by enabling it to continue to run even when one of its associated root domains is interrupted. When a root domain is interrupted, the I/O domains that use its services continue to run by enabling its affected devices to fail over to the alternate I/O path. When the root domain returns to service, the affected devices in the resilient I/O domain are also returned to service and the failover capabilities are restored.

I/O domain resiliency is a logical domain configuration strategy that involves:

- Creating NPRDs to provide virtualized I/O services to the I/O domain. The NPRDs own at least one PCIe bus from at least one CMIOU.
- Creating virtualized I/O services from the NPRDs to the I/O domain. The I/O domain must have at least two I/O connections with one of the connections coming from one IOH on one CMIOU and the other connection coming from another IOH on a different CMIOU.
- Creating alternate paths to the I/O connections by using multipathing.

I/O domain resiliency has these restrictions:

- Multipath I/O configurations are required for uninterrupted I/O services.
- Current support is limited to SR-IOV virtual functions, virtual network devices, and virtual storage devices that support I/O domain resiliency..

For this feature, follow these guidelines:

- For fibre channel cards:
 - Generally, add cards in pairs for redundancy.
 - Spread the cards across IOHs.
 - Enable MPxIO in the service domain.
- For NIC cards:
 - Generally, add cards in pairs for redundancy.
 - Use IEEE 802.3ad link aggregations in the service domain.
- For InfiniBand cards:
 - Generally, add cards in pairs for redundancy.
 - Avoid sharing the PCI bus with other cards, if possible.

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 VM Server for SPARC Overview” on page 33](#)

Understanding Oracle Enterprise Manager Ops Center

These topics describe how Oracle Enterprise Manager Ops Center runs on these servers.

- [“Oracle Enterprise Manager Ops Center Overview” on page 36](#)
- [“Oracle Enterprise Manager Ops Center Resources” on page 37](#)

Related Information

- [Oracle Enterprise Manager Ops Center at http://www.oracle.com/technetwork/oem/ops-center/](http://www.oracle.com/technetwork/oem/ops-center/)
- [Oracle Enterprise Manager Ops Center downloads \(http://www.oracle.com/technetwork/oem/ops-center/oem-ops-center-188778.html\)](http://www.oracle.com/technetwork/oem/ops-center/oem-ops-center-188778.html)
- [Oracle Enterprise Manager Ops Center documentation \(http://docs.oracle.com/en/enterprise-manager/\)](http://docs.oracle.com/en/enterprise-manager/)

Oracle Enterprise Manager Ops Center Overview

You can monitor and manage these servers, along with other servers and assets, by using the Oracle Enterprise Manager Ops Center software. Run this software's discovery process to add information about your server to a database of physical servers, virtual systems, operating systems, networks, and storage. You can then use this software to monitor and manage all of these products from a single interface.

Related Information

- [Oracle Enterprise Manager Ops Center downloads \(http://www.oracle.com/technetwork/oem/ops-center/oem-ops-center-188778.html\)](http://www.oracle.com/technetwork/oem/ops-center/oem-ops-center-188778.html)
- [Oracle Enterprise Manager Ops Center documentation \(http://docs.oracle.com/en/enterprise-manager/\)](http://docs.oracle.com/en/enterprise-manager/)

- [“Oracle Enterprise Manager Ops Center Resources” on page 37](#)

Oracle Enterprise Manager Ops Center Resources

Besides the traditional installation, upgrade, and administration guides that are available for this software, there are additional resources that include descriptions and instructions about this software. Use these links to obtain that information:

- [Deployment guides](#)
- [Operation guides](#)
- [Reference documents](#)
- [Plug in guides](#)
- [Books](#)
- [Videos](#)

Related Information

- [Oracle Enterprise Manager Ops Center downloads \(http://www.oracle.com/technetwork/oem/ops-center/oem-ops-center-188778.html\)](http://www.oracle.com/technetwork/oem/ops-center/oem-ops-center-188778.html)
- [Oracle Enterprise Manager Ops Center documentation \(http://docs.oracle.com/en/enterprise-manager/\)](http://docs.oracle.com/en/enterprise-manager/)
- [“Oracle Enterprise Manager Ops Center Overview” on page 36](#)

Understanding Multipathing Software

These topics describe the multipathing options that you can use on these servers.

- [“Multipathing Software Overview” on page 38](#)
- [“Multipathing Resources” on page 38](#)

Related Information

- [Administering TCP/IP Networks, IPMP, and IP Tunnels in Oracle Solaris 11.3](#)
- [Oracle Solaris SAN Configuration and Multipathing Guide in Oracle Solaris 10 documentation](#)

- Oracle VM Server for SPARC documentation and the *Oracle VM Server for SPARC 3.5 Administration Guide* at <http://www.oracle.com/goto/vm-sparc/docs>

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 connected to the same dual-ported storage array.

Related Information

- [Administering TCP/IP Networks, IPMP, and IP Tunnels in Oracle Solaris 11.3](#)
- Oracle Solaris 10 documentation and the *Oracle Solaris SAN Configuration and Multipathing Guide* at <http://www.oracle.com/pls/topic/lookup?ctx=solaris10>
- Oracle VM Server for SPARC documentation and the *Oracle VM Server for SPARC 3.5 Administration Guide* at <http://www.oracle.com/goto/vm-sparc/docs>
- “Multipathing Resources” on page 38

Multipathing Resources

For these servers, you can use different types of multipathing software, including:

- **Oracle Solaris IP Network Multipathing software (IPMP)**, which provides multipathing and load-balancing capabilities for IP network interfaces. For instructions on configuring and administering Oracle Solaris IP Network Multipathing, refer to [Administering TCP/IP Networks, IPMP, and IP Tunnels in Oracle Solaris 11.3](#).
- **Oracle Solaris Datalink Multipathing aggregations (DLMP)**, also referred to as trunking, which enables you to configure several interfaces on a system as a single, logical unit to increase throughput of network traffic. For instructions on configuring and administering Oracle Solaris Datalink Multipathing, refer to [Managing Network Datalinks in Oracle Solaris 11.3](#).
- **Oracle Solaris I/O Multipathing (MPxIO)**, which enables you to configure the multipathing features for FC devices to control all supported FC HBAs. This feature was formerly known as StorageTek Traffic Manager. For instructions on configuring and administering the Oracle Solaris I/O Multipathing features in Oracle Solaris 11.3, refer to

Managing SAN Devices and Multipathing in Oracle Solaris 11.3. For Oracle Solaris 10, refer to the *Oracle Solaris SAN Configuration and Multipathing Guide* in [Oracle Solaris 10 documentation](#).

- **Oracle VM Server for SPARC Virtual Disk Multipathing (mpgroups)**, which enables you to configure a virtual disk on a guest domain to access its back-end storage by more than one path. For instructions on configuring and administering Oracle VM Server for SPARC Virtual Disk Multipathing, refer to the *Oracle VM Server for SPARC 3.5 Administration Guide*.

Related Information

- [Administering TCP/IP Networks, IPMP, and IP Tunnels in Oracle Solaris 11.3](#)
- Oracle Solaris 10 documentation and the *Oracle Solaris SAN Configuration and Multipathing Guide* at <http://www.oracle.com/pls/topic/lookup?ctx=solaris10>
- Oracle VM Server for SPARC documentation and the *Oracle VM Server for SPARC 3.5 Administration Guide* at <http://www.oracle.com/goto/vm-sparc/docs>
- “Multipathing Software Overview” on page 38

Understanding Oracle Auto Service Request

These topics describe how Oracle Auto Service Request (Oracle ASR) runs on these servers.

- “Oracle ASR Overview” on page 39
- “Oracle ASR Activation” on page 40

Related Information

- [Oracle Auto Service Request documentation \(http://docs.oracle.com/cd/E37710_01/index.html\)](http://docs.oracle.com/cd/E37710_01/index.html)
- *How to Approve Pending ASR Assets In My Oracle Support* (DOC ID 1329200.1) at <https://support.oracle.com>

Oracle ASR Overview

When you have completed the initial installation and Oracle Solaris configuration, you can activate 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 System 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 are 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, Oracle Premium Support for Systems, and Oracle Platinum Services at <https://www.oracle.com/support/premier/index.html>.

Related Information

- [Oracle Auto Service Request documentation \(http://docs.oracle.com/cd/E37710_01/index.html\)](http://docs.oracle.com/cd/E37710_01/index.html)
- “Identifying Components” in *SPARC M8 and SPARC M7 Servers Service Manual*
- “Oracle ASR Activation” on page 40

Oracle ASR Activation

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

Related Information

- [Oracle Auto Service Request documentation \(http://docs.oracle.com/cd/E37710_01/index.html\)](http://docs.oracle.com/cd/E37710_01/index.html)
- “Oracle ASR Overview” on page 39

Accessing the Server

These topics describe how to access the server using various administration tools:

- [“Logging In to Oracle ILOM”](#) on page 41
- [“Log Out of Oracle ILOM”](#) on page 45
- [“Start the Host Console”](#) on page 45
- [“Accessing the OpenBoot Prompt”](#) on page 48
- [“Redirecting KVMs Devices”](#) on page 50

Related Information

- [Oracle ILOM documentation \(http://www.oracle.com/goto/ilo/doc\)](http://www.oracle.com/goto/ilo/doc)
- [“Oracle ILOM Overview”](#) on page 16

Logging In to Oracle ILOM

Oracle ILOM is available when the server or host is in any of these modes:

- Standby power mode
- System powered on, but host not running
- While the OS is booting
- Fully powered on and booted

Use the following information to log in to Oracle ILOM.

| Description | Links |
|---|--|
| Identify default account name and password. | “Oracle ILOM Root Password” on page 42 |
| Log in to and out of the Oracle ILOM CLI and web interface. | “Log In to Oracle ILOM (CLI)” on page 43 “Log In to Oracle ILOM (Web Interface)” on page 42 |

| Description | Links |
|-------------|---|
| | “Log Out of Oracle ILOM” on page 45 |

Related Information

- [Oracle ILOM 4.0 documentation \(https://docs.oracle.com/cd/E81115_01/\)](https://docs.oracle.com/cd/E81115_01/)
- [Oracle ILOM 3.2 documentation \(https://docs.oracle.com/cd/E37444_01/\)](https://docs.oracle.com/cd/E37444_01/)
- [“Updating the Firmware” on page 129](#)
- [“Controlling the System or Host State” on page 61](#)

Oracle ILOM Root Password

The servers ship with a root account that you use to initially log in to Oracle ILOM. This account has administrative privileges (read and write) for all Oracle ILOM features, functions, and commands. The factory set password is changeme.

To prevent unauthorized access, change the password. You must have user (u) permissions to change the root password.

Note - To provide optimum server security, change the factory set server password.

Related Information

- [Oracle ILOM 4.0 documentation \(https://docs.oracle.com/cd/E81115_01/\)](https://docs.oracle.com/cd/E81115_01/)
- [Oracle ILOM 3.2 documentation \(https://docs.oracle.com/cd/E37444_01/\)](https://docs.oracle.com/cd/E37444_01/)
- [“Log In to Oracle ILOM \(Web Interface\)” on page 42](#)
- [“Log In to Oracle ILOM \(CLI\)” on page 43](#)

▼ Log In to Oracle ILOM (Web Interface)

You must configure the SP parameters shown in [“Configuring the SP Network” on page 115](#) before you can use the Oracle ILOM web interface. After the SP boots, access Oracle ILOM to configure and manage the system.

1. **Ensure that you have network access to the SP you want to administer.**
Refer to [SPARC M8 and SPARC M7 Servers Installation Guide](#) for available connections.

2. **In a web browser, type the IP address for the Active SP that you want to administer.**

For information about locating the IP address for ACTIVE_SP, SP0, or SP1, see [“Configure the IPv4 and IPv6 Static IP Addresses for a Specific SP or Host” on page 120](#).

Note - You can connect to the SPM (SPM0 or SPM1) that manages a specific PDomain by using the IP address for that SPM or the host name. However, you will not be able to switch to the Summary page for the SP that is managing the entire server or to the Summary page for any of the other PDomains on the server.



Caution - Depending on the browser and on the presence of security certificates, you might encounter an error or warning message that you must acknowledge or can ignore before the Oracle ILOM login prompt is displayed.

3. **Type an Oracle ILOM user name and password, and then click Log In.**

The System Information Summary page is displayed.

Related Information

- [Oracle ILOM 4.0 documentation \(https://docs.oracle.com/cd/E81115_01/\)](https://docs.oracle.com/cd/E81115_01/)
- [Oracle ILOM 3.2 documentation \(https://docs.oracle.com/cd/E37444_01/\)](https://docs.oracle.com/cd/E37444_01/)
- [“Log In to Oracle ILOM \(CLI\)” on page 43](#)
- [“Log Out of Oracle ILOM” on page 45](#)

▼ Log In to Oracle ILOM (CLI)

The servers support 25 simultaneous login sessions. Use this method to log in to the Oracle ILOM CLI when you are logging in over the network.

1. **Access a terminal device that is connected to the SP through the network.**
2. **Open one or more terminal sessions.**

Use one of the terminal sessions to access and use the Oracle ILOM software. Use the other terminal session to access the host consoles if you plan to start the hosts, if they are not already running, and access Oracle Solaris (see [“Start a Host” on page 63](#)).

Note - You can use one terminal session to access the Oracle ILOM CLI, start the host, and then start the host console. However, if you use this method, you will not see the initial startup messages. If you need to see those messages, you can review them in the console history log.

3. In the terminal sessions, log in to Oracle ILOM in one of the following ways:

- **If you are logging in with the default root account, type the following at the terminal prompt:**

```
$ ssh root@IP-address-of-SP
```

You can also use the system identifier as in this example:

```
$ ssh root@system-identifier-sp
```

- **If you are logging in with a user account that was created for you by the system administrator, type the following at the system prompt:**

```
$ ssh user@IP-address-of-SP
```

Note - Normally, when you enter an IPv6 address or Link-Local IPv6 address, you must enclose the address within brackets. However, when you specify an IPv6 address to log in to Oracle ILOM using SSH, do not enclose the IPv6 address in brackets.

4. At the log-in prompt, if necessary type the password of your user account (for the default root account, this is changeme).

When the Oracle ILOM prompt is displayed (-> is the default prompt), you are connected to the SP and can now use Oracle ILOM to administer the server.

Related Information

- [Oracle ILOM 4.0 documentation \(https://docs.oracle.com/cd/E81115_01/\)](https://docs.oracle.com/cd/E81115_01/)
- [Oracle ILOM 3.2 documentation \(https://docs.oracle.com/cd/E37444_01/\)](https://docs.oracle.com/cd/E37444_01/)
- “Log In to Oracle ILOM (Web Interface)” on page 42
- “Log Out of Oracle ILOM” on page 45
- “Start the Host Console” on page 45

▼ Log Out of Oracle ILOM

- Perform one of these actions:
 - From the Oracle ILOM prompt, type:

```
-> exit
```
 - From the Oracle ILOM web interface:
Click the Log Out button in the upper right corner.

Related Information

- [Oracle ILOM 4.0 documentation \(https://docs.oracle.com/cd/E81115_01/\)](https://docs.oracle.com/cd/E81115_01/)
- [Oracle ILOM 3.2 documentation \(https://docs.oracle.com/cd/E37444_01/\)](https://docs.oracle.com/cd/E37444_01/)
- “Log In to Oracle ILOM (Web Interface)” on page 42
- “Start the Host Console” on page 45

▼ Start the Host Console

To start the host console, you must specify the PDomain number to which you want to connect. On a SPARC M8-8 or SPARC M7-8 server with two PDomains, the PDomain numbers are either 0 or 1. On a SPARC M8-8 or SPARC M7-8 server with one PDomain, the PDomain number is always 0. The SPARC M7-16 server has one host console for each of the four possible PDomains.

This task uses PDomain_0, HOST0, and DCU_0 as examples. This task also assumes that the host is already running. You must have the console role (c) to complete this task.

Tip - To use the Oracle ILOM CLI and the host console simultaneously, start two CLI sessions. Use one session to start the host console, and use the other session to access the Oracle ILOM CLI.

Note - You can use a single terminal session to access the Oracle ILOM CLI, start the host, and then start the host console, in that sequence. However, you will not see the initial startup messages. If you need to see those messages, you can review the host console log.

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

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. View the system information.

Check the system health property. If it indicates that the system requires service, check the health details. You might need to address some or all of the faults. The following output has been edited for clarity. The output shows that there are two open problems. As indicated, run the `show /System/Open_Problems` command to view details about the faults.

```
-> show /System
...
  Properties:
    health = Service Required
    health_details = PS5 (Power Supply 5), PS4 (Power Supply 4) are faulty.
    Type 'show /System/Open_Problems' for details.
    open_problems_count = 2
...
->

-> show /System/Open_Problems

Open Problems (2)
Date/Time          Subsystems          Component
-----
Tue Sep 27 15:28:13 2015  Power                PS5 (Power Supply 5)
  A power supply AC input voltage failure has occurred. (Probability:100,
  UUID:7df1a763-018d-c45b-e645-a7717ec5f89e, Resource:/SYS/PS5/SUPPLY,
  Part Number:7068817, Serial Number:465776G+1348B20C46, Reference
  Document:http://support.oracle.com/msg/SPT-8000-5X)
Tue Sep 27 15:28:19 2015  Power                PS4 (Power Supply 4)
  A power supply AC input voltage failure has occurred. (Probability:100,
  UUID:532e9def-fe5c-c481-920b-8bc42c680418, Resource:/SYS/PS4/SUPPLY,
  Part Number:7068817, Serial Number:465776G+1348B20C7N, Reference
  Document:http://support.oracle.com/msg/SPT-8000-5X)
->
```

3. View the state and status of the host.

This output has been edited for clarity. If the `power_state` property is `Off`, you can start the host console, but the `PDomain` prompt is not displayed. If the `power_state` property is `Off`, the host is not running. If the status value is `OpenBoot Primary Boot Loader` or `OpenBoot Running`, the host is running, but it is at the `ok` prompt. Finally, if the value is `Solaris running`, the host is running, and it is at the Oracle Solaris prompt.

```
-> show /Servers/PDomains/PDomain_0/HOST
...
  power_state = On
  send_break_action = (Cannot show property)
```

```

sp_name = /SYS/SP0/SPM0
state_capture_mode = default
state_capture_on_error = enabled
state_capture_status = enabled
status = OpenBoot Running
...
->

```

4. **For the SPARC M7-16 server only, view the `dcus_assigned` property for the host to which you want to connect.**

```
-> show /Servers/PDomains/PDomain_0/HOST dcus_assigned
```

```

/Servers/PDomains/PDomain_0/HOST
Properties:
  dcus_assigned = /SYS/DCU0

```

```
->
```

If the host has no DCUs assigned to it, you cannot start the host, nor can you start the host console. This message is displayed if you try to start the host console:

Set `dcus_assigned` for `/HOST0` before starting console.

If no DCUs are assigned, see [“Assign a DCU to a Host” on page 143](#).

5. **Start the host console for the PDomain.**

Note - You will not see the PDomain prompt if the host is not running. To start the host, see [“Start a Host” on page 63](#).

```
-> start /Servers/PDomains/PDomain_0/HOST/console [-f|force] [-script]
Are you sure you want to start /Servers/PDomains/PDomain_0/HOST/console (y/n)? y
```

Serial console started. To stop, type #.

```
root@system-identifier-pd0:~#
```

- `-f|force` – Enables you to take control of the console from any current user and to force that user into view mode. You must have the console role (c) to use this option. If you use this option, other users will receive warnings that their connections have been forced into read-only mode. Each time a console session that used the `-f|force` option exits, read-write status is restored to the next user in line with the first user’s read-write status being restored last.
- `-script` – Bypasses the prompt for a yes or no confirmation.

Note - After the host console has started, you might need to press Enter to make the PDomain prompt appear.

6. **To switch back to the Oracle ILOM prompt, type the escape characters (#. are the default characters).**

Note - To change the escape characters, type `set /Servers/PDomains/PDomain_0/HOST/console escapechars=new-characters`.

Related Information

- [Oracle ILOM 4.0 documentation \(https://docs.oracle.com/cd/E81115_01/\)](https://docs.oracle.com/cd/E81115_01/)
- [Oracle ILOM 3.2 documentation \(https://docs.oracle.com/cd/E37444_01/\)](https://docs.oracle.com/cd/E37444_01/)
- “Log In to Oracle ILOM (Web Interface)” on page 42
- “Log Out of Oracle ILOM” on page 45
- “Start a Host” on page 63

Accessing the OpenBoot Prompt

When accessing the OpenBoot prompt (ok) on a SPARC M8 or SPARC M7 series server, you must specify the HOSTx name of the PDomain to which you want to connect.



Caution - When you need to shut down the OS to obtain the OpenBoot prompt, do so by performing a graceful shut down of the OS with the `init` or `shutdown` command. Any other method might result in the loss of server state data.

Related Information

- “OpenBoot Prompt Overview” on page 49
- “Obtaining the OpenBoot Prompt” on page 49
- OpenBoot documentation at <http://www.oracle.com/goto/openboot/docs>
- *Oracle OpenBoot 4.x Administration Guide*

OpenBoot Prompt Overview

When the host is powered on, but the OS is not booted, the OpenBoot prompt (ok) is displayed. You can use the help command at the ok prompt to view information about the OpenBoot commands you can use.

These are common tasks that you can perform at the OpenBoot prompt.

| Task | More Information |
|-------------------------------|---|
| Boot the host | “Boot the OS Manually (OpenBoot Prompt)” on page 77 |
| Configure OpenBoot parameters | “Display OpenBoot Variables” on page 153 “Change the Default Boot Device (OpenBoot)” on page 149 |

For information about OpenBoot commands, see the [Oracle OpenBoot 4.x Administration Guide](#).

Related Information

- [“Obtaining the OpenBoot Prompt” on page 49](#)
- [Oracle OpenBoot 4.x Administration Guide](#)

Obtaining the OpenBoot Prompt

There are several ways to access the OpenBoot CLI, and the method you use is based on the status of the host.

| Host Status | More Information |
|---|--|
| Host powered on but Oracle Solaris is not running. ILOM status shows OpenBoot running | “Access the OpenBoot CLI (OpenBoot Running)” in Oracle OpenBoot 4.x Administration Guide |
| ILOM status shows Solaris running | “Access the OpenBoot CLI (Solaris Running)” in Oracle OpenBoot 4.x Administration Guide |
| ILOM status shows Powered off | “Access the OpenBoot CLI (Powered Off)” in Oracle OpenBoot 4.x Administration Guide |
| Host not responding | “Access the OpenBoot CLI (Hung System)” in Oracle OpenBoot 4.x Administration Guide |

Related Information

- [“Accessing the OpenBoot CLI and Getting Help” in *Oracle OpenBoot 4.x Administration Guide*](#)
- [“OpenBoot Prompt Overview” on page 49](#)

Redirecting KVMS Devices

The KVMS software that is preinstalled on these servers allows for both video-redirection and serial-redirection connections to the Oracle Solaris OS. However, only the serial-redirection connection supports the Oracle Solaris console. Video redirection provides a graphical display to the Oracle Solaris desktop.

SPARC M8 servers cannot perform video redirection through the Oracle ILOM Remote System Console. You must use Oracle ILOM Remote VNC Console.

Console messages can be seen only over the serial-redirection connections and not over video-redirection connections. To see the redirected devices at the OpenBoot prompt, you need to start the video-redirection window before OpenBoot runs. If you start the session after OpenBoot starts, type `reset -all` to discover and display the redirected devices.

Note - For information about configuring remote redirection using the Oracle ILOM Remote System Console Plus, refer to [“Using the Oracle ILOM Remote System Console Plus” in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*](#).

These topics describe how to configure remote redirection using the CLI.

- [“Configure KVMS Settings” on page 51](#)
- [“Enable Video Redirection From Oracle Solaris” on page 52](#)
- [“KVMS Connections After a Reboot” on page 54](#)

Related Information

- [“Understanding How Oracle Solaris Manages Multiple Display Devices on the SPARC M7 Servers” on page 55](#)

- [“Using Remote KVMS Consoles for Host Server Redirection” in Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x](#)

▼ Configure KVMS Settings

This task uses PDomain_0 as an example.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. View the current KVMS properties.

```
-> show /Servers/PDomains/PDomain_0/SP/services/kvms
```

```
/Servers/PDomains/PDomain_0/SP/services/kvms
```

```
Targets:
```

```
host_storage_device
```

```
Properties:
```

```
custom_lock_key = (none)
custom_lock_modifiers = (none)
lockmode = disabled
max_session_count = 4
mousemode = absolute
servicestate = enabled
```

```
...
```

```
->
```

See [“Configure Local Client KVMS Settings”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x* for information about these properties.

3. Specify the correct settings from the following location.

```
-> set /Servers/PDomains/PDomain_0/SP/services/kvms property=value
```

where *property* can be any of these values.

| | |
|-----------------|---|
| custom_lock_key | Requires the console role (c). The possible values for this property are: esc, end, tab, ins, del, home, enter, space, break, backspace, pg_up, pg_down, scrl_lck, sys_rq, num_plus, num_minus, f1, f2, f3, f4, f5, f6, f7, f8, f9, f10, f11, f12, a-z, 0-9, !, @, #, \$, %, ^, &, *, (,), -, _, =, +, ?, , ~, [, {,], }, ;, :, <, ., >, / |
|-----------------|---|

| | |
|------------------------------------|---|
| <code>custom_lock_modifiers</code> | Requires the console role (c). You can set up to four values for this property, separated by commas. The possible values for this property are: <code>l_alt, r_alt, l_shift, r_shift, l_ctrl, r_ctrl, l_gui, r_gui</code> |
| <code>lockmode</code> | Requires the console role (c). The possible values for this property are: <code>disabled</code> (the default), <code>windows</code> , and <code>custom</code> . |
| <code>max_session_count</code> | Requires the console role (c). The possible values for this property are: 1, 2, 3, or 4 (the default) |
| <code>mousemode</code> | Requires the console role (c). The possible values for the property are: <code>absolute</code> or <code>relative</code> (the default) |
| <code>servicestate</code> | Requires the admin role (a). The possible values for this property are: <code>enabled</code> (the default) or <code>disabled</code> |

4. To enable KVMS access to a PDomain, configure the SP network settings for a specific host.

See [“Configure the Host IP Address for rKVMS” on page 124.](#)

Related Information

- [“Enable Video Redirection From Oracle Solaris” on page 52](#)
- [Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x](#)

▼ **Enable Video Redirection From Oracle Solaris**

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43.](#)

2. Start the host console.

See [“Start the Host Console” on page 45.](#)

3. If necessary, start the host.

See [“Start a Host” on page 63.](#)

4. **Log in to Oracle Solaris and switch to the root role or other administrator role by using the `su` command.**

5. **From the Oracle Solaris prompt, install the `solaris-desktop` packages.**

```
# pkg install group/system/solaris-desktop
```

6. **Reboot the host to start the GNOME display manager server.**

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

After the host reboots, the GNOME display manager service `gdm` starts and runs in the background.

In general, use these commands to control the GNOME display manager service when needed:

- Disable the `gdm` service:

```
# svcadm disable gdm
```

- Enable the `gdm` service:

```
# svcadm enable gdm
```

- Restart the `gdm` service:

```
# svcadm restart gdm
```

Note - The OpenBoot `input-device=rkeyboard` and `output-device=rscreen` properties are not supported on these servers.

7. **Access the Oracle Solaris desktop using one of the remote consoles.**

For SPARC M8 servers and SPARC M7 servers, you can use Oracle ILOM Remote VNC Console as described in [“Connecting to the Oracle ILOM Remote System VNC Console” in Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x](#).

For SPARC M7 servers only, you can also use Oracle ILOM Remote System Console as described in [“Launching and Using the Oracle ILOM Remote System Console Plus” in Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x](#)

Related Information

- [“Oracle Solaris Overview” on page 28](#)
- [Oracle Solaris 11.3 Desktop Administrator's Guide \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11&SDSAG\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11&SDSAG)

▼ Enable a Local Display Monitor

If you have purchased and installed a graphics card in your SPARC M8-8 server, perform the following procedure to enable the X server to provide display services to the monitor. By default, the SPARC M8-8 server is configured to use Xvnc as the X server. This procedure shows how to override the Xvnc server and enable the Xorg server which must be used to display to a monitor.

Note - This procedure prevents use of Oracle ILOM Remote System VNC Console.

1. **Log in to Oracle Solaris and switch to the root role or other administrator role by using the `su` command.**
2. **Use the following command to disable the Xvnc server and enable the Xorg server.**

```
# svccfg -s application/x11/x11-server setprop options/vncplatform_override = boolean: true
```

3. **Restart the display manager service.**

```
# svcadm restart gdm
```

4. **(Optional) List the value of the property.**

```
# svcprop -p options/vncplatform_override svc:/application/x11/x11-server
```

KVMS Connections After a Reboot

On the servers, one SPM in the PDomain is selected as the PDomain SPM, which is responsible for hosting the KVMS server. If this SPM reboots, or if a different SPM is selected to become the PDomain SPM (due to user actions or a detected fault on the current PDomain SPM), the network connection to Oracle ILOM Remote System Console Plus will terminate. The PDomain will not automatically attempt to reestablish the link.

If you need to reestablish remote links, refer to the help topic in the Oracle ILOM web interface.

Related Information

- [“SP Network Overview” on page 116](#)

- [SPARC M8 and SPARC M7 Servers Service Manual](#)

Understanding How Oracle Solaris Manages Multiple Display Devices on the SPARC M7 Servers

The SPARC M7 servers have redundant SPs. To support the replacement of SPs while the host is running, new support was introduced for individual X sessions to be started and stopped. Starting and stopping of an individual X session is automatically handled when enabling an SP after its addition or preparing an SP for removal. Under normal conditions, you should not have to administer X sessions on these servers.

Note - SPARC M8 servers do not support these tasks because only VNC is supported for video redirection.

If for some reason, the automated nature of the X sessions is not working, you can manually configure them. These topics describe how to configure dynamic X sessions.

- [“Enable Dynamic X Sessions” on page 55](#)
- [“Add a Dynamic X Session” on page 57](#)
- [“Delete a Dynamic X Session” on page 58](#)
- [“Restart a Dynamic X Session” on page 59](#)

Related Information

- [“Redirecting KVMs Devices” on page 50](#)
- [Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x](#)
- [Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 3.2.x](#)

▼ Enable Dynamic X Sessions

Note - The GNOME desktop runs on the X Window System. In this procedure, the term *X session* is used generically to identify this environment.

For more information about the `/usr/lib/ConsoleKit/dsession` command, use the `--help` option. To learn more about the GNOME desktop and ConsoleKit, see the `gdm(1M)` and `console-kit-daemon(1M)` man pages.

You must have the console role (c) and the admin role (a) in Oracle ILOM and administrator privileges on Oracle Solaris to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Start the host console.

See [“Start the Host Console”](#) on page 45.

3. If necessary, start the host.

See [“Start a Host”](#) on page 63.

4. If necessary, switch to the root role or other administrator role by using the `su` command.

5. Disable the GNOME display manager.

```
# svcadm disable gdm
```

6. Set the ConsoleKit `consolekit/sessions` property to an empty string.

```
# svccfg -s system/consolekit setprop \  
consolekit/sessions = astring: ""
```

7. Restart the `consolekit` service to enable the `consolekit/sessions` property.

```
# svcadm restart consolekit
```

8. Enable the GNOME display manager.

```
# svcadm enable gdm
```

Related Information

- [“Add a Dynamic X Session”](#) on page 57
- [“Delete a Dynamic X Session”](#) on page 58
- [“Restart a Dynamic X Session”](#) on page 59
- [“User Roles on the SP”](#) on page 20

- [Securing Systems and Attached Devices in Oracle Solaris 11.3](#)
- [Oracle Solaris 11 documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)

▼ Add a Dynamic X Session

When the GNOME display manager starts, dynamic X sessions are added for all display devices (one for each device).

Note - The GNOME desktop runs on the X Window System. In this task, the term *X session* is used generically to identify this environment.

For more information about the `/usr/lib/ConsoleKit/dsession` command, use the `--help` option. To learn more about the GNOME desktop and ConsoleKit, see the `gdm(1M)` and `console-kit-daemon(1M)` man pages.

You must have the console role (c) and the admin role (a) in Oracle ILOM and administrator privileges on Oracle Solaris to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.
2. **Start the host console.**
See [“Start the Host Console”](#) on page 45.
3. **If necessary, start the host.**
See [“Start a Host”](#) on page 63.
4. **If necessary, switch to the root role or other administrator role by using the `su` command.**
5. **At the superuser prompt, type:**

```
# /usr/lib/ConsoleKit/dsession --add device-path
```

where *device-path* is a valid path to a display device.

Related Information

- [“Enable Dynamic X Sessions”](#) on page 55

- [“Delete a Dynamic X Session” on page 58](#)
- [“Restart a Dynamic X Session” on page 59](#)

▼ Delete a Dynamic X Session

When the GNOME display manager is terminated, all of the dynamic X sessions are deleted.

Note - The GNOME desktop runs on the X Window System. In this task, the term *X session* is used generically to identify this environment.

For more information about the `/usr/lib/ConsoleKit/dsession` command, use the `--help` option. To learn more about the GNOME desktop and ConsoleKit, see the `gdm(1M)` and `console-kit-daemon(1M)` man pages.

You must have the console role (c) and the admin role (a) in Oracle ILOM and administrator privileges on Oracle Solaris to complete this task.

- 1. Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
- 2. Start the host console.**
See [“Start the Host Console” on page 45](#).
- 3. If necessary, start the host.**
See [“Start a Host” on page 63](#).
- 4. If necessary, switch to the root role or other administrator role by using the `su` command.**

- 5. At the superuser prompt, display the current dynamic X sessions.**

```
# /usr/lib/ConsoleKit/dsession --list all
```

- 6. Delete the dynamic X session.**

```
# /usr/lib/ConsoleKit/dsession --delete device-path
```

where *device-path* is a valid path to a display device.

You can also delete all of the dynamic X sessions by using the `-f|-fini` option.

Related Information

- [“Enable Dynamic X Sessions” on page 55](#)
- [“Add a Dynamic X Session” on page 57](#)
- [“Restart a Dynamic X Session” on page 59](#)

▼ Restart a Dynamic X Session

When the GNOME display manager is terminated, all of the dynamic X sessions are deleted.

Note - The GNOME desktop runs on the X Window System. In this task, the term *X session* is used generically to identify this environment.

For more information about the `/usr/lib/ConsoleKit/dsession` command, use the `--help` option. To learn more about the GNOME desktop and ConsoleKit, see the `gdm(1M)` and `console-kit-daemon(1M)` man pages.

You must have the console role (c) and the admin role (a) in Oracle ILOM and administrator privileges on Oracle Solaris to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **Start the host console.**
See [“Start the Host Console” on page 45](#).
3. **If necessary, start the host.**
See [“Start a Host” on page 63](#).
4. **If necessary, switch to the root role or other administrator role by using the `su` command.**
5. **At the superuser prompt, type:**

```
# /usr/lib/ConsoleKit/dsession --restart device-path
```

where *device-path* is a valid path to a display device.

Related Information

- [“Enable Dynamic X Sessions” on page 55](#)

- [“Add a Dynamic X Session” on page 57](#)
- [“Delete a Dynamic X Session” on page 58](#)

Controlling the System, Hosts, and SPs

These topics describe how to control the system, hosts, and SPs.

- [“Controlling the System or Host State” on page 61](#)
- [“Booting and Shutting Down the OS” on page 75](#)
- [“Resetting the System, Host, or SP” on page 80](#)

Related Information

- [SPARC M8 and SPARC M7 Servers Service Manual](#)
- [“Configuring Boot and Restart Behavior” on page 147](#)

Controlling the System or Host State

You can start or stop the entire system or a specific host. Use these topics to understand and control the system and host states.

| Description | Links |
|---|--|
| Learn about the different system and host states. | “Server, System, and Host States” on page 62 |
| Change the system or host state. | “Start a Host” on page 63 |
| | “Stop a Host” on page 68 |
| | “Start a Host With Guest Domains” on page 67 |
| | “Stop a Host With Guest Domains” on page 70 |

Related Information

- [“Resetting the System, Host, or SP” on page 80](#)
- [“Configuring Boot and Restart Behavior” on page 147](#)

- [“Booting and Shutting Down the OS” on page 75](#)

Server, System, and Host States

The server can be in one of these states:

| | |
|-------------------------|---|
| No power applied | No power is applied to the server. For example, when the power cords are not connected, or the data center power breaker is off. |
| Standby | Power is applied to the server, the SP is running, but main power is not applied to the system or the host(s). You can access Oracle ILOM on the SP in the Standby state. |
| Fully powered on | The system and the host(s) are powered on. After the system boots the OS in the host(s), you can access the OS. |

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

| | |
|-------------------------------|--|
| Booted | The operating system is running in one of these levels: <ul style="list-style-type: none"> 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. |

The host automatically attempts to boot when you reset or start the host if the OpenBoot `auto-boot?` variable is set to `true` and the Oracle ILOM `auto-boot` property is enabled. In addition, other Oracle ILOM properties can affect the power state of the host, and thus, the boot behavior. This table explains how the `HOST_AUTO_POWER_ON` property and the `HOST_LAST_POWER_STATE` property affect the host power state.

| <code>HOST_AUTO_POWER_ON</code> | <code>HOST_LAST_POWER_STATE</code> | Host Power State Behavior | Boot Behavior |
|---------------------------------|------------------------------------|--|---|
| Enabled | Disabled | Powers on. | The host will boot if the OpenBoot <code>auto-boot?</code> variable is set to <code>true</code> and the Oracle ILOM <code>auto-boot</code> property is enabled. |
| Disabled | Enabled | Restores host to the previous power state. | The host will not boot if the power state was off. If the previous state was on, then the host will boot if the OpenBoot <code>auto-boot?</code> variable is set to <code>true</code> and the Oracle ILOM <code>auto-boot</code> property is enabled. |
| Disabled | Disabled | Remains off. | The host will not boot. |

Related Information

- [Oracle ILOM Getting Started Guide Firmware Release 4.0.x](#)
- [Oracle ILOM Getting Started Guide Firmware Release 3.2.x](#)
- [“Start a Host” on page 63](#)
- [“Stop a Host” on page 68](#)
- [“Reset the System” on page 80](#)
- [“Reset a Host” on page 81](#)
- [“Reset a SP” on page 82](#)

▼ Start a Host

You can start each host separately, or you can start all configured hosts on the server. On a SPARC M8-8 or SPARC M7-8 server with two PDomains, there are two hosts: HOST0 and HOST1. On a SPARC M8-8 or SPARC M7-8 server with one PDomain, there is only one host: HOST0. On the SPARC M7-16 server, there are four possible hosts, depending on the configuration: HOST0, HOST1, HOST2, and HOST3.

Note - The host numbers (for example, HOST0) are enumerated at the root ("/") level. At the PDomain level, the host is not enumerated (for example, /Servers/PDomains/PDomain_0/HOST is HOST0).

After you start the host console(s) in one or more terminal sessions (see [“Start the Host Console” on page 45](#)), use another session to start the system or host so that you do not miss the initial startup messages. You can use one session to perform these steps in the opposite order. However, you will not see the initial startup messages. If you need to see those messages, view the host console history log.

This task uses PDomain_0, HOST0, and DCU_0 as examples. You must have the reset role (r) to start the system or a specific host.

- 1. Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
- 2. Start one or more host consoles for the number of hosts that you want to start.**
See [“Start the Host Console” on page 45](#).
- 3. View the system information.**

Check the system health property. If it indicates that the system requires service, check the health details. You might need to address some or all of the faults. The following output has been edited for clarity. The output shows that there are two open problems. As indicated, run the `show /System/Open_Problems` command to view details about the faults.

```
-> show /System
...
  Properties:
    health = Service Required
    health_details = PS5 (Power Supply 5), PS6 (Power Supply 4) are faulty.
    Type 'show /System/Open_Problems' for details.
    open_problems_count = 2
...
->

-> show /System/Open_Problems

Open Problems (2)
Date/Time          Subsystems          Component
-----
Tue Sep 27 15:28:13 2015  Power              PS5 (Power Supply 5)
  A power supply AC input voltage failure has occurred. (Probability:100,
  UUID:7df1a763-018d-c45b-e645-a7717ec5f89e, Resource:/SYS/PS5/SUPPLY,
  Part Number:7068817, Serial Number:465776G+1348B20C46, Reference
  Document:http://support.oracle.com/msg/SPT-8000-5X)
Tue Sep 27 15:28:19 2015  Power              PS4 (Power Supply 4)
  A power supply AC input voltage failure has occurred. (Probability:100,
  UUID:532e9def-fe5c-c481-920b-8bc42c680418, Resource:/SYS/PS4/SUPPLY,
  Part Number:7068817, Serial Number:465776G+1348B20C7N, Reference
  Document:http://support.oracle.com/msg/SPT-8000-5X)
->
```

4. View the state and status of the host.

The host can be in any one of these states:

- If the `power_state` property is `Off`, the host is not running. You must start the host.
- If the `power_state` property is `On`, but the `status` property is `Off`, the host is not running. You must start the host.
- If the `power_state` property is `On`, and the `status` property is `OpenBoot Primary Boot Loader` or `OpenBoot Running`, the host is running, but it is at the `ok` prompt. You must boot Oracle Solaris.
- If the `power_state` property is `On`, and the `status` property is `Solaris running`, the host is running, and it is at the Oracle Solaris prompt. You can log in directly to the `PDomain`, or you can start the host console.

This output has been edited for clarity.

```
-> show /Servers/PDomains/PDomain_0/HOST
...
    power_state = On
    send_break_action = (Cannot show property)
    sp_name = /SYS/SP0/SPM0
    state_capture_mode = default
    state_capture_on_error = enabled
    state_capture_status = enabled
    status = OpenBoot Running
...
->
```

5. For the SPARC M7-16 server only, view the `dcus_assigned` property for the host that you want to start.

```
-> show /Servers/PDomains/PDomain_0/HOST dcus_assigned

/Servers/PDomains/PDomain_0/HOST
Properties:
    dcus_assigned = /SYS/DCU0

->
```

If the host has no DCUs assigned to it, you cannot start the host. This message is displayed if you try to start the host:

```
start: No DCUs assigned
```

If no DCUs are assigned, see [“Assign a DCU to a Host” on page 143](#).

6. If needed, view the disabled components.

See [“View Disabled Components” on page 113](#). Ensure that there are no disabled components that might prevent you from starting the host.

7. Consider your next step.

■ **If you want to start the system and all of the configured hosts, use this command.**

This example shows the output for the SPARC M7-8 server with two PDomains, which has two hosts. For a SPARC M8-8 or SPARC M7-8 server with one PDomain, you should see only one host. For the SPARC M7-16 server, you should see four hosts.

```
-> start /System
Are you sure you want to start all of the configured hosts on the system (y/n)? y
```

```
Starting /System
start:
/HOST0: Starting
/HOST1: Starting

->
```

Note - On the SPARC M7-16 server, if one of the hosts is already running, you cannot use the start /System command. This message is displayed:

```
start: Target already started
```

If any of the hosts is unconfigured, meaning that a DCU is not assigned to the host, the following message is displayed:

```
start:
/HOST0: Starting
/HOST1: Starting
/HOST2: Starting
/HOST3: No DCUs assigned
```

■ **If you want to start a specific host, use this command.**

```
-> start /Servers/PDomains/PDomain_0/HOST
Are you sure you want to start /Servers/PDomains/PDomain_0/HOST (y/n) ? y
Starting /Servers/PDomains/PDomain_0/HOST

->
```

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

If the host has faulty or disabled components, you might not be able to start the host. This message is displayed in the Oracle ILOM output.

```
start: System faults or hardware configuration prevents power on
```

In this case, you might see one of these messages in the host console.

```
SP> NOTICE: Exclude all of host. Reason: Can't determine compatibility of /SYS/
CMI0U1.
```

```
Remove and reinstall /SYS/CMI0U1 to attempt detection again.
```

```
SP> NOTICE: Check for usable CPUs in /SYS/DCU0
```

```
SP> NOTICE: Apply configuration rules to /SYS/DCU0
```

8. Repeat this command for each of the hosts that you started until you see that the host status displays one of these values.

- OpenBoot Primary Boot Loader
- OpenBoot running
- Solaris running

-> **show /Servers/PDomains/PDomain_0/HOST status**

```
/Servers/PDomains/PDomain_0/HOST
  Properties:
    status = Solaris running
```

->

Related Information

- [Oracle ILOM Getting Started Guide Firmware Release 4.0.x](#)
- [Oracle ILOM Getting Started Guide Firmware Release 3.2.x](#)
- [“Server, System, and Host States” on page 62](#)
- [“Reset the System” on page 80](#)
- [“Reset a Host” on page 81](#)
- [“Reset a SP” on page 82](#)
- [“Stop a Host” on page 68](#)

▼ Start a Host With Guest Domains

If the host is configured with Oracle VM Server for SPARC guest domains, use this procedure to power on the host and start the guest domains simultaneously.

You must have the reset role (r) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Check the status of the boot_guests property.

```
-> show /Servers/PDomains/PDomain_0/HOST/domain/control
  Targets:
```

```
Properties:
  auto-boot = enabled
  boot_guests = enabled
...
->
```

3. Consider your next step.

- **If boot_guests is enabled, go to Step 4.**
- **If boot_guests is not enabled, enable it.**

```
-> set /Servers/PDomains/PDomain_0/HOST/domain/control boot_guests=enabled
```

Note - If you do not set boot_guests to enabled, you must manually boot the guest domains individually.

4. Start the host console.

See [“Start the Host Console” on page 45](#).

5. Start the host.

See [“Start a Host” on page 63](#).

Related Information

- [“Stop a Host” on page 68](#)
- [“Stop a Host With Guest Domains” on page 70](#)

▼ Stop a Host

You can power off each host (PDomain) separately, or you can power off all of the configured hosts.

This task uses PDomain_0 as an example. You must have the reset role (r) to complete this task.

1. Log in to Oracle ILOM.

[“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Stop the host(s) as required for your situation:

- **To shut down the OS gracefully and then power off all of the configured hosts, leaving the server in standby, type the following command.**

The following output is from the SPARC M7-8 server with two PDomains, and assumes that there are no faults that would prevent the hosts from shutting down.

```
-> stop /System
Are you sure you want to stop all of the configured hosts on the system (y/n) y
Stopping /System
stop:
/HOST0: Stopping
/HOST1: Stopping

->
```

The following output is from the SPARC M7-8 server with one PDomain, and assumes that there are no faults that would prevent the host from shutting down.

```
-> stop /System
Are you sure you want to stop all of the configured hosts on the system (y/n) ? y
Stopping /System
stop:
/HOST0: Stopping

->
```

The following output is from the SPARC M7-16 server, and assumes that there are no faults that would prevent the hosts (HOST0 in this case) from shutting down. Also, in this case, only HOST0 has DCUs assigned to it.

```
-> stop /System
Are you sure you want to stop all of the configured hosts on the system (y/n)? y
Stopping /System
stop:
/HOST0: Stopping
/HOST1: No DCUs assigned
/HOST2: No DCUs assigned
/HOST3: No DCUs assigned

->
```

Note - If a host does not shut down successfully, use the `-f` force option.

- **To shut down the OS gracefully and then power off a specific host, type:**

```
-> stop /Servers/PDomains/PDomain_0/HOST
```

```
Are you sure you want to stop /Servers/PDomains/PDomain_0/HOST (y/n) ? y
Stopping /Servers/PDomains/PDomain_0/HOST

->
```

Note - If the host does not shut down successfully, use the `-f` force option.

- **To immediately turn off power to a specific host, type the following command.**

Note - Ensure that all data is saved before typing this command. To bypass the confirmation prompt, use the `-script` option.

```
-> stop -f /Servers/PDomains/PDomain_0/HOST
Are you sure you want to immediately stop /Servers/PDomains/PDomain_0/HOST (y/n) ? y
Stopping /Servers/PDomains/PDomain_0/HOST immediately

->
```

Related Information

- [Oracle ILOM Getting Started Guide Firmware Release 4.0.x](#)
- [Oracle ILOM Getting Started Guide Firmware Release 3.2.x](#)
- [“Start a Host” on page 63](#)
- [“Reset a Host” on page 81](#)
- [“Reset the System” on page 80](#)

▼ Stop a Host With Guest Domains

If the host is configured with multiple Oracle VM for SPARC guest domains, use this procedure to stop the host. You must have the console role (c) and the admin role (a) to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **Start the host console.**
See [“Start the Host Console” on page 45](#).
3. **If needed, ensure that the guest domain configuration is saved to the SP.**

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

4. Stop all of the guest domains.

```
# ldm stop-domain -a
```

5. Unbind all of the guest domains individually.

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

6. Verify that the guest domains are inactive.

```
# ldm ls
```

7. Stop the host.

See [“Stop a Host” on page 68](#).

Note - If the host does not power off successfully, use the `-f` | force option.

Related Information

- [“Start a Host” on page 63](#)
- [“Start a Host With Guest Domains” on page 67](#)

▼ Specify the Host 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, if enabled.

Note - You cannot set `HOST_AUTO_POWER_ON` and `HOST_LAST_POWER_STATE` to enabled at the same time.

You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. 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 host when the SP has been booted.
- disabled – (Default) Keeps the host power off when power is applied if HOST_AUTO_POWER_ON is set to disabled.

Related Information

- [“Restore the Host State at Restart” on page 72](#)
- [“Controlling the System or Host State” on page 61](#)

▼ Restore the Host State at Restart

Use the `/SP/policy HOST_LAST_POWER_STATE` property to control the behavior of the host after an unexpected power outage. When external power is restored, the Oracle ILOM SP 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 memory. If the `HOST_LAST_POWER_STATE` property 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.

Note - The `HOST_AUTO_POWER_ON` property and the `HOST_LAST_POWER_STATE` property are mutually exclusive. You cannot enable them at the same time.

This table explains how the `HOST_AUTO_POWER_ON` property and the `HOST_LAST_POWER_STATE` property affect the host power state.

| HOST_AUTO_POWER_ON | HOST_LAST_POWER_STATE | Host Power State Behavior |
|--------------------|-----------------------|--|
| Enabled | Disabled | Powers on. |
| Disabled | Enabled | Restores host to the previous power state. |
| Disabled | Disabled | Remains off. |

You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

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

where *value* can be:

- enabled – When power is restored, returns the host to the state it was in before the power was removed.
- disabled – (Default) Keeps the host off when power is applied.

Related Information

- [“Specify the Host State at Restart” on page 71](#)
- [“Reset a SP” on page 82](#)

▼ Specify Host Virtual Keyswitch Behavior

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

This task uses `PDomain_0` as an example. You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

```
-> set /Servers/PDomains/PDomain_0/HOST keyswitch_state=value
```

where *value* can be:

- Normal – (Default) The host 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 `Diag target`, resulting in maximum POST being executed.
- Locked – Host power on is allowed. However, you are prohibited from updating flash devices or setting `/Servers/PDomains/PDomain_0/HOST send_break_action=break`.

Related Information

- [“Start a Host” on page 63](#)
- [“Stop a Host” on page 68](#)

▼ Specify the Autorestart Behavior

Use this task to specify what the Active SP should do if the host hangs.

This task uses `PDomain_0` as an example. You must have the reset role (r) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. View the current setting for the autorestart property.

```
-> show /Servers/PDomains/PDomain_0/HOST autorestart
```

```
/Servers/PDomains/PDomain_0/HOST  
Properties:  
  autorestart = reset
```

```
->
```

3. Set the autorestart property to the desired value.

```
-> set /Servers/PDomains/PDomain_0/HOST autorestart=value
```

where *value* can be reset, dumpcore, or none.

Related Information

- [“Start a Host” on page 63](#)
- [“Stop a Host” on page 68](#)

▼ Specify the Restart Behavior Upon a Fatal Error

This task uses `PDomain_0` as an example. You must have the reset role (r) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. View the current setting for the autorunonerror property.

```
-> show /Servers/PDomains/PDomain_0/HOST autorunonerror
```

```
/Servers/PDomains/PDomain_0/HOST
Properties:
  autorunonerror = none
```

```
->
```

3. Set the autorunonerror property to the desired value.

```
-> set /Servers/PDomains/PDomain_0/HOST autorunonerror=value
```

where *value* can be none, powercycle, or poweroff.

Related Information

- [“Start a Host”](#) on page 63
- [“Stop a Host”](#) on page 68

Booting and Shutting Down the OS

There are several ways to boot and shut down the OS. Use the tasks in this table that best suit your situation.

| Description | Links |
|--|---|
| Learn about the boot sequence. | “Boot Sequence” on page 76 |
| Boot the OS at the OpenBoot prompt. | “Boot the OS Manually (OpenBoot Prompt)” on page 77 |
| Shut down the OS using the Oracle Solaris <code>init</code> command. | “Shut Down the OS (<code>init</code> Command)” on page 78 |
| Shut down the OS using the Oracle Solaris <code>shutdown</code> command. | “Shut Down the OS (<code>shutdown</code> Command)” on page 79 |

Related Information

- [“Controlling the System or Host State”](#) on page 61

- [“Resetting the System, Host, or SP” on page 80](#)

Boot Sequence

The boot sequence has changed on these servers. In addition to being able to boot from traditional OpenBoot-accessible boot drives, the servers can now boot from an iSCSI device over IPoIB using an OpenBoot-accessible boot pool that is located on the eUSB devices on the CMIOUs in the PDomain. For more information, see [“iSCSI Devices Using IPoIB” on page 30](#).

For a description of the boot sequence changes and instructions on how you can manage the boot pool by using the `bootadm boot -pool`, refer to [Booting and Shutting Down Oracle Solaris 11.3 Systems](#).

You can configure booting parameters from the OS or at the OpenBoot prompt. You can also affect the boot behavior through Oracle ILOM. These are the primary OpenBoot variables and default values that determine how the host boots (see [“Display OpenBoot Variables” on page 153](#)):

- `diag-switch? false`
- `auto-boot? true`
- `boot-device disk net`

Note - To enable automatic booting, the OpenBoot `auto-boot?` variable must be set to `true` and the Oracle ILOM `auto-boot` property must be enabled.

A new OpenBoot variable has been added (`os - root - device`). This variable defines devices and root file systems for root pools. This is a non-volatile variable that you can view using the `printenv` command at the OpenBoot prompt or using the `eeprom` command at the Oracle Solaris prompt.

Note - For booting from an iSCSI device over IPoIB, the `boot - device` variable shows the path to an eUSB device, and the root partition normally specified there is on the iSCSI device.

Related Information

- [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [“Boot the OS Manually \(OpenBoot Prompt\)” on page 77](#)

▼ Boot the OS Manually (OpenBoot Prompt)

You must have the console role (c) and the admin role (a) to complete this task.

1. **Log in to Oracle ILOM.**
See “[Log In to Oracle ILOM \(CLI\)](#)” on page 43.
2. **Start the host console.**
See “[Start the Host Console](#)” on page 45.
3. **If necessary, and if `auto-boot?` is not set to `true`, start the host.**
See “[Start a Host](#)” on page 63.
4. **Boot the OS using one of these methods:**
 - **Boot from a device that is specified in the OpenBoot `boot-device` variable:**

```
{0} ok boot
```

Note - For booting from an iSCSI device over IPoIB, the `boot-device` variable shows the path to an eUSB device, and the root partition normally specified there is on the iSCSI device.

- **Boot from a specific boot disk if one is specified in the OpenBoot `boot-device` variable:**

```
{0} ok boot disk
```

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

```
{0} ok boot boot-device-path
```

where *boot-device-path* is the path to a valid device from which to boot.



Caution - If you plan to use a boot disk that is part of an FC array to install the OS in a hands-free manner, you must change the device path before you execute this command. In the device path, you must replace `disk@` with `ssd@`. For example, the following device path,

```
/pci@312/pci@1/SUNW,emlxs@0/fp@0,0/disk@w5000cca0172afb6d,0:a
```

should be:

```
/pci@312/pci@1/SUNW,emlxs@0/fp@0,0/ssd@w5000cca0172afb6d,0:a
```

Related Information

- “OpenBoot Configuration Variables” on page 154
- Oracle Solaris documentation (<http://www.oracle.com/pls/topic/lookup?ctx=solaris11>)

▼ Shut Down the OS (`init` Command)

You must have the console role (c) to complete this task.

- 1. Log in to Oracle ILOM.**
See “Log In to Oracle ILOM (CLI)” on page 43.
- 2. Start the host console.**
See “Start the Host Console” on page 45.
- 3. If you logged in to Oracle ILOM with a user account other than the root user, switch to the Oracle Solaris root account by using the `su` command.**
- 4. Shut down the OS.**

Specify run level 0 to shut down the OS and display the OpenBoot prompt. The following example is from the SPARC M7-8 server.

```
# init 0
# svc.startd: The system is coming down. Please wait.
svc.startd: 136 system services are now being stopped.
syncing file systems... done
Program terminated
NOTICE: Entering OpenBoot.
NOTICE: Fetching Guest MD from HV.
NOTICE: Starting additional cpus.
NOTICE: Initializing LDC services.
NOTICE: Probing PCI devices.
NOTICE: Finished PCI probing.

SPARC M7-8, No Keyboard
Copyright (c) 1998, 2014, Oracle and/or its affiliates. All rights reserved.
OpenBoot 4.37.3, 509.5000 GB memory available, Serial #105357064.
Ethernet address 0:10:e0:47:9f:14, Host ID: 12345f01.

{0} ok
```

Related Information

- [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- “Shut Down the OS (shutdown Command)” on page 79

▼ Shut Down the OS (shutdown Command)

You must have the console role (c) to complete this task.

1. **Log in to Oracle ILOM.**
See “[Log In to Oracle ILOM \(CLI\)](#)” on page 43.
2. **Start the host console.**
See “[Start the Host Console](#)” on page 45.
3. **If you logged in to Oracle ILOM with a user account other than the root user, switch to the root account by using the `su` command.**
4. **Shut down the OS.**

Use these command options with the shutdown command:

- `-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.

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

```
Shutdown started.    Mon Oct 10 20:03:04 PDT 2015
```

```
Changing to init state 0 - please wait
Broadcast Message from root (console) on host-name-pd0 Mon Oct 10 20:03:04...
THE SYSTEM host-name-pd0 IS BEING SHUT DOWN NOW !!!
Log off now or risk your files being damaged
```

```
root@host-name-pd0:~# svc.startd: The system is coming down.  Please wait.
svc.startd: 136 system services are now being stopped.
syncing file systems... done
Program terminated
NOTICE: Entering OpenBoot.
```

```
NOTICE: Fetching Guest MD from HV.  
NOTICE: Starting additional cpus.  
NOTICE: Initializing LDC services.  
NOTICE: Probing PCI devices.  
NOTICE: Finished PCI probing.
```

```
SPARC M7-8, No Keyboard  
Copyright (c) 1998, 2014, Oracle and/or its affiliates. All rights reserved.  
OpenBoot 4.37.3, 509.5000 GB memory available, Serial #105357064.  
Ethernet address 0:10:e0:47:9f:14, Host ID: 12345f01.
```

```
{0} ok
```

Related Information

- [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [“Accessing the OpenBoot Prompt” on page 48](#)

Resetting the System, Host, or SP

These topics describe how to reset the system (and all configured hosts), a specific host, or a SP.

- [“Reset the System” on page 80](#)
- [“Reset a Host” on page 81](#)
- [“Reset a SP” on page 82](#)

Related Information

- [“Configuring Boot and Restart Behavior” on page 147](#)
- [“Booting and Shutting Down the OS” on page 75](#)

▼ Reset the System

You do not have to power the entire server off and on to reset the system. However, a reset is not enough when performing certain tasks, such as reassigning DCUs on the SPARC M7-16 server.

You must have the console role (c) and the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

The following output is an example of resetting the system on a SPARC M7-8 server with one PDomain. For a SPARC M8-8 or SPARC M7-8 server with two PDomains, the output will show two hosts, and for the SPARC M7-16 server, the output will show four hosts, if all four hosts are configured.

```
-> reset /System
Are you sure you want to reset all of the configured hosts on the system (y/n)? y
Performing reset on /System
reset:
/HOST0: Resetting

->
```

Related Information

- [“Start a Host” on page 63](#)
- [“Stop a Host” on page 68](#)
- [“Reset a Host” on page 81](#)

▼ Reset a Host

The Oracle ILOM reset command can perform a graceful or forced reset of the host (PDomain). By default, the reset command gracefully resets the host. You must reset each host separately, unless you reset the entire system, as described in [“Reset the System” on page 80](#).

This task uses `PDomain_0` as an example. You must have the console role (c) and the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Start the host console.

See [“Start the Host Console” on page 45](#).

3. Type one of the following commands to reset the host.

- **Perform a graceful reset:**

```
-> reset /Servers/PDomains/PDomain_0/HOST
Are you sure you want to reset /Servers/PDomains/PDomain_0/HOST (y/n) ? y
Performing reset on /Servers/PDomains/PDomain_0/HOST

->
```

- **If a graceful reset is not possible, perform a forced reset:**

```
-> reset -f /Servers/PDomains/PDomain_0/HOST
Are you sure you want to reset /Servers/PDomains/PDomain_0/HOST (y/n) ? y
Performing reset /Servers/PDomains/PDomain_0/HOST

->
```

Related Information

- [Oracle ILOM Getting Started Guide Firmware Release 4.0.x](#)
- [Oracle ILOM Getting Started Guide Firmware Release 3.2.x](#)
- “Server, System, and Host States” on page 62
- “Reset the System” on page 80
- “Reset a SP” on page 82

▼ Reset a SP

On these servers, you can reset all of the SPs. However, you should have to reset only the Active SP.

You must have the reset role (r). You must have the admin role (a) to set the reset_to_defaults property.

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

See “[Log In to Oracle ILOM \(CLI\)](#)” on page 43.

2. **Reset the Active SP:**

- **To reset the Active SP without changing the system configuration, type:**

```
-> reset /SP
Are you sure you want to reset /SP (y/n)? y
```

Performing reset on /SP

->

Note - This command will reset all of the SPs and SPMs. If the Active SP does not reset successfully, use the -f|force option.

■ **To change the reset_to_defaults setting and reset the Active SP, type:**

```
-> set /SP reset_to_defaults=value
-> reset /SP
Are you sure you want to reset /SP (y/n)? y
Performing reset on /SP
```

->

- all – Resets all of the Oracle ILOM configuration data to the default settings at the next SP reset. This action does not erase the log file entries.
- factory – Resets all of the Oracle ILOM configuration data to the default settings, and erases all log files at the next SP reset.
- none – (Default) Resets the SP for normal operation while using the current configurations. Use the none option to cancel a pending reset_to_defaults operation (all or factory) before the next SP reset.



Caution - Under normal conditions, you should not have to reset the SP to the default settings. If you use the all or factory values, all of the IP, subnet, and netmask addresses for the SPs and hosts are removed. You will need to establish a network connection with the serial management port to restore these addresses.

This operation also removes all boot aliases (disk and net) that you created. You will need to re-create these aliases.

Note - If the Active SP does not reset successfully, use the -f|force option.

Related Information

- [Oracle ILOM Getting Started Guide Firmware Release 4.0.x](#)
- [Oracle ILOM Getting Started Guide Firmware Release 3.2.x](#)
- “Server, System, and Host States” on page 62
- “Reset the System” on page 80
- “Reset a Host” on page 81

Monitoring the Server

These topics describe the many ways to monitor the server, including indicators, Oracle ILOM, Oracle Enterprise Manager Ops Center, FMA, and POST. For specific information about indicators, and for complete troubleshooting information, refer to the service manual for your server.

Note - The Oracle ILOM web interface provides easy-to-read summaries of the server components. The web interface also provides platform-specific information and help. Thus, the topics in this guide mainly describe the use of the CLI commands to monitor the server.

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

- [“Locate the Server” on page 86](#)
- [“Obtain the Server Serial Number” on page 87](#)
- [“Display the Server Model Type” on page 87](#)
- [“Display RFID Serial Number \(SPARC M8-8\)” on page 88](#)
- [“View the Power State of the System” on page 89](#)
- [“View the Status of the System” on page 91](#)
- [“View Host Properties” on page 92](#)
- [“View DCU Properties” on page 94](#)
- [“Monitoring CMIOUs and DIMMs” on page 97](#)
- [“Monitoring the System Power” on page 102](#)
- [“Monitoring the Cooling System” on page 105](#)
- [“Monitoring Faults” on page 107](#)
- [“View Disabled Components” on page 113](#)

Related Information

- [“Understanding System Administration Resources” on page 15](#)

- [SPARC M8 and SPARC M7 Servers Service Manual](#)

▼ Locate the Server

If you need to service a component, you can light the system Locate indicator to help easily identify the correct server. You must have the read-only role (o) to complete this task.

You can also perform this task from the Actions panel on the Summary Information page in the Oracle ILOM web interface.

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

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Manage the Locator indicator with the following commands.

- To display the current state of the Locator indicator, type:

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

```
/System
  Properties:
    locator_indicator = Off
```

```
->
```

- To turn on the Locator indicator, type:

```
-> set /System locator_indicator=On
Set 'locator_indicator' to 'On'
```

```
->
```

- To turn off the Locator indicator, type:

```
-> set /System locator_indicator=Off
Set 'locator_indicator' to 'Off'
```

```
->
```

Related Information

- [“Monitoring Faults” on page 107](#)

- [“Obtain the Server Serial Number” on page 87](#)

▼ Obtain the Server Serial Number

- Use one of these methods to obtain the serial number:

- **Use the Oracle ILOM CLI.**

```
-> show /System serial_number

/System
  Properties:
    serial_number = serial-number

->
```

- **Use the Oracle ILOM web interface.**

The server serial number is in the General Information panel on the Summary Information page.

- **Use the label on the server.**

- View the server serial number (SysSN) on the label.
- Use a barcode reader.

The servers also include a radio frequency ID (RFID) tag which you can read with a RFID reader within a 9-foot range. The serial number of the RFID tag is not the same as the serial number of the server, but can be used for asset inventory.

On SPARC M8 servers, you can also use an Oracle ILOM command to find the RFID serial number. See [“Display RFID Serial Number \(SPARC M8-8\)” on page 88](#)

Related Information

- [“Locate the Server” on page 86](#)
- [“Display the Server Model Type” on page 87](#)

▼ Display the Server Model Type

The model type is also displayed in the General Information pane on the Summary Information page in the Oracle ILOM web interface.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Type:

```
-> show /System model
/System
  Properties:
    model = SPARC M8-8

->
```

Related Information

- [“Locate the Server”](#) on page 86
- [“View the Power State of the System”](#) on page 89

▼ Display RFID Serial Number (SPARC M8-8)

The serial number of the RFID tag is not the same as the product serial number of the server, but can be used for asset inventory. You can use a RFID reader or Oracle ILOM command to display the RFID serial number on SPARC M8 servers.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Type:

```
-> show /System rfid_serial_number

/System
  Properties:
    rfid_serial_number = serial-number
```

Related Information

- [“Locate the Server”](#) on page 86
- [“Obtain the Server Serial Number”](#) on page 87
- [“Display the Server Model Type”](#) on page 87

▼ View the Power State of the System

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. **Use the following command:**

```
-> show / -t power_state status
```

Sample output for different server types:

- For a SPARC M8-8 or SPARC M7-8 server with two PDomains:

```
-> show / -t power_state status
```

| Target | Property | Value |
|---|-------------|------------------------------|
| /HOST0 | power_state | On |
| /HOST0 | status | Solaris running |
| /HOST1 | power_state | On |
| /HOST1 | status | OpenBoot Primary Boot Loader |
| /Servers/PDomains/ PDomain_0/HOST | power_state | On |
| /Servers/PDomains/ PDomain_0/HOST | status | Solaris running |
| /Servers/PDomains/ PDomain_0/System | power_state | On |
| /Servers/PDomains/ PDomain_0/System/DCUs/ DCU_0 | power_state | On |
| /Servers/PDomains/ PDomain_0/System/DCUs/ DCU_0/CMIOU_0 | power_state | On |

...->

- For a SPARC M8-8 or SPARC M7-8 server with one PDomain, type:

```
show / -t power_state status
```

| Target | Property | Value |
|-------------------------------------|-------------|-----------------|
| /HOST0 | power_state | On |
| /HOST0 | status | Solaris running |
| /Servers/PDomains/PDomain_0/HOST | power_state | On |
| /Servers/PDomains/PDomain_0/HOST | status | Solaris running |
| /Servers/PDomains/PDomain_0/System | power_state | On |
| /Servers/PDomains/PDomain_0/System/ | power_state | On |

View the Power State of the System

```

DCUs/DCU_0 | |
/Servers/PDomains/PDomain_0/System/ | power_state | On
DCUs/DCU_0/CMIOU_0 | |
/Servers/PDomains/PDomain_0/System/ | power_state | On
DCUs/DCU_0/CMIOU_1 | |
/Servers/PDomains/PDomain_0/System/ | power_state | On
DCUs/DCU_0/CMIOU_2 | |
/Servers/PDomains/PDomain_0/System/ | power_state | On
DCUs/DCU_0/CMIOU_3 | |
/Servers/PDomains/PDomain_0/System/ | power_state | On
DCUs/DCU_0/CMIOU_4 | |
/Servers/PDomains/PDomain_0/System/ | power_state | On
DCUs/DCU_0/CMIOU_5 | |
/Servers/PDomains/PDomain_0/System/ | power_state | On
DCUs/DCU_0/CMIOU_6 | |
/Servers/PDomains/PDomain_0/SP/ | status | ok
powermgmt/budget | |
/Servers/PDomains/PDomain_0/SP/ | status | operational
services/kvms/host_storage_device | |
/System | power_state | On
/System/DCUs/DCU_0 | power_state | On
/System/DCUs/DCU_0/CMIOU_0 | power_state | On
/System/DCUs/DCU_0/CMIOU_1 | power_state | On
/System/DCUs/DCU_0/CMIOU_2 | power_state | On
/System/DCUs/DCU_0/CMIOU_3 | power_state | On
/System/DCUs/DCU_0/CMIOU_4 | power_state | On
/System/DCUs/DCU_0/CMIOU_5 | power_state | On
/System/DCUs/DCU_0/CMIOU_6 | power_state | On
/SP/clients/asr | status | unregistered
/SP/clients/oeshm | status | Disabled
/SP/redundancy | status | Active
/SP/services/fips | status | disabled

```

- For the SPARC M7-16 server, type:

```

-> show / -t power_state status
Target          | Property          | Value
-----+-----+-----
/HOST0          | power_state      | On
/HOST0          | status           | OpenBoot Primary Boot Loader
/HOST1          | power_state      | Off
/HOST1          | status           | Powered Off
/HOST2          | power_state      | Off

```

```

/HOST2          | status          | Powered Off
/HOST3          | power_state     | On
/HOST3          | status          | Solaris running
/Servers/PDomains/ | power_state     | On
  PDomain_0/HOST |                 |
/Servers/PDomains/ | status          | OpenBoot Primary Boot Loader
  PDomain_0/HOST |                 |
/Servers/PDomains/ | power_state     | On
  PDomain_0/System |                 |
/Servers/PDomains/ | power_state     | On
  PDomain_0/System/ |                 |
  DCUs/DCU_0       |                 |
/Servers/PDomains/ | power_state     | On
  PDomain_0/System/ |                 |
  DCUs/DCU_0/CMI0U_0 |                 |
...
->

```

Related Information

- [“Server, System, and Host States” on page 62](#)
- [“Start a Host” on page 63](#)

▼ View the Status of the System

The status of the server components is also displayed in the General Information pane on the Summary Information page in the Oracle ILOM web interface.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **View the status details for the system.**

```

-> show /System/

/System
Targets:
  Open_Problems (1)
  DCUs
  Processors
  Memory
  Power
  Cooling

```



```
-> show /Servers/PDomains/PDomain_0/HOST
```

```
/Servers/PDomains/PDomain_0/HOST
```

```
Targets:
```

```
VPS  
VPS_CPUS  
VPS_MEMORY  
bootmode  
console  
diag  
domain  
status_history  
tpm  
verified_boot
```

```
Properties:
```

```
alert_forwarding = disabled  
autorestart = none  
autorunonerror = powercycle  
bootfailrecovery = none  
bootrestart = none  
boottimeout = 0  
dcus_assigned = /SYS/DCU0  
dimm_sparing = enabled  
gm_version = GM 1.10.0 2017/07/26 19:24  
hostconfig_version = Hostconfig 1.10.0 2017/07/26 19:12  
hostfw_status = Host firmware is up to date  
hypervisor_version = Hypervisor 1.19.0 2017/07/26 18:48  
keyswitch_state = Normal  
macaddress = 00:10:e0:24:76:b0  
maxbootfail = 3  
obp_version = OpenBoot 4.42.0 2017/07/26 13:27  
operation_in_progress = Host start in progress  
post_version = POST 5.7.0 2017/07/26 18:51  
power_state = On  
send_break_action = (Cannot show property)  
sp_name = /SYS/SP0/SPM0  
state_capture_mode = default  
state_capture_on_error = enabled  
state_capture_status = enabled  
status = Powered On  
status_detail = 20170728 16:12:23: Start Host in progress: Step 4 of 7  
sysfw_version = Sun System Firmware 9.8.0 2017/07/26 20:43
```

Related Information

- [“View the Power State of the System” on page 89](#)

- [“View DCU Properties” on page 94](#)

▼ View DCU Properties

You can view the DCU properties on the DCUs page in the Oracle ILOM web interface.

- 1. Log in to Oracle ILOM.**

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

- 2. View information and health status details for all DCUs in the system.**

- For a SPARC M8-8 or SPARC M7-8 server with two PDomains, you should see output similar to this:

```
-> show /System/DCUs/
```

```
/System/DCUs
```

```
Targets:
```

```
DCU_0
```

```
DCU_1
```

```
Properties:
```

```
health = OK
```

```
health_details = -
```

```
installed_dcus = 2
```

```
max_dcus = 2
```

```
dcu_size = 4
```

```
failover = auto
```

```
...
```

```
->
```

- For a SPARC M8-8 or SPARC M7-8 server with one PDomain, you should see output similar to this:

```
-> show /System/DCUs/
```

```
/System/DCUs
```

```
Targets:
```

```
DCU_0
```

```
Properties:
```

```
health = OK
```

```
health_details = -
```

```

installed_dcus = 1
max_dcus = 1
dcu_size = 8
failover = auto

```

- For the SPARC M7-16 server, you should see output that is similar to this:

```
-> show /System/DCUs/
```

```

/System/DCUs
Targets:
  DCU_0
  DCU_1
  DCU_2
  DCU_3

Properties:
  health = OK
  health_details = -
  installed_dcus = 4
  max_dcus = 4
  dcu_size = 4
  failover = auto

```

3. View the health status and properties for a specific DCU.

The output of this command depends on the server model.

This example shows the output from a SPARC M7-8 server with four CMIOUs installed in DCU_0.

```
-> show /System/DCUs/DCU_0
```

```

/System/DCUs/DCU_0
Targets:
  CMIOU_0
  CMIOU_1
  CMIOU_2
  CMIOU_3

Properties:
  health = OK
  health_details = -
  power_state = On
  cpu_summary = Four Oracle SPARC M7
  memory_summary = 512 GB
  location = DCU0 (Domain Configuration Unit 0)

```

```

host_assigned = /HOST0
fan_list = FM0/F0 (Fan Module 0), FM0/F1 (Fan Module 0), FM1/F0 (Fan Module 1),
          FM1/F1 (Fan Module 1), FM2/F0 (Fan Module 2), FM2/F1 (Fan Module 2),
          FM3/F0 (Fan Module 3), FM3/F1 (Fan Module 3), FM4/F0 (Fan Module 4),
          FM4/F1 (Fan Module 4), FM5/F0 (Fan Module 5), FM5/F1 (Fan Module 5),
          FM6/F0 (Fan Module 6), FM6/F1 (Fan Module 6), FM7/F0 (Fan Module 7),
          FM7/F1 (Fan Module 7)
sp_name = /SYS/SP0/SPM0
initiate_sp_failover = (none)

```

->

This example shows the output from a SPARC M8-8 server with eight CMIOUs installed in DCU_0.

-> **show /System/DCUs/DCU_0**

```

/System/DCUs/DCU_0
Targets:
  CMIOU_0
  CMIOU_1
  CMIOU_2
  CMIOU_3
  CMIOU_4
  CMIOU_5
  CMIOU_6
  CMIOU_7

Properties:
  health = OK
  health_details = -
  power_state = On
  cpu_summary = Eight Oracle SPARC M8
  memory_summary = 4096 GB
  location = DCU0 (Domain Configuration Unit 0)
  host_assigned = /HOST0
  fan_list = FM0/F0 (Fan Module 0), FM0/F1 (Fan Module 0), FM1/F0 (Fan Module 1),
FM1/F1
              (Fan Module 1), FM2/F0 (Fan Module 2), FM2/F1 (Fan Module 2), FM3/F0
(Fan
              Module 3), FM3/F1 (Fan Module 3), FM4/F0 (Fan Module 4), FM4/F1 (Fan
Module
              4), FM5/F0 (Fan Module 5), FM5/F1 (Fan Module 5), FM6/F0 (Fan Module
6),
              FM6/F1 (Fan Module 6), FM7/F0 (Fan Module 7), FM7/F1 (Fan Module 7)
  sp_name = /SYS/SP0/SPM0
  initiate_sp_failover = (none)

```


Related Information

- [“View the Power State of the System” on page 89](#)
- [“View Host Properties” on page 92](#)

Monitoring CMIOUs and DIMMs

These topics describe how to monitor CMIOUs and DIMMs.

- [“CMIOU and DIMM Configuration Overview” on page 97](#)
- [“Display Summary of Installed CMIOUs” on page 98](#)
- [“View the State and Health of a CMIOU” on page 100](#)
- [“View DIMM Locations” on page 101](#)
- [“View the Health and State of a DIMM” on page 102](#)

Related Information

- [“Servicing CMIOUs” in *SPARC M8 and SPARC M7 Servers Service Manual*](#)
- [“Servicing DIMMs” in *SPARC M8 and SPARC M7 Servers Service Manual*](#)

CMIOU and DIMM Configuration Overview

This section lists the number of PDomains, DCUs, and CMIOU slots that are available in the servers, followed by the administrative path to each component in Oracle ILOM.

Note - To ensure proper operation of the server, follow the CMIOU configuration guidelines described in the Service Manual. For more information, refer to [“Servicing CMIOUs” in *SPARC M8 and SPARC M7 Servers Service Manual*](#).

| Model | PDomains | DCUs | CMIOU Slots | DIMM Slots | PCIe Slots |
|----------------------------------|----------------|---------|-------------------------|--------------|-------------|
| SPARC M8-8 server (two PDomains) | 2 static (0-1) | 2 (0-1) | 4 per DCU (0-3 and 4-7) | 16 per CMIOU | 3 per CMIOU |
| SPARC M8-8 server (one PDomain) | 1 static (0) | 1 (0) | 8 per DCU (0-7) | 16 per CMIOU | 3 per CMIOU |

| Model | PDomains | DCUs | CMIOU Slots | DIMM Slots | PCIe Slots |
|----------------------------------|-----------------|---------|---------------------------------------|--------------|-------------|
| SPARC M7-8 server (two PDomains) | 2 static (0-1) | 2 (0-1) | 4 per DCU (0-3 and 4-7) | 16 per CMIOU | 3 per CMIOU |
| SPARC M7-8 server (one PDomain) | 1 static (0) | 1 (0) | 8 per DCU (0-7) | 16 per CMIOU | 3 per CMIOU |
| SPARC M7-16 | 4 dynamic (0-3) | 4 (0-3) | 4 per DCU (0-3, 4-7, 8-11, and 12-15) | 16 per CMIOU | 3 per CMIOU |

The Oracle ILOM administrative paths are as follows:

| | |
|-----------------|--|
| PDomains | <code>/Servers/PDomains/PDomain_n</code> |
| DCUs | <code>/System/DCUs/DCU_n</code> |
| CMIOUs | <code>/System/DCUs/DCU_n/CMIOU_n</code> |
| DIMMs | <code>/System/Memory/DIMMs/DIMM_n</code> |

Related Information

- [“Servicing CMIOUs” in SPARC M8 and SPARC M7 Servers Service Manual](#)
- [“Servicing DIMMs” in SPARC M8 and SPARC M7 Servers Service Manual](#)
- [“Display Summary of Installed CMIOUs” on page 98](#)

▼ Display Summary of Installed CMIOUs

You can view the details about the installed CMIOUs on the Processors page in the Oracle ILOM web interface.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **Use one of these methods to display information about the CMIOUs installed in the system or DCUs.**

- **Determine the total number of CMIOUs installed in the system.**

```
-> show /System/Processors summary_description
```

```
/System/Processors
Properties:
  summary_description = Eight Oracle SPARC M7
```

->

- **For a SPARC M8-8 or SPARC M7-8 server with two PDomains, determine how many CMIOUs are installed in the two DCUs.**

```
-> show -level 2 /System/DCUs cpu_summary
```

```
/System/DCUs/DCU_0
Properties:
  cpu_summary = Four Oracle SPARC M7
```

```
/System/DCUs/DCU_1
Properties:
  cpu_summary = Four Oracle SPARC M7
```

->

- **For a SPARC M8-8 or SPARC M7-8 server with one PDomain, determine how many CMIOUs are installed in the single DCU.**

```
-> show -level 2 /System/DCUs cpu_summary
```

```
/System/DCUs/DCU_0
Properties:
  cpu_summary = Eight Oracle SPARC M7
```

->

- **For the SPARC M7-16 server, determine how many CMIOUs are installed in a particular DCU.**

```
-> show -level 2 /System/DCUs cpu_summary
```

```
/System/DCUs/DCU_0
Properties:
  cpu_summary = Four Oracle SPARC M7
```

```
/System/DCUs/DCU_1
Properties:
  cpu_summary = Four Oracle SPARC M7
```

```
/System/DCUs/DCU_2
Properties:
```

```
cpu_summary = Four Oracle SPARC M7

/System/DCUs/DCU_3
Properties:
cpu_summary = Four Oracle SPARC M7

->
```

Note - These example configurations show the number of Oracle SPARC M7 CMIOUs installed in a fully loaded system. Under some conditions (for example, following the installation or removal of a CMIOU), the system might return an incorrect value or a value of "Oracle SPARC," with no type identified. The system returns the correct CMIOU type after the system or host has been successfully restarted.

Related Information

- [“CMIOU and DIMM Configuration Overview” on page 97](#)
- [“Servicing CMIOUs” in *SPARC M8 and SPARC M7 Servers Service Manual*](#)
- [“View the State and Health of a CMIOU” on page 100](#)

▼ View the State and Health of a CMIOU

You can view the details about the installed CMIOUs on the Processors page in the Oracle ILOM web interface.

This task uses DCU_0 and CMIOU_0 as examples.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

```
-> show /System/DCUs/DCU_0/CMIOU_0 power_state health health_details

/System/DCUs/DCU_0/CMIOU_0
Properties:
power_state = On
health = Service Required
health_details = fault.io.pciex.device-invreq Type 'show /System/Open_Problems'
for details.

->
```

Related Information

- [“CMIOU and DIMM Configuration Overview” on page 97](#)
- [“Display Summary of Installed CMIOUs” on page 98](#)
- [“Servicing CMIOUs” in *SPARC M8 and SPARC M7 Servers Service Manual*](#)

▼ View DIMM Locations

You can view the locations of the DIMMs on the Memory page in the Oracle ILOM web interface.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

```
-> show /System/Memory/DIMMs -t location
-----+-----+-----
Target          | Property | Value
-----+-----+-----
/System/Memory/DIMMs/ | location | CMI0U0/CM/CMP/BOB00/CH0/DIMM (CPU Memory
DIMM_0          |         | IO Unit 0 Memory Branch 00 Memory Channel
                |         | 0)
/System/Memory/DIMMs/ | location | CMI0U0/CM/CMP/BOB00/CH1/DIMM (CPU Memory
DIMM_1          |         | IO Unit 0 Memory Branch 00 Memory Channel
                |         | 1)
/System/Memory/DIMMs/ | location | CMI0U0/CM/CMP/BOB01/CH0/DIMM (CPU Memory
DIMM_2          |         | IO Unit 0 Memory Branch 01 Memory Channel
                |         | 0)
/System/Memory/DIMMs/ | location | CMI0U0/CM/CMP/BOB01/CH1/DIMM (CPU Memory
DIMM_3          |         | IO Unit 0 Memory Branch 01 Memory Channel
                |         | 1)
/System/Memory/DIMMs/ | location | CMI0U0/CM/CMP/BOB10/CH0/DIMM (CPU Memory
DIMM_4          |         | IO Unit 0 Memory Branch 10 Memory Channel
                |         | 0)
/System/Memory/DIMMs/ | location | CMI0U0/CM/CMP/BOB10/CH1/DIMM (CPU Memory
DIMM_5          |         | IO Unit 0 Memory Branch 10 Memory Channel
                |         | 1)
...
->
```

Related Information

- [“View the Health and State of a DIMM” on page 102](#)

- [“Servicing DIMMs” in SPARC M8 and SPARC M7 Servers Service Manual](#)

▼ View the Health and State of a DIMM

You can view the health and state of the DIMMs on the Memory page in the Oracle ILOM web interface.

This task uses DIMM_0 as an example.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. **Type:**

```
-> show /System/Memory/DIMMs/DIMM_0 health health_details requested_state
```

```
/System/Memory/DIMMs/DIMM_0
Properties:
  health = OK
  health_details = -
  requested_state = Enabled
```

```
->
```

Related Information

- [“View DIMM Locations” on page 101](#)
- [“Servicing DIMMs” in SPARC M8 and SPARC M7 Servers Service Manual](#)

Monitoring the System Power

These tasks describe how to monitor the system power.

- [“View System Power Consumption” on page 103](#)
- [“View Individual Power Supply Properties” on page 104](#)

Related Information

- [“Configuring the Power Budget and Consumption” on page 162](#)

- [“Monitoring the Cooling System” on page 105](#)

▼ View System Power Consumption

You can view the power consumption on the Power page in the Oracle ILOM web interface.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. View the power consumption and maximum allowed power.

- For the SPARC M8-8 or SPARC M7-8 server, you should see output that is similar to this:

```
-> show /System/Power

/System/Power
Targets:
  Power_Supplies
Properties:
  health = OK
  health_details = -
  actual_power_consumption = xxxx watts
  max_permitted_power = xxxxx watts
  installed_power_supplies = 6
  max_power_supplies = 6
...
->
```

- For the SPARC M7-16 server, you should see output that is similar to this:

```
-> show /System/Power

/System/Power
Targets:
  Power_Supplies

Properties:
  health = OK
  health_details = -
  actual_power_consumption = xxxx watts
  max_permitted_power = xxxxx watts
  installed_power_supplies = 16
```

```
max_power_supplies = 16
...
->
```

Related Information

- [“View Host Properties” on page 92](#)
- [“View DCU Properties” on page 94](#)
- [“View Individual Power Supply Properties” on page 104](#)

▼ View Individual Power Supply Properties

You can view the properties of individual power supplies by clicking the Details link in the Power Supplies table on the Power page in the Oracle ILOM web interface.

This task uses `Power_Supply_0` as an example.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

```
-> show /System/Power/Power_Supplies/Power_Supply_0
```

```
/System/Power/Power_Supplies/Power_Supply_0
```

```
Targets:
```

```
Properties:
```

```
health = OK
health_details = -
part_number = 7068817
serial_number = 465776G+1347B20BDK
manufacturer = Power-One, Inc.
location = PS0 (Power Supply 0)
input_power = Present
output_power = 12 watts
```

```
...
->
```

Related Information

- [“View Host Properties” on page 92](#)

- [“View DCU Properties” on page 94](#)
- [“View System Power Consumption” on page 103](#)

Monitoring the Cooling System

These tasks describe how to monitor the cooling system.

- [“View the Cooling Details” on page 105](#)
- [“View the Health and Location of a Fan” on page 106](#)

Related Information

- [“Monitoring the System Power” on page 102](#)
- [“Configuring the Power Budget and Consumption” on page 162](#)
- [“Servicing Fan Modules \(CMIOU Chassis\)” in *SPARC M8 and SPARC M7 Servers Service Manual*](#)

▼ View the Cooling Details

You can view the cooling details on the Cooling page in the Oracle ILOM web interface.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

- This output is from the SPARC M7-8 server with two PDomains. A SPARC M8-8 or SPARC M7-8 server with one PDomain has similar output.

```
-> show /System/Cooling
```

```
/System/Cooling
```

```
Targets:
```

```
Fans
```

```
Properties:
```

```
health = OK
```

```
health_details = -
installed_chassis_fans = 16
max_chassis_fans = 16
installed_power_supply_fans = 12
max_power_supply_fans = 12
inlet_temp = 24 degrees C
exhaust_temp = 44 degrees C
actual_power_consumption = 253 watts
...
->
```

- This output is from the SPARC M7-16 server.

```
-> show /System/Cooling
```

```
/System/Cooling
```

```
Targets:
```

```
Fans
```

```
Properties:
```

```
health = OK
health_details = -
installed_chassis_fans = 104
max_chassis_fans = 104
installed_power_supply_fans = 32
max_power_supply_fans = 32
inlet_temp = 20 degrees C
exhaust_temp = 42 degrees C
actual_power_consumption = 358 watts
...
->
```

Related Information

- [“Servicing Fan Modules \(CMIOU Chassis\)” in SPARC M8 and SPARC M7 Servers Service Manual](#)
- [“View the Health and Location of a Fan” on page 106](#)

▼ View the Health and Location of a Fan

You can view the health and location of an individual fan by clicking the Details link in the Fans table on the Cooling page in the Oracle ILOM web interface.

This task uses Fan_0 as an example.

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

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. **Type:**

```
-> show /System/Cooling/Fans/Fan_0

/System/Cooling/Fans/Fan_0
  Targets:

  Properties:
    health = OK
    health_details = -
    part_number = Not Supported
    serial_number = Not Supported
    location = FM0 (Fan Module 0)
    fan_percentage = 69 %
  ...
->
```

Related Information

- [“Servicing Fan Modules \(CMIOU Chassis\)”](#) in *SPARC M8 and SPARC M7 Servers Service Manual*
- [“View the Cooling Details”](#) on page 105

Monitoring Faults

You can use several methods to obtain fault information on these servers. This section focuses on FMA and Oracle ILOM. Refer to the [SPARC M8 and SPARC M7 Servers Service Manual](#) and the Oracle ILOM documentation for complete troubleshooting and fault monitoring information.

Use one of these tools to monitor the faults, depending on the level of information that you need:

- **FMA** – If you need detailed information about a fault, use the `fmadm faulty` command. See [“Discover Faults \(FMA\)”](#) on page 108.

- **Oracle ILOM** – If you need a quick view of a fault, use the `show faulty` or `show /System/Open_Problems` command. The number of open problems is also noted in the `show /System` output. See [“Discover Faults \(Oracle ILOM\)” on page 110](#).

Related Information

- [“Detecting and Managing Faults” in SPARC M8 and SPARC M7 Servers Service Manual](#)
- [“Managing Oracle Hardware Faults Through the Oracle ILOM Fault Management Shell” in Oracle ILOM User’s Guide for System Monitoring and Diagnostics Firmware Release 4.0.x](#)
- [“Managing Oracle Hardware Faults Through the Oracle ILOM Fault Management Shell” in Oracle ILOM User’s Guide for System Monitoring and Diagnostics Firmware Release 3.2.x](#)

▼ Discover Faults (FMA)

The FMA shell is the preferred method for obtaining detailed fault information because it presents the most comprehensive view of the faults.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **Start the `fmadm` shell, and use the `fmadm faulty` command to determine if a fault is shown.**

```
-> start /SP/faultmgmt/shell
Do you want to start the /SP/faultmgmt/shell (y/n)? y

faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2015-09-27/12:04:56 388a8916-3257-ea2a-c7b7-b62bf2f210f8 SPT-8000-7J         Minor

Problem Status      : open
Diag Engine         : fdd 1.0
System
  Manufacturer      : Oracle Corporation
  Name              : SPARC M7-8
  Part_Number       : 7087407
  Serial_Number     : AK00180227

System Component
  Manufacturer      : Oracle Corporation
```

```
Name          : SPARC M7-8
Part_Number   : 32397572+5+1
Serial_Number : AK00185563
```

```
-----
Suspect 1 of 1
Fault class  : fault.chassis.power.missing
Certainty   : 100%
Affects     : /SYS/PS1
Status      : not present
```

```
FRU
Status       : faulty
Location     : /SYS
Manufacturer : Oracle Corporation
Name         : SPARC M7-8
Part_Number  : 32397572+5+1
Serial_Number : AK00185563
Chassis
Manufacturer : Oracle Corporation
Name         : SPARC M7-8
Part_Number  : 32397572+5+1
Serial_Number : AK00185563
```

Description : A power supply unit is absent.

Response : The service-required LED on the chassis will be illuminated.

Impact : Server will be powered down when there are insufficient operational power supplies.

Action : Please refer to the associated reference document at <http://support.oracle.com/msg/SPT-8000-7J> for the latest service procedures and policies regarding this diagnosis.

```
faultmgmtsp> exit
->
```

If the output of the command shows a faulty component, refer to the [SPARC M8 and SPARC M7 Servers Service Manual](#).

Note - Clearing a fault at the `fmadm` level does not clear the fault in Oracle Enterprise Manager Ops Center. You must clear the error manually.

Related Information

- [“Display Console History” on page 135](#)

- “Detecting and Managing Faults” in *SPARC M8 and SPARC M7 Servers Service Manual*

▼ Discover Faults (Oracle ILOM)

Although the FMA shell is the preferred method of viewing detailed fault information, you can use Oracle ILOM to view a quick summary of faults, open problems, and general server health status.

1. Log in to Oracle ILOM.

See “Log In to Oracle ILOM (CLI)” on page 43.

2. View the faults.

```
-> show faulty
Target                                | Property                                | Value
-----+-----+-----
+-----+-----+-----
/SP/faultmgmt/0                       | fru                                    | /SYS
/SP/faultmgmt/0/faults/0               | class                                  |
  fault.chassis.power.missing
/SP/faultmgmt/0/faults/0               | sunw-msg-id                            | SPT-8000-7J
/SP/faultmgmt/0/faults/0               | component                               | /SYS/PS3
/SP/faultmgmt/0/faults/0               | uuid                                    | ebb41093-b3bd-
c05b-98eb-dfdc7ef87e18
/SP/faultmgmt/0/faults/0               | timestamp                               |
  2015-09-27/12:04:55
/SP/faultmgmt/0/faults/0               | fru_serial_number                       | AK00185563
/SP/faultmgmt/0/faults/0               | fru_part_number                         | 32397572+5+1
/SP/faultmgmt/0/faults/0               | fru_name                                | SPARC M7-8
/SP/faultmgmt/0/faults/0               | fru_manufacturer                        | Oracle
  Corporation
/SP/faultmgmt/0/faults/0               | system_component_manufacturer          | Oracle
  Corporation
/SP/faultmgmt/0/faults/0               | system_component_name                   | SPARC M7-8
/SP/faultmgmt/0/faults/0               | system_component_part_number            | 32397572+5+1
/SP/faultmgmt/0/faults/0               | system_component_serial_number          | AK00185563
/SP/faultmgmt/0/faults/0               | chassis_manufacturer                    | Oracle
  Corporation
/SP/faultmgmt/0/faults/0               | chassis_name                            | SPARC M7-8
/SP/faultmgmt/0/faults/0               | chassis_part_number                     | 32397572+5+1
/SP/faultmgmt/0/faults/0               | chassis_serial_number                   | AK00185563
/SP/faultmgmt/0/faults/0               | system_manufacturer                     | Oracle
  Corporation
/SP/faultmgmt/0/faults/0               | system_name                             | SPARC M7-8
```

```

/SP/faultmgmt/0/faults/0 | system_part_number | 7087407
/SP/faultmgmt/0/faults/0 | system_serial_number | AK00180227
...
->

```

3. View the open problems.

```
-> show /System/Open_Problems
```

```

Open Problems (5)
Date/Time          Subsystems          Component
-----
Fri Sep 27 12:04:55 2015 Cooling, Power      /System (Host System)
    A power supply unit is absent. (Probability:100, UUID:ebb41093-b3bd-c05b-98eb-
    dfdc7ef87e18, Resource:/SYS/PS3,
    Part Number:7087407, Serial Number:AK00180227, Reference
    Document:http://support.oracle.com/msg/SPT-8000-7J)
Fri Sep 27 12:04:56 2015 Cooling, Power      /System (Host System)
    A power supply unit is absent. (Probability:100, UUID:52bb334b-28cc-ce2b-d508-
    eecca5822d0b0, Resource:/SYS/PS5,
    Part Number:7087407, Serial Number:AK00180227, Reference
    Document:http://support.oracle.com/msg/SPT-8000-7J)
Fri Sep 27 12:04:56 2015 Cooling, Power      /System (Host System)
    A power supply unit is absent. (Probability:100, UUID:388a8916-3257-ea2a-c7b7-
    b62bf2f210f8, Resource:/SYS/PS1,
    Part Number:7087407, Serial Number:AK00180227, Reference
    Document:http://support.oracle.com/msg/SPT-8000-7J)
Mon Sep 27 09:43:13 2015 Domain Configuration Unit CMI0U1 (CPU Memory IO Unit 1)
    A Field Replaceable Unit (FRU) has a corrupt FRUID SEEPROM. (Probability:100,
    UUID:7442c25b-564e-ece3-8b14-e42cf6c54c3d,
    Resource:/SYS/CMI0U1, Part Number:7094491, Serial Number:465769T+14296N0138,
    Reference Document:http://support.oracle.com/msg/ILOM-8000-2V)
Mon Sep 27 12:32:06 2015 Processors, Domain Configuration Unit CMI0U0 (CPU Memory IO
    Unit 0)
    The number of chip-level correctable errors has exceeded acceptable levels.
    (Probability:100,
    UUID:bf0af2e1-3009-e986-9bec-9eb49538e001, Resource:/SYS/CMI0U0/CM/CMP, Part
    Number:7094491,
    Serial Number:465769T+14296N0138, Reference Document:http://support.oracle.com/
    msg/SPSUN4V-8000-7D)
->

```

4. View the system details.

```
-> show /System
```

```

/System
Targets:

```

```

    Open_Problems (5)
...
  Properties:
    health = Service Required
    health_details = /System (Host System), CMI0U1 (CPU Memory IO Unit 1),
                    CMI0U0 (CPU Memory IO Unit 0) are faulty. Type 'show
                    /System/Open_Problems' for details.
    open_problems_count = 5
    type = Domained Server
    model = SPARC M7-8
    qpart_id = Q10777
    part_number = 7087407
    serial_number = AK00180227
    component_model = SPARC M7-8
    component_part_number = 32397572+5+1
    component_serial_number = AK00185563
    system_identifier = SCAexit-M78-045
    system_fw_version = Sun System Firmware : 9.4.3 Tue Sep 27 11:57:15 PDT 2015
    ilom_address = IP-address
    ilom_mac_address = MAC-address
    locator_indicator = Off
    power_state = Off
    actual_power_consumption = 162 watts
    action = (none)

...
->

```

5. View the health details.

```

-> show /System health_details

/System
  Properties:
    health_details = /System (Host System), CMI0U1 (CPU Memory IO Unit 1),
                    CMI0U0 (CPU Memory IO Unit 0) are faulty. Type 'show /System/Open_Problems'
                    for details.

->

```

Related Information

- [“Discover Faults \(FMA\)” on page 108](#)
- [“View the Power State of the System” on page 89](#)
- [“Detecting and Managing Faults” in SPARC M8 and SPARC M7 Servers Service Manual](#)

▼ View Disabled Components

Use this task before you start hosts or reset the SPs to the factory default settings. For hosts, you might not be able to start the host if certain components are disabled, either due to a fault or due to user intervention. For the SPs, you must be aware of the disabled components because resetting the SPs to the factory default settings will re-enable the components. You will need to manually disable the components after the reset.

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

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. **Type:**

```
-> show disabled
Target                | Property                | Value
-----+-----+-----
/SYS/CMIOU2/CM/CMP/   | disable_reason          | By user
BOB00/CH0/DIMM        |                          |
/SYS/CMIOU6/CM/CMP/   | disable_reason          | By user
BOB01/CH1/DIMM        |                          |
/SYS/CMIOU8/CM/CMP    | disable_reason          | Configuration Rules

->
```

Related Information

- [“Start a Host”](#) on page 63
- [“Resetting the System, Host, or SP”](#) on page 80
- [“View Host Properties”](#) on page 92
- [“View DCU Properties”](#) on page 94
- [“Monitoring Faults”](#) on page 107
- [“Detecting and Managing Faults”](#) in *SPARC M8 and SPARC M7 Servers Service Manual*

▼ View Status and Faults in Chassis View (Oracle ILOM)

The web interface of Oracle ILOM provides an interactive Chassis View page to view the overall health of the chassis components. Chassis View is a visual representation of the front and rear of the system chassis to show all components and indicate where components are absent. Graphic indicators display the state of individual components.

1. **Log in to the Oracle ILOM web interface for the host.**

See [“Log In to Oracle ILOM \(Web Interface\)”](#) on page 42

2. Click Chassis View.

The Chassis View displays your server's chassis and its installed components. Some components feature graphic indicators to show their health status, such as a green power button for CMIOUs that are powered on, or a red X for components that are faulty and need service.

Click the More details link for information about health service definitions.

3. Highlight component images by moving the mouse over them to display more information.

A tip window shows the ILOM path of the highlighted component. If a component is missing, the tip window indicates it is absent.

4. Click a component to open a window that shows the properties and values associated with the component.

See the Open Problems page for more information about faulty components including links to documents in My Oracle Support.

Related Information

- [“SPARC Chassis View”](#) in *Oracle ILOM User's Guide for System Monitoring and Diagnostics Firmware Release 4.0.x*
- [“Detecting and Managing Faults”](#) in *SPARC M8 and SPARC M7 Servers Service Manual*

Managing the Platform

These topics describe how to manage platform features using the Oracle ILOM CLI interface. You can also use the Oracle ILOM web interface to perform these tasks. The web interface contains platform-specific information and help. Thus, these topics focus on the CLI.

- [“Configuring the SP Network” on page 115](#)
- [“Change Server Identifier Information” on page 127](#)
- [“Manage Single Sign-On Service Network Deployment State” on page 128](#)
- [“Updating the Firmware” on page 129](#)
- [“Managing the Host Console” on page 132](#)

Related Information

- [“Locate the Server” on page 86](#)
- [“Configuring the SP Network” on page 115](#)
- [“Configuring PDomains and Hosts” on page 137](#)

Configuring the SP Network

These topics describe how to configure the SP network:

- [“SP Network Overview” on page 116](#)
- [“Determine Which SP Is the Active SP” on page 117](#)
- [“Change the Current Role of the SP Pair” on page 118](#)
- [“Determine the Status of a Specific SP, SPM, or Host” on page 119](#)
- [“Configure the IPv4 and IPv6 Static IP Addresses for a Specific SP or Host” on page 120](#)
- [“Configure the Subnet Gateway” on page 122](#)
- [“Configure the Netmask for the SP Network” on page 123](#)

- “Configure the Host IP Address for rKVMS” on page 124
- “Configure the Dedicated SP Interconnect Mode” on page 126

Related Information

- Oracle Solaris documentation (<http://www.oracle.com/pls/topic/lookup?ctx=solaris11>)
- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x*
- *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x*

SP Network Overview

The SPARC M8-8 and SPARC M7-8 servers with two PDomains have two SPs (SP0 and SP1), one for each static PDomain, and each SP has two SPMs (SPM0 and SPM1). One of the SPs acts as the active PDomain SP to manage tasks for the PDomain. The other SP acts as the standby PDomain SP that assumes the active PDomain SP role in the event of a failure.

The SPARC M8-8 and SPARC M7-8 servers with one PDomain have a pair of redundant SPs (SP0 and SP1) with a single SPM (SPM0) on each SP. One of the SPs functions as the Active SP to manage the platform, and the other acts as a Standby SP that assumes the Active SP role in the event of a failure.

Both SPs are individually accessible from the external network, so they need to be configured separately with unique IP addresses. As part of failover, the IP address assigned to an Active SP migrates to the new Active SP, depending on which SP is controlling the chassis. To enable you to connect to this IP address to manage the chassis, instead of accessing SP0 or SP1 separately, you must configure the IP address for the Active SP.

The SPARC M7-16 server switch chassis has one pair of SPs with one SPM per SP, and each CMIOU chassis has a pair of SPPs with two SPMs per SPP. This server is capable of supporting up to four PDomains. One of the SPPs on each PDomain is identified as a PDomain SPM, and it is responsible for managing tasks for the PDomain and hosting the rKVMS service for the PDomain.

Note - The /SP/network/HOSTx targets are for the network properties of the PDomain SPMs that manage the hosts. The target does not signify the host itself.

To enable rKVMS access to a PDomain on a SPARC M7 server, you need to configure the SPM network settings for that PDomain (see [“Configure the Host IP Address for rKVMS” on page 124](#)).

Since the Oracle ILOM Remote System Console Plus is not available on SPARC M8-8, the SPM for the PDomain does not need an IP address. However to enable direct access to a PDomain on a SPARC M8-8 sever through Oracle ILOM Remote System VNC Console, you should configure the network settings for the PDomain SPM.

PDomain SPMs are also accessible from the external network if you have configured IP addresses for them.

Note - The SPs do not support DHCP. You must assign static IP addresses to SP components.

Related Information

- [“Planning Network Addresses” in SPARC M8 and SPARC M7 Servers Installation Guide](#)
- [“Servicing SPs” in SPARC M8 and SPARC M7 Servers Service Manual](#)
- [“Determine Which SP Is the Active SP” on page 117](#)

▼ Determine Which SP Is the Active SP

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. **Type:**

```
-> show /SP/redundancy
    Targets:

    Properties:
      fru_name = /SYS/SP1/SPM0
      initiate_failover_action = (none)
      status = Active
    ...
->
```

The status property can display the following responses.

| Value | Definition |
|--------|--|
| Active | Shows that the SPM listed in the fru_name property is the Active SP. |

| Value | Definition |
|------------|---|
| Standby | Shows that the SPM listed in the fru_name property is the Standby SP. |
| Standalone | The system has only one SP because, for example, one SP has failed to respond to or join the network. |

Related Information

- [“SP Network Overview” on page 116](#)
- [“Change the Current Role of the SP Pair” on page 118](#)

▼ Change the Current Role of the SP Pair

Use this task to change the current roles of the SP pair. For example, you might want to change the SP that is currently identified as the Active SP to be the Standby SP if you are replacing it.

This operation can take a few minutes to complete.

You must have the admin role (a) to complete this task.

- 1. Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
- 2. Determine which SP is currently identified as the Active SP.**
See [“Determine Which SP Is the Active SP” on page 117](#).
- 3. Initiate the failover, effectively causing the Active SP to become the Standby SP and the Standby SP to become the Active SP.**

```
-> set /SP/redundancy initiate_failover_action=true  
Set 'initiate_failover_action' to 'true'
```

```
->
```

Note - If the failover does not succeed, use the `-f | --force` option.

Related Information

- [“SP Network Overview” on page 116](#)
- [“Determine Which SP Is the Active SP” on page 117](#)
- [“Determine the Status of a Specific SP, SPM, or Host” on page 119](#)

▼ Determine the Status of a Specific SP, SPM, or Host

This task uses `SP0` and `HOST0` as examples. You can use `ACTIVE_SP` or the name of any one of the SPs or SPMs. You can also use the name of any one of the HOSTs which actually indicate the PDomain SPMs.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. View the state property for a SP.

```
-> show /SP/network/SP0 state
```

```
/SP/network/SP0
  Properties:
    state = enabled
```

```
->
```

The value of the `state` property is `enabled` by default. However, an `enabled` state does not mean that the SP is on the network. The SP must have an IPv4 or IPv6 address to be on the network. If the value equals `disabled`, the SP is not on the network. You can re-enable the SP by setting the `state` property to `enabled`.

3. View the state property for a host.

```
-> show /SP/network/HOST0 state
```

```
/SP/network/HOST0
  Properties:
    state = enabled
```

```
->
```

The value of the `state` property is `enabled` by default. However, an `enabled` state for `HOSTx` does not mean that the PDomain SPM is on the network. The PDomain SPM must have an IPv4 or IPv6 address to be on the network. If the value equals `disabled`, the PDomain SPM is not on the network. You can re-enable the PDomain SPM by setting the `state` property of `HOSTx` to `enabled`.

Related Information

- [“SP Network Overview”](#) on page 116

- [“Configure the IPv4 and IPv6 Static IP Addresses for a Specific SP or Host” on page 120](#)

▼ Configure the IPv4 and IPv6 Static IP Addresses for a Specific SP or Host

This task uses SP0 as an example. You can use ACTIVE_SP or the name of any one of the SPs or SPMs. You can also use the name of any one of the PDomain SPMs which are specified using the HOSTx targets..

You must have the admin role (a) to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **View the current static IP address.**

- **For the IPv4 address, type:**

```
-> show /SP/network/SP0 ipaddress
```

```
/SP/network/SP0  
Properties:  
  ipaddress = IPv4-address
```

```
->
```

- **For the IPv6 address, type:**

```
-> show /SP/network/SP0/ipv6 static_ipaddress
```

```
/SP/network/SP0/ipv6  
Properties:  
  static_ipaddress = IPv6-address
```

```
->
```

3. **Assign a static IP address.**

- **For an IPv4 address, type:**

```
-> set /SP/network/SP0 pendingipaddress=IPv4-address  
set 'pendingipaddress' to 'IPv4-address'
```


->

- **For an IPv6 address, type:**

```
-> set /SP/network/SP0/ipv6 pending_static_ipaddress=IPv6-IP-address
set 'pending_static_ipaddress' to 'IPv6-address'
```

->

4. Commit the changes to the IP addresses.

```
-> set /SP/network commitpending=true
Set 'commitpending' to 'true'
```

->

Note - If you are connecting to Oracle ILOM over a LAN, you will have to reconnect to Oracle ILOM after committing any IP property changes.

5. Verify that the parameters were set correctly.

- **For the IPv4 address, type:**

```
-> show /SP/network/SP0 ipaddress
```

```
/SP/network/SP0
Properties:
  ipaddress = IPv4-address
```

->

- **For the IPv6 address, type:**

```
-> show /SP/network/SP0/ipv6 static_ipaddress
```

```
/SP/network/SP0/ipv6
Properties:
  static_ipaddress = IPv6-address
```

->

Related Information

- [“SP Network Overview” on page 116](#)
- [“Configure the Subnet Gateway” on page 122](#)

▼ Configure the Subnet Gateway

You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. View the current setting for the subnet gateway.

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

```
/SP/network
Properties:
  ipgateway = gateway-IP-address
```

```
->
```

3. Assign a new subnet gateway address.

```
-> set /SP/network pendingipgateway=gateway-IP-address
set 'pendingipgateway' to 'gateway-IP-address'
```

```
->
```

4. Commit the change to the subnet gateway address.

```
-> set /SP/network commitpending=true
Set 'commitpending' to 'true'
```

```
->
```

Note - If you are connecting to Oracle ILOM over a LAN, you will have to reconnect to Oracle ILOM after committing any IP property changes.

5. Verify that the subnet gateway address was set correctly.

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

```
/SP/network
Properties:
  ipgateway = gateway-IP-address
```

```
->
```

Related Information

- [“SP Network Overview” on page 116](#)
- [“Configure the Netmask for the SP Network” on page 123](#)

▼ Configure the Netmask for the SP Network

This example uses 255.255.255.0 as the netmask. Your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. View the current setting for the netmask.

```
-> show /SP/network ipnetmask

/SP/network
Properties:
  ipnetmask = 255.255.255.0

->
```

3. Assign a new netmask address for the SP network.

```
-> set /SP/network pendingipnetmask=netmask-address
set 'pendingipnetmask' to 'netmask-address'

->
```

4. Commit the change to the netmask address.

```
-> set /SP/network commitpending=true
Set 'commitpending' to 'true'

->
```

Note - If you are connecting to Oracle ILOM over a LAN, you will have to reconnect to Oracle ILOM after committing any IP property changes.

5. Verify that the netmask address was set correctly.

```
-> show /SP/network ipnetmask

/SP/network
Properties:
  ipnetmask = netmask-address

->
```

Related Information

- [“SP Network Overview” on page 116](#)
- [“Configure the Host IP Address for rKVMS” on page 124](#)

▼ Configure the Host IP Address for rKVMS

This task is *required* for using Oracle ILOM Remote System Console Plus on SPARC M7 servers.

This task is *optional* for using Oracle ILOM Remote System VNC Console on SPARC M8 servers. The IP address is needed if you want to connect directly to PDomain SPMs.

This task uses HOST0 as an example. You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Set the IP address for the host.

```
-> set /SP/network/HOST0 pendingipaddress=IP-address
set 'pendingipaddress' to 'IP-address'

->
```

3. Commit the change to the host IP address.

```
-> set /SP/network/HOST0 commitpending=true
Set 'commitpending' to 'true'

->
```

4. (Optional) Update the Oracle Java security settings in the Java Control Panel on the desktop client system.

Performing this subtask adds the IP address of the Active SP and HOST to a list of sites that are allowed to run Java applications on the client. If you choose not to do this, you might be prompted to allow the exception each time you run the Remote Console.

a. Display and record the IP address for the Active SP.

```
-> show /SP/network/ACTIVE_SP ipaddress
```

```
/SP/network/ACTIVE_SP
Properties:
  ipaddress = IP-address
```

```
->
```

b. Display and record the IP address for the host.

```
-> show /SP/network/HOST0 ipaddress
```

```
/SP/network/HOST0
Properties:
  ipaddress = IP-address
```

```
->
```

c. Launch the Java Control Panel on your desktop system that you will use to connect to the SP or SPM.

For help launching the Java Control Panel, see the following:

Microsoft Windows https://www.java.com/en/download/help/win_controlpanel.xml

Mac OS https://www.java.com/en/download/help/mac_controlpanel.xml

Linux and Oracle
Solaris In a terminal window, run the command

```
$ /path-to-java-version/bin/ControlPanel
```

where */path-to-java-version* is the path to the Java jre or jdk directory on your Linux or Oracle Solaris system.

d. Select the Security tab in the Java Control Panel.

- e. Click the **Edit Site List** button, add the `https://` URLs for the IP addresses for the Active SP and the host in the Exception Site List dialog, and click OK.
- f. Click OK to apply the changes and close the Java Control Panel.

Related Information

- [“SP Network Overview” on page 116](#)
- [“Redirecting KVMs Devices” on page 50](#)

▼ Configure the Dedicated SP Interconnect Mode

Supporting an internal Ethernet-over-USB interface, you can establish a LAN management connection to Oracle ILOM from a host OS client.

This task uses `PDomain_0` as an example. You must have the admin role (a) to complete this task.

1. View the dedicated interconnect settings for a PDomain.

```
-> show /Servers/PDomains/PDomain_0/SP/network/interconnect
```

```
/Servers/PDomains/PDomain_0/SP/network/interconnect
```

```
Targets:
```

```
Properties:
```

```
  hostmanaged = true
  type = USB Ethernet
  ipaddress = IP-address
  ipnetmask = netmask-IP-address
  spmacaddress = MAC-address
  hostmacaddress = MAC-address
```

```
...
```

```
->
```

2. Configure the dedicated interconnect mode for a PDomain.

```
-> set /Servers/PDomains/PDomain_0/SP/network/interconnect hostmanaged=true
```

```
Set 'hostmanaged' to 'true'
```

```
->
```

Note - The `hostmanaged` property is set to `true` by default.

The configuration mode allows the host application to control and configure the interface between the SP and the host. When it is set to `false`, the host application is not allowed to manipulate this interface, so you must manually configure the interconnect.

For more information, see [“Dedicated Interconnect SP Management Connection”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*.

Related Information

- [“SP Network Overview”](#) on page 116
- [“Change Server Identifier Information”](#) on page 127

▼ Change Server Identifier Information

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

You must have the admin role (a) to complete this task.

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

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. **Type:**

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

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

Related Information

- [“Obtain the Server Serial Number”](#) on page 87
- [“Display the Server Model Type”](#) on page 87
- [“Manage Single Sign-On Service Network Deployment State”](#) on page 128

▼ Manage Single Sign-On Service Network Deployment State

The single sign-on state is enabled by default to enable users who have already logged into the Oracle ILOM web interface to launch the Remote System Console without entering their passwords again. This task shows how to view the current sso state and enable it if necessary. You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. View the current SSO state.

```
-> show /SP/services/sso
```

```
/SP/services/sso
```

```
Targets:
```

```
Properties:
```

```
state = disabled
```

3. Enable the SSO service.

```
-> set /SP/services/sso state=enabled
```

```
Set 'state' to 'enabled'
```

```
->
```

4. Ensure that the SSO state was changed.

```
-> show /SP/services/sso state
```

```
/SP/services/sso
```

```
Properties:
```

```
state = enabled
```

```
->
```

For more information about setting network deployment properties with the features that are common to all platforms managed by Oracle ILOM, refer to the [Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x](#).

Related Information

- [Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x](#)
- ["Oracle ILOM Overview" on page 16](#)
- ["LDAP/SSL Security" on page 24](#)

Updating the Firmware

On these servers, you can update the firmware without impacting hosts that are running in the PDomains. For hosts that are running, the firmware is automatically updated when the running system or PDomains are powered off and then powered on.

If you try to update the firmware with a version that is incompatible with the firmware on the running system or PDomains, you will be instructed to shut down the hosts with the incompatible version and then update to the new firmware version. Optionally, to ensure that all SPs and hosts move to the new image at the same time, you must power off all hosts.

In addition, Oracle ILOM ensures that the system is upgraded automatically to the correct firmware when swapping SPs and powering hosts off then on.

The firmware image you install to update the system firmware includes all necessary firmware components, including the Oracle ILOM firmware, OpenBoot PROM firmware, POST firmware, and miscellaneous files. The firmware image is installed in the flash memory of the SP.

These topics describe how to update the system firmware and view current versions of firmware for these servers.

- ["Display the Firmware Version" on page 130](#)
- ["Update the Firmware from Oracle ILOM" on page 130](#)

Related Information

- ["Specify Host Virtual Keyswitch Behavior" on page 73](#)
- [Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x](#)

▼ Display the Firmware Version

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

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. **Display the available system firmware properties.**

```
-> show /System system_fw_version
```

```
/System
Properties:
  system_fw_version = Sun System Firmware 9.8.0 2017/07/26 20:43
```

Related Information

- [SPARC M8 and SPARC M7 Servers Product Notes](#)
- [“Update the Firmware from Oracle ILOM”](#) on page 130

▼ Update the Firmware from Oracle ILOM

The Live Firmware update feature of the SPARC M8, M7, T8, 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(s) is power cycled. Because Oracle ILOM can be updated while the host is powered on, this feature reduces the total system down time. On SPARC M8 and M7 series servers, the firmware update can be done on a per-host basis as each PDomain can be restarted independently.

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

```
-> show /System system_fw_version
```

2. **Download the latest available system firmware version from My Oracle Support.**

See the web page [Firmware Downloads and Release History for Oracle Systems \(http://www.oracle.com/technetwork/systems/patches/firmware/release-history-jsp-138416.html\)](http://www.oracle.com/technetwork/systems/patches/firmware/release-history-jsp-138416.html) for links to firmware downloads for each server type.

The download is an archive file such as a zip file which you must extract to find the pkg file containing the firmware image.

Place the firmware image in a shared location that the server can access, such as a local or network share or on a TFTP, FTP, HTTP or HTTPS server.

3. **Read the README file that accompanies the firmware image to be aware of any special release notes or instructions.**
4. **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.**
5. **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 *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x* or [“Update the Server SP or CMM Firmware Image”](#) in *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 [“Logging In to Oracle ILOM”](#) on page 41.

- b. **Load the firmware image from the shared location. Type:**

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

The value for *protocol* can be: http, https, ftp, tftp, sftp, or scp.

For some protocols, you can specify the username and password of the user account to access the server where the firmware image is located. See [“Supported File Transfer Methods”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*.

For example, if the firmware image can be accessed through an http server with IP address 198.51.100.123:

```
-> load -source http://198.51.100.123/fw-downloads/Sun_System_Firmware-X_X_X.pkg
```

A series of prompts display.

- c. **Type *y* to load the image file, then type *y* to preserve the existing configuration, 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 Version” on page 130](#)
- [SPARC M8 and SPARC M7 Servers Product Notes](#)

Managing the Host Console

These topics describe how to manage the host console and to display the host console history.

- [“View the Current Console Settings” on page 132](#)
- [“Host Console Log Property Guidelines” on page 133](#)
- [“Display Console History” on page 135](#)

Related Information

- [“Start the Host Console” on page 45](#)
- [“Redirecting KVMs Devices” on page 50](#)

▼ View the Current Console Settings

This task uses PDomain_0 as an example.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **View the current settings.**

```
-> show /Servers/PDomains/PDomain_0/HOST/console
Targets:
  history
```

```

Properties
  escapechars = #.
  line_count = 0
  logging = enabled
  pause_count = 0
  start_from = end
...
->

```

| | |
|-------------|--|
| escapechars | Characters used to exit the console redirection session. A hash with a period (#.) are the default characters. |
| line_count | Number of lines of the serial console history log to display. This property accepts a value within the range of 1 to 2048 lines. Specify 0 for an unlimited number of lines, which is the default. |
| logging | Determines whether to log the console history. You can set this property to either enabled or disabled. |
| pause_count | Number of lines of the console history log to display before pausing for a response from you. This property accepts a value of 1 to any valid integer or 0 for infinite number of lines. The default is 0 which causes the display to not pause. |
| start_from | Display the serial console history log from the beginning or from the end. The possible values are beginning to display from the first line, which is the oldest, and end to display from the last line, which is the most recent. By default end is used. |

See [“Establishing a Host Serial Console Session to the Server \(CLI\)”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*

Related Information

- [“Display Console History”](#) on page 135
- [“Start the Host Console”](#) on page 45
- [“Host Console Log Property Guidelines”](#) on page 133

Host Console Log Property Guidelines

Oracle ILOM provides properties that enable you to configure how the host console history log displays. The `line_count` property specifies how many lines of the serial console history log

to display, and the `pause_count` property specifies how many lines of the log to display before being prompted to continue. For more information about these properties, refer to [“Establishing a Host Serial Console Session to the Server \(CLI\)”](#) in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*.

Setting the `line_count` and `pause_count` properties in one SPARC M8 or M7 server host console will set these properties for all host consoles on the server for the Oracle ILOM session.

For example, on a SPARC M7-8 server containing two PDomains, setting the `line_count` and `pause_count` properties on one PDomain will set these properties on the second PDomain as well.

```
-> set /Servers/PDomains/PDomain_0/HOST/console line_count=30 pause_count=10
Set 'line_count' to '30'
Set 'pause_count' to '10'
```

```
-> show /Servers/PDomains/PDomain_0/HOST/console line_count pause_count
```

```
/Servers/PDomains/PDomain_0/HOST/console
Properties:
  line_count = 30
  pause_count = 10
```

```
-> show /Servers/PDomains/PDomain_1/HOST/console line_count pause_count
```

```
/Servers/PDomains/PDomain_1/HOST/console
Properties:
  line_count = 30
  pause_count = 10
```

Note - These host console properties are not persistent across sessions. These property values are valid only for the length of that particular console session. When you start a new session, these properties are set to their default settings.

Related Information

- [“Display Console History”](#) on page 135
- [“Start the Host Console”](#) on page 45
- [“View the Current Console Settings”](#) on page 132

▼ Display Console History

This task uses PDomain_0 as an example.

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

See “[Log In to Oracle ILOM \(CLI\)](#)” on page 43.

2. **View the console history log.**

```
-> show /Servers/PDomains/PDomain_0/HOST/console/history
```

Note - Time stamps in the console log reflect server time. By default, the Oracle ILOM console log uses UTC/GMT, but you can use the `/SP/clock timezone` command to set the SP clock to use other time zones. The Oracle Solaris OS system time is independent of the Oracle ILOM time.

Related Information

- “[View the Current Console Settings](#)” on page 132
- [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x](#)
- [Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 3.2.x](#)

Configuring PDomains and Hosts

These topics describe how to configure PDomains and hosts and to administer the components within those hosts.

- [“PDomain Overview” on page 137](#)
- [“Managing DCUs \(SPARC M7-16\)” on page 138](#)
- [“Configuring Boot and Restart Behavior” on page 147](#)
- [“Configuring the Power Budget and Consumption” on page 162](#)

Related Information

- [“Understanding System Administration Resources” on page 15](#)
- [“Managing the Platform” on page 115](#)

PDomain Overview

The SPARC M8-8 and SPARC M7-8 servers support either two *static* PDomains or one static PDomain. You cannot reconfigure static PDomains. However, you can administer CMIOUs and DIMMs, and use domain-level commands to administer and monitor the components within a static PDomain.

The SPARC M7-16 server supports one to four *dynamic* PDomains that you can reconfigure. You can also administer and monitor the components within those PDomains.

Note - DCUs are not assigned to PDomains. They are assigned to the host that runs inside the PDomain, even though you use the `/Servers/PDomains/PDomain_n/HOST` path to assign the DCUs to a particular host on the SPARC M7-16 server. The DCU assignments on a SPARC M8-8 or SPARC M7-8 server cannot be changed.

Each PDomain is represented as `/Servers/PDomains/PDomain_n` in Oracle ILOM, where *n* ranges from zero to one less than the maximum number of possible PDomains.

Note - Although the PDomains are enumerated at the `/Servers/PDomains/PDomain_n` level, the hosts are not enumerated at that level. They are enumerated at the root level (`/`). For example, `/HOST0` is the same host as `/Servers/PDomains/PDomain_0/HOST`.

Each DCU is represented as `/System/DCUs/DCU_n` in Oracle ILOM, where *n* ranges from zero to one less than the maximum number of possible DCUs.

Related Information

- [“Managing DCUs \(SPARC M7-16\)” on page 138](#)
- [“Monitoring CMIOUs and DIMMs” on page 97](#)
- [“Configuring Boot and Restart Behavior” on page 147](#)

Managing DCUs (SPARC M7-16)

On the SPARC M7-16 server, a host can have no DCUs assigned to it, which means that it is an unconfigured host, or a host can have one, two, three, or four DCUs assigned to it. Use these tasks to manage DCUs on the SPARC M7-16 server.

- [“Determine the Current Assignment of DCUs” on page 138](#)
- [“Determine the Availability of DCUs” on page 140](#)
- [“Unassign DCUs From a Host” on page 141](#)
- [“Specify Which DCUs Can Be Assigned to a Host” on page 142](#)
- [“Assign a DCU to a Host” on page 143](#)
- [“Disable and Enable Automatic Failover for a DCU” on page 146](#)

Related Information

- [“Monitoring the Server” on page 85](#)
- [“Managing the Platform” on page 115](#)
- [“Creating Virtualized Environments” on page 167](#)

▼ Determine the Current Assignment of DCUs

This task uses `PDomain_0` and `DCU_0` as examples.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Use one of these methods to determine the current DCU assignments.

■ **Determine which DCUs are assigned to a specific host.**

In these examples, DCU0 is assigned to HOST0.

```
-> show /Servers/PDomains/PDomain_0/HOST
...
Properties:
  alert_forwarding = disabled
  autorestart = reset
  autorunonerror = powercycle
  bootfailrecovery = poweroff
  bootrestart = none
  boottimeout = 0
  dcus_assignable = /SYS/DCU0 /SYS/DCU1 /SYS/DCU2 /SYS/DCU3
  dcus_assigned = /SYS/DCU0
  dcus_available = (none)
...
->
```

```
-> show /Servers/PDomains/PDomain_0/HOST dcus_assigned
```

```
/Servers/PDomains/PDomain_0/HOST
Properties:
  dcus_assigned = /SYS/DCU0
```

```
->
```

■ **Determine to which host a specific DCU is assigned.**

```
-> show /System/DCUs/DCU_0 host_assigned
```

```
/System/DCUs/DCU0
Properties:
  host_assigned = /HOST0
```

```
->
```

Related Information

- [“Determine the Availability of DCUs”](#) on page 140
- [“Unassign DCUs From a Host”](#) on page 141
- [“Specify Which DCUs Can Be Assigned to a Host”](#) on page 142

- [“Assign a DCU to a Host” on page 143](#)

▼ Determine the Availability of DCUs

The `dcus_available` property is a read-only property. Its values depend on the current assignment of DCUs and on the DCUs listed in the `dcus_assignable` property. Only DCUs listed as available can be assigned to a host. If a DCU is assigned to a host, it does not appear in the list of available DCUs. Also, if you changed the `dcus_assignable` property to exclude a specific DCU, that DCU does not appear in the list of available DCUs, even if it is not assigned to another host, until you change the `dcus_assignable` property.

This task uses `PDomain_0`, `DCU2`, `DCU3` as examples.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Use one of these methods to check the availability of the DCUs.

This example shows that only `DCU2` and `DCU3` are available for assignment to the host in `PDomain_0`.

```
-> show /Servers/PDomains/PDomain_0/HOST
...
Properties:
  alert_forwarding = disabled
  autorestart = reset
  autorunonerror = powercycle
  bootfailrecovery = poweroff
  bootrestart = none
  boottimeout = 0
  dcus_assignable = /SYS/DCU0 /SYS/DCU1 /SYS/DCU2 /SYS/DCU3
  dcus_assigned = /SYS/DCU0
  dcus_available = /SYS/DCU2 /SYS/DCU3
  dimm_sparing = enabled

...
->
```

Or:

```
-> show /Servers/PDomains/PDomain_0/HOST dcus_available

/Servers/PDomains/PDomain_0/HOST
Properties:
```

```
dcus_available = /SYS/DCU2 /SYS/DCU3
```

```
->
```

Related Information

- [“Determine the Current Assignment of DCUs” on page 138](#)
- [“Unassign DCUs From a Host” on page 141](#)
- [“Specify Which DCUs Can Be Assigned to a Host” on page 142](#)
- [“Assign a DCU to a Host” on page 143](#)

▼ Unassign DCUs From a Host

This task uses PDomain_0, HOST0, DCU0, and DCU1 as examples. You must have the admin role (a) and the reset role (r) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Determine the current assignment of the DCU that you want to unassign.

See [“Determine the Current Assignment of DCUs” on page 138](#).

3. Start the host console for the host from which you want to unassign a DCU.

Starting the host console enables you to view any errors or faults that might prevent you from unassigning the DCU from the host.

See [“Start the Host Console” on page 45](#).

4. Stop the host to which the DCU is currently assigned.

```
-> stop /Servers/PDomains/PDomain_0/HOST
Are you sure you want to stop /Servers/PDomains/PDomain_0/HOST (y/n) y
Stopping /Servers/PDomains/PDomain_0/HOST
```

```
->
```

5. Unassign the DCU from the host.

- To unassign all of the DCUs from a host, type:

```
-> set /Servers/PDomains/PDomain_1/HOST dcus_assigned=""
```

```
Set 'dcus_assigned' to ''
```

```
->
```

■ **To unassign a specific DCU from a host, type:**

This step assumes that DCU0 and DCU1 are currently assigned to HOST0. In effect, this step unassigns DCU1 from HOST0.

```
-> set /Servers/PDomains/PDomain_0/HOST dcus_assigned="/SYS/DCU0"
```

```
Set 'dcus_assigned' to '/SYS/DCU0'
```

```
->
```

Related Information

- [“Determine the Current Assignment of DCUs” on page 138](#)
- [“Determine the Availability of DCUs” on page 140](#)
- [“Specify Which DCUs Can Be Assigned to a Host” on page 142](#)
- [“Assign a DCU to a Host” on page 143](#)

▼ Specify Which DCUs Can Be Assigned to a Host

The `dcus_assignable` property enables you to control which DCUs can be assigned to a host. By default, all of the DCUs are assignable to each host. You should not need to change this property unless it was changed prior to attempting this task.

When you make a DCU available for assignment to a host with the `dcus_assignable` property, the DCU replaces the existing list of assignable DCUs. For example, if you start with `dcus_assignable = /SYS/DCU0`, and you want both DCU0 and DCU1 to be available for assignment, you must specify `dcus_assignable="/SYS/DCU0 /SYS/DCU1"`. If, instead, you start with `dcus_assignable = /SYS/DCU0`, and you specify `dcus_assignable="/SYS/DCU1"`, the list of available DCUs will be changed to only DCU1. DCU0 will no longer be included in the list.

This task uses `PDomain_0`, `DCU0`, and `HOST0` as examples. You must have the admin role (a) and the reset role (r) to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **Check the availability of the DCUs.**

Note - If the DCU you want to make assignable is not listed, you must locate the DCU, unassign it, and make it assignable so that it becomes available before you can assign it to another host. You must also stop the host to make the unassignment take effect.

See [“Determine the Availability of DCUs” on page 140](#).

3. If needed, start the host console for the host from which you want to unassign a DCU.

Starting the host console enables you to view any errors or faults that might prevent you from unassigning the DCU from the host.

See [“Start the Host Console” on page 45](#).

4. If needed, stop the host to which the DCU is currently assigned.

See [“Stop a Host” on page 68](#).

5. If needed, unassign the DCU from the host to which it is currently assigned.

See [“Unassign DCUs From a Host” on page 141](#).

6. Specify which DCUs should be assignable to the host.

This step assumes that only DCU0 is assigned to HOST0.

```
-> set /Servers/PDomains/PDomain_0/HOST dcus_assignable="/SYS/DCU0 /SYS/DCU1"  
Set 'dcus_assignable' to '/SYS/DCU0 /SYS/DCU1'
```

```
->
```

Related Information

- [“Determine the Current Assignment of DCUs” on page 138](#)
- [“Determine the Availability of DCUs” on page 140](#)
- [“Unassign DCUs From a Host” on page 141](#)
- [“Assign a DCU to a Host” on page 143](#)

▼ Assign a DCU to a Host

This task uses PDomain_0, DCU0, and DCU1 as examples. You must have the admin role (a) and the reset role (r) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Determine the current availability of the DCU that you want to assign.

Note - If the DCU you want to assign is not listed as available, you must locate the DCU, unassign it, and make it assignable so that it becomes available before you can assign it to another host. You must also stop the host to make the unassignment take effect, and you must start the host to make the assignment take effect.

See [“Determine the Availability of DCUs”](#) on page 140.

If needed perform these steps to make the DCU available.

a. Start the host console for the host to which the DCU is currently assigned.

Starting the host console enables you to view any errors or faults that might prevent you from unassigning the DCU from the host.

See [“Start the Host Console”](#) on page 45.

b. Stop the host to which the DCU is currently assigned.

See [“Stop a Host”](#) on page 68.

c. Unassign the DCU from the host.

See [“Unassign DCUs From a Host”](#) on page 141.

3. Verify that the DCU you want to assign is assignable to the host.

See [“Specify Which DCUs Can Be Assigned to a Host”](#) on page 142.

4. Start the host console for the host to which you want to assign the DCU.

See [“Start the Host Console”](#) on page 45.

5. If needed, stop the host to which you want to assign the DCU.

See [“Stop a Host”](#) on page 68.

6. If needed, specify that the DCU should be assignable to the host.

See [“Specify Which DCUs Can Be Assigned to a Host”](#) on page 142.

7. Assign the DCU to the host.

This step assumes that only DCU0 is currently assigned to the host and that you want to assign DCU1.


```
-> set /Servers/PDomains/PDomain_0/HOST/ dcus_assigned="/SYS/DCU0 /SYS/DCU1"
Set 'dcus_assigned' to '/SYS/DCU0 /SYS/DCU1'
```

```
->
```

8. Use one of these methods to verify that the DCU was assigned to the host.

```
-> show /Servers/PDomains/PDomain_0/HOST
```

```
...
```

```
Properties:
```

```
  autorestart = reset
  autorunonerror = powercycle
  bootfailrecovery = poweroff
  bootrestart = none
  boottimeout = 0
  dcus_assignable = /SYS/DCU0 /SYS/DCU1 /SYS/DCU2 /SYS/DCU3
  dcus_assigned = /SYS/DCU0 /SYS/DCU1
  dcus_available = /SYS/DCU2
```

```
...
```

```
->
```

Or:

```
-> show /Servers/PDomains/PDomain_0/HOST dcus_assigned
```

```
/Servers/PDomains/PDomain_0/HOST
```

```
Properties:
```

```
  dcus_assigned = /SYS/DCU0 /SYS/DCU1
```

```
->
```

9. Start the host to which you added the new DCU.

See [“Start a Host” on page 63](#).

10. If needed, start the host from which you unassigned the DCU.

See [“Start a Host” on page 63](#).

Related Information

- [“Determine the Current Assignment of DCUs” on page 138](#)
- [“Determine the Availability of DCUs” on page 140](#)
- [“Unassign DCUs From a Host” on page 141](#)
- [“Specify Which DCUs Can Be Assigned to a Host” on page 142](#)

▼ Disable and Enable Automatic Failover for a DCU

The `/System/DCUs/ failover` property is set to `auto` by default, so that Oracle ILOM automates failover when a failure occurs in a DCU. During service operations such as hot-plug removal and replacement, you can suspend automated failover and manually set the Active SP configuration as required before performing the operation.

Setting DCUs to manual failover prevents ILOM from performing system initiated failover specifically for DCUs. Automated failover of the Active SP is always in effect.

On SPARC M8 and M7 servers with two DCUs, the Active SP is also the controlling SP for DCU0, so DCU0 failover can still occur in the context of an Active SP failover.

You must have the admin role (a) to perform this task.

- 1. Log in to Oracle ILOM.**

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

- 2. Show the current state of the DCU failover property.**

```
-> show /System/DCUs failover

/System/DCUs
  Properties:
    failover = auto
```

- 3. Set the failover property to manual.**

```
-> set /System/DCUs failover=manual
Set 'failover' to 'manual'
```

- 4. Perform the removal and replacement.**

See [SPARC M8 and SPARC M7 Servers Service Manual](#) for instructions.

- 5. Enable automatic failover when the replacement is complete.**

```
-> set /System/DCUs failover=auto
Set 'failover' to 'auto'
```

Configuring Boot and Restart Behavior

These topics describe how to change the default boot configuration.

- [“Boot and Restart Overview” on page 147](#)
- [“Configuring Boot Variables” on page 148](#)
- [“Configuring the Boot Mode” on page 157](#)

Related Information

- [“Controlling the System or Host State” on page 61](#)
- [“Resetting the System, Host, or SP” on page 80](#)
- [“Booting and Shutting Down the OS” on page 75](#)
- [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [Oracle OpenBoot 4.x Administration Guide](#)

Boot and Restart Overview

Note - This topic uses PDomain_0 as an example.

Use OpenBoot and Oracle Solaris commands to reconfigure the host'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.

Note - The boot sequence has changed to accommodate booting from an iSCSI device over IPoIB. For information about these changes, see [“Boot Sequence” on page 76](#) and [“iSCSI Devices Using IPoIB” on page 30](#). For detailed descriptions of the changes and instructions on how to manage the new infrastructure, refer to the [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11).

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

You can also secure the boot process by using Verified Boot, which verifies the boot blocks, unix, and geunix. You can set the Boot Policy (`boot_policy`) property in Oracle ILOM to none

(default), warning, or enforce. The warning setting sends a warning to the Oracle Solaris OS console, and it allows the boot process to proceed. The enforce setting sends a warning to the Oracle Solaris console, but it does not allow the boot process to proceed. You can set the `boot_policy` property from `/Servers/PDomains/PDomain_0/host/verified_boot`.



Caution - The enforce setting does not allow the boot process to proceed if the OpenBoot `use-nvramrc?` variable is set to `true`. You can directly set the `use-nvramrc?` variable with the `setenv` command, or the variable is set to `true` when you use the `nvalias` command. If you set the `use-nvramrc?` variable to `false`, you will not be able to create device aliases with the `nvalias` command.

Related Information

- [“Configuring Boot Variables” on page 148](#)
- [“Configuring the Boot Mode” on page 157](#)
- [Oracle OpenBoot 4.x Administration Guide](#)

Configuring Boot Variables

These topics describe how to configure the boot variables. For more comprehensive information about customizing how the host boots, refer to the Oracle Solaris documentation for your release.

- [“Change the Default Boot Device \(OpenBoot\)” on page 149](#)
- [“Create a Boot Device Alias” on page 150](#)
- [“Enable or Disable Automatic Booting \(OpenBoot\)” on page 151](#)
- [“Enable or Disable Automatic Booting \(Oracle Solaris\)” on page 152](#)
- [“Display OpenBoot Variables” on page 153](#)
- [“OpenBoot Configuration Variables” on page 154](#)
- [“printenv Output” on page 155](#)

Related Information

- [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [Oracle OpenBoot 4.x Administration Guide](#)
- [“Booting and Shutting Down the OS” on page 75](#)

▼ Change the Default Boot Device (OpenBoot)

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

You must have the console role (c) and the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Start the host console.

See [“Start the Host Console”](#) on page 45.

3. If necessary, start the host.

See [“Start a Host”](#) on page 63.

4. Get to the ok prompt.

See [“Accessing the OpenBoot Prompt”](#) on page 48.

5. If you want to use a known device, determine the name of the boot device.

To see the names of devices, type:

```
{0} ok devalias
```

6. Configure the boot-device variable with the correct boot device.

```
{0} ok setenv boot-device boot-device
```

where *boot-device* is a valid device alias from Step 5 or a valid device path from which to boot.



Caution - If you plan to use a boot disk that is part of an FC array to install the OS in a hands-free manner, you must change the device path. In the device path, you must replace `disk@` with `ssd@`. For example, the following device path,

```
/pci@312/pci@1/SUNW,emlxs@0/fp@0,0/disk@w5000cca0172afb6d,0:a
```

should be:

```
/pci@312/pci@1/SUNW,emlxs@0/fp@0,0/ssd@w5000cca0172afb6d,0:a
```

7. Verify the change.

```
{0} ok printenv boot-device
```

Related Information

- [“Create a Boot Device Alias” on page 150](#)
- [“Display OpenBoot Variables” on page 153](#)
- [Oracle OpenBoot 4.x Administration Guide](#)

▼ Create a Boot Device Alias

You must have the console role (c) and the admin role (a) to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **Start the host console.**
See [“Start the Host Console” on page 45](#).
3. **If necessary, start the host.**
See [“Start a Host” on page 63](#).
4. **Get to the ok prompt.**
See [“Accessing the OpenBoot Prompt” on page 48](#).
5. **Use the nvalias command to create the alias.**

```
{0} ok nvalias name-of-alias device-path
```

where *device-path* must be a path to a valid device from which to boot.



Caution - The Verified Boot enforce setting does not allow the boot process to proceed if the OpenBoot use-nvramrc? variable is set to true. You can directly set the use-nvramrc? variable with the setenv command, or the variable is set to true when you use the nvalias command. If you set the use-nvramrc? variable to false, you will not be able to create device aliases with the nvalias command.

Related Information

- [“Change the Default Boot Device \(OpenBoot\)” on page 149](#)
- [“Display OpenBoot Variables” on page 153](#)

- [Oracle OpenBoot 4.x Administration Guide](#)

▼ Enable or Disable Automatic Booting (OpenBoot)

Use one of these procedures to configure OpenBoot so that a host reset or power on attempts to boot the OS automatically, or does not. This change is permanent, but it takes effect only after a host reset.

Note - To enable automatic booting of the OS, the OpenBoot `auto-boot?` variable must be set to `true` *and* the Oracle ILOM `auto-boot` property must be enabled. You can change the `auto-boot?` variable at the Oracle Solaris prompt with the `eeeprom` command or at the OpenBoot prompt with the `setenv` command. You can change the `auto-boot` property in Oracle ILOM at `/Servers/PDomains/PDomain_n/HOST/domain/control`.

You must have the console role (c) and the admin role (a) to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.
2. **Start the host console.**
See [“Start the Host Console”](#) on page 45.
3. **If necessary, start the host.**
See [“Start a Host”](#) on page 63.
4. **Get to the `ok` prompt.**
See [“Accessing the OpenBoot Prompt”](#) on page 48.
5. **Set the OpenBoot `auto-boot?` variable to `true` or `false`.**
 - `true` – (Default) The host automatically attempts to boot from the devices specified in `boot-device` if you configured the `boot-device` variable *and* you enabled the Oracle ILOM `auto-boot` property.

Note - If you are configuring the host for maximum availability, configure the host to automatically reboot following either an error or a hardware reconfiguration by setting `auto-boot?` and `auto-boot-on-error?` to `true`. The default value for `auto-boot-on-error?` is `false`.

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

For example, to change the default setting, type:

```
{0} ok setenv auto-boot? false
```

6. Verify the change.

```
{0} ok printenv auto-boot?  
auto-boot? = false
```

Related Information

- [“Change the Default Boot Device \(OpenBoot\)” on page 149](#)
- [“Display OpenBoot Variables” on page 153](#)
- [Oracle OpenBoot 4.x Administration Guide](#)

▼ Enable or Disable Automatic Booting (Oracle Solaris)

Use this procedure to configure OpenBoot so that a host reset or power on either attempts to boot automatically, or not, when Oracle Solaris is running in the host. This change does not affect the reboot command. If you issue the reboot command, or if the Oracle Solaris OS panics and reboots, the host will continue the boot process.

Note - To enable automatic booting of the OS, the OpenBoot `auto-boot?` variable must be set to `true` *and* the Oracle ILOM `auto-boot` property must be enabled. You can change the `auto-boot?` variable at the Oracle Solaris prompt with the `setenv` command or at the OpenBoot prompt with the `setenv` command. You can change the `auto-boot` property in Oracle ILOM at `/Servers/PDomains/PDomain_n/HOST/domain/control`.

You must have the console role (c) and the admin role (a) to complete this task.

1. **Log in to Oracle ILOM.**
See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).
2. **Start the host console.**
See [“Start the Host Console” on page 45](#).
3. **If necessary, start the host.**
See [“Start a Host” on page 63](#).

4. Set the OpenBoot `auto-boot?` variable.

- `true` – (Default) The host automatically attempts to boot from the devices specified in `boot-device` if you configured the `boot-device` variable *and* you enabled the Oracle ILOM `auto-boot` property.
- `false` – The host does not automatically boot. You can boot the host manually.

For example:

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

5. Verify the change.

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

Related Information

- [“Enable or Disable Automatic Booting \(OpenBoot\)” on page 151](#)
- [“Display OpenBoot Variables” on page 153](#)
- [Booting and Shutting Down Oracle Solaris 11.3 Systems](#)
- [Oracle OpenBoot 4.x Administration Guide](#)

▼ Display OpenBoot Variables

You must have the console role (c) and the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Start the host console.

See [“Start the Host Console” on page 45](#).

3. If necessary, start the host.

See [“Start a Host” on page 63](#).

4. View the value for an individual OpenBoot variable using one of these methods:

- From Oracle Solaris, type:

```
# eeprom variable
```

Where *variable* is a valid OpenBoot variable.

- Get to the OpenBoot prompt (see [“Accessing the OpenBoot Prompt” on page 48](#)), then type:

```
{0} ok printenv variable
```

Where *variable* is a valid OpenBoot variable.

For an example of printenv output, see [“printenv Output” on page 155](#).

5. View all of the OpenBoot variables using one of these methods:

- From Oracle Solaris, type:

```
# eeprom
```

Note - This command displays only the current values of the OpenBoot variables. It does not display the default values for the variables. To view the default values, use the printenv command from the OpenBoot prompt.

- Get to the OpenBoot prompt (see [“Accessing the OpenBoot Prompt” on page 48](#)), then type:

```
{0} ok printenv
```

For descriptions of which OpenBoot variables control the way the system boots, see [“OpenBoot Configuration Variables” on page 154](#).

Related Information

- [“Change the Default Boot Device \(OpenBoot\)” on page 149](#)
- [“OpenBoot Configuration Variables” on page 154](#)
- [Oracle OpenBoot 4.x Administration Guide](#)

OpenBoot Configuration Variables

| Variable | Default Value | Description |
|---------------------|---------------|---|
| auto-boot-on-error? | false | <p>Controls whether the host attempts to boot after POST detects a hardware reconfiguration or error, and enables the selection of the auto-boot behavior in the presence of detected errors.</p> <ul style="list-style-type: none"> ■ false – Host does not attempt to boot and stops at the ok prompt. ■ true – When auto-boot? is also set to true, the host automatically attempts to boot from the selected device following a hardware reconfiguration or error, which is necessary for maximum availability. |

| Variable | Default Value | Description |
|------------------------|---------------|--|
| auto-boot? | true | Controls whether the host automatically boots after a host reset or when the power is turned on. <ul style="list-style-type: none"> ■ true – Automatically attempts to boot from the devices specified in boot-device. ■ false – Host does not attempt to boot and stops at ok prompt. |
| boot-command | boot | Specifies the command to be executed when auto-boot? is true. <ul style="list-style-type: none"> ■ boot – Boot kernel from devices specified in boot-device. ■ boot net – Boot kernel from the network. ■ boot disk1:h – Boot from disk1 partition h. ■ boot tape – Boot default file from tape. ■ boot device-path – Boot from the device specified as device_path. For a list of aliases on your server, type devalias. |
| boot-device | disk net | Contains the name of the default boot device. Note - For booting from an iSCSI device over IPoIB, the boot-device variable shows the path to an eUSB device, and the root partition normally specified there is on the iSCSI device. |
| boot-file | | An optional variable that provides boot arguments that are used when OpenBoot is not in diagnostic mode. |
| diag-switch? | false | If the value is true, run in the Diagnostic mode. |
| network-boot-arguments | | An optional variable that enables you to set configuration variables to be used by OpenBoot when you perform a WAN boot. Setting this variable takes precedence over any default boot variable value. Refer to the eeprom(1M) man page for details. |
| pci-probe-policy | all | An optional variable that should only be used on Oracle SuperCluster engineered systems to specify how probing for PCIe devices is conducted. For all other non-SuperCluster systems the value of this property should not be changed, and if changed can result in an unknown system behavior. |

Related Information

- [“Display OpenBoot Variables” on page 153](#)
- [“printenv Output” on page 155](#)
- [Oracle OpenBoot 4.x Administration Guide](#)

printenv Output

On M8 systems and recent M7 systems:

```
{0} ok printenv
```

| Variable Name | Value | Default Value |
|---------------|-------|---------------|
|---------------|-------|---------------|

| | | |
|------------------------|-----------------|-----------------|
| pci-probe-policy | all | all |
| keyboard-layout | | |
| reboot-command | | |
| security-mode | none | No default |
| security-password | | 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 | disk net | disk net |
| multipath-boot? | false | false |
| boot-device-index | 0 | 0 |
| use-nvramrc? | false | false |
| nvramrc | | |
| error-reset-recovery | boot | boot |
| {0} ok | | |

On early M7 systems:

| | | |
|------------------------|-------|---------------|
| {0} ok printenv | | |
| Variable Name | Value | Default Value |
| ttya-rts-dtr-off | false | false |
| ttya-ignore-cd | true | true |
| keyboard-layout | | |
| reboot-command | | |
| security-mode | none | No default |
| security-password | | 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 | disk net | disk net |
| multipath-boot? | false | false |
| boot-device-index | 0 | 0 |
| use-nvramrc? | false | false |
| nvramrc | | |
| error-reset-recovery | boot | boot |

Related Information

- [“Display OpenBoot Variables” on page 153](#)
- [“OpenBoot Configuration Variables” on page 154](#)

Configuring the Boot Mode

These topics describe how to configure the boot mode.

- [“Boot Mode Overview” on page 158](#)
- [“Configure the Host Boot Mode” on page 158](#)
- [“Change the Host Boot Mode Behavior at Reset” on page 159](#)
- [“Configure the Host Boot Mode Script” on page 160](#)
- [“Display the Host Boot Mode Expiration Date” on page 161](#)
- [“Override OpenBoot Settings to Reset the Host” on page 161](#)

Related Information

- [Oracle Solaris documentation \(http://www.oracle.com/pls/topic/lookup?ctx=solaris11\)](http://www.oracle.com/pls/topic/lookup?ctx=solaris11)
- [“Booting and Shutting Down the OS” on page 75](#)

Boot Mode Overview

Boot mode (bootmode) properties enable you to override the default method the host 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`, and then reset the host 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.

Because bootmode is intended only to correct a problem with the OpenBoot or Oracle VM Server for SPARC settings, 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

- [“Resetting the System, Host, or SP” on page 80](#)
- [“Boot and Restart Overview” on page 147](#)
- [“Oracle VM Server for SPARC Overview” on page 33](#)

▼ Configure the Host Boot Mode

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

This task uses `PDomain_0` as an example. You must have the reset role (`r`) to complete this task.

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

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Determine the valid Oracle VM Server for SPARC configurations on the SP.

```
-> show /Servers/PDomains/PDomain_0/HOST/domain/configs
```

3. Set the boot mode configuration.

```
-> set /Servers/PDomains/PDomain_0/HOST/bootmode config=configname
```

where the *configname* value is a valid name of a logical domain configuration.

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

```
-> set /Servers/PDomains/PDomain_0/HOST/bootmode config=ldm-set1
```

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

```
-> set /Servers/PDomains/PDomain_0/HOST/bootmode config=factory-default
```

Related Information

- [“Boot Mode Overview”](#) on page 158
- [“Oracle VM Server for SPARC Overview”](#) on page 33

▼ Change the Host Boot Mode Behavior at Reset

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

This task uses `PDomain_0` as an example. You must have the `reset` role (`r`) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)”](#) on page 43.

2. Set the bootmode state.

```
-> set /Servers/PDomains/PDomain_0/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 host reset or 10 minutes. 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 "" (" indicates an empty script).

Related Information

- [“Boot Mode Overview” on page 158](#)
- [“Configure the Host Boot Mode Script” on page 160](#)

▼ Configure the Host Boot Mode Script

This task uses `PDomain_0` as an example. You must have the reset role (`r`) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

```
-> set /Servers/PDomains/PDomain_0/HOST/bootmode script=value
```

The `script` property controls the host server's firmware OpenBoot method of booting. It does not affect the current `/HOST/bootmode` setting.

`value` can be up to 255 bytes in length.

You can specify a bootmode setting, and set the script within the same command.

```
-> set /Servers/PDomains/PDomain_0/HOST/bootmode state=reset_nvram script="setenv diag-switch? true"
```

After the host resets and OpenBoot reads the values stored in the script, OpenBoot sets the `diag-switch?` variable to the user-requested value of `true`.

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

Related Information

- [“Boot Mode Overview” on page 158](#)
- [“Display the Host Boot Mode Expiration Date” on page 161](#)

▼ Display the Host Boot Mode Expiration Date

This procedure uses PDomain_0 as an example.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. View the bootmode expires property.

```
-> show /Servers/PDomains/PDomain_0/HOST/bootmode expires
    Properties:
        expires = Thu Oct 29 18:24:16 2015

->
```

Related Information

- [“Boot Mode Overview” on page 158](#)
- [“Override OpenBoot Settings to Reset the Host” on page 161](#)

▼ Override OpenBoot Settings to Reset the Host

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

This task uses PDomain_0 as an example. You must have the reset role (r) to complete this task.

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(CLI\)” on page 43](#).

2. Type:

```
-> set /Servers/PDomains/PDomain_0/HOST/domain/control auto-boot=disabled
Set 'auto-boot' to 'disabled'

-> reset /Servers/PDomains/PDomain_0/HOST/domain/control
Are you sure you want to reset /Servers/PDomains/PDomain_0/HOST/domain/control (y/n)? y
Performing reset on /Servers/PDomains/PDomain_0/HOST/domain/control

->
```

The host reboots and stops at the OpenBoot prompt. If the reset command does not complete successfully, use the `-f` force option. To bypass the confirmation, use the `-script` option.

Related Information

- [“Boot Mode Overview” on page 158](#)
- [“Configuring Boot and Restart Behavior” on page 147](#)

Configuring the Power Budget and Consumption

These topics and tasks describe how to configure the power budget and consumption of the hosts.

- [“Power Management Overview” on page 162](#)
- [“Configure the Power Allocation for a PDomain” on page 163](#)

Related Information

- [“View System Power Consumption” on page 103](#)
- [“View the Power State of the System” on page 89](#)

Power Management Overview

You can optionally set system management policies in Oracle ILOM to control the power consumption. This topic uses PDomain_0 and HOST0 as examples.

| Server | Domains | Description |
|---|--------------------|--|
| SPARC M8-8 or SPARC M7-8 sever (two PDomains) | Two static domains | Set from /Servers/PDomains/PDomain_0/SP/powermgmt. |
| SPARC M8-8 or SPARC M7-8 server (one PDomain) | One static domain | Set from /Servers/PDomains/PDomain_0/SP/powermgmt. |

A power cap enabled at the PDomain level is measured against the power consumption of the CMIOUs that are owned by the PDomain. Oracle ILOM polls the /HOST0/VPS sensor and notifies the logical domain power capper module in the control domain of how much power consumption needs to be increased or decreased to achieve the cap.

For information about setting power management properties with the features that are common to all platforms managed by Oracle ILOM, refer to [“Setting System Management Power Source](#)

Policies” in *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x*.

Related Information

- “Server, System, and Host States” on page 62
- “Start a Host” on page 63
- “Stop a Host” on page 68

▼ Configure the Power Allocation for a PDomain

This task uses PDomain_0 as an example. You must have the admin role (a) to complete this task.

1. Log in to Oracle ILOM.

See “Log In to Oracle ILOM (CLI)” on page 43.

2. View the current power allocation for the host.

SPARC M8 and M7 servers show similar output with watt variance due to power supply differences.

```
-> show /Servers/PDomains/PDomain_0/SP/powermgmt/budget
```

```
/Servers/PDomains/PDomain_0/sp/powermgmt/budget
```

```
Targets:
```

```
Properties:
```

```
activation_state = disabled
status = ok
powerlimit = 3588 (watts)
timelimit = default (30 seconds)
violation_actions = none
min_powerlimit = 1318
pendingpowerlimit = 3588 (watts)
pendingtimelimit = default
pendingviolation_actions = none
commitpending = (Cannot show property)
```

```
...
```

```
->
```

3. Activate the power allocation feature.

You must enable the power allocation feature before you can set a new power limit.

```
-> set /Servers/PDomains/PDomain_0/SP/powermgmt/budget activation_state=enabled
Set 'activation_state' to 'enabled'
```

```
->
```

4. Set the power limit.

You can set the power limit to be between the minimum power limit, which is the value of the `min_powerlimit` property, and the maximum power limit, which is the value of the `powerlimit` property. You can express the power limit value in either watts, *wattsw*, or as a percentage (*percent%*) between the valid range, as in the following example.

```
-> set /Servers/PDomains/PDomain_0/SP/powermgmt/budget pendingpowerlimit=75%
Set 'pendingpowerlimit' to '75%' [75 (%)]
```

```
->
```

5. If needed, set the time limit.

The time limit is the grace period during which the power limit is allowed to be exceeded after it is initially achieved. You can set this value to default (30 seconds) or a value in seconds (0–99999).

```
-> set /Servers/PDomains/PDomain_0/SP/powermgmt/budget pendingtimelimit=60
Set 'pendingtimelimit' to '60'
```

```
->
```

6. If needed, set the violation action.

This property instructs the SP what to do if the time limit property is exceeded. The possible values are `none` or `hardpoweroff`.

```
-> set /Servers/PDomains/PDomain_0/SP/powermgmt/budget
    pendingviolation_actions=hardpoweroff
Set 'pendingviolation_actions' to 'hardpoweroff'
```

```
->
```

7. Commit the changes.

You must perform this step for the changes to take effect.

```
-> set /Servers/PDomains/PDomain_0/SP/powermgmt/budget commitpending=true
Set 'commitpending' to 'true'
```

```
->
```

8. Verify that the changes were made.

```
-> show /Servers/PDomains/PDomain_0/SP/powermgmt/budget

/Servers/PDomains/PDomain_0/SP/powermgmt/budget
Targets:

Properties:
  activation_state = enabled
  status = ok
  powerlimit = 75 (%)
  timelimit = 60
  violation_actions = hardpoweroff
  min_powerlimit = 658
  pendingpowerlimit = 75 (%)
  pendingtimelimit = 60
  pendingviolation_actions = hardpoweroff
  commitpending = (Cannot show property)
...
->
```

Related Information

- [“Power Management Overview” on page 162](#)
- [“View System Power Consumption” on page 103](#)

Creating Virtualized Environments

You can use the resources on and connected to the SPARC M8 servers and SPARC M7 servers to create virtualized environments with logical domains using the Oracle VM Server for SPARC software. With the logical domains technology, you can create entire data center tiers within a single server. Securely isolated from one another, logical domains are able to virtualize the various resources of the platform (for example, I/O, CPU, memory, and storage resources) with the flexibility to change resource amounts and configurations on demand. To create these environments, you must understand the physical architecture of the server and how it is mapped to the logical software level. These topics describe the mapping and how to use that information to create virtualized environments.

- [“Physical I/O Architecture” on page 169](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)
- [“Understanding Virtualization Examples” on page 190](#)

Related Information

- [Oracle VM Server for SPARC documentation \(http://www.oracle.com/goto/vm-sparc/docs\)](http://www.oracle.com/goto/vm-sparc/docs)
- [“Configuring PDomains and Hosts” on page 137](#)

Understanding the I/O Architecture

The I/O architecture for these SPARC M8 and SPARC M7 servers has changed from previous releases of M-Series servers. For these servers, the CMT processors no longer directly host the PCI Express fabric. For these servers, the PCIe fabric has been moved to an I/O controller chip called the I/O hub (IOH). These topics describe the I/O architecture:

- [“I/O Assignments” on page 168](#)
- [“Physical I/O Architecture” on page 169](#)
- [“Identify the Root Complex of a Device” on page 180](#)

Related Information

- [“Understanding Virtualization Examples” on page 190](#)
- [“Configuring PDomains and Hosts” on page 137](#)

I/O Assignments

The total number of available PCIe slots depends directly on the number of CMIOUs in the PDomain. Each CMIOU has three PCIe slots. Each PDomain must have at least one network adapter, and most configurations require at least one storage adapter.

You can assign an I/O device or a virtual function to a guest domain, making it an I/O domain, or you can assign an entire PCIe bus to a guest domain, making it a non-primary root domain (NPRD) that provides virtualized I/O services to other guest domains. You can also run applications in NPRDs to achieve bare-metal performance.

The number of possible I/O domains is proportional to the number of devices and virtual functions that are available to the PDomain. The number of NPRDs is directly dependent on the number of available root complexes. You can use single root I/O virtualization (SR-IOV) to create virtual functions to increase the number of I/O domains. See [“I/O Domains With SR-IOV Configuration” on page 196](#) for an example of a basic configuration that uses SR-IOV to increase the number of I/O domains that can exist in a PDomain. See [“Virtualization Guidelines and Restrictions” on page 190](#) for more information about I/O domains, and [“Bare Metal Plus Zones Configuration” on page 192](#) for more information about NPRDs.

Note - You can dynamically add a PCIe bus to a PDomain without shutting down the PDomain or putting it in delayed reconfiguration. For more information about this feature, see [“Dynamic PCIe Bus Assignment” on page 34](#). Also, when you create I/O domains, you should consider making them resilient by using NPRDs, as described in [“I/O Domain Resiliency” on page 35](#).

The following table lists the number of available slots per PDomain on each server, minus the slot that is required for the network adapter, along with the number of available slots if a storage adapter is installed. The number of possible NPRDs that own a root complex to provide virtualized I/O to guest domains is directly proportional to the number of available PCIe slots.

| Server | Number of CMIOUs per PDomain | Total Number of PCIe Slots per PDomain | Available PCIe Slots for I/O Domains |
|---------------------------|------------------------------|--|--------------------------------------|
| SPARC M8-8 (one PDomain) | 8 | 24 | 23 or 22 |
| | 4 | 12 | 11 or 10 |
| SPARC M8-8 (two PDomains) | 4 | 12 | 11 or 10 |
| | 2 | 6 | 5 or 4 |

| Server | Number of CMIOUs per PDomain | Total Number of PCIe Slots per PDomain | Available PCIe Slots for I/O Domains |
|--|------------------------------|--|--------------------------------------|
| SPARC M7-8 (one PDomain) | 8 | 24 | 23 or 22 |
| | 4 | 12 | 11 or 10 |
| SPARC M7-8 (two PDomains) | 4 | 12 | 11 or 10 |
| | 2 | 6 | 5 or 4 |
| SPARC M7-16 (one PDomain, four DCUs per PDomain) | 16 | 48 | 47 or 46 |
| | 8 | 24 | 23 or 22 |
| SPARC M7-16 (two PDomains, two DCUs per PDomain) | 8 | 24 | 23 or 22 |
| | 4 | 12 | 11 or 10 |
| SPARC M7-16 (four PDomains, one DCU per PDomain) | 4 | 12 | 11 or 10 |
| | 2 | 6 | 5 or 4 |

Related Information

- [“Physical I/O Architecture” on page 169](#)
- [“Identify the Root Complex of a Device” on page 180](#)

Physical I/O Architecture

The physical I/O architecture for the SPARC M8 and SPARC M7 servers has changed from previous releases of the M series servers. Different names are used, and the CPU no longer owns the PCIe fabric.

I/O Terminology

The terms that are used to describe the I/O architecture of SPARC M8 and SPARC M7 servers include:

- **Root complex** – In a PCIe device path, the root complex is the first element (for example, `/pci@300`). In previous releases of the M series servers, the CMT processors contained one or more root complexes. In SPARC M7 and SPARC M8 servers, the root complex has moved to the I/O hub controller chip (IOH). Each server has one or more IOH controller chips.

- **Root port** – A root complex can have one or more root ports. Each root port is independent from any other in that fabric. However, any device under the same root complex shares that fabric.

The root port is the second term in a PCIe device path. The first root port is pci@1, the second is pci@2, and so on.

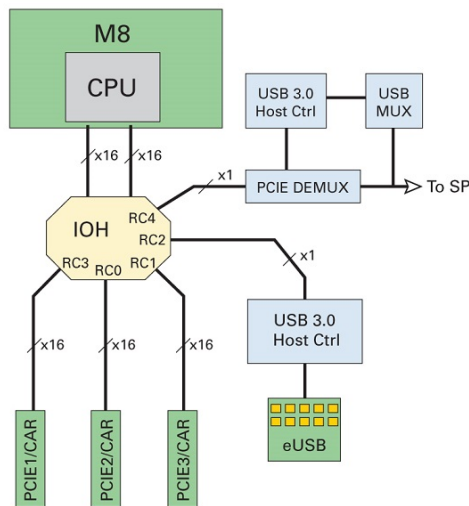
- **PCI Bus** – This is the label that you use to assign a root complex to a logical domain.

Root Complex Assignments (SPARC M8-8)

The root complex assignments are slightly different in the SPARC M8-8 server compared to the SPARC M7 servers. SPARC M8-8 uses two root complexes (RC2, RC4) to connect to the eUSB device and the SP while SPARC M7 systems use a single root complex (RC4) for connecting the eUSB device and the SP. This allows assignment of an eUSB device on all CMIOUs to guest domains where they can be used to perform iSCSI boot using IPoIB. In contrast, on M7 systems, this can only be done on CMIOUs that are not providing any rKVMS services.

The following figure shows the root complex assignments for one SPARC M8-8 CMIOU.

FIGURE 1 SPARC M8-8 CMIOU Root Complex



For SPARC M8 and SPARC M7, each root complex has a device path, a service path, and a bus name. The following table shows the naming for CMIOU0 and CMIOU1 as an examples. For all of the CMIOU naming examples, see [“I/O Component Relationships” on page 175](#).

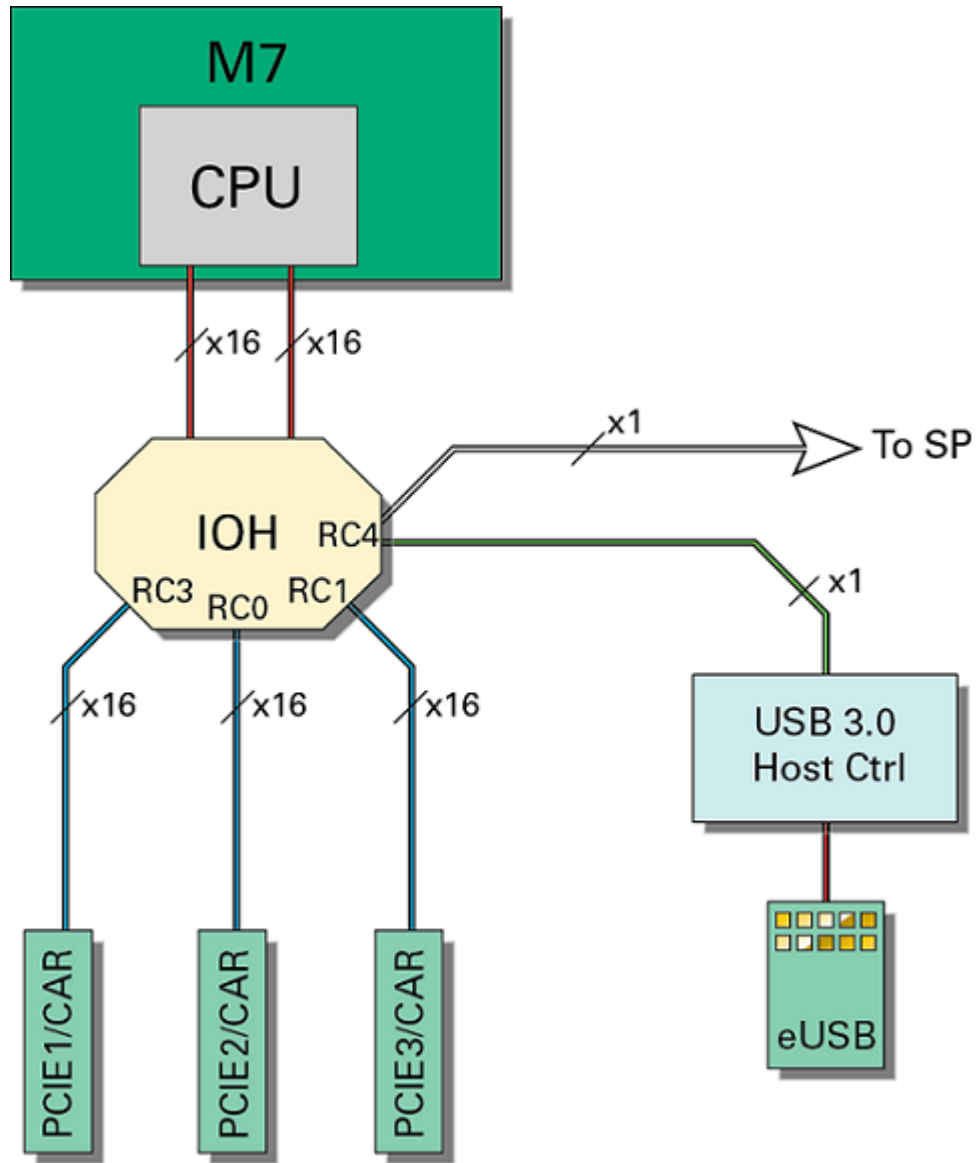
TABLE 1 I/O Paths for SPARC M8 and SPARC M7 CMIOUs

| CMIOU | Oracle Solaris Device Path | Oracle ILOM Service Path | Oracle VM Server for SPARC Bus Name | Notes |
|--------|----------------------------|--------------------------|-------------------------------------|---------------------------------------|
| CMIOU0 | /pci@301/pci@1 | /SYS/CMIOU0/PCIE3 | pci_1 | Typically used for boot disk adapter. |
| | /pci@300/pci@1 | /SYS/CMIOU0/PCIE2 | pci_0 | |
| | /pci@303/pci@1 | /SYS/CMIOU0/PCIE1 | pci_3 | |
| CMIOU1 | /pci@306/pci@1 | /SYS/CMIOU1/PCIE3 | pci_6 | Typically used for network adapter. |
| | /pci@305/pci@1 | /SYS/CMIOU1/PCIE2 | pci_5 | |
| | /pci@308/pci@1 | /SYS/CMIOU1/PCIE1 | pci_8 | |

Root Complex Assignments (SPARC M7)

The following figure shows the root complex assignments for one SPARC M7 series server CMIOU.

FIGURE 2 SPARC M7 CMIOU Root Complex



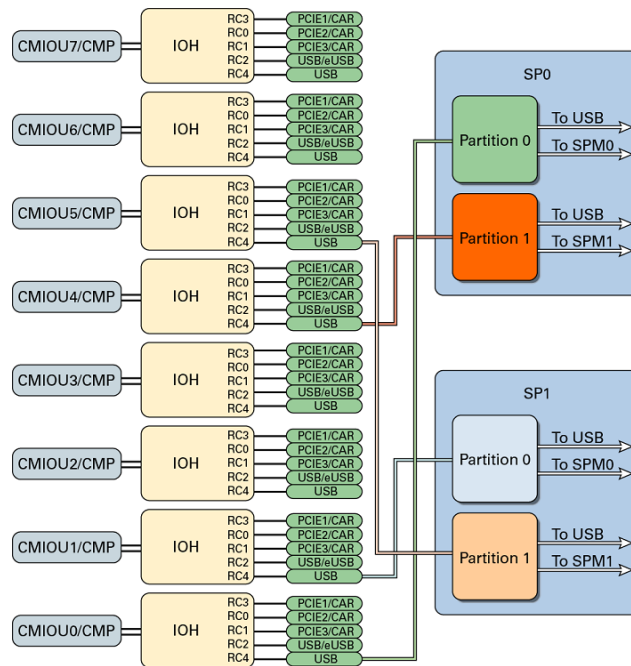
Each root complex has a device path, a service path, and a bus name as shown in the examples in Table 1, “I/O Paths for SPARC M8 and SPARC M7 CMIOUs,” on page 171. For all of the CMIOU naming examples, see “I/O Component Relationships” on page 175.

I/O Architecture Layout (SPARC M8-8)

Figure 3, “I/O Architecture Layout for SPARC M8-8 with One PDomain,” on page 173 shows the I/O architecture layout for the SPARC M8-8 server with one PDomain. For the SPARC M8-8 server with two PDomains, the diagram represents the I/O architecture layout for both static domains.

The diagram shows connections between the SPs and CMIOU4 and CMIOU5. While the wires are present, the connections are not active in the SPARC M8-8 server with one PDomain. They are active in the SPARC M8-8 server with two PDomains.

FIGURE 3 I/O Architecture Layout for SPARC M8-8 with One PDomain

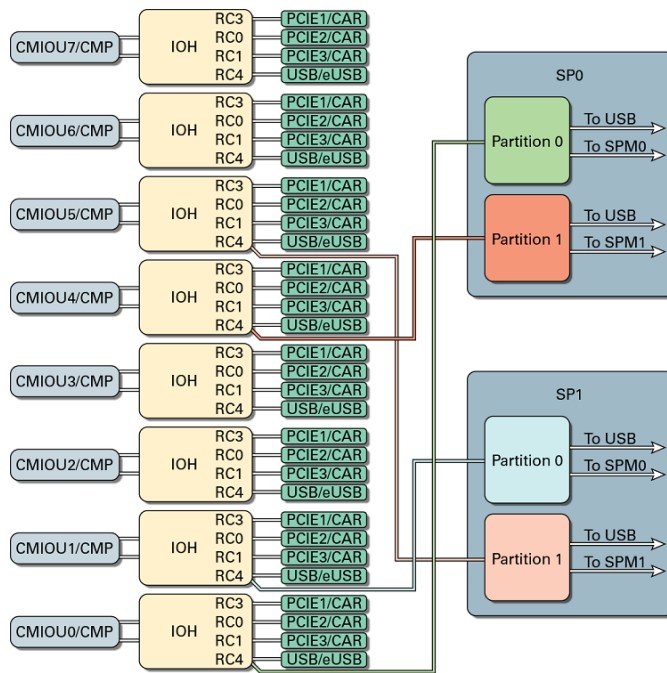


I/O Architecture Layout (SPARC M7)

Figure 4, “I/O Architecture Layout for SPARC M7 with One PDomain,” on page 174 shows the I/O architecture layout for the SPARC M7-8 server with one PDomain. For the SPARC M7-8 server with two PDomains, the diagram represents the I/O architecture layout for both static domains. For the SPARC M7-16 server, the diagram represents one half of the I/O architecture.

Note - The diagram shows connections between the SPs and CMIOU4 and CMIOU5. While the wires are physically present, the connections are not active in the SPARC M7-8 server with one PDomain. They are active in the SPARC M7-8 server with two PDomains and the SPARC M7-16 servers.

FIGURE 4 I/O Architecture Layout for SPARC M7 with One PDomain



I/O Component Example Output

The `ldm list-io` command lists information about the I/O devices on the server.

The following example shows output for a M7-8 server, and the M8-8 server output is similar. This output has been edited for clarity.

```
# ldm list-io -l

NAME                                TYPE  BUS    DOMAIN  STATUS
----                                -
...
/SYS/CMI0U0/PCIE2                   PCIE  pci_0  primary EMP
[pci@300/pci@1]
/SYS/CMI0U0/PCIE3                   PCIE  pci_1  primary OCC
[pci@301/pci@1]
  LSI,sas@0/iport@80
  LSI,sas@0/iport@v0
/SYS/CMI0U0/PCIE1                   PCIE  pci_3  primary OCC
[pci@303/pci@1]
  network@0
  network@0,1
  network@0,2
  network@0,3
...
```

In the output you can find the following about installed PCIe devices:

| | |
|-----------------------------------|---|
| Root complex and root port | Shown in brackets. For the device <code>/SYS/CMI0U0/PCIE2</code> the <code>[pci@300/pci@1]</code> shows that the root complex is <code>pci@300</code> and the root port is <code>pci@1</code> . |
| Slot number | Shown in the Oracle ILOM service path. For the device <code>/SYS/CMI0U0/PCIE2</code> , the <code>PCIE2</code> indicates the device is located in slot 2 on <code>CMI0U0</code> . |
| Bus name | Shown in the <code>BUS</code> column. For the device <code>/SYS/CMI0U0/PCIE2</code> , the <code>Bus</code> is <code>pci_0</code> . You use the <code>Bus</code> label to assign a root complex to a logical domain. |

I/O Component Relationships

This table explains the DCU and CMI0U component relationships in the servers.

TABLE 2 Server I/O Components

| Server | DCUs | CMIOUTs |
|--|-------------------------------------|---|
| SPARC M8-8 or SPARC M7-8 (two PDomains) | Two static with four CMIOUTs each | CMIOUT0-3 CMIOUT4-7 |
| SPARC M8-8 or SPARC M7-8 (one PDomain) | One static with eight CMIOUTs | CMIOUT0-7 |
| SPARC M7-16 | Four dynamic with four CMIOUTs each | CMIOUT0-3 CMIOUT4-7 CMIOUT8-11 CMIOUT12-15 |

The following additional tables list the relationships between the root complex numbers, PCIe slot numbers, root complex names, and bus names on each CMIOUT that you can install in the servers.

For CMIOUT0 through CMIOUT3 on all servers:

- [Table 3 - I/O Component Naming for CMIOUT0](#)
- [Table 4 - I/O Component Naming for CMIOUT1](#)
- [Table 5 - I/O Component Naming for CMIOUT2](#)
- [Table 6 - I/O Component Naming for CMIOUT3](#)

For CMIOUT4 through CMIOUT7 on all servers:

- [Table 7 - I/O Component Naming for CMIOUT4](#)
- [Table 8 - I/O Component Naming for CMIOUT5](#)
- [Table 9 - I/O Component Naming for CMIOUT6](#)
- [Table 10 - I/O Component Naming for CMIOUT7](#)

For CMIOUT8 through CMIOUT15 on M7-16 Servers:

- [Table 11 - I/O Component Naming for CMIOUT8](#)
- [Table 12 - I/O Component Naming for CMIOUT9](#)
- [Table 13 - I/O Component Naming for CMIOUT10](#)
- [Table 14 - I/O Component Naming for CMIOUT11](#)
- [Table 15 - I/O Component Naming for CMIOUT12](#)
- [Table 16 - I/O Component Naming for CMIOUT13](#)
- [Table 17 - I/O Component Naming for CMIOUT14](#)
- [Table 18 - I/O Component Naming for CMIOUT15](#)

TABLE 3 I/O Component Naming for CMIOUT0

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIe2 | pci@300 | pci_0 |

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 1 | PCIE3 | pci@301 | pci_1 |
| 2 (M8 only) | N/A | pci@302 | pci_2 |
| 3 | PCIE1 | pci@303 | pci_3 |
| 4 | N/A | pci@304 | pci_4 |

TABLE 4 I/O Component Naming for CMIOU1

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@305 | pci_5 |
| 1 | PCIE3 | pci@306 | pci_6 |
| 2 (M8 only) | N/A | pci@307 | pci_7 |
| 3 | PCIE1 | pci@308 | pci_8 |
| 4 | N/A | pci@309 | pci_9 |

TABLE 5 I/O Component Naming for CMIOU2

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@30a | pci_10 |
| 1 | PCIE3 | pci@30b | pci_11 |
| 2 (M8 only) | N/A | pci@30c | pci_12 |
| 3 | PCIE1 | pci@30d | pci_13 |
| 4 | N/A | pci@30e | pci_14 |

TABLE 6 I/O Component Naming for CMIOU3

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@30f | pci_15 |
| 1 | PCIE3 | pci@310 | pci_16 |
| 2 (M8 only) | N/A | pci@311 | pci_17 |
| 3 | PCIE1 | pci@312 | pci_18 |
| 4 | N/A | pci@313 | pci_19 |

TABLE 7 I/O Component Naming for CMIOU4

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@314 | pci_20 |
| 1 | PCIE3 | pci@315 | pci_21 |

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 2 (M8 only) | N/A | pci@316 | pci_22 |
| 3 | PCIE1 | pci@317 | pci_23 |
| 4 | N/A | pci@318 | pci_24 |

TABLE 8 I/O Component Naming for CMIOU5

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@319 | pci_25 |
| 1 | PCIE3 | pci@31a | pci_26 |
| 2 (M8 only) | N/A | pci@31b | pci_27 |
| 3 | PCIE1 | pci@31c | pci_28 |
| 4 | N/A | pci@31d | pci_29 |

TABLE 9 I/O Component Naming for CMIOU6

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@31e | pci_30 |
| 1 | PCIE3 | pci@31f | pci_31 |
| 2 (M8 only) | N/A | pci@31g | pci_32 |
| 3 | PCIE1 | pci@321 | pci_33 |
| 4 | N/A | pci@322 | pci_34 |

TABLE 10 I/O Component Naming for CMIOU7

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@323 | pci_35 |
| 1 | PCIE3 | pci@324 | pci_36 |
| 2 (M8 only) | N/A | pci@325 | pci_35 |
| 3 | PCIE1 | pci@326 | pci_38 |
| 4 | N/A | pci@327 | pci_39 |

TABLE 11 I/O Component Naming for CMIOU8

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@328 | pci_40 |
| 1 | PCIE3 | pci@329 | pci_41 |
| 3 | PCIE1 | pci@32b | pci_43 |

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 4 | N/A | pci@32c | pci_44 |

TABLE 12 I/O Component Naming for CMIOU9

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@32d | pci_45 |
| 1 | PCIE3 | pci@32e | pci_46 |
| 3 | PCIE1 | pci@330 | pci_48 |
| 4 | N/A | pci@331 | pci_49 |

TABLE 13 I/O Component Naming for CMIOU10

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@332 | pci_50 |
| 1 | PCIE3 | pci@333 | pci_51 |
| 3 | PCIE1 | pci@335 | pci_53 |
| 4 | N/A | pci@336 | pci_54 |

TABLE 14 I/O Component Naming for CMIOU11

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@337 | pci_55 |
| 1 | PCIE3 | pci@338 | pci_56 |
| 3 | PCIE1 | pci@33a | pci_58 |
| 4 | N/A | pci@33b | pci_59 |

TABLE 15 I/O Component Naming for CMIOU12

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@33c | pci_60 |
| 1 | PCIE3 | pci@33d | pci_61 |
| 3 | PCIE1 | pci@33f | pci_63 |
| 4 | N/A | pci@340 | pci_64 |

TABLE 16 I/O Component Naming for CMIOU13

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@341 | pci_65 |
| 1 | PCIE3 | pci@342 | pci_66 |

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 3 | PCIE1 | pci@344 | pci_68 |
| 4 | N/A | pci@345 | pci_69 |

TABLE 17 I/O Component Naming for CMIOU14

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@346 | pci_70 |
| 1 | PCIE3 | pci@347 | pci_71 |
| 3 | PCIE1 | pci@349 | pci_73 |
| 4 | N/A | pci@34a | pci_74 |

TABLE 18 I/O Component Naming for CMIOU15

| Root Complex Number | Slot Number | Root Complex Name | BUS Name |
|---------------------|-------------|-------------------|----------|
| 0 | PCIE2 | pci@34b | pci_75 |
| 1 | PCIE3 | pci@34c | pci_76 |
| 3 | PCIE1 | pci@34e | pci_78 |
| 4 | N/A | pci@34f | pci_79 |

Related Information

- “Identify the Root Complex of a Device” on page 180
- “Understanding Virtualization Examples” on page 190

▼ Identify the Root Complex of a Device

Note - For more information about the `ldm` command and for instructions on assigning devices to I/O domains, refer to the [Oracle VM Server for SPARC documentation \(http://www.oracle.com/goto/vm-sparc/docs\)](http://www.oracle.com/goto/vm-sparc/docs).

1. **Log in to Oracle ILOM.**
See “Logging In to Oracle ILOM” on page 41.
2. **Start the host console.**
See “Start the Host Console” on page 45.

3. **If needed, start the host.**
See [“Start a Host” on page 63](#).
4. **Log in to the primary domain.**
5. **Use the `ldm list-io` command to display the I/O devices on the server.**

```
# ldm list-io -l
```

The root complex and root port of the device is shown in brackets in the following examples. This output has been edited for clarity.

See [“I/O Component Example Output” on page 175](#) for more information about interpreting the output.

```
# ldm list-io -l
```

| NAME | TYPE | BUS | DOMAIN | STATUS |
|--|------|-------|---------|--------|
| ---- | ---- | --- | ----- | ----- |
| ... | | | | |
| /SYS/CMIOU0/PCIE2 [pci@300/pci@1] | PCIE | pci_0 | primary | EMP |
| /SYS/CMIOU0/PCIE3 [pci@301/pci@1] | PCIE | pci_1 | primary | OCC |
| LSI,sas@0/iport@80 LSI,sas@0/iport@v0 | | | | |
| /SYS/CMIOU0/PCIE1 [pci@303/pci@1] | PCIE | pci_3 | primary | OCC |
| network@0 network@0,1 network@0,2 network@0,3 | | | | |
| ... | | | | |
| # | | | | |

This output is from a partially loaded SPARC M7-16 server. The root complex and root port of the device is shown in brackets. This output has been edited for clarity.

```
# ldm list-io -l
```

| NAME | TYPE | BUS | DOMAIN | STATUS |
|--------------------------------------|------|-------|---------|--------|
| ---- | ---- | --- | ----- | ----- |
| ... | | | | |
| /SYS/CMIOU0/PCIE2 [pci@300/pci@1] | PCIE | pci_0 | primary | EMP |
| /SYS/CMIOU0/PCIE3 [pci@301/pci@1] | PCIE | pci_1 | primary | OCC |
| LSI,sas@0/iport@80 | | | | |

```

LSI,sas@0/iproport@v0
/SYS/CMIOU0/PCIE1          PCIE   pci_3   primary  OCC
[pci@303/pci@1]
  network@0
  network@0,1
  network@0,2
  network@0,3
...
#

```

Related Information

- [Oracle VM Server for SPARC documentation \(http://www.oracle.com/goto/vm-sparc/docs\)](http://www.oracle.com/goto/vm-sparc/docs)
- [“Understanding Virtualization Examples” on page 190](#)
- [“Understanding the Memory Resources” on page 187](#)
- [“Understanding Virtualization Examples” on page 190](#)

Understanding Core Assignments

These topics describe how CPU cores are assigned and how to find their core IDs.

- [“Core Assignments” on page 182](#)
- [“Display Core Assignments” on page 185](#)

Related Information

- [“Understanding Virtualization Examples” on page 190](#)
- [“Monitoring CMIOUs and DIMMs” on page 97](#)

Core Assignments

Although you can assign a minimum of one CPU thread to a logical domain, most workloads require more processing power than one thread can provide. You could also assign threads from one CPU to multiple logical domains, but that configuration could present stability issues for the logical domains that share the CPU threads of a single core. You cannot configure a domain to use whole CPU cores and CPU threads simultaneously. CPU core configurations and CPU thread configurations are mutually exclusive. You should assign whole cores to individual logical domains.

Note - For most workloads, you should assign at least one or two cores to the domain using the `ldm set -core` command to specify the number of cores.

The number of available cores that you can use to create guest domains is a function of how many CMIOUs are in the individual PDomain and the number of cores per CPU. The M8 and M7 CPUs each have a total of 32 cores.

Table 19, “Cores Per PDomain and Number of Guest Domains,” on page 183 lists the cores that are available per PDomain on the servers. The given number of possible guest domains excludes the number of cores (two in these calculations) that are required for the primary domain. The calculation of the number of possible guest domains for each server configuration is based on core boundaries and the recommendation of using two cores as the minimum number per guest domain. If you use CPU threads to create guest domains, you can achieve the maximum number of guest domains per PDomain. If you use one core as the minimum, you can achieve twice as many guests domains as the number listed in the table. The maximum number of guest domains that can be supported is 128.

Note - These numbers are based on whole core assignments and use two cores as the minimum number of cores assigned to the primary domain and the guest domains.

TABLE 19 Cores Per PDomain and Number of Guest Domains

| Server | Configuration | Total Number of Cores per PDomain | Number of Possible Guest Domains per PDomain |
|---|---|-----------------------------------|--|
| SPARC M8-8 or SPARC M7-8 (two PDomains) | Fully populated (8 CMIOUs, 4 per PDomain) | 128 | 63 |
| | Half populated (4 CMIOUs, 2 per PDomain) | 64 | 31 |
| SPARC M8-8 or SPARC M7-8 (one PDomain) | Fully populated (8 CMIOUs, all in PDomain) | 256 | 127 |
| | Half populated (4 CMIOUs, all in PDomain) | 128 | 63 |
| SPARC M7-16 (one PDomain) | Fully populated (16 CMIOUs, 4 DCUs per PDomain) | 512 | 127 |
| | Half populated (8 CMIOUs, 4 DCUs per PDomain) | 256 | 127 |
| SPARC M7-16 (two PDomains) | Fully populated (16 CMIOUs, 2 DCUs per PDomain) | 256 | 127 |
| | Half populated (8 CMIOUs, 2 DCUs per PDomain) | 128 | 63 |

| Server | Configuration | Total Number of Cores per PDomain | Number of Possible Guest Domains per PDomain |
|-----------------------------|--|-----------------------------------|--|
| SPARC M7-16 (four PDomains) | Fully populated (16 CMIOUs, 1 DCU per PDomain) | 128 | 63 |
| | Half populated (8 CMIOUs, 1 DCU per PDomain) | 64 | 31 |

The enumeration for physical CPU cores involves node numbers, SCC numbers, and core numbers. SCC and core numbers are directly specified in the NAC name relative to the CMP (for example, *CMP-path/CMP/SCCx/COREy*). The node number is a function of the CMP path, and it is different on each server.

At the logical level, the `ldm` command shows cores in a flat enumeration that is non-contiguous. For example,

- `/SYS/CMIOU0/CM/CMP/SCC0` contains logical cores 0 to 3.
- `/SYS/CMIOU0/CM/CMP/SCC1` contains logical cores 8 to 11.
- `/SYS/CMIOU0/CM/CMP/SCC2` contains logical cores 16 to 19.

Each SCC provides four contiguously enumerated cores, but there is a gap of four logical core numbers when going to the next SCC.

The total number of available cores depends on the state of the CPUs that are installed in the server. Each CPU has 32 cores for a total of 256 cores on the SPARC M8-8 and SPARC M7-8 server and 512 cores on the SPARC M7-16 server. To find the number of available cores per CPU, use the `show` command in Oracle ILOM with the appropriate target. The following example shows the processor `CPU_0` running in a degraded state with only 20 available cores).

```
-> show /System/Processors/CPUs/CPU_0

/System/Processors/CPUs/CPU_0
Targets:

Properties:
  health = Degraded
  health_details = -
  requested_state = Enabled
  part_number = Not Available
  serial_number = 00000000000000000000b906120121084
  location = CMIOU0/CM/CMP (CPU Memory IO Unit 0)
  model = Oracle SPARC M7
  max_clock_speed = 3.600 GHz
  total_cores = 32
  enabled_cores = 20
  temperature = 45 degrees C
```


...
->

Related Information

- [“Display Core Assignments” on page 185](#)
- [“Understanding Virtualization Examples” on page 190](#)

▼ Display Core Assignments

1. **Log in to Oracle ILOM.**
See [“Logging In to Oracle ILOM” on page 41](#).
2. **Start the host console.**
See [“Start the Host Console” on page 45](#).
3. **If needed, start the host.**
See [“Start a Host” on page 63](#).
4. **Log in to the primary domain.**
5. **Execute the `ldm list-rsrc-group` command to display the properties of the CMIOUs that are installed in the server.**

```
# ldm list-rsrc-group -l
```

Note - In the default factory configuration, all of the cores are assigned to the primary domain. You must remove cores from the primary domain to assign them to new logical domains.

The following example for a SPARC M8 server shows the cores assigned to the primary domain before any logical domains have been created. The output has been edited for clarity.

```
# ldm ls-rsrc-group -l
NAME                                CORE  MEMORY  IO
/SYS/CMIOU0                          32   128G    5

CORE
  CID                                BOUND
  0, 1, 2, 3, 8, 9, 10, 11           primary
  16, 17, 18, 19, 24, 25, 26, 27     primary
  32, 33, 34, 35, 40, 41, 42, 43     primary
```

```

    48, 49, 50, 51, 56, 57, 58, 59          primary
    ...
-----
NAME                                CORE  MEMORY  IO
/SYS/CMIOU1                          32   128G    5

CORE
  CID                                BOUND
  64, 65, 66, 67, 72, 73, 74, 75      primary
  80, 81, 82, 83, 88, 89, 90, 91      primary
  96, 97, 98, 99, 104, 105, 106, 107  primary
  112, 113, 114, 115, 120, 121, 122, 123 primary
    ...

```

The following example for a SPARC M7 server shows the cores assigned to the primary domain and two guest domains, `ldm0` and `ldm1`:

```

# ldm list-rsrc-group -l

NAME                                CORE  MEMORY  IO
/SYS/CMIOU0                          24   128G    4

CORE
  CID                                BOUND
  0, 1                                primary
  2, 3, 8, 9, 10, 11, 16, 17         ldom0
  18, 19, 24, 25, 26, 27, 32, 33     ldom0
  34, 35, 40, 41, 42, 43             ldom0
    ...
-----
NAME                                CORE  MEMORY  IO
/SYS/CMIOU1                          24    64G    4

CORE
  CID                                BOUND
  64, 65, 66, 67, 72, 73, 74, 75     ldom1
  80, 81, 82, 83, 88, 89, 90, 91     ldom1
  112, 113, 114, 115, 120, 121, 122, 123 ldom1
    ...
#

```

The IO column shows 5 for the SPARC M8 server and 4 for the SPARC M7 server because the eUSB device is attached to the root complex of the M8 CMIOUs.

Related Information

- [“Core Assignments” on page 182](#)

- [“Understanding Virtualization Examples” on page 190](#)

Understanding the Memory Resources

These topics describe the memory resources that you can assign to logical domains.

- [“Memory Assignments” on page 187](#)
- [“Memory Naming” on page 188](#)
- [“Display Memory Assignments” on page 188](#)

Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)

Memory Assignments

You can assign as much memory to a logical domain as your applications need, as long as the amount does not exceed the available memory. The available memory is a function of the number and size of the installed DIMMs, the amount of memory in use by the system, and the state of DIMM sparing. See [“DIMM Sparing” on page 25](#) for more information about this feature.

The amount of memory being used by the system is noted as `_sys_` memory in the `ldm list-rsrc-group` command output, and it is different for each server. All of the memory is assigned to the `primary` domain in the factory default configuration. You must remove memory from the `primary` domain to assign it to another domain. The `primary` domain should retain at least 16 to 64 gigabytes of memory.

Related Information

- [“Memory Naming” on page 188](#)
- [“Display Memory Assignments” on page 188](#)

Memory Naming

DIMMs follow the naming convention `/SYS/CMIOUx/CM/CMP/BOByw/CHz/DIMM` with the following values:

- CMIU number:
 - SPARC M8-8 and SPARC M7-8: CMIU0 to CMIU7
 - SPARC M7-16: CMIU0 to CMIU15
- BOB number (where *y* is 0 to 3 and *w* is 0 or 1)
- DDR channel number (where *z* is 0 or 1)

For information about the DIMM layout, see [“DIMM and eUSB Locations in a CMIU”](#) in *SPARC M8 and SPARC M7 Servers Service Manual*.

Related Information

- [“Memory Assignments”](#) on page 187
- [“Display Memory Assignments”](#) on page 188

▼ Display Memory Assignments

1. **Log in to Oracle ILOM.**
See [“Logging In to Oracle ILOM”](#) on page 41.
2. **Ensure that the primary host is running.**
If the primary host is not running, start it with the `start` command.
3. **Start the host console.**
See [“Start the Host Console”](#) on page 45.
4. **Log in to the primary domain.**
5. **Execute the `ldm list-rsrc-group` command to display the properties of the CMIUs that are installed in the server.**

```
# ldm list-rsrc-group -l
```

Note - In the default factory configuration, all of the memory is assigned to the primary domain.

The following example shows the memory-related output of this command on a SPARC M8 server. The output is edited for clarity.

```
# ldm list-rsrc-group -l
NAME                                CORE MEMORY IO
/SYS/CMIOU0                          32  128G  5
...

MEMORY
  PA          SIZE          BOUND
  0x0         60M           _sys_
  0x3c00000  32M           _sys_
  0x50000000 128512M        primary
  0x1fd000000 768M         _sys_
...
-----
NAME                                CORE MEMORY IO
/SYS/CMIOU1                          32  128G  5
...

MEMORY
  PA          SIZE          BOUND
  0x4000000000000 130304M    primary
  0x401fd00000000 768M         _sys_
...
```

The following example shows memory-related output of this command on a SPARC M7 server. The output is edited for clarity.

```
# ldm list-rsrc-group -l
NAME                                CORE MEMORY IO
/SYS/CMIOU0                          24  128G  4
...

MEMORY
  PA          SIZE          BOUND
  0x0         60M           _sys_
  0x3c00000  32M           _sys_
  0x5c00000  94M           _sys_
  0x50000000 14592M        primary
  0x3e0000000 112G         ldom0
  0x1ff00000000 256M         _sys_
...
```

```

-----
NAME                CORE  MEMORY  IO
/SYS/CMIOU1        24    64G     4
...
MEMORY
  PA                SIZE          BOUND
  0x400000000000    65280M        ldom1
  0x400ff0000000    256M          _sys_
...
#
    
```

Related Information

- [“Memory Assignments” on page 187](#)
- [“Memory Naming” on page 188](#)

Understanding Virtualization Examples

These topics describe the guidelines and restrictions involved with virtualizing the resources on these servers, and give examples of common configurations.

- [“Virtualization Guidelines and Restrictions” on page 190](#)
- [“Understanding Basic Virtualization Configurations” on page 192](#)

Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)

Virtualization Guidelines and Restrictions

The configuration examples in this section follow these guidelines and restrictions.

| Domain Type | Guidelines and Restrictions |
|----------------|--|
| Control domain | ■ Runs the minimum supported version of the Oracle Solaris OS. |

| Domain Type | Guidelines and Restrictions |
|----------------|---|
| | <p>Refer to the SPARC M8 and SPARC M7 Servers Product Notes for the minimum supported version of the OS.</p> <ul style="list-style-type: none"> ■ Is the only one per PDomain. ■ Is named <i>primary</i>. You cannot change the name. ■ Has privileged access to the Hypervisor. ■ Runs the Logical Domain Manager. ■ Is used to administer the other domains. ■ Is typically a root domain that provides services to the other domains, such as virtual disk, virtual switch, and virtual console access. |
| Service domain | <ul style="list-style-type: none"> ■ Runs the minimum supported version of the Oracle Solaris OS. <p>Refer to the SPARC M8 and SPARC M7 Servers Product Notes for the minimum supported version of the OS.</p> <ul style="list-style-type: none"> ■ Provides virtual I/O services to other domains, such as virtual disk and virtual switch services. ■ Is typically a root domain that owns one or more root complexes. ■ Can be one or more per server or PDomain. |
| I/O domain | <ul style="list-style-type: none"> ■ Runs the minimum supported version of the Oracle Solaris OS. <p>Refer to the SPARC M8 and SPARC M7 Servers Product Notes for the minimum supported version of the OS.</p> <ul style="list-style-type: none"> ■ Has direct access to physical I/O. ■ Is assigned one or more PCIe root complexes (which also makes it a root domain). ■ Can use SR-IOV virtual functions. ■ Can be one or many, depending on the available PCIe resources. ■ Provides bare-metal I/O performance. ■ Is not necessarily a service domain. |
| Root domain | <ul style="list-style-type: none"> ■ Runs the minimum supported version of the Oracle Solaris OS. <p>Refer to the SPARC M8 and SPARC M7 Servers Product Notes for the minimum supported version of the OS.</p> <ul style="list-style-type: none"> ■ Owns one or more PCIe root complexes. ■ Can be one or more, depending on the available PCI buses. |
| Guest domain | <ul style="list-style-type: none"> ■ Runs either the minimum supported version of the Oracle Solaris 10 OS or the Oracle Solaris 11 OS. <p>Refer to the SPARC M8 and SPARC M7 Servers Product Notes for the minimum supported versions of the OS.</p> <ul style="list-style-type: none"> ■ Depends on one or more service domains for I/O. ■ Is purely virtual. ■ Has no direct access to physical I/O. ■ Supports live migration. ■ Can be one or as many as the server's resources support. |

Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)
- [“Understanding Basic Virtualization Configurations” on page 192](#)

Understanding Basic Virtualization Configurations

These topics describe several basic virtualization configurations that you can deploy on these servers to suit your environment's needs.

The example configurations use Oracle Solaris Zones or Oracle VM Server for SPARC to partition and virtualize the system.

- [“Bare Metal Plus Zones Configuration” on page 192](#)
- [“Non-primary Root Domain With Dedicated Root Complex Configuration” on page 195](#)
- [“I/O Domains With SR-IOV Configuration” on page 196](#)
- [“Single-Service Domain With Virtual I/O Configuration” on page 199](#)
- [“Dual-Service Domains With Virtual I/O Configuration” on page 200](#)

Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)
- [“Virtualization Guidelines and Restrictions” on page 190](#)

Bare Metal Plus Zones Configuration

This example depicts bare metal with Oracle Solaris Zones only. Oracle VM Server for SPARC is not used.

Oracle Solaris Zones is a highly flexible virtualization technology provided in Oracle Solaris. The Oracle Solaris Zones partitioning technology is used to virtually divide the resources of a physical machine and its Oracle Solaris operating system to simulate multiple machines and operating systems to provide an isolated and secure environment for running applications.

Oracle Solaris Zones provides several types of zones. The instance of the operating system that is running directly on a bare metal server or in a logical domain is called the *global zone*. An instance of a virtual system running inside the global zone is called a *non-global zone*, or simply a zone. By default, a non-global zone runs the same Oracle Solaris 11.3 OS as the global zone and is referred to as a native zone. A feature called branded zones enables you to create zones that are capable of running Oracle Solaris 10 as well.

A *kernel zone* is a non-global zone that runs a kernel and operating system that is separate from the global zone. The separate kernel and OS installation in a kernel zone provide for greater independence and enhanced security of operating system instances and applications. Oracle Solaris Kernel Zones do not need to run the same version of the OS as the global zone. A kernel zone can run an Oracle Solaris release, Support Repository Update (SRU), or kernel version that is different from that of the host system. The Oracle Solaris release in a kernel zone must be at least Oracle Solaris 11.2 however. A kernel zone can run non-global zones inside it, acting as the global zone to those zones inside.

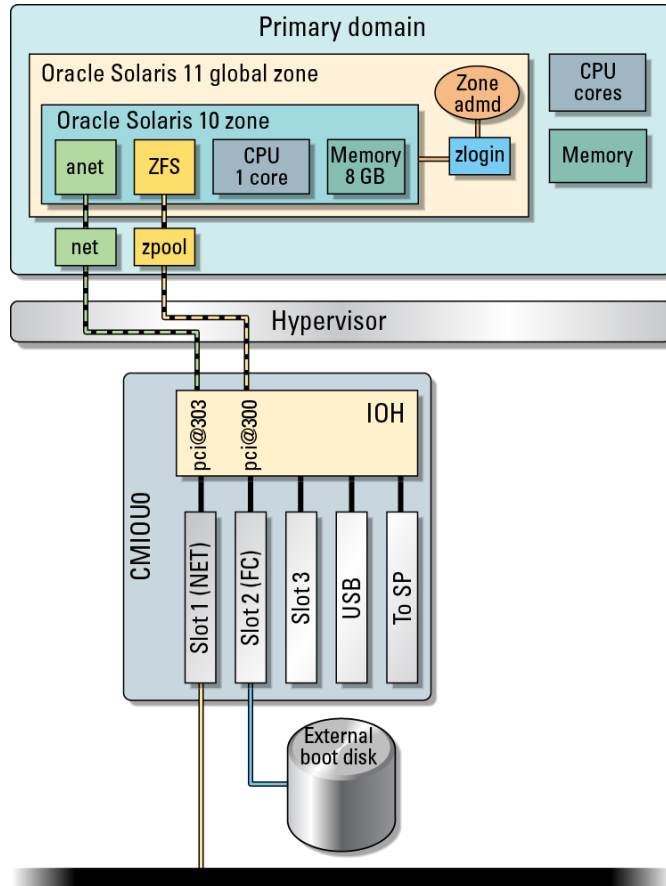
See the [Introduction to Oracle Solaris Zones in the Oracle Solaris 11.3 documentation](#) for more information about zones.

A bare-metal configuration, with or without zones, resembles the traditional server model of having one large instance of the OS running on the server. This configuration provides these features:

- Acts like a traditional OS partitioning model that is supported on sun4u and sun4v architectures.
- Ensures that the hypervisor is transparent to the zones.
- Enables the administration daemons running in the global zone to manage the non-global zones .
- Supports Oracle Solaris 10 branded zones and Oracle Solaris 11 native zones and kernel zones.
- Provides very low-overhead, fine-grain resource management, and high scalability.

[Figure 5, “Basic Layout of Bare Metal Plus Zones Configuration,” on page 194](#) shows the basic layout of the bare-metal configuration in the primary domain. You can also use non-primary domains to increase the number of similar configurations on the same server. The non-primary root domains would depend on the primary domain for virtual console services. The total number of possible non-primary root domains depends on the number of available root complexes and CPU cores, the amount of available memory, and especially, the requirements of the workload in each domain.

FIGURE 5 Basic Layout of Bare Metal Plus Zones Configuration



Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)
- [Introduction to Oracle Solaris Zones in the Oracle Solaris 11.3 documentation](#)

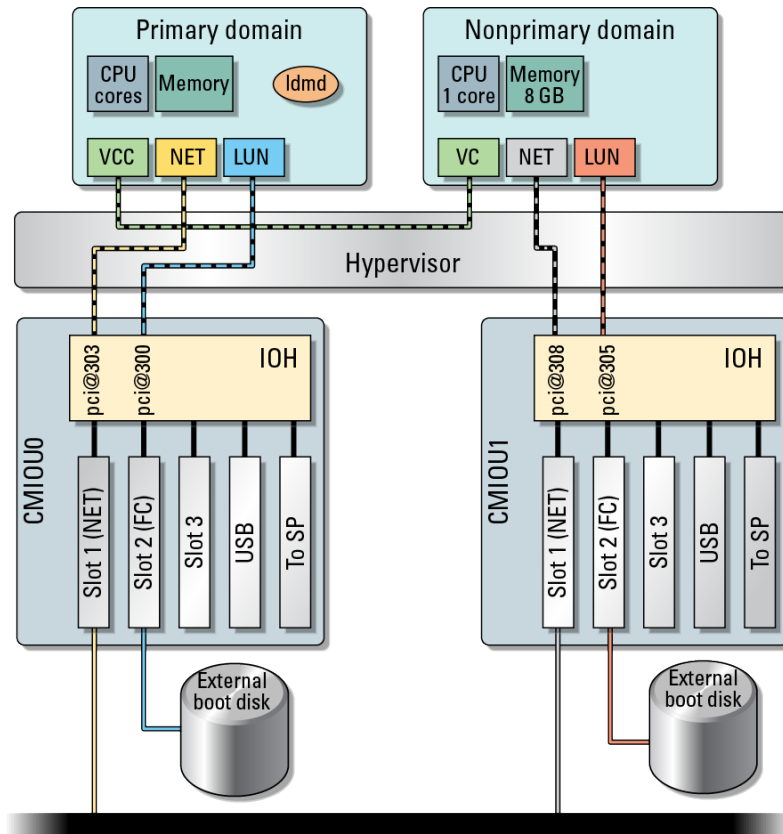
Non-primary Root Domain With Dedicated Root Complex Configuration

This example uses logical domains implemented using Oracle VM Server for SPARC to partition and virtualize the system, in contrast to the Bare Metal Plus Zones example just completed.

A non-primary root domain (NPRD) configuration also resembles the traditional server model of having one large instance of the OS running on the server. However, in this configuration, the NPRD is isolated from the primary domain. This configuration has these features:

- There is zero overhead, similar to the bare-metal configuration. You assign physical I/O devices to the domain, and use traditional methods, such as MPxIO and IPMP, for I/O redundancy.
- Only the virtual console service is dependent on the control domain.
- The number of root domains is typically limited by the number of PCIe root complexes available within the server.
- Live migration is not supported.

This figure shows the basic layout of the single NPRD configuration. You can create additional NPRDs on these servers. The total number of possible NPRDs depends on the number of available root complexes and CPU cores, the amount of available memory, and especially, the requirements of the workload in each domain.



Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)

I/O Domains With SR-IOV Configuration

This example uses logical domains implemented using Oracle VM Server for SPARC to partition and virtualize the system.

You can create I/O domains with SR-IOV to provide flexible I/O with native I/O throughput that removes the virtualization I/O overhead that is associated with using virtual I/O services from a root domain. This configuration has these features:

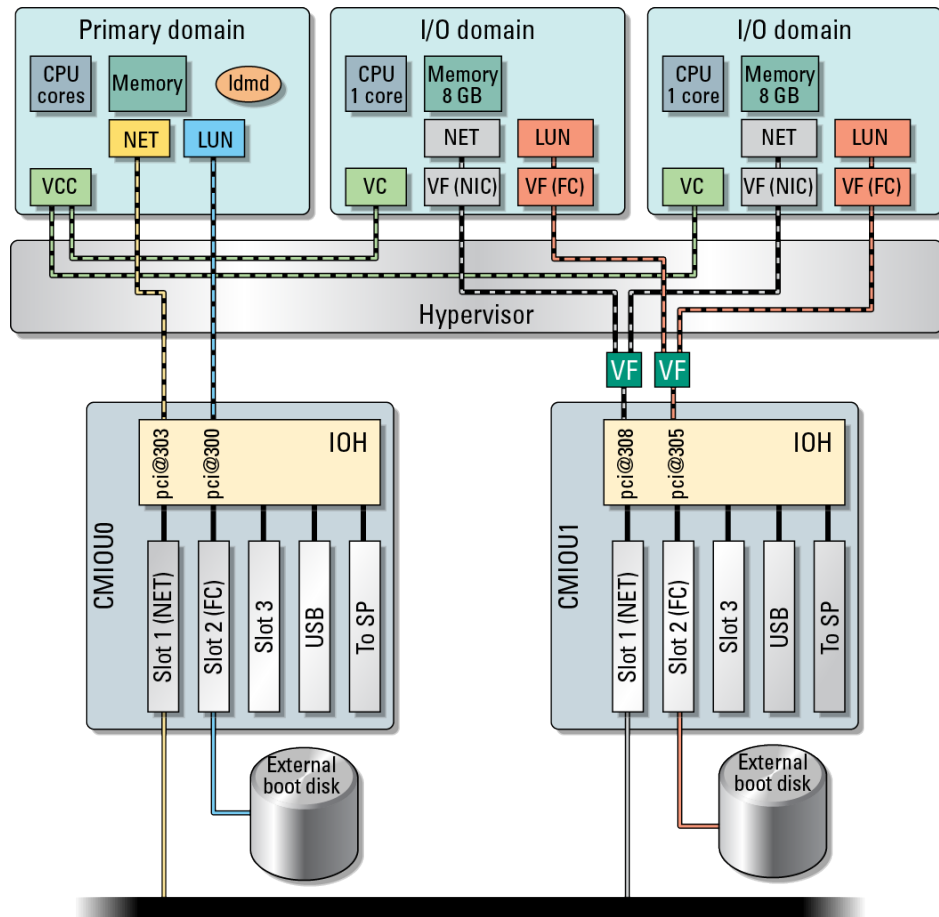
- Depends on the root domain for virtual console services.
- Allows live migration with some network cards, using Oracle VM Server for SPARC 3.5.
- Supports dynamic SR - IOV.
 - Enables creation or destruction of virtual functions without a reboot of the primary domain.
 - Enables the addition or removal of virtual functions to a running domain without a need to reboot it.
 - Enables the creation or destruction of multiple virtual functions simultaneously.

Note - Before you create an I/O domain configuration, see [“Oracle VM Server for SPARC Overview” on page 33](#) for information about dynamic PCIe bus assignments and I/O domain resiliency.

For information about SR-IOV live migration, see the [Oracle VM Server for SPARC 3.5 Administration Guide](#).

This diagram shows the basic layout of the I/O domains with SR-IOV configuration. The total number of possible I/O domains depends on the number of available root complexes and CPU cores, the amount of available memory, and especially, the requirements of the workload in each domain.

The diagram shows a configuration with a single root domain, the primary domain, although SR-IOV can also be used in multiple root domains.



Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)
- [Oracle VM Server for SPARC 3.5 Administration Guide](#)

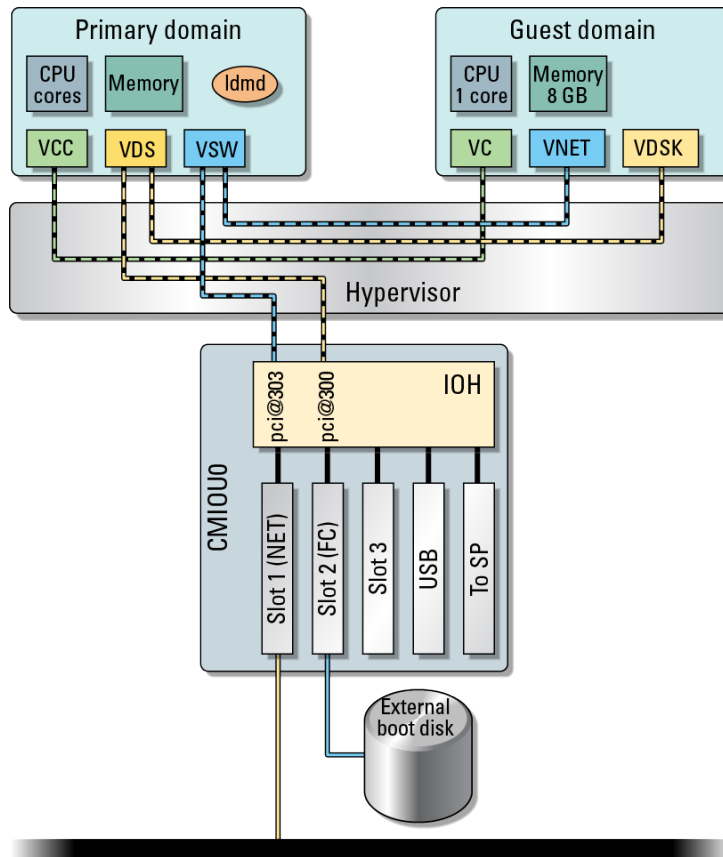
Single-Service Domain With Virtual I/O Configuration

This example uses logical domains implemented using Oracle VM Server for SPARC to partition and virtualize the system.

You can use a single-service domain configuration to provide services to virtual guest domains. One benefit of this is that such guest domains can be live migrated.

- Uses virtual I/O services provided by the service domain.
- Enables the use of a large number of small but isolated domains.
- Enables live migration of the guest domains.

The following diagram shows a primary domain using the basic layout of the single-service domain with virtual I/O configuration. You can add up to 127 guest domains to this configuration. Or, you can create additional configurations with non-primary root domains that provide services to additional guest domains. The total number of possible non-primary root domains depends on the number of available root complexes and CPU cores, the amount of available memory, and especially, the requirements of the workload in each domain.



Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)

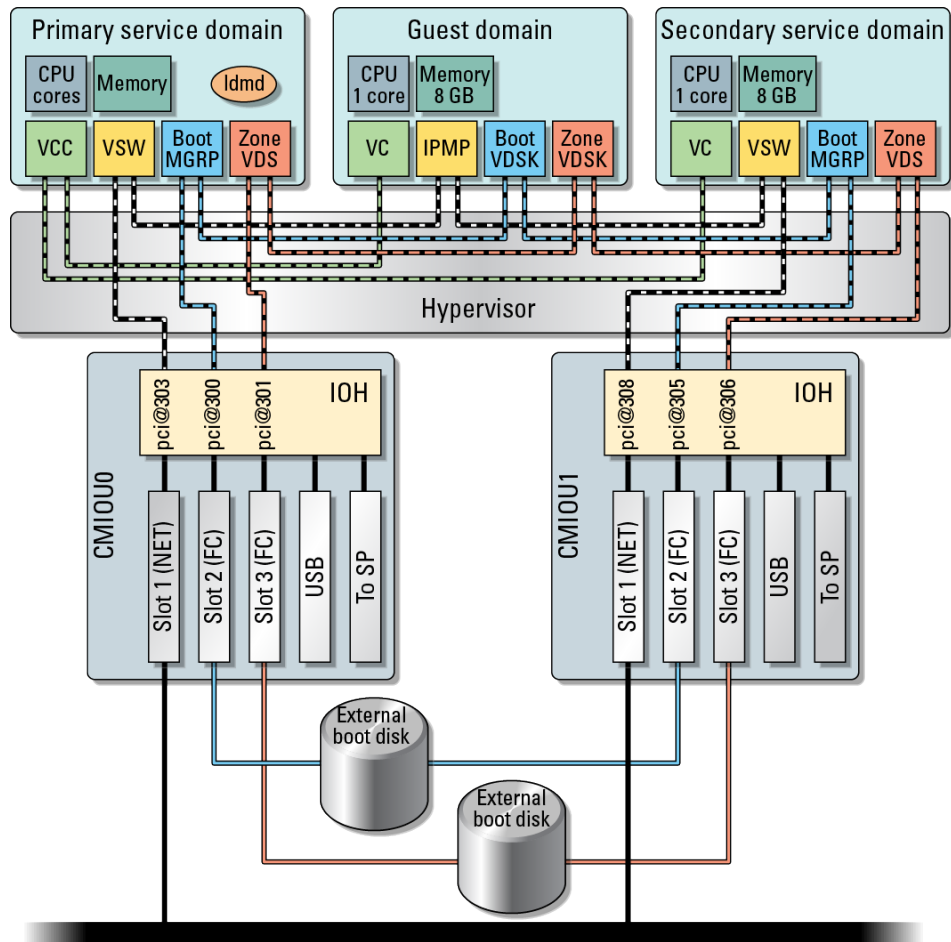
Dual-Service Domains With Virtual I/O Configuration

This example uses logical domains implemented using Oracle VM Server for SPARC to partition and virtualize the system.

Using two service domains to provide services to a guest domain increases the availability and reliability of the guest domain. If a fault occurs in one service domain, the guest can be configured to automatically continue to receive services. This configuration has these features:

- Enables the maximum amount of availability within a single server.
- Enables the use of IPMP for virtual network and MP groups for virtual disk.
- Enables load balancing of the I/O among the service domains.

The following diagram shows the basic layout of the dual service domain with virtual I/O configuration. The control domain is the domain labeled Primary service domain. You can add up to 126 guest domains to this configuration. Or, you can create additional dual service domain configurations with NPRDs that provide services to additional guest domains. The total number of possible NPRDs depends on the number of available root complexes and CPU cores, the amount of available memory, and especially, the requirements of the workload in each domain.



Related Information

- [“Understanding the I/O Architecture” on page 167](#)
- [“Understanding Core Assignments” on page 182](#)
- [“Understanding the Memory Resources” on page 187](#)

SPARC Virtualization White Papers

Virtualization white papers are available at the [Oracle VM Server for SPARC Technical White Papers](#) portal page.

In particular, you might find the following articles helpful:

- [Oracle VM Server for SPARC Best Practices \(PDF\)](#)
- [Oracle's SPARC T7 and SPARC M7 Servers: Domaining Best Practices \(PDF\)](#)

Glossary

A

- Active SP** An SP selected by Oracle ILOM to manage server resources. When an Active SP can no longer serve this role, the Standby SP assumes its role. See also [SP](#) and [Standby SP](#).
- ASR** Auto Service Request. Oracle software that provides the ability to notify Oracle Support automatically.

B

- BE** Boot environment. A bootable instance of the Oracle Solaris image. A BE can contain additional installed software packages.
- BoB** Memory buffer on board. An ASIC on a CMIOU board that transfers data between a DIMM and a CMP.
- boot pool** A special pool on firmware-accessible devices that contains the set of files required to boot the Oracle Solaris kernel for a BE. Each dataset in the boot pool is linked to a BE. See also [BE](#) and [pool](#).

C

- CMIOU** CPU, memory, and I/O unit. Each CMIOU contains 1 [CMP](#), 16 [DIMM](#) slots, and 1 [IOH](#) chip. Each CMIOU also hosts an [eUSB](#) device.
- CMP** Chip multiprocessing. Each CMIOU contains 1 CMP. The SPARC M8-8 and SPARC M7-8 servers can contain a maximum of 8 CMPs each.
- CMT** Chip multithreading. Processor technology enabling multiple hardware threads (also known as strands) to execute on the same chip, through multiple cores per chip, multiple threads per core, or through a combination of both.

D

- dataset** A generic term used to refer to a [ZFS](#) file system, snapshot, clone, or volume.
- DCU** Domain configurable unit. The smallest building block for PDomains. A SPARC M8-8 or SPARC M7-8 server with two PDomains has two DCUs, and a SPARC M8-8 or SPARC M7-8 server with one PDomain has one DCU. Those DCUs are static. Their assignment cannot be changed. See also [PDomain](#).
- DCU SPM** In a SPARC M7 series server, Oracle ILOM identifies one SPM from an SPM pair to manage DCU activity. See also [SPM](#) and [DCU](#).
- deferred dump** If a server crashes, the crash dump is preserved in memory until after the server reboots. During the reboot, the crash dump files are extracted from memory to a predefined file system location.
- DHCP** Dynamic Host Configuration Protocol. Software that automatically assigns IP addresses to clients on a TCP/IP network. The SPs do not support DHCP. You must assign static IP addresses to SP components.
- DIMM** Dual in-line memory module.
- DLMP** Datalink multipathing aggregations. An Oracle Solaris feature enabling you to configure several interfaces on a system as a single, logical unit to increase throughput of network traffic.

E

- eUSB** Embedded USB. A flash-based drive designed specifically to be used as a boot device. An eUSB does not provide storage for applications or customer data.

F

- FC** Fibre Channel. High-speed network technology primarily used to connect computer data storage.
- FMA** Fault management architecture. Generates fault indictments from the [SP](#). FMA provides three system activities: error handling, fault diagnosis, and response.

G

- GB** Gigabyte. 1 gigabyte = 1024 megabytes.

H

- HBA** Host bus adapter. Provides I/O processing and physical connectivity between a server and a storage or network device.
- HCA** Host channel adapter. Primarily used to describe [InfiniBand](#) interface cards.

I

- ILOM** See [Oracle ILOM](#).
- InfiniBand** A networking communications standard that features very high throughput and very low latency.
- IOH** I/O hub.
- IPMP** IP network multipathing. An Oracle Solaris feature providing multipathing and load-balancing capabilities for IP network interfaces.
- IPoIB** Internet protocol over [InfiniBand](#).
- iSCSI** Internet small computer system interface. An IP-based storage networking standard that enables a server to access storage across a network. In an iSCSI network, the remote storage is called the iSCSI target.
- iSCSI using IPoIB** A boot process that enables a server to boot an [iSCSI](#) target accessible using IP over an [InfiniBand](#) network. See also [IPoIB](#).

K

- KVM** Keyboard video mouse.
- KVMS** Keyboard video mouse storage.

L

- LDAP** Lightweight Directory Access Protocol.
- logical domain** A virtual machine comprising a discrete logical grouping of resources that has its own operating system and identity within a single computer system.

M

| | |
|---------------------|--|
| MIB | Management information base. |
| miniroot | A miniroot is a minimal root file system consisting of the Oracle Solaris software required to boot the OS to either install or upgrade the OS and is used as a fallback image. You might need to patch the miniroot if you need to add driver and hardware support to the boot image. |
| MP | Multipathing. See also multipathing . |
| mpgroups | Oracle VM Server for SPARC virtual disk multipathing. Enables you to configure a guest domain's virtual disk to access its back-end storage using more than one path. |
| MPxIO | Multipathing I/O. An Oracle Solaris feature enabling you to configure the multipathing features of FC devices to control all supported FC HBAs. |
| multipathing | Multipathing software enables you to define and control redundant physical paths to I/O devices such as storage devices and network interfaces. |

N

| | |
|--------------|---|
| NPRD | Non-primary root domain. This type of guest domain is assigned an entire root complex and all of the devices on that PCIe bus. Typically, this type of guest domain provides virtualized I/O services to other guest domains, but you can also run applications in NPRDs to achieve bare-metal performance. |
| NTP | Network Time Protocol. |
| NVRAM | Non-volatile random-access memory. |

O

| | |
|--------------------|--|
| OpenBoot | Oracle firmware that enables a PDomain to boot the Oracle Solaris OS. Provides an interface for testing hardware and software interactively. |
| Oracle ILOM | Oracle Integrated Lights Out Manager. The system management firmware that is preinstalled on the server SPs. |
| Oracle VTS | Oracle Validation Test Suite. An application that exercises the system, provides hardware validation, and identifies possible faulty components. |

P

| | |
|--------------------|--|
| PCIe | Peripheral Component Interconnect Express. |
| PDomain | Physical domain. The SPARC M8-8 and SPARC M7-8 servers can have one or two configured PDomains. These PDomains are static and cannot be reconfigured. See also DCU and static PDomain . |
| PDomain SPM | The lead SPM of a PDomain. The PDomain SPM manages tasks and provides rKVMS service for that PDomain. See also PDomain and SPM . |
| pool | A logical group of devices describing the layout and physical characteristics of the available storage. Storage space for datasets is allocated from a pool. ZFS uses a model where storage devices are aggregated into a storage pool. See also boot pool , root pool , and dataset . |
| POST | Power-on self-test. Diagnostic software that runs when the server boots. |
| PROM | Programmable read-only memory. |

R

| | |
|------------------|--|
| RAS | Reliability, availability, and serviceability. Many of the SPARC server components provide high-RAS features, such as the ability to hot-plug PCIe devices. The level of RAS for the server is also affected by the configuration of PDomain components. For instance, for I/O domain resiliency (which is a high-RAS domain configuration strategy), the I/O domain must get its network and storage connections from two different IOHs on two CMIOUs. |
| RC | Root complex. The first element in a PCIe device path (for example, <code>/pci@300</code>). |
| rKVMS | Remote keyboard video mouse and storage. |
| root pool | A dataset containing a complete Oracle Solaris image or a BE . See also pool . |
| root port | In a PCIe device path, the root port is always the second element (for example, <code>/pci@300/pci@0</code>). |

S

| | |
|------------|---|
| SAN | Storage area network. A dedicated network providing access to computer storage devices. |
| SAS | Serial attached SCSI. |

| | |
|-----------------------|---|
| SCC | SPARC core cluster. |
| SNMP | Simple Network Mail Protocol. |
| SP | Service processor. For redundancy, the server contains two service processors, one active and one on standby. |
| SPM | Service processor module. A component of the SPs. SPMs contain processors that enable the SPs to manage the server resources. See also DCU SPM and PDomain SPM . |
| SSH | Secure shell. A program for logging in and executing commands on a system or service processor. |
| Standby SP | A redundant SP that will manage server resources if the Active SP fails. See also SP and Active SP . |
| static PDomain | A SPARC M8-8 or SPARC M7-8 server PDomain. Static PDomains cannot be reconfigured. See also PDomain . |
| system | In the SPARC M7 series servers documentation, system refers to the /System level in the Oracle ILOM firmware. |
| T | |
| TPM | Trusted platform module. |
| V | |
| VLAN | Virtual local area network. |
| VNC | Virtual network computing. The Oracle ILOM Remote System VNC Console is a VNC system implementation that enables you to remotely redirect the host server KVM events to a graphical shared desktop display. |
| VTs | See Oracle VTs . |
| Z | |
| ZFS | Zettabyte file system. A file system that uses storage pools to manage physical storage. See also BE , pool , boot pool , and root pool . |

Index

Numbers and Symbols

-> prompt, about, 16

A

accessing

OpenBoot prompt, 48

Oracle ILOM, 41

Active Directory, overview, 24

adding dynamic X sessions, 57

administration paths for CMIOUs and DIMMs, 97

alias, creating boot device, 150

ASR *See* Oracle Auto Service Request

assigning DCUs to a host, 143

automatic booting

auto-boot? parameter, 152

controlling, 151

autorestart, specifying behavior, 74

B

bare metal plus zones configuration, 192

boot mode

configuring script, 160

expiration date, 161

managing at reset, 159

managing configuration, 158

managing host, 148

Oracle VM Server for SPARC, 158

overview, 158

boot pool, defined, 30

booting

automatic booting, 152

boot sequence, 76

configuring behavior, 147

configuring boot variables, 148

creating boot device alias, 150

OS, 75, 77

overview, 147

bus name, 175

C

changing

default boot device, 149

SP pair roles, 118

CLI

accessing the host console, 45

Oracle ILOM, 43

CMIOUs

administration path, 97

configuration overview, 97

displaying summary, 98

I/O naming, 175

viewing state and health, 100

commands

dsession, 55

exit, 45

init, 78

printenv, 155

shutdown, 79

configurations

bare metal plus zones, 192

dual service domains with virtual I/O, 200

I/O domains with SR-IOV, 196

- non-primary root domain with dedicated root complex, 195
- single service domain with virtual I/O, 199
- configuring
 - boot and restart behavior, 147
 - dedicated interconnect, 126
 - KVMS settings, 51
 - multiple dynamic X sessions, 55
 - power allocation, 163
- console history, displaying, 135
- console log
 - guidelines, 133
 - view settings, 132
- controlling
 - automatic boot, 151
 - system or host state, 61
 - system, hosts, and SP, 61
- cooling system
 - fan locations, 106
 - monitoring, 105
 - viewing details, 105
- core assignments
 - displaying, 185
 - overview, 182
 - understanding, 182

D

- DCUs
 - assigning to a host, 143
 - determining assignments, 138
 - determining availability, 140
 - managing, 138
 - unassigning from a host, 141
- dedicated interconnect, configuring, 126
- default boot device, changing, 149
- deferred dump, overview, 29
- deleting, dynamic X sessions, 58
- determining
 - DCU assignments, 138
 - DCU availability, 140
- devices, redirecting with KVMS, 50
- DIMMs

- administration path, 97
- configuration, 97
- sparing, 25
- viewing health and state, 102
- viewing locations, 101
- disabled components, viewing, 113
- display devices, enabling dynamic X sessions, 55
- displaying
 - console history, 135
 - server model type, 87
- DLMP, 38
- dynamic PCIe bus assignment, 34
- dynamic X sessions
 - adding, 57
 - configuring, 55
 - deleting, 58
 - enabling, 55
 - restarting, 59

E

- enabling
 - dynamic X sessions, 55
 - video redirection, 52
- exit command, 45

F

- fallback image and IPoIB, 30
- fault detection
 - discovering
 - FMA, 108
 - Oracle ILOM, 110
 - monitoring, 107
- firmware
 - displaying version, 130
 - updating, 129, 130
- FMA, discovering faults, 108
- fully powered-on power state, 62

G

- guest domains

starting, 67
stopping, 70

H

history, console, 135

hosts

assigning DCUs, 143
automatically rebooting, 151
configuring, 137
console, accessing, 45
controlling, 61
DCU availability, 142
determining DCU assignments, 138
determining DCU availability, 140
resetting, 81
starting, 63
state at restart
 restoring, 72
 specifying, 71
stopping, 68
unassigning DCUs, 141
viewing properties, 92

I

I/O

architectural overview, 167
architecture layout, 173, 174
component information, 175
domain configuration with SR-IOV, 196
domain resiliency, 35
physical architecture, 169
terminology, 169
identifying root complexes, 180
init command, 78
installing
 X server packages, 52
IPMP, 38
iSCSI devices using IPoIB, overview, 30

K

keyswitch, specifying behavior, 73

KVMS

redirecting devices with, 50
reestablishing connections, 54
settings, configuring, 51

L

LDAP/SSL, overview, 24
Live Firmware update, 130
local monitor, 54
locating, 86
logging in
 to Oracle ILOM
 CLI, 43
 web interface, 42
logging out of Oracle ILOM, 45
logical domain, described, 33

M

managing

host console, 132
platform, 115
SSO deployment state, 128

memory

assigning, 187
DIMM sparing, 25
displaying assignments, 188
naming, 188
understanding resources, 187

monitoring

CMIOUs and DIMMs, 97
faults, 107
system power, 102

mpgroups, 38

MPxIO, 38

multipathing

overview, 38
resources, 38
understanding, 37

N

- network, SSO deployment state, 128
- non-primary root domain configurations
 - with dedicated root complexes, 195

O

- OBP *See* OpenBoot
- obtaining serial number, 87
- OpenBoot
 - auto-boot? parameter, 152
 - booting the OS, 77
 - ok prompt, 48
 - overview, 26, 49
 - properties, 27
 - reset override, 161
 - understanding deployment, 26
 - variables, 27
 - supported, 154
 - viewing, 153
- Ops Center *See* Oracle Enterprise Manager Ops Center
- Oracle Auto Service Request, 39
 - activation, 40
 - overview, 39
- Oracle Enterprise Manager Ops Center
 - overview, 36
 - resources, 37
 - understanding, 36
- Oracle Hardware Management Pack, 32
- Oracle ILOM
 - accessing the host console, 45
 - Active Directory, 24
 - discovering faults, 110
 - LDAP/SSL, 24
 - logging in
 - CLI, 43
 - web interface, 42
 - logging out, 45
 - MIB overview, 23
 - NTP service, 22
 - overview, 16
 - remote login, 43
 - remote system console, 21
 - root password, 42
 - SNMP, 23
 - time synchronization, 22
 - understanding deployment, 15
- user
 - accounts, 18
 - authentication, 19
 - roles, 20
 - VNC console, 21
- Oracle Solaris
 - datalink multipathing, 38
 - deferred dump, 29
 - I/O multipathing, 38
 - IP network multipathing, 38
 - iSCSI devices using IPoIB, 30
 - Oracle Hardware Management Pack, 32
 - Oracle VTS, 31
 - overview, 28
 - understanding deployment, 28
- Oracle Solaris desktop installation, 52
- Oracle VM Server for SPARC
 - dynamic PCIe bus assignment, 34
 - I/O domain resiliency, 35
 - overview, 33
 - starting hosts with guests, 67
 - stopping hosts with guest domains, 70
 - understanding, 32
 - virtual disk multipathing, 38
- Oracle VTS, 31
- OS
 - boot sequence, 76
 - booting, 75, 77
 - shutting down, 75
 - init command, 78
 - shutdown command, 79

P

- password, Oracle ILOM, 42
- PCIe, SPARC M7 name assignments, 171
- PCIe, SPARC M8-8 name assignments, 170
- PDomains
 - configuring components, 137

- overview, 137
- platform, managing, 115
- power
 - allocating budget, 163
 - management overview, 162
 - supplies, viewing, 104
- printenv output, 155
- properties
 - DCU, 94
 - individual hosts, 92
 - OpenBoot, 27

R

- reestablishing KVMS connections, 54
- remote
 - redirection with KVMS, 50
 - system console, overview, 21
- resetting
 - changing behavior, 159
 - hosts, 81
 - SPs, 82
 - system from Oracle ILOM, 80
- restarting
 - boot and restart behavior, 147
 - dynamic X sessions, 59
 - overview, 147
 - specifying behavior, 74
- RFID tag, 87
- RFID tag, displaying, 88
- root complex, 175
 - identifying, 180
 - names, 175
 - numbers, 175
- root port, 175

S

- serial number, obtaining, 87
- server
 - changing identifier, 127
 - fully powered-on power state, 62
 - locating, 86

- model type, display, 87
- monitoring, 85
- no power applied state, 62
- serial number, obtaining, 87
- states
 - defined, 62
 - standby power, 62
- service domain configurations
 - dual domains, 200
 - single domain, 199
- shutdown command, 79
- shutting down
 - init command, 78
 - shutdown command, 79
- slot number, 175
- SNMP overview, 23
- SP
 - changing SP pair roles, 118
 - clock properties, 22
 - controlling, 61
 - logging in to Oracle ILOM, 43
 - network overview, 116
 - resetting, 82
- standby power state, 62
- starting
 - hosts, 63
 - hosts with guest domains, 67
- status, viewing system, 91
- stopping
 - hosts, 68
 - hosts with guest domains, 70
- StorageTek Traffic Manager, 38
- switching to the host console, 45
- synchronizing clock times, 22
- system
 - administration overview, 15
 - communication, 41
 - controlling, 61
 - monitoring cooling, 105
 - monitoring power, 102
 - power state, viewing, 89
 - resetting from Oracle ILOM, 80
 - viewing DCU properties, 94

viewing power consumption, 103

U

unassigning DCUs from a host, 141
understanding basic configuration types, 192
updating firmware, 130
user
 accounts overview, 18
 authentication overview, 19
 roles overview, 20

V

variables, OpenBoot, 27
video redirection, enabling, 52
viewing
 cooling system, 105
 DCU properties, 94
 disabled components, 113
 fan locations, 106
 individual host properties, 92
 power state, 89
 power supplies, 104
 system power consumption, 103
 system status, 91
virtual keyswitch, 73
virtualization
 examples, 190
 guidelines, 190
 restrictions, 190
VNC console, 21

X

X server, 54
X server packages, installing, 52
Xorg
 enabling, 54
Xvnc
 disabling, 54

Z

zones
 with bare metal system, 192