

SPARC Enterprise

T5440 Server

Administration Guide





SPARC Enterprise™ T5440 Server Administration Guide

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Preface

This manual is for experienced system administrators. This manual includes general descriptive information about the SPARC Enterprise™ T5440 server, and detailed instructions for configuring and administering the server. To use the information in this document, you must have working knowledge of computer network concepts and terms, and advanced familiarity with the Solaris™ Operating System (Solaris OS).

Note – For information about changing the hardware configuration of your server, or about running diagnostics, see the service manual for your server.

For Safe Operation

This manual contains important information regarding the use and handling of this product. Read this manual thoroughly. Use the product according to the instructions and information available in this manual. Keep this manual handy for further reference.

Fujitsu makes every effort to prevent users and bystanders from being injured or from suffering damage to their property. Use the product according to this manual.

Structure and Contents of This Manual

This manual is organized as described below:

- [“Basic Administrative Tasks” on page 1](#)
Describes how to communicate with the server, and perform basic administrative tasks.
- [“Manage Disk Volumes” on page 13](#)
Describes how to manage internal disk volumes.
- [“Manage the System” on page 27](#)
Describes how to manage the system remotely.
- [“Use Logical Domains Software” on page 37](#)
Introduces logical domains software.
- [“ALOM-to-ILOM Command Reference” on page 45](#)
Lists and describes ALOM CMT compatibility shell equivalents for ILOM commands.

Related Documentation

The latest versions of all the SPARC Enterprise™ Series manuals are available at the following Web sites:

Global Site

(<http://www.fujitsu.com/sparcenterprise/manual/>)

Japanese Site

(<http://primeserver.fujitsu.com/sparcenterprise/manual/>)

Title	Description	Manual Code
<i>SPARC Enterprise T5440 Server Getting Started Guide</i>	Minimum steps to power on and boot the server for the first time	C120-E504
<i>SPARC Enterprise T5440 Server Product Notes</i>	Information about the latest product updates and issues	C120-E508
<i>Important Safety Information for Hardware Systems</i>	Safety information that is common to all SPARC Enterprise series servers	C120-E391
<i>SPARC Enterprise T5440 Server Safety and Compliance Guide</i>	Safety and compliance information that is specific to the server	C120-E509
<i>SPARC Enterprise/ PRIMEQUEST Common Installation Planning Manual</i>	Requirements and concepts of installation and facility planning for the setup of SPARC Enterprise and PRIMEQUEST	C120-H007
<i>SPARC Enterprise T5440 Server Site Planning Guide</i>	Server specifications for site planning	C120-H029
<i>SPARC Enterprise T5440 Server Installation and Setup Guide</i>	Detailed rackmounting, cabling, power on, and configuring information	C120-E510
<i>SPARC Enterprise T5440 Server Service Manual</i>	How to run diagnostics to troubleshoot the server, and how to remove and replace parts in the server	C120-E512
<i>SPARC Enterprise T5440 Server Administration Guide</i>	How to perform administrative tasks that are specific to the server	C120-E511
<i>Integrated Lights Out Manager 2.0 User's Guide</i>	Information that is common to all platforms managed by Integrated Lights Out Manager (ILOM) 2.0	C120-E474
<i>Integrated Lights Out Manager 2.0 Supplement for SPARC Enterprise T5440 Server</i>	How to use the ILOM 2.0 software on the server	C120-E513

Title	Description	Manual Code
<i>Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide</i>	Information that describes ILOM 3.0 features and functionality	C120-E573
<i>Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide</i>	Information and procedures for network connection, logging in to ILOM 3.0 for the first time, and configuring a user account or a directory service	C120-E576
<i>Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide</i>	Information and procedures for accessing ILOM 3.0 functions using the ILOM web interface	C120-E574
<i>Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide</i>	Information and procedures for accessing ILOM 3.0 functions using the ILOM CLI	C120-E575
<i>Integrated Lights Out Manager (ILOM) 3.0 SNMP and IPMI Procedures Guide</i>	Information and procedures for accessing ILOM 3.0 functions using SNMP or IPMI management hosts	C120-E579
<i>Integrated Lights Out Manager (ILOM) 3.x Feature Updates and Release Notes</i>	Enhancements that have been made to ILOM firmware since the ILOM 3.0 release	C120-E600
<i>Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5440 Server</i>	How to use the ILOM 3.0 software on the server	C120-E587
<i>External I/O Expansion Unit Installation and Service Manual</i>	Procedures for installing the External I/O Expansion Unit on the SPARC Enterprise T5120/T5140/T5220/T5240/T5440 servers	C120-E543
<i>External I/O Expansion Unit Product Notes</i>	Important and late-breaking information about the External I/O Expansion Unit	C120-E544

Note – Product Notes are available on the website only. Please check for the recent update on your product.

UNIX Commands

This document might not contain information on basic UNIX[®] commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris[™] Operating System documentation, which is at <http://docs.sun.com>

Text Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. To delete a file, type rm <i>filename</i> .

* The settings on your browser might differ from these settings.

Prompt Notations

The following prompt notations are used in this manual.

Shell	Prompt Notations
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#
ILOM service processor	->
ALOM compatibility shell	sc>
OpenBoot PROM firmware	ok

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For Users in Other Countries:

(http://www.fujitsu.com/global/contact/computing/sparce_index.html)

Basic Administrative Tasks

This section contains information about common tasks used to manage your system *after* initial setup.

Description	Links
Refer to your systems' installation and setup guide for initial setup instructions.	"Initial System Setup" on page 1
Access the system using ILOM, or configure alternate ways to communicate with the system.	"ILOM Overview" on page 2 "Log In to ILOM" on page 3 "Log In to the System Console" on page 4 "Display the ok Prompt" on page 4 "System Console Output Options" on page 5 "Access the System Console Through a Local Graphics Monitor" on page 6
Perform common tasks.	"Power On the System" on page 7 "Power Off the System" on page 7 "Reset the System" on page 8 "Update the Firmware" on page 9

Initial System Setup

For directions on initial system setup, see the installation guide for your server. That book contains the following information:

- Installing the Server Hardware
- Configuring the Service Processor
- Setting Up the Operating System Software

Communicating With the System

This section contains:

- [“ILOM Overview” on page 2](#)
- [“Log In to ILOM” on page 3](#)
- [“Log In to the System Console” on page 4](#)
- [“Display the ok Prompt” on page 4](#)
- [“Display the ILOM ->Prompt” on page 5](#)
- [“System Console Output Options” on page 5](#)
- [“Access the System Console Through a Local Graphics Monitor” on page 6](#)

ILOM Overview

Integrated Lights Out Manager (ILOM) is a low-level system management tool used to monitor and manage system components, diagnose problems, and manage the service processor. The service processor card acts independently of the host system, and is available when the main system power is shut down.

By default, the service processor is the gateway to the system, through its two ports: network management (NET MGT) and serial management (SER MGT). After initial installation, typically you connect an Ethernet cable from the network management port to your management network. This setup enables remote access to ILOM, which you can manage from either the command-line interface or the web interface.

For more information about ILOM, see the *Integrated Lights Out Management Supplement for the SPARC Enterprise T5440 Server* and the *Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide*.

If you are familiar with the ALOM CMT, see the [“ILOM and ALOM CMT Command Comparison” on page 45](#) section to see how ILOM commands map to common ALOM commands.

Related Information

- [“Log In to ILOM” on page 3](#)
- [“Display the ILOM ->Prompt” on page 5](#)
- [“Log In to the System Console” on page 4](#)

▼ Log In to ILOM

This procedure assumes the default configuration of the service processor as described in your server's installation guide. To set up the default service processor configuration, see your server's installation guide.

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

The ILOM default username is *root* and the default password is *changeme*.

```
% ssh root@xxx.xxx.xxx.xxx
...
Are you sure you want to continue connecting (yes/no) ? yes

...
Password: password (nothing displayed)
Waiting for daemons to initialize...

Daemons ready

Integrated Lights Out Manager

Version 2.0.0.0

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->
```

You are now logged into ILOM. Perform tasks as needed.

For more information about ILOM, refer to the ILOM supplement for your server and the following documents:

- *Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide*
- *Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide*

Note – In order to provide optimum system security, change the default system password.

Related Information

- [“ILOM Overview” on page 2](#)
- [“Log In to the System Console” on page 4](#)

▼ Log In to the System Console

1. Log in to ILOM.

See “Log In to ILOM” on page 3.

2. To access the system console from ILOM, type:

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

You are logged in to the system console. Perform tasks as needed.

Related Information

- “Display the ok Prompt” on page 4
- “Display the ILOM ->Prompt” on page 5

▼ Display the ok Prompt

This procedure assumes the default system console configuration.

1. Decide which method you need to use to reach the ok prompt.



Caution – When possible, reach the ok prompt by performing a graceful shutdown of the OS. Any other method used may result in the loss of system state data.

2. Use the appropriate shutdown method from the following table.

System State	What To Do
OS Running and Responsive	<ul style="list-style-type: none">• From a shell or command tool window, issue an appropriate command (for example, the shutdown or init 0 command) as described in Solaris system administration documentation.• From the ILOM -> prompt, type: -> Stop /SYS• Use the system Power button.

System State	What To Do
OS Unresponsive	From the ILOM -> prompt, type the set /HOST send_break_action=break command provided the operating system software is not running and the server is already under OpenBoot firmware control. Then issue the start /SP/console command.
OS Unresponsive and Need to Prevent auto-boot	From the ILOM -> prompt, type: -> set /HOST/bootmode script="setenv auto-boot? false" Press Enter. Then type: -> reset /SYS -> start /SP/console

Related Information

- [“Display the ILOM ->Prompt” on page 5](#)

▼ Display the ILOM ->Prompt

- **Use one of the following ways to get to the ILOM -> prompt:**
 - From the system console, type the ILOM escape sequence (#).
 - Log in to ILOM directly from a device connected to the serial management port or network management port. See [“Log In to ILOM” on page 3](#).

Related Information

- [“ILOM Overview” on page 2](#)
- [“Display the ok Prompt” on page 4](#)

System Console Output Options

On your sever, the system console comes preconfigured to allow input and output only by means of the ILOM service processor. In the default configuration, ILOM alerts and system console output are interspersed in the same window.

You can separate the service processor system console output and the ILOM output by opening an ILOM session in one window, then opening the system console session in a second window. Or, you can redirect the system console to the graphics frame buffer. For more information, see [“Access the System Console Through a Local Graphics Monitor” on page 6](#).

▼ Access the System Console Through a Local Graphics Monitor

After initial system installation, you can install a local graphics monitor and configure it to access the system console. You *cannot* use a local graphics monitor to perform initial system installation, nor can you use a local graphics monitor to view power-on self-test (POST) messages.

To install a local graphics monitor, you must have the following items:

- Supported PCI-based graphics accelerator card and software driver
- Monitor with appropriate resolution to support the frame buffer
- Supported USB keyboard
- Supported USB mouse

1. Install the graphics card into the appropriate PCI slot.

Installation must be performed by a qualified service provider. For more information, see your server's Service Manual.

2. Attach the monitor's video cable to the graphics card's video port.

3. Connect the monitor's power cord to an AC outlet.

4. Connect the USB keyboard cable to one USB port. Connect the USB mouse cable to another USB port on the server.

5. Get to the `ok` prompt.

See ["Display the `ok` Prompt"](#) on page 4.

6. Set OpenBoot input output configuration variables appropriately.

From the existing system console, type:

```
ok setenv input-device keyboard
ok setenv output-device screen
```

7. To cause the changes to take effect, type:

```
ok reset-all
```

Related Information

- ["System Console Output Options"](#) on page 5

Performing Common Tasks

This section contains:

- “Power On the System” on page 7
- “Power Off the System” on page 7
- “Reset the System” on page 8
- “Update the Firmware” on page 9

▼ Power On the System

1. Log in to ILOM.

See “Log In to ILOM” on page 3.

2. At the ILOM -> prompt, type:

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

->
```

Note – To force a power-on sequence, use the `start -script /SYS` command.

Related Information

- “Power On the System” on page 7
- “Reset the System” on page 8

▼ Power Off the System

1. Shut down the Solaris OS.

At the Solaris prompt, type:

```
# shutdown -g0 -i0 -y
# svc.startd: The system is coming down. Please wait.
svc.startd: 91 system services are now being stopped.
```

```
Jun 12 19:46:57 wgs41-58 syslogd: going down on signal 15
svc.stard: The system is down.
syncing file systems...done
Program terminated
r)ebboot o)k prompt, h)alt?
```

2. Switch from the system console prompt to the service processor console prompt.
Type:

```
ok #.
->
```

3. From the ILOM -> prompt, type:

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

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

Related Information

- [“Power On the System” on page 7](#)
- [“Reset the System” on page 8](#)

▼ Reset the System

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

- To reset the system, from the Solaris prompt, type:

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

Related Information

- [“Power On the System” on page 7](#)
- [“Power Off the System” on page 7](#)

▼ Update the Firmware

1. **Ensure that the ILOM service processor network management port is configured.**

See the server's installation guide for instructions.

2. **Open an SSH session to connect to the service processor.**

```
% ssh root@xxx.xxx.xxx.xxx
...
Are you sure you want to continue connecting (yes/no) ? yes

...
Password: password (nothing displayed)
Waiting for daemons to initialize...

Daemons ready

Integrated Lights Out Manager

Version 2.0.0.0

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->
```

3. **Power off the host. Type:**

```
-> stop /SYS
```

4. **Set the `keyswitch_state` parameter to normal. Type:**

```
-> set /SYS keyswitch_state=normal
```

5. **Type the `load` command with the path to the new flash image.**

The `load` command updates the service processor flash image and the host firmware. The `load` command requires the following information:

- IP address of a TFTP server on the network that can access the flash image
- Full path name to the flash image that the IP address can access

The command usage is as follows:

```
load [-script] -source tftp://xxx.xxx.xx.xx/pathname
```

where:

- -script - Does not prompt for confirmation and acts as if yes was specified
- -source - Specifies the IP address and full path name (URL) to the flash image

```
-> load -source tftp://129.168.10.101/pathname
NOTE: A firmware upgrade will cause the server and ILOM to be reset.
It is recommended that a clean shutdown of the server be done prior
to the upgrade procedure. An upgrade takes about 6 minutes to
complete. ILOM will enter a special mode to load new firmware. No
other tasks can be performed in ILOM until the firmware upgrade is
complete and ILOM is reset.
Are you sure you want to load the specified file (y/n)?y
Do you want to preserve the configuration (y/n)? y
.....
Firmware update is complete.
ILOM will now be restarted with the new firmware.
Update Complete. Reset device to use new image.
->
```

After the flash image has been updated, the system automatically resets, runs diagnostics, and returns to the login prompt on the serial console.

```
U-Boot 1.1.1 (May 23 2007 - 21:30:12)
***
POST cpu PASSED
POST ethernet PASSED
Hit any key to stop autoboot: 0
## Booting image at fe080000 ***

IP Protocols: ICMP, UDP, TCP, IGMP

Checking all file systems...
fsck 1.37 (21-Mar-2005)
Setting kernel variable ...
... done.
Mounting local filesystems...
Cleaning /tmp /var/run /var/lock.

Identifying DOC Device Type(G3/G4/H3) ...
OK

Configuring network interfaces....Internet Systems Consortium DHCP
Client V3.0.1
Copyright 2007 Internet Systems Consortium
All rights reserved.
For info, please visit http://www.isc.org/products/DHCP
```

```
eth0: config: auto-negotiation on, 100FDX, 100HDX, 10FDX, 10HDX.  
Listening on LPF/eth0/00:14:4f:3f:8c:af  
Sending on LPF/eth0/00:14:4f:3f:8c:af  
Sending on Socket/fallback  
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 6  
eth0: link up, 100Mbps Full Duplex, auto-negotiation complete.  
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 15  
Hostname: hostname  
Starting portmap daemon: portmap.  
Initializing random number generator...done.  
INIT: Entering runlevel: 3  
Starting system log daemon: syslogd and klogd.  
Starting periodic command scheduler: cron.  
Starting IPMI Stack..... Done.  
Starting OpenBSD Secure Shell server: sshd.  
Starting Servicetags listener: stlistener.  
Starting FRU update program: frutool.  
  
hostname login:
```

Related Information

- [“Display the ILOM ->Prompt” on page 5](#)
- [“Display the ok Prompt” on page 4](#)

Manage Disk Volumes

This section contains information about creating and removing RAID volumes.

Description	Links
Learn about Hardware RAID support on this system.	“Hardware RAID Support” on page 13
Create RAID volumes then configure RAID volumes for use with Solaris.	“Create a Hardware Mirrored Volume” on page 14 “Create a Hardware Mirrored Volume of the Default Boot Device” on page 15 “Create a Hardware Striped Volume” on page 17 “Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System” on page 18 “Disk Slot Numbers” on page 20
Delete or hot-plug a RAID volume.	“Delete a Hardware RAID Volume” on page 21 “Hot-Plug a Mirrored Disk” on page 23 “Hot-Plug a Nonmirrored Disk” on page 24

Hardware RAID Support

On the SPARC Enterprise T5440 server, the SAS controller supports mirroring and striping using the Solaris OS `raidctl` utility.

The onboard disk controller of the server provides supports up to two hardware RAID volumes. The controller supports either two-disk RAID 1 (integrated mirror, or IM) volumes, or up to two-disk RAID 0 (integrated strip, or IS) volumes.

RAID volumes created using the hardware controller must be configured and labeled using `format (1M)` prior to use with the Solaris OS. See [“Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System” on page 18](#).

Related Information

- “Creating RAID Volumes” on page 14
- “Removing Hardware RAID Volumes” on page 21

Creating RAID Volumes

This section contains:

- “Create a Hardware Mirrored Volume” on page 14
- “Create a Hardware Mirrored Volume of the Default Boot Device” on page 15
- “Create a Hardware Striped Volume” on page 17
- “Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System” on page 18
- “Disk Slot Numbers” on page 20

▼ Create a Hardware Mirrored Volume

1. Verify which hard drive corresponds with which logical device name and physical device name, using the `raidctl` command.

```
# raidctl  
No RAID volumes found.
```

See “Disk Slot Numbers” on page 20 to locate the correct disk number.

2. Type the following command:

```
# raidctl -c primary secondary
```

A message appears asking you to confirm the operation. For example:

```
# raidctl -c c0t0d0 c0t1d0  
Creating RAID volume c0t0d0 will destroy all data on member disks,  
proceed  
(yes/no)?
```

3. Type **yes** to confirm creating the RAID volume.

```
# raidctl -c c0t0d0 c0t1d0
Creating RAID volume c0t0d0 will destroy all data on member disks,
proceed
(yes/no)? yes
Volume `c0t0d0` created
```

When you create a RAID mirror, the secondary drive (in this case, `c0t1d0`) disappears from the Solaris device tree.

4. To verify creation of the RAID volume, type:

```
# raidctl
RAID      Volume      RAID      RAID      Disk
Volume    Type          Status    Disk      Status
-----
c0t0d0    IM           OK        c0t0d0    OK
                               c0t1d0    OK
```

If a mirrored disk fails, see [“Removing Hardware RAID Volumes”](#) on page 21.

Related Information

- [“Disk Slot Numbers”](#) on page 20
- [“Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System”](#) on page 18
- [“Hardware RAID Support”](#) on page 13

▼ Create a Hardware Mirrored Volume of the Default Boot Device

Due to the volume initialization that occurs on the disk controller when a new volume is created, the volume must be configured and labeled using the `format (1M)` utility *prior* to use with the Solaris OS. See [“Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System”](#) on page 18.

Because of this limitation, `raidctl (1M)` blocks the creation of a hardware RAID volume if any of the member disks currently have a file system mounted.

This section describes the procedure required to create a hardware RAID volume containing the default boot device. Since the boot device always has a mounted file system when booted, an alternate boot medium must be employed, and the volume

created in that environment. One alternate medium is a network installation image in single-user mode (refer to the *Solaris 10 Installation Guide* for more information about configuring and using network-based installations).

1. Determine which disk is the default boot device.

From the OpenBoot ok prompt, type the `printenv` command, and if necessary, the `devalias` command, to identify the default boot device. For example:

```
ok printenv boot-device
boot-device =          disk

ok devalias disk
disk                  /pci@0/pci@0/pci@2/scsi@0/disk@0,0
```

2. Type the `boot net -s` command.

```
ok boot net -s
```

3. Once the system boots, use the `raidctl(1M)` utility to create a hardware mirrored volume, using the default boot device as the primary disk.

See [“Create a Hardware Mirrored Volume”](#) on page 14.

```
# raidctl -c -r 1 c0t0d0 c0t1d0
Creating RAID volume c0t0d0 will destroy all data on member disks,
proceed
(yes/no) ? yes
Volume c0t0d0 created
#
```

4. Install the volume with the Solaris OS using any supported method.

The hardware RAID volume `c0t0d0` appears as a disk to the Solaris installation program.

Note – The logical device names might appear differently on your system, depending on the number and type of add-on disk controllers installed.

5. To configure the volume for use with Solaris, see [“Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System”](#) on page 18.

Related Information

- [“Disk Slot Numbers”](#) on page 20
- [“Hardware RAID Support”](#) on page 13

▼ Create a Hardware Striped Volume

1. Identify the hard drives to be used in the RAID volume.

To verify which hard drive corresponds with which logical device name and physical device name, see [“Disk Slot Numbers” on page 20](#).

Note – The logical device names might appear differently on your system, depending on the number and type of add-on disk controllers installed.

2. To create the striped RAID volume, type:

```
# raidctl -c -r disk1disk2
```

The creation of the RAID volume is interactive by default. For example:

```
# raidctl -c -r 0 c0t1d0 c0t2d0 c0t3d0
Creating RAID volume c0t1d0 will destroy all data on member disks,
proceed
(yes/no) ? yes
Volume 'c0t1d0' created
#
```

3. To check the status of a RAID striped volume, type:

```
# raidctl
RAID      Volume      RAID      RAID      RAID
Volume    Type        Status    Disk      Status
-----
c0t1d0    IS          OK        c0t1d0    OK
          c0t2d0      OK
          c0t3d0      OK
```

The example shows that the RAID striped volume is online and functioning.



Caution – Under RAID 0 (disk striping) there is no replication of data across drives. The data is written to the RAID volume across all member disks in a round-robin fashion. If any one disk is lost, all data on the volume is lost. For this reason, RAID 0 cannot be used to ensure data integrity or availability, but can be used to increase write performance in some scenarios.

For more information, see the `raidctl(1M)` manpage.

Related Information

- “Hardware RAID Support” on page 13
- “Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System” on page 18

▼ Configure and Label a Hardware RAID Volume for Use in the Solaris Operating System

After creating a RAID volume using `raidctl`, use `format(1)` to configure and label the volume before attempting to use it in a Solaris operating system.

1. Start the `format` utility:

```
# format
```

The `format` utility might generate messages about corruption of the current label on the volume, which you are going to change. You can safely ignore those messages.

2. Specify the disk that represents the RAID volume that you configured.

In this example, `c0t2d0` is the logical name of the volume, and its corresponding number is 2.

```
# format
Searching for disks...done
AVAILABLE DISK SELECTIONS:
    0. c0t0d0 <SUN72G cyl 14084 alt 2 hd sec 424>
        /pci@0/pci@0/pci@2/scsi@0/sd@0, 0
    1. c0t1d0 <SUN72G cyl 14084 alt 2 hd sec 424>
        /pci@0/pci@0/pci@2/scsi@0/sd@1, 0
    2. c0t2d0 <SUN72G cyl 14084 alt 2 hd sec 424>
        /pci@0/pci@0/pci@2/scsi@0/sd@2, 0
Specify disk (enter its number): 2
selecting c0t2d0
[disk formatted]
FORMAT MENU:
    disk          - select a disk
    type          - select (define) a disk type
    partition    - select (define) a partition table
    current      - describe the current disk
    format       - format and analyze the disk
    fdisk        - run the fdisk program
    repair       - repair a defective sector
    label        - write label to the disk
```

```
analyze - surface analysis
defect - defect list management
backup - search for backup labels
verify - read and display labels
save - save new disk/partition definitions
inquiry - show vendor, product and revision
volname - set 8-character volume name
volname - execute <cmd>, then return
quit
```

3. Type the `type` command at the `format>` prompt, then select 0 (zero) to autoconfigure the volume.

```
format> type

AVAILABLE DRIVE TYPES:
    0. Auto configure
    1. DEFAULT
    2. SUN72G
    3. SUN72G
    4. other
Specify disk type (enter its number) [3]: 0
c0t2d0: configured with capacity of 68.23GB
<LSILOGIC-LogicalVolume-3000 cyl 69866 alt 2 hd 16 sec 128>
selecting c0t2d0
[disk formatted]
```

4. Use the `partition` command to partition, or `slice`, the volume according to your desired configuration.

See the `format(1M)` man page for additional information.

5. Write the new label to the disk using the `label` command.

```
format> label
Ready to label disk, continue? yes
```

6. Verify that the new label has been written by printing the disk list using the `disk` command.

```
format> disk
AVAILABLE DISK SELECTIONS:
    0. c0t0d0 <SUN72G cyl 14084 alt 2 hd sec 424>
       /pci@0/pci@0/pci@2/scsi@0/sd@0, 0
    1. c0t1d0 <SUN72G cyl 14084 alt 2 hd sec 424>
       /pci@0/pci@0/pci@2/scsi@0/sd@1, 0
    2. c0t2d0 <LSILOGIC-LogicalVolume-3000 cyl 69866 alt 2 hd
16 sec 128>
       /pci@0/pci@0/pci@2/scsi@0/sd@2, 0
Specify disk (enter its number) [2]:
```

Note that `c0t2d0` now has a type indicating it is an `LSILOGIC-LogicalVolume`.

7. Exit the `format` utility.

The volume can now be used in the Solaris OS.

Related Information

- [“Disk Slot Numbers” on page 20](#)
- [“Hardware RAID Support” on page 13](#)

Disk Slot Numbers

To perform a disk hot-plug procedure, you must know the physical or logical device name for the drive that you want to install or remove. If your system encounters disk errors, you can find messages about failing disks in the system console or in the `/var/adm/messages` files.

These error messages typically refer to a failed hard drive by its physical device name (for example, `/devices/pci@1f,700000/scsi@2/sd@1/0`) or by its logical device name (for example, `c0t1d0`). In addition, some applications may report a disk number (Disk0 through Disk3).

Use [TABLE: Disk Slot Numbers, Logical Device Names, and Physical Device Names](#) on page 21 to map internal disk slot numbers with the logical and physical device names for each hard drive.

TABLE: Disk Slot Numbers, Logical Device Names, and Physical Device Names

Disk Slot Numbers	Logical Device Names	Physical Device Names
Slot 0	c0t0d0s0	/devices/pci@0/pci@1/scsi@0/sd@0,0
Slot 1	c0t1d0s0	/devices/pci@0/pci@1/scsi@0/sd@1,0
Slot 2	c0t2d0s0	/devices/pci@0/pci@1/scsi@0/sd@2,0
Slot3	c0t3d0s0	/devices/pci@0/pci@1/scsi@0/sd@3,0

Related Information

- [“Hardware RAID Support”](#) on page 13
- [“Creating RAID Volumes”](#) on page 14
- [“Removing Hardware RAID Volumes”](#) on page 21

Removing Hardware RAID Volumes

This section contains:

- [“Delete a Hardware RAID Volume”](#) on page 21
- [“Hot-Plug a Mirrored Disk”](#) on page 23
- [“Hot-Plug a Nonmirrored Disk”](#) on page 24

▼ Delete a Hardware RAID Volume

1. **Verify which hard drive corresponds with which logical device name and physical device name.**

See [“Disk Slot Numbers”](#) on page 20.

2. To determine the name of the RAID volume, type:

```
# raidctl
RAID      Volume      RAID      RAID      Disk
Volume   Type        Status    Disk      Status
-----
c0t0d0   IM          OK        c0t0d0    OK
                   c0t0d0    OK
```

In this example, the RAID volume is c0t0d0.

3. To delete the volume, type:

```
# raidctl -d mirrored-volume
```

For example:

```
# raidctl -d c0t0d0
RAID Volume 'c0t0d0' deleted
```

If the RAID volume is an IS volume, the deletion of the RAID volume is interactive, for example:

```
# raidctl -d c0t0d0
Deleting volume C0t0d0 will destroy all data it contains, proceed
(yes/no)? yes
Volume 'c0t0d0' deleted.
#
```

The deletion of an IS volume results in the loss of all data that it contains. As an alternative, you can use the **-f** option to force the deletion if you are sure you no longer need the IS volume, or the data that it contains. For example:

```
# raidctl -f -d c0t0d0
Volume 'c0t0d0' deleted.
#
```

4. To confirm that you have deleted the RAID array, type:

```
# raidctl
No RAID volumes found.
```

Related Information

- [“Creating RAID Volumes” on page 14](#)

▼ Hot-Plug a Mirrored Disk

1. **Verify which hard drive corresponds with which logical device name and physical device name.**

See [“Disk Slot Numbers” on page 20](#).

2. **To confirm a failed disk, type:**

```
# raidctl
```

If the Disk Status is FAILED, then the drive can be removed and a new drive inserted. Upon insertion, the new disk should be OK and the volume should be RESYNCING.

For example:

```
# raidctl
```

RAID	Volume	RAID	RAID	RAID
Volume	Type	Status	Disk	Status

c0t1d0	IM	DEGRADED	c0t1d0	OK
			c0t2d0	FAILED

This example indicated that the disk mirror has degraded due to a failure in disk c0t2d0.

3. **Remove the hard drive as described in your server’s service manual.**

There is no need to issue a software command to bring the drive offline when the drive has failed.

4. **Install a new hard drive as described in your server’s service manual.**

The RAID utility automatically restores the data to the disk.

5. To check the status of the RAID rebuild, type:

```
# raidctl
```

For example:

```
# raidctl
RAID          Volume      RAID          RAID          RAID
Volume        Type         Status         Disk           Status
-----
c0t1d0         IM           RESYNCING      c0t1d0         OK
                                     c0t2d0         OK
```

This example indicated that RAID volume c0t1d0 is resynchronizing. If you issue the command again once synchronization is complete and the disk is back online, the RAID status changes from RESYNCING to OK.

Related Information

- [“Hot-Plug a Nonmirrored Disk” on page 24](#)
- [“Delete a Hardware RAID Volume” on page 21](#)

▼ Hot-Plug a Nonmirrored Disk

1. Verify which hard drive corresponds with which logical device name and physical device name.

See [“Disk Slot Numbers” on page 20](#).



Caution – To avoid data corruption or loss, ensure that no applications or processes are accessing the hard drive.

2. Type:

```
# cfigadm -al
```

For example:

```
# cfigadm -al
Ap_Id           Type           Receptacle     Occupant        Condition
c0              scsi-bus      connected      configured      unknown
c0::dsk/c0t0d0  disk          connected      configured      unknown
c0::dsk/c0t1d0  disk          connected      configured      unknown
c0::dsk/c0t2d0  disk          connected      configured      unknown
c0::dsk/c0t3d0  disk          connected      configured      unknown
c1              scsi-bus      connected      configured      unknown
c1::dsk/c1t0d0  CD-ROM        connected      configured      unknown
usb0/1          unknown       empty          unconfigured    ok
usb0/2          unknown       empty          unconfigured    ok
#
```

The `-al` options return the status of all SCSI devices, including buses and USB devices.

3. Remove the hard drive from the device tree. Type:

```
# cfigadm -c unconfigure Ap-Id
```

For example:

```
# cfigadm -c unconfigure c0::dsk/c0t3d0
```

This example removes `c0t3d0` from the device tree. The blue OK-to-Remove LED lights.

4. Verify that the device has been removed form the device tree. Type:

```
# cfigadm -al
Ap_Id           Type           Receptacle     Occupant        Condition
c0              scsi-bus      connected      configured      unknown
c0::dsk/c0t0d0  disk          connected      configured      unknown
c0::dsk/c0t1d0  disk          connected      configured      unknown
c0::dsk/c0t2d0  disk          connected      configured      unknown
c0::dsk/c0t3d0  disk          unavailable     configured      unknown
c1              scsi-bus      connected      configured      unknown
c1::dsk/c1t0d0  CD-ROM        connected      configured      unknown
```

usb0/1	unknown	empty	unconfigured	ok
usb0/2	unknown	empty	unconfigured	ok
#				

5. Remove the hard drive as described in your server's service manual.

6. Install a new hard drive as described in your server's service manual.

7. Configure the new hard drive. Type:

```
# cfgadm -c configure Ap-Id
```

For example:

```
# cfgadm -c configure c1::dsk/c0t3d0
```

The green Activity LED flashes as the new disk at c0t3d0 is added to the device tree.

8. Verify that the new hard drive is in the device tree. Type:

```
# cfgadm -al
Ap_Id          Type          Receptacle    Occupant      Condition
c0             scsi-bus     connected     configured    unknown
c0::dsk/c0t0d0 disk          connected     configured    unknown
c0::dsk/c0t1d0 disk          connected     configured    unknown
c0::dsk/c0t2d0 disk          connected     configured    unknown
c0::dsk/c0t3d0 disk          connected     configured    unknown
c1             scsi-bus     connected     configured    unknown
c1::dsk/c1t0d0 CD-ROM        connected     configured    unknown
usb0/1         unknown      empty         unconfigured  ok
usb0/2         unknown      empty         unconfigured  ok
#
```

Note that c0t3d0 is now listed as configured.

Related Information

- [“Hot-Plug a Mirrored Disk” on page 23](#)
- [“Delete a Hardware RAID Volume” on page 21](#)

Manage the System

This section contains information about basic fault management and managing devices.

Description	Links
Use ILOM to view system faults and set diagnostic levels.	“Log In to ILOM” on page 3 “Display System Faults” on page 28 “Run Full POST Diagnostics on Reset” on page 29 “Locate the System” on page 30
Configure your system to resume operation when encountering nonfatal faults.	“Automatic System Recovery” on page 31 “Enable Automatic System Recovery” on page 31 “Disable Automatic System Recovery” on page 32 “View Components Affected by ASR” on page 33
Clear component fault messages manually.	“Clear Component Fault Messages” on page 34
Manage devices manually.	“Unconfigure a Device Manually” on page 34 “Configure a Device Manually” on page 35 “Devices and Device Identifiers” on page 35

Searching for Faults

This section contains:

- [“Log In to ILOM” on page 3](#)
- [“Display System Faults” on page 28](#)
- [“Run Full POST Diagnostics on Reset” on page 29](#)
- [“Locate the System” on page 30](#)

▼ Log In to ILOM

This procedure assumes the default configuration of the service processor as described in your server's installation guide.

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

The ILOM default username is *root* and the default password is *changeme*.

```
% ssh root@xxx.xxx.xxx.xxx
...
Are you sure you want to continue connecting (yes/no) ? yes
...
Password: password (nothing displayed)
Waiting for daemons to initialize...

Daemons ready

Integrated Lights Out Manager

Version 2.0.0.0

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->
```

You are now logged into ILOM. Perform tasks as needed.

For more information about ILOM, refer to the ILOM's user's guide and the ILOM supplement for your server.

Note – In order to provide optimum system security, change the default system password.

▼ Display System Faults

1. Log in to ILOM.

See [“Log In to ILOM”](#) on page 28.

2. At the ILOM -> prompt, type:

```
-> show /SP/faultmgmt
```

This command displays the fault ID, the faulted FRU device, and the fault message to standard output. The `show /SP/faultmgmt` command also displays POST results.

For example:

```
-> show /SP/faultmgmt

/SP/faultmgmt
  Targets:
    0 (/SYS/PS1)

  Properties:

  Commands:
    cd
    show

->
```

Related Information

- [“Clearing Faults” on page 33](#)
- [“Bypassing Minor Faults” on page 31](#)
- [“Managing Devices” on page 34](#)
- [“Locate the System” on page 30](#)

▼ Run Full POST Diagnostics on Reset

Running full POST diagnostics can take a significant amount of time at system reset. Use this diagnostic setting for troubleshooting purposes, then return to your normal diagnostic setting for regular operation.

1. Log in to ILOM.

See [“Log In to ILOM” on page 28](#).

2. At the ILOM -> prompt, type:

```
-> set /SYS keyswitch_state=diag
```

The system is set to run full POST diagnostics on system reset.

3. To return to your normal diagnostic settings *after* running POST, type:

```
-> set /SYS keyswitch_state=normal
```

Related Information

- [“Clearing Faults” on page 33](#)
- [“Bypassing Minor Faults” on page 31](#)
- [“Managing Devices” on page 34](#)
- [“Locate the System” on page 30](#)

▼ Locate the System

1. Log in to ILOM.

See [“Log In to ILOM” on page 28](#).

2. To easily find your system in a data center or server room, use the Locator LED as described below.

- To turn on the Locator LED, from the ILOM -> prompt, type:

```
-> set /SYS/LOCATE value=Fast_Blink
```

- To turn off the Locator LED, from the ILOM -> prompt, type:

```
-> set /SYS/LOCATE value=off
```

- To display the state of the locator LED, from the ILOM -> prompt, type:

```
-> show /SYS/LOCATE
```

For more information on LEDs, see your server’s service manual.

Related Information

- [“Configure a Device Manually” on page 35](#)
- [“Clear Component Fault Messages” on page 34](#)

Bypassing Minor Faults

This section contains:

- [“Automatic System Recovery” on page 31](#)
- [“Enable Automatic System Recovery” on page 31](#)
- [“Disable Automatic System Recovery” on page 32](#)
- [“View Components Affected by ASR” on page 33](#)

Automatic System Recovery

Automatic system recovery (ASR) functionality enables the system to resume operation after experiencing certain non-fatal hardware faults or failures. Once you enable ASR, the system’s diagnostic firmware automatically detects failed hardware components. The autoconfiguring capability designed into the system firmware enables the system to unconfigure failed components and restore system operation. As long as the system is capable of operating without the failed component, the ASR features enable the system to reboot automatically, without operator intervention.

The system provides ASR for failures in CPU cores or threads, memory modules, and PCIE slots.

Related Information

- [“Enable Automatic System Recovery” on page 31](#)
- [“Disable Automatic System Recovery” on page 32](#)

▼ Enable Automatic System Recovery

To enable Automatic System Recovery, you must change system parameters in two places: at the ILOM -> prompt, and at the ok prompt.

1. Log in to ILOM.

See [“Log In to ILOM” on page 28](#).

2. At the ILOM -> prompt, type:

```
-> set /HOST/diag mode=normal
-> set /HOST/diag level=max
-> set /HOST/diag trigger=power-on-reset error-reset
```

3. At the ok prompt, type:

```
ok setenv auto-boot? true
ok setenv auto-boot-on-error? true
```

4. To cause the parameter changes to take effect, type:

```
ok reset-all
```

The system permanently stores the parameter changes and boots automatically when the OpenBoot configuration variable `auto-boot?` is set to `true` (its default value).

Related Information

- [“Display the ok Prompt” on page 4](#)
- [“Disable Automatic System Recovery” on page 32](#)
- [“Automatic System Recovery” on page 31](#)

▼ Disable Automatic System Recovery

1. Log in to ILOM.

See [“Log In to ILOM” on page 28](#)

2. Display the ok prompt.

See [“Display the ok Prompt” on page 4](#).

3. At the ok prompt, type:

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


4. To cause the parameter change to take effect, type:

```
ok reset-all
```

The system permanently stores the parameter change.

After you disable the ASR feature, it is not activated again until you re-enable it.

Related Information

- [“Enable Automatic System Recovery” on page 31](#)
- [“Automatic System Recovery” on page 31](#)

▼ View Components Affected by ASR

1. Log in to ILOM.

See [“Log In to ILOM” on page 28](#).

2. At the ILOM -> prompt, type:

```
-> show /SYS/component component_state
```

In the show /SYS/component component_state command output, any devices marked disabled have been manually unconfigured using the system firmware. The command output also shows devices that have failed firmware diagnostics and have been automatically unconfigured by the system firmware.

Related Information

- [“Disable Automatic System Recovery” on page 32](#)
- [Unconfigure a Device Manually](#)
- [“Configure a Device Manually” on page 35](#)

Clearing Faults

This section describes clearing fault messages using ILOM. For detailed troubleshooting information, see the system’s service manual.

▼ Clear Component Fault Messages

1. Log in to ILOM.

See “Log In to ILOM” on page 28.

2. At the ILOM -> prompt, type:

```
-> set /SYS/component clear_fault_action=true
```

Related Information

- “View Components Affected by ASR” on page 33
- “Display System Faults” on page 28
- “Devices and Device Identifiers” on page 35

Managing Devices

This section contains:

- “Unconfigure a Device Manually” on page 34
- “Configure a Device Manually” on page 35
- “Devices and Device Identifiers” on page 35

▼ Unconfigure a Device Manually

1. Log in to ILOM.

See “Log In to ILOM” on page 28.

2. At the ILOM -> prompt, type:

```
-> set Device_Identifier component_state=disabled
```

Related Information

- “Devices and Device Identifiers” on page 35
- “Clear Component Fault Messages” on page 34
- “Configure a Device Manually” on page 35

▼ Configure a Device Manually

1. Log in to ILOM.

See “Log In to ILOM” on page 28.

2. At the ILOM -> prompt, type:

```
-> set Device_Identifier component_state=enabled
```

Related Information

- “Devices and Device Identifiers” on page 35
- “Unconfigure a Device Manually” on page 34

Devices and Device Identifiers

The device identifiers are case sensitive.

TABLE:

Device	Devices Identifiers
System fan (0-3)	/SYS/MB/FTn
Hard disk drive (0-3)	/SYS/HDDn
DVD-ROM	/SYS/DVD
Power supply (0-3)	/SYS/PSn
Ethernet port (0-3)	/SYS/MB/NETn
Network management port	/SYS/MB/NETMGT
Serial management port	/SYS/MB/SERMGT
USB port (0-3)	/SYS/MB/USBn
PCI-E slot (0-7)	/SYS/MB/PCIEn
XUAI 10GbE slot (0-1)	/SYS/MB/XUAI n
DB-9 serial port	/SYS/TTYA

Related Information

- “Unconfigure a Device Manually” on page 34
- “Configure a Device Manually” on page 35

Use Logical Domains Software

SPARC Enterprise servers support the Logical Domains (LDom) 1.0.3 software that is used to create and manage logical domains. The software comprises LDoms-enabling code in the Solaris 10 11/06 OS, LDoms-enabling code in System Firmware 6.4, and the Logical Domains Manager, which is the command-line interface.

Description	Links
Learn about Logical Domains software, configurations and requirements.	“Logical Domain Software Overview” on page 38 “Logical Domain Configurations” on page 39 “Logical Domains Software Requirements” on page 39
Operate the Solaris OS with Logical Domains.	“OpenBoot Firmware Not Available After Solaris OS Has Started if Domaining Is Enabled” on page 40 “Power-Cycle a Server” on page 40 “Save Your Current Logical Domain Configurations to the SC” on page 41 “Result of an OpenBoot power-off Command” on page 41 “Result of Solaris OS Breaks” on page 41 “Results From Halting or Rebooting the Control Domain” on page 41 “Additional Documentation” on page 43

Understanding Logical Domains Software

This sections includes:

- [“Logical Domain Software Overview” on page 38](#)

- “Logical Domain Configurations” on page 39
- “Logical Domains Software Requirements” on page 39

Logical Domain Software Overview

Logical Domains (LDoms) software enables you to allocate the system resources of your server (such as a boot environment, CPUs, memory, and I/O devices) into logical domains. By using a logical domains environment, you can increase resource usage, improve scaling, and gain greater control of security and isolation.

LDoms software enables you to create and manage as many as 128 logical domains, depending on the hardware configuration of the server on which the Logical Domains Manager has been installed. You can virtualize resources and define network, storage, and other I/O devices as services that can be shared between domains.

A logical domain is a discrete logical grouping with its own operating system, resources, and identity within a single computer system. Applications software can run in logical domains. Each logical domain can be created, destroyed, reconfigured, and rebooted independently. There are several roles that logical domains can perform as shown in the following table.

TABLE: Logical Domain Roles

Domain Role	Description
Control domain	Domain in which the Logical Domains Manager runs, enabling you to create and manage other logical domains and allocate virtual resources to other domains. There can be only one control domain per server. The initial domain created when installing LDoms software is a control domain and is named <code>primary</code> .
Service domain	Domain that provides virtual device services to other domains, such as a virtual switch, a virtual console concentrator, and a virtual disk server.
I/O domain	Domain that has direct ownership of and direct access to physical I/O devices, such as a network card in a PCI Express controller. Shares the devices with other domains in the form of virtual devices. You can have a maximum of two I/O domains, one of which also must be the control domain.
Guest domain	Domain that is managed by the control domain and uses services from the I/O and service domains.

Logical Domain Configurations

The Logical Domain configurations are stored on the service processor (SP). Using Logical Domains Manager CLI commands, you can add a configuration, specify a configuration to be used, and list the configurations on the service processor. You can also use the ILOM set `/HOST/bootmode config=configfile` command to specify an LDoms boot configuration. For further information about `/HOST/bootmode`, see your server's ILOM supplement.

Logical Domains Software Requirements

The following software is required or recommended for LDoms on the SPARC Enterprise T5440 server:

- (Required) Solaris 10 11/06 OS – Refer to the Solaris 10 Collection for more information.
- (Required) Solaris 10 11/06 OS patches:
 - 124921-02, which contains updates to the Logical Domains 1.0 drivers and utilities. Logical Domains networking will be broken without this patch.
 - 125043-01, which contains updates to the console (qcn) drivers. This patch depends on KU 118833-36, so if this is not already updated on your system, you will need to do so.

For further information about patches, see the product notes for your server.

- (Required) System firmware version 6.4.x – Refer to your server's documentation for more information.
- (Required) Logical Domains Manager 1.0.x software.
- (Recommended) Solaris Security Toolkit 4.2 software – Refer to the Solaris Security Toolkit 4.2 Administration Guide and Solaris Security Toolkit 4.2 Reference Manual for more information

Note – During the boot process, domains that use virtual boot devices must wait for their service domains to come online first. This can prolong the boot process.

Operating the Solaris OS With Logical Domains

This section describes the changes in behavior in using the Solaris OS that occur once a configuration created by the Logical Domains Manager is instantiated; that is, after domaining is enabled.

Note – Any discussion about whether domaining is enabled pertains only to UltraSPARC T1-based platforms. Otherwise, domaining is always enabled.

- [“OpenBoot Firmware Not Available After Solaris OS Has Started if Domaining Is Enabled” on page 40](#)
- [“Power-Cycle a Server” on page 40](#)
- [“Result of an OpenBoot `power-off` Command” on page 41](#)
- [“Result of Solaris OS Breaks” on page 41](#)
- [“Results From Halting or Rebooting the Control Domain” on page 41](#)
- [“Additional Documentation” on page 43](#)

OpenBoot Firmware Not Available After Solaris OS Has Started if Domaining Is Enabled

If domaining is enabled, the OpenBoot firmware is not available after the Solaris OS has started, because it is removed from memory.

To reach the `ok` prompt from the Solaris OS, you must halt the domain. You can use the Solaris OS `halt` command to halt the domain.

Power-Cycle a Server

Whenever performing any maintenance on a system running LDoms software that requires power-cycling the server, you must save your current logical domain configurations to the SC first.

▼ Save Your Current Logical Domain Configurations to the SC

- Use the following command.

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

Result of an OpenBoot power-off Command

The OpenBoot `power-off` command does *not* power down a system. To power down a system while in OpenBoot firmware, use your system controller's or system processor's `poweroff` command. The OpenBoot `power-off` command displays the following message:

```
NOTICE: power-off command is not supported, use appropriate  
NOTICE: command on System Controller to turn power off.
```

Result of Solaris OS Breaks

If domaining is not enabled, the Solaris OS normally goes to the OpenBoot prompt after a break is issued. The behavior described in this section occurs in two situations:

1. You press the L1-A key sequence when the input device is set to keyboard.
2. You enter the `send break` command when the virtual console is at the `telnet` prompt.

If domaining is enabled, you receive the following prompt after these types of breaks.

```
c)ontinue, s)ync, r)eboot, h)alt?
```

Type the letter that represents what you want the system to do after these types of breaks.

Results From Halting or Rebooting the Control Domain

The following table shows the expected behavior of halting or rebooting the control (primary) domain.

Note – The question in [TABLE: Expected Behavior of Halting or Rebooting the Control \(primary\) Domain on page 42](#) regarding whether domaining is enabled pertains only to the UltraSPARC T1 processors. Otherwise, domaining is always enabled.

TABLE: Expected Behavior of Halting or Rebooting the Control (primary) Domain

Command	Domaining Enabled?	Other Domain Configured?	Behavior
halt	Disabled	N/A	For UltraSPARC T1 Processors: Drops to the ok prompt.
	Enabled	No	For UltraSPARC T1 Processors: See message in 02. For UltraSPARC T2 Processors: Host powered off and stays off until powered on at the SC.
	Enabled	Yes	Soft resets and boots up if the variable <code>auto-boot?=true</code> . Soft resets and halts at ok prompt if the variable <code>auto-boot?=false</code> .
reboot	Disabled	N/A	For UltraSPARC T1 Processors: Powers off and powers on the host.
	Enabled	No	For UltraSPARC T1 Processors: Powers off and powers on the host. For UltraSPARC T2 Processors: Reboots the host, no power off.
	Enabled	Yes	For UltraSPARC T1 Processors: Powers off and powers on the host. For UltraSPARC T2 Processors: Reboots the host, no power off.
shutdown -i 5	Disabled	N/A	For UltraSPARC T1 Processors: Powers off the host.
	Enabled	No	Host powered off, stays off until powered on at the SC.
	Enabled	Yes	Soft resets and reboots.

Additional Documentation

For more information on LDom software, see the following documents:

1. *The Logical Domains (LDoms) 1.0 Documentation*

(http://www.sun.com/products-n-solutions/hardware/docs/Software/enterprise_computing/systems_management/ldoms/ldoms1_0/index.html)

2. *The Beginners Guide to LDom: Understanding and Deploying Logical Domains*

(<http://www.sun.com/blueprints/0207/820-0832.html>)

ALOM-to-ILOM Command Reference

ILOM and ALOM CMT Command Comparison

The following table provides a command-by-command comparison between the command sets of ALOM CMT and the default ILOM CLI command set. Only the supported ALOM CMT command options are listed in the tables. Where there are ALOM CMT command-line arguments that have no corresponding ILOM properties, those ALOM CMT arguments have been omitted. The command set of the ALOM compatibility shell provides a close approximation of the equivalent commands and arguments (where supported) in ALOM CMT.

Note – By default, when displaying information ALOM CMT commands limit their output to a terse format, offering more verbose output if a `-v` flag is supplied with the command. ILOM’s show commands do not have a terse output format. They always provide verbose output.

TABLE: ALOM CMT Shell Configuration Commands

ALOM CMT Command	Summary	Comparable ILOM Command
<code>password</code>	Changes the login password of the current user.	<code>set /SP/users/username password</code>
<code>restartssh</code>	Restarts the SSH server so that new host keys generated by the <code>ssh-keygen</code> command are reloaded.	<code>set /SP/services/ssh restart_sshd_action=true</code>
<code>setdate [[mdd]HHMM mmddHHMM[cc]yy][.SS]</code>	Sets ALOM CMT date and time.	<code>set /SP/clock datetime=value</code>
<code>setdefaults</code>	Resets all ALOM CMT configuration parameters to their default values. The <code>-a</code> option resets the user information to the factory default (one admin account only).	<code>set /SP reset_to_defaults=configuration</code>
<code>setdefaults -a</code>		<code>set /SP reset_to_defaults=all</code>
<code>setkeyswitch [normal stby diag locked]</code>	Sets the status of the virtual keyswitch. Setting the virtual keyswitch to standby (<code>stby</code>) powers off the server. Before powering off the host server, ALOM CMT asks for a confirmation.	<code>set /SYS keyswitch_state=value</code>
<code>setsc [param] [value]</code>	Sets the specified ALOM CMT parameter to the assigned value.	<code>set target property=value</code>
<code>setupsc</code>	Runs the interactive configuration script. This script configures the ALOM CMT configuration variables.	No equivalent in ILOM
<code>showplatform [-v]</code>	Displays information about the host system’s hardware configuration, and whether the hardware is providing service. The <code>-v</code> option displays verbose information about the displayed components.	<code>show /HOST</code>
<code>showfru</code>	Displays information about the field-replaceable units (FRUs) in a host server.	No equivalent in ILOM

TABLE: ALOM CMT Shell Configuration Commands (*Continued*)

ALOM CMT Command	Summary	Comparable ILOM Command
showusers	Displays a list of users currently logged in to ALOM CMT. The display for this command has a similar format to that of the UNIX command <code>who</code> . The <code>-g</code> option pauses the display after the number of lines you specify for <i>lines</i> .	show /SP/sessions
showusers <i>-g lines</i>		No equivalent in ILOM
showhost	Displays version information for host-side components.	show /HOST
showhost <i>version</i>	The <i>version</i> option displays the same information as the <code>showhost</code> command with no option.	
showkeyswitch	Displays status of virtual keyswitch.	show /SYS keyswitch_state
showsc [<i>param</i>]	Displays the current non-volatile random access memory (NVRAM) configuration parameters.	show <i>target property</i>
showdate	Displays the ALOM CMT date. ALOM CMT time is expressed in Coordinated Universal Time (UTC) rather than local time. The Solaris OS and ALOM CMT time are not synchronized.	show /SP/clock datetime
ssh-keygen -l	Generates Secure Shell (SSH) host keys and displays the host key fingerprint on the SC.	show /SP/services/ssh/keys rsa dsa
ssh-keygen -r		set /SP/services/ssh generate_new_key_action= true
ssh-keygen -t {rsa dsa}		set /SP/services/ssh generate_new_key_type= [rsa dsa]
usershow [<i>username</i>]	Displays a list of all user accounts, permission levels, and whether passwords are assigned.	show /SP/users
useradd <i>username</i>	Adds a user account to ALOM CMT.	create /SP/users/ <i>username</i>

TABLE: ALOM CMT Shell Configuration Commands (*Continued*)

ALOM CMT Command	Summary	Comparable ILOM Command
<code>userdel <i>username</i></code>	Deletes a user account from ALOM CMT. The <code>-y</code> option enables you to skip the confirmation question.	<code>delete /SP/users/<i>username</i></code>
<code>userdel -y <i>username</i></code>		<code>delete -script /SP/users/<i>username</i></code>
<code>userpassword [<i>username</i>]</code>	Sets or changes a user password.	<code>set /SP/users/<i>username</i> password</code>
<code>userperm [<i>username</i>] [c] [u] [a] [r]</code>	Sets the permission level for a user account.	<code>set /SP/users/<i>username</i> role=<i>permissions</i></code> (where <i>permissions</i> are Administrator or Operator)

TABLE: ALOM CMT Shell Log Commands

ALOM CMT Command	Summary	Comparable ILOM Command
<code>showlogs</code> <code>[-b <i>lines</i> -e <i>lines</i> -v]</code> <code>[-g <i>lines</i>] [-p <i>logtype</i> [r p]]</code>	Displays the history of all events logged in the ALOM CMT RAM event log, or major and critical events in the persistent log. The <code>-p</code> option selects whether to display entries only from the RAM event log (<i>logtype</i> r) or the persistent event log (<i>logtype</i> p).	<code>show /SP/logs/event/list</code> No equivalent in ILOM
<code>consolehistory</code> <code>[-b <i>lines</i> -e <i>lines</i> -v]</code> <code>[-g <i>lines</i>] [boot run]</code>	Displays the host server console output buffers.	No equivalent in ILOM

TABLE: ALOM CMT Shell Status and Control Commands

ALOM CMT Command	Summary	Comparable ILOM Command
showenvironment	Displays the environmental status of the host server. This information includes system temperatures, power supply status, front panel LED status, hard disk drive status, fan status, voltage, and current sensor status.	show -o table -level all /SYS
showpower [-v]	Displays power metrics for the host server.	show /SP/powermgmt
shownetwork [-v]	Displays the current network configuration information. The -v option shows additional information about your network, including information about your DHCP server.	show /SP/network
console	Connects to the host system console. The -f option forces the console write lock from one user to another.	start /SP/console
console -f		No equivalent in ILOM
break -c	Drops the host server from running the Solaris OS software into OpenBoot PROM or kmdb depending upon the mode in which the Solaris software was booted.	set /HOST send_break_action=break
break -D		set /HOST send_break_action=dumpcore
bootmode [normal] [reset_nvram] [config=configname] [bootscript = string]	Controls the host server OpenBoot PROM firmware method of booting.	set /HOST/bootmode <i>property=value</i> [where <i>property</i> is state, config, or script]
flashupdate -s <i>IPaddr</i> -f <i>pathname</i> [-v]	Downloads and updates system firmware (both host firmware and ALOM CMT firmware). For ILOM, <i>ipaddr</i> must be a TFTP server. If DHCP is used, <i>ipaddr</i> can be replaced by the name of the TFTP host.	load -source tftp:// <i>ipaddr/pathname</i>

TABLE: ALOM CMT Shell Status and Control Commands (*Continued*)

ALOM CMT Command	Summary	Comparable ILOM Command
<code>reset [-c]</code>	Attempts to gracefully reset the system. If that fails, this option	<code>reset /SYS</code>
<code>reset [-y] [-c]</code>	forcefully reset the system.	<code>reset -script /SYS</code>
<code>reset -f</code>	Forcefully resets the system.	<code>reset -f /SYS</code>
<code>reset -d</code>	Attempts to gracefully reset the control domain. If that fails, this option forcefully reset the control domain.	<code>reset /HOST/domain/control</code>
<code>reset [-d] [-f]</code>	Forcefully resets the control domain.	<code>reset - f /HOST/domain/control</code>
<code>reset [-d] [-n]</code>	When resetting the control domain, this option may automatically boot (this is the default behavior when the <code>auto-boot</code> option is <i>not</i> specified).	<code>set /HOST/domain/control auto-boot=disable reset /HOST/domain/control</code>
<code>reset [-d] [-f] [-n]</code>	When resetting the control domain, this option does not automatically boot and stays at the OpenBoot <code>ok</code> prompt. This option overrides all reboot variables and stops the control domain at the OpenBoot <code>ok</code> prompt after host reset. The <code>auto-boot?</code> option remains unchanged, thus subsequent reset commands automatically reboot host if the <code>auto-boot?</code> option is set to <code>true</code> .	<code>set /HOST/domain/control auto-boot=disable reset -f /HOST/domain/control</code>
<code>powercycle [-y] [-f]</code>	<code>poweroff</code> followed by <code>poweron</code> . The <code>-f</code> option forces an immediate	<code>stop /SYS start /SYS</code>
<code>powercycle -y</code>	<code>poweroff</code> , otherwise the command attempts a graceful shutdown.	<code>stop -script /SYS start -script /SYS</code>
<code>powercycle -f</code>		<code>stop -force /SYS start -force /SYS</code>

TABLE: ALOM CMT Shell Status and Control Commands (*Continued*)

ALOM CMT Command	Summary	Comparable ILOM Command
poweroff	Removes the main power from the host server. The <code>-y</code> option enables you to skip the confirmation question. ALOM CMT attempts to shut the server down gracefully. The <code>-f</code> option forces an immediate shutdown.	stop /SYS
poweroff -y		stop -script /SYS
poweroff -f		stop -force /SYS
poweron	Applies the main power to the host server or FRU.	start /SYS
setlocator [on/off]	Turns the Locator LED on the server on or off.	set /SYS/LOCATE value= <i>value</i>
showfaults [-v]	Displays current valid system faults.	show /SP/faultmgmt
clearfault <i>UUID</i>	Manually repairs system faults.	set /SYS/ <i>component</i> clear_fault_action=true
showlocator	Displays the current state of the Locator LED as either on or off.	show /SYS/LOCATE

TABLE: ALOM CMT Shell FRU Commands

ALOM CMT Command	Summary	Comparable ILOM Command
setfru -c <i>data</i>	The <code>-c</code> option enables you to store information (such as inventory codes) on all FRUs in a system.	set /SYS customer_frudata= <i>data</i>
[showfru -g lines] [-s -d] [<i>FRU</i>]	Displays information about the FRUs in a host server.	No equivalent in ILOM
removefru [-y] [<i>FRU</i>]	Prepares a FRU (for example, a power supply) for removal. The <code>-y</code> option enables you to skip the confirmation question.	set /SYS/PS0 prepare_to_remove_action=true

TABLE: ALOM CMT Shell Automatic System Recovery (ASR) Commands

ALOM CMT Command	Summary	Comparable ILOM Command
<code>enablecomponent</code> <i>asr-key</i>	Removes a component from the <code>asr-db</code> blacklist.	<code>set /SYS/component</code> <code>component_state=enabled</code>
<code>disablecomponent</code> <i>asr-key</i>	Adds a component to the <code>asr-db</code> blacklist.	<code>set /SYS/component</code> <code>component_state=disabled</code>
<code>showcomponent</code> <i>asr-key</i>	Displays system components and their test status (ASR state).	<code>show /SYS/component</code> <code>component_state</code>
<code>clearasrdb</code>	Removes all entries from the <code>asr-db</code> blacklist.	No equivalent in ILOM

TABLE: ALOM CMT Shell Miscellaneous Commands

ALOM CMT Command	Summary	Comparable ILOM Command
<code>help</code> [<i>command</i>]	Displays a list of all ALOM CMT commands with their syntax and a brief description of how each command works. Specifying a command name as an option enables you to view the help for that command.	<code>help</code>
<code>resetsc</code>	Reboots ALOM CMT. The <code>-y</code> option enables you to skip the confirmation question.	<code>reset /SP</code>
<code>resetsc -y</code>		<code>reset -script /SP</code>
<code>userclimode</code>	Sets the type of shell to <i>shelltype</i> , where <i>shelltype</i> is <code>default</code> or <code>alom</code> .	<code>set /SP/users/username cli_mode=shelltype</code>
<code>logout</code>	Logs out from an ALOM CMT shell session.	<code>exit</code>

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