Sun SPARC™ Enterprise T1000 Server Installation Guide

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Preface

This guide provides instructions, background information, and reference material to help you install the SPARC™ Enterprise T1000 server.

Instructions for installation in the document assume that a system administrator is experienced with the Solaris™ Operating System (Solaris OS).

Note – All internal components must be installed by qualified service technicians only.

How This Document Is Organized

This document is organized in the following way:

Chapter 1 provides an overview of the server installation process.

Chapter 2 provides instructions for installing the server into a rack.

Chapter 3 provides instructions for configuring and powering on the server, and for installing additional software.

Appendix A provides instructions for updating the system controller firmware and the host firmware.

Appendix B provides instructions for selecting a boot device.

Appendix C provides configuration instructions for servers that use an earlier version of firmware than Sun system firmware 6.2.

Using UNIX Commands

This document might not contain information about 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

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

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

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

SPARC Enterprise T1000 Server Documentation

You can view and print the following manuals from the Sun™ documentation web site at http://www.sun.com/documentation

Title	Description	Part Number
Sun SPARC Enterprise T1000 Server Site Planning Guide	*Site planning information for the server*	820-0017
Sun SPARC Enterprise T1000 Server Product Notes	*Late-breaking information about the server. The latest notes are posted at:* http://www.sun.com/documentation	820-0021
Sun SPARC Enterprise T1000 Server Overview Guide	*Provides an overview of the features of this server*	820-0016
Sun SPARC Enterprise T1000 Server Administration Guide	*How to perform administrative tasks that are specific to this server*	820-0020
Sun SPARC Enterprise T1000 Server Service Manual	*How to run diagnostics to troubleshoot your server and how to remove and replace parts*	820-0019
Advanced Lights Out Management (ALOM) CMT Guide	*How to use the Advanced Lights Out Manager (ALOM) CMT software on this server*	(Varies based on version.)
Sun Fire T1000 Server Safety and Compliance Guide	*Provides safety and compliance information that is specific to this server*	820-0022

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Sun SPARC Enterprise T1000 Server Installation Guide, part number 820-0018-10

CHAPTER 1

Preparing for Installation

This chapter describes the server installation, and provides background information about the installation procedures that begin in Chapter 2.

This chapter contains these topics:

- "Tools Needed" on page 2
- "Optional Components" on page 3
- "Installation Overview" on page 3
- "Slide Rail Assembly Notes" on page 5
- "Cable Management Notes" on page 7
- "Data Port and Cabling Notes" on page 8
- "Safety Precautions" on page 9

Server Overview

FIGURE 1-1 shows the server.

FIGURE 1-1 Server

Tools Needed

- No. 2 Phillips screwdriver
- ESD mat and grounding strap

Optional Components

The standard components of the server are installed at the factory. However, if you ordered options such as additional memory or a PCI card, these may be shipped separately. Install these components prior to installing the server in a rack.

If you ordered any other options that are not factory-installed, see the *SPARC Enterprise T1000 Server Service Manual* for installation instructions.

Note – All internal components must be installed only by qualified service technicians.

Caution – Electrostatic damage can permanently disable the system or require repair by service technicians. Place components on an antistatic surface, such as an antistatic discharge mat, an antistatic bag, or a disposable antistatic mat. Wear an antistatic grounding strap connected to a metal surface on the chassis when you work on system components.

Note – The list of optional components can be updated without notice.

Installation Overview

This installation guide provides procedures that must be performed in the following order.

1. Verify that you have received all of the components that ship with your server.
2. Gather configuration information for your system. See your system administrator for specific details, including these parameters:
   - Gateway IP address
   - IP address for the system controller
   - Netmask
3. Install any optional components shipped with your system. If you have purchased other optional components such as additional memory, install them prior to mounting the server in a rack. See "Optional Components" on page 3.

4. Mount the server into a rack or equipment cabinet. See "To Install the Server in the Rack" on page 19.

Note – In the rest of this document, the term *rack* means either an open rack or a closed cabinet.

---

5. Connect the server to a serial terminal or a terminal emulator (PC or workstation) to display system messages. See "Powering On the Server for the First Time" on page 25.

Tip – The serial terminal or a terminal emulator should be connected before you connect the power cables. As soon as AC power is connected to the system, the system controller immediately powers on and runs diagnostics. Diagnostic test failures will be printed on the serial terminal. For more information, refer to the *Advanced Lights Out Management (ALOM) CMT Guide*.

---

6. Connect the data cables to the server, but do not connect the AC power cable yet. See "Connecting the Server Cables" on page 21.
7. Connect the AC power cable to the server and examine the display for any error messages. See "Powering On the Server for the First Time" on page 25.

Caution – There is a potential for electric shock if the server and related equipment are not properly grounded.

Note – The system controller (SC) runs on the 3.3v standby voltage. As soon as AC power is connected to the system, the system controller immediately powers on, runs diagnostics, and initializes the ALOM CMT firmware.

---

8. After the system controller boots, access the ALOM CMT command-line interface through the serial management port. See "To Log In To the System Controller Using the Serial Management Port" on page 29.
9. Configure the SC network management port. See "To Configure the System Controller Network Management Port" on page 31.
10. Enable the new configuration by resetting the system controller. See "To Reset the System Controller" on page 34.
11. Power on the server using the ALOM CMT software. See "To Initiate the Power On Sequence" on page 36.
12. Configure the Solaris OS. See "To Boot the Solaris Operating System" on page 39.

The Solaris OS is preinstalled on the server. When you power on, you are automatically guided through the Solaris OS configuration procedure. See "To Boot the Solaris Operating System" on page 39.

13. Install any required patch or patches to the server.

    Refer to the product notes for a list of the required patches.

14. (Optional) Load additional software from the Solaris media kit.

    The Solaris media kit (sold separately) includes several CDs containing software to help you operate, configure, and administer your server. Refer to the documentation provided with the media kit for a complete listing of included software and detailed installation instructions.

Slide Rail Assembly Notes

The rackmount kit has two slide rail assemblies. Each slide rail assembly can be installed on either the right or left side of the rack.

A slide rail assembly consists of three main sections, a front section, a sliding rear section, and a removable mounting bracket (FIGURE 1-2). The rackmount kit also includes two extension brackets.

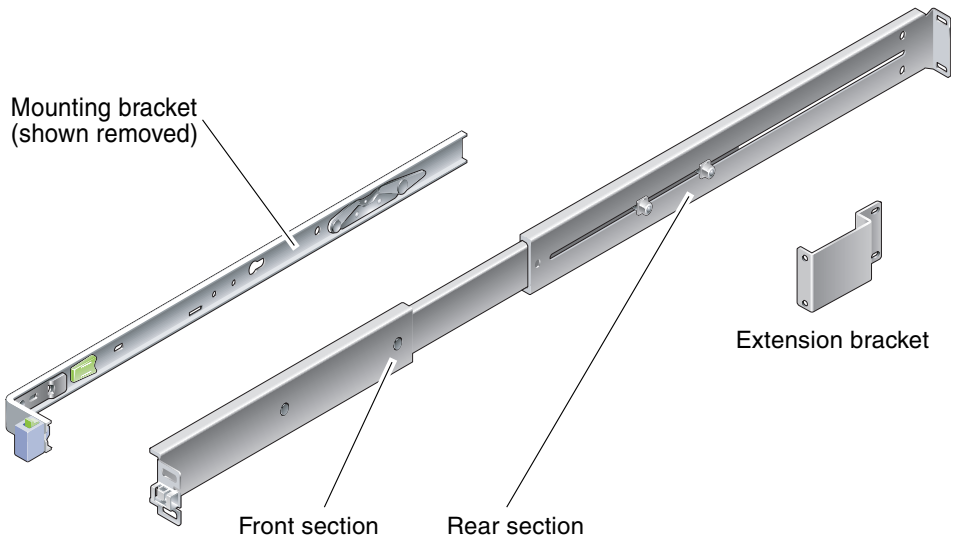

FIGURE 1-2 Slide Rail Assembly

The slide rail assembly has the following features:

- The front and rear sections form the slide rail. The front and rear sections expand to fit rack depths from 24 in. (610 mm) to 29.0 in. (740 mm).
- Extension brackets are included in the mounting rail kit. The extension brackets add 2.9 in. (73 mm) to the length of each slide rail.
- The mounting bracket slides 13 in. (330 mm) out of the slide rail, then locks in place. If you unlock the mounting bracket, it slides an additional 4 in. (100 mm) before separating from the slide rail. The mounting brackets mount directly to the sides of the server chassis.
- There are two locks on each server mounting bracket (FIGURE 1-3). The lock enables the mounting bracket to slide forward. The mounting bracket release allows you to remove the mounting bracket from the slide rail. You also use the release when pushing the mounting bracket into the slide rail.

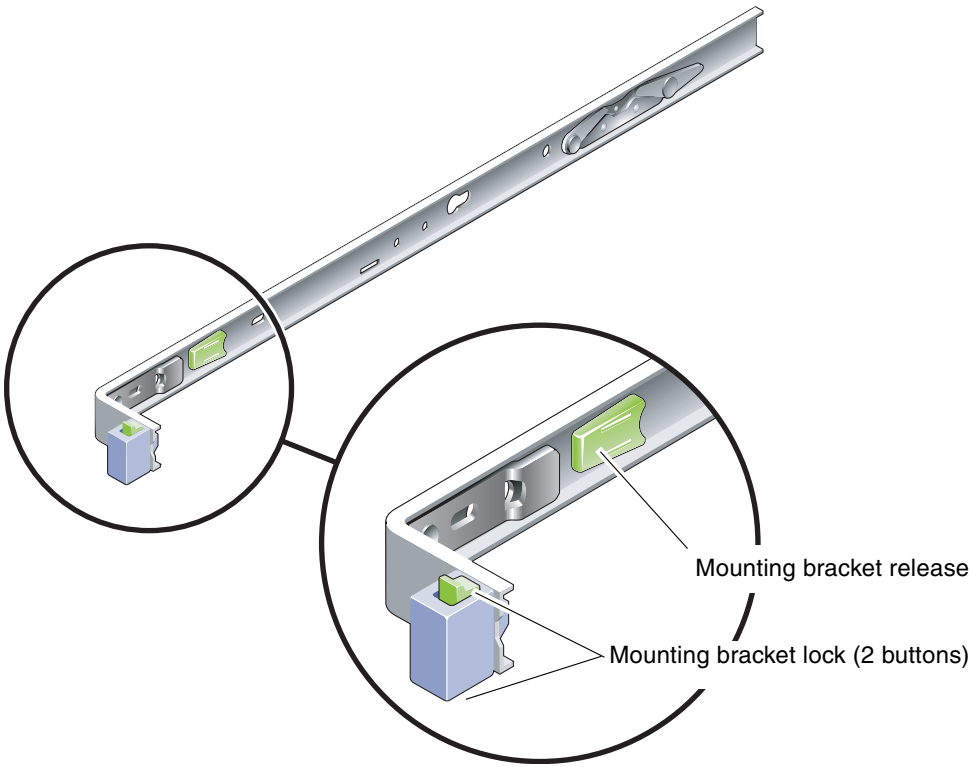

FIGURE 1-3 Mounting Bracket Locks

Cable Management Notes

A cable management bracket (FIGURE 1-4) is included in the server slide rail kit. The cable management bracket clips onto the slide rails. Use cable ties or cable straps to attach cabling to the bracket.

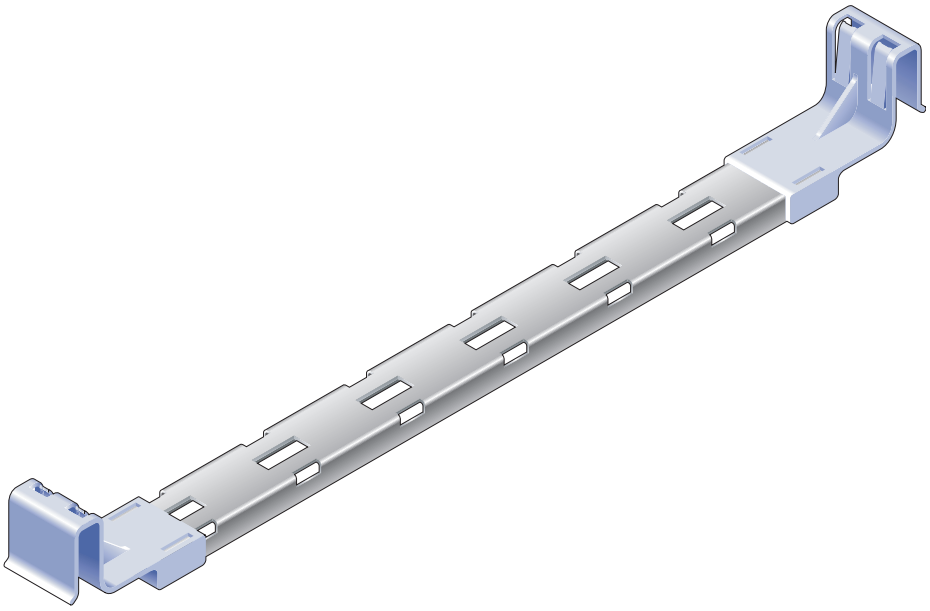

FIGURE 1-4 Cable Management Bracket

Data Port and Cabling Notes

Port Locations

FIGURE 1-5 shows the ports on the server.

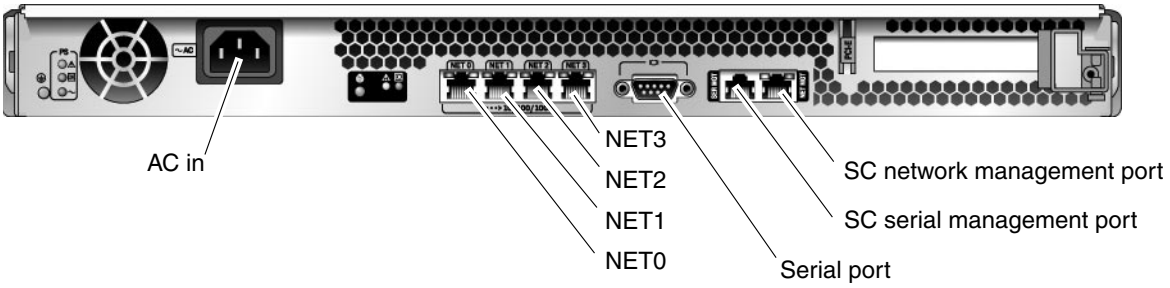

FIGURE 1-5 Locations of Ports and Connectors on the Rear Panel

Cabling Notes

The following list describes the server's cable connections and ports:

- **Minimum cable connections for the server:**
  - At least one system on-board Ethernet network connection (NET port)
  - System controller serial management port (SERIAL MGT port)
  - System controller network management port (NET MGT port)
  - Power cable
- **System controller (SC) management ports.** There are two SC management ports for use with the ALOM CMT system controller.
  - The SC serial management port (labeled SERIAL MGT) uses an RJ-45 cable and is always available. This is the default connection to the ALOM CMT system controller.
  - The SC network management port (labeled NET MGT) is the optional connection to the ALOM CMT system controller. See "To Configure the System Controller Network Management Port" on page 31. The SC network management port uses an RJ-45 cable for a 10/100BASE-T connection. This port does not support connections to Gigabit networks.

    See the *Sun SPARC Enterprise T1000 Server Overview* for more information.

- **Ethernet ports.** The server Ethernet interfaces operate at 10 Mbps, 100 Mbps, and 1000 Mbps. The transfer rates for the Ethernet ports are given in TABLE 1-1.

TABLE 1-1 Ethernet Connection Transfer Rates

Connection Type	IEEE Terminology	Transfer Rate
Ethernet	10BASE-T	10 Mbit/sec
Fast Ethernet	100BASE-TX	100 Mbits/sec
Gigabit Ethernet	1000BASE-T	1000 Mbit/sec

- **TTYA serial port.** Use the DB-9 connector with a null modem cable for serial devices. This port appears as `ttya` in Solaris OS and OpenBoot PROM™ messages. This port is not connected to the SC serial management port.
- **AC power cables.** As soon as the AC power cables are connected to the power source, the server goes into standby mode and the ALOM CMT system controller initializes.

Tip – The serial terminal or a terminal emulator should be connected before you connect the power cables. As soon as AC power is connected to the system, the system controller immediately powers on and runs diagnostics. Diagnostic test failures will be printed on the serial terminal. For more information, refer to the *Advanced Lights Out Management (ALOM) CMT v1.2 Guide*.

Safety Precautions

Caution – Deploy the antitilt feature for your equipment rack before beginning the installation.

CHAPTER 2

Installing the Server

This chapter provides instructions for installing the server in an equipment rack. This chapter contains the following sections:

- "Rackmount Kit" on page 11
- "Installing the Server in a Rack" on page 12
- "Removing the Server From the Rack for Service" on page 21
- "Connecting the Server Cables" on page 21

Note – Ensure that you have all of the parts before you begin the installation of the server.

Note – In this guide, references to *left* and *right* are from your viewpoint as you face either the front or the rear of the system.

Rackmount Kit

The server rackmount kit includes two mounting slides, a slide spacing tool, and a cable management bracket. The kit also includes two extension brackets for use with racks up to 39.5 in. (1000 mm) in depth.

The mounting kit also includes an assortment of screws and nuts to fit various types of racks. Extra screws and nuts are included.

Installing the Server in a Rack

▼ To Install the Mounting Brackets

1. **Pull both mounting brackets completely out of their respective slide rails.**

   a. **Simultaneously press and hold the upper and lower lock buttons of the slide rail lock (FIGURE 2-1).**

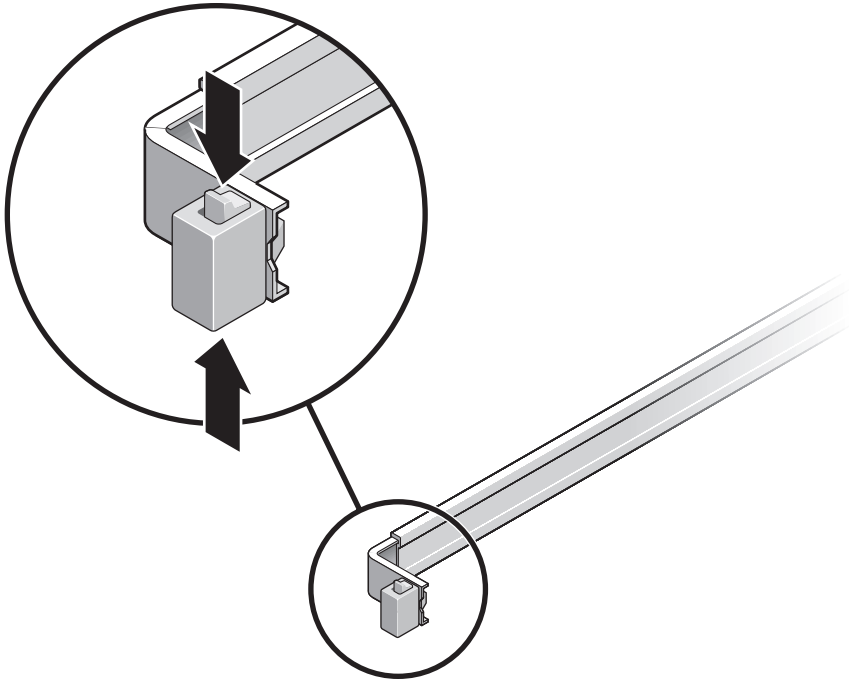

FIGURE 2-1 Unlocking the Slide Rail Assembly

   b. **Pull the mounting bracket out until it stops.**

   c. **Slide the mounting bracket release button to the left (FIGURE 2-2), then slide the mounting bracket completely out of the slide rail.**

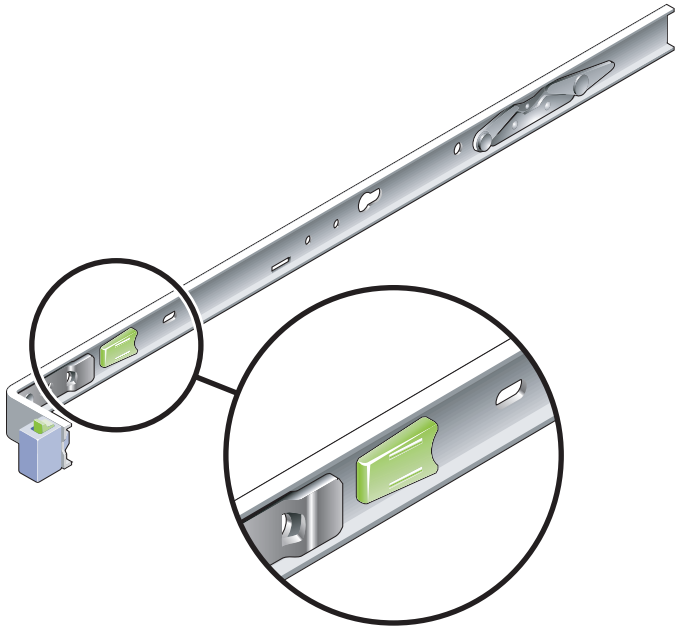

FIGURE 2-2 Mounting Bracket Release Button

2. **Attach a mounting bracket to the right side of the server chassis.**

   a. **Position the mounting bracket against the server chassis (FIGURE 2-3) so that the slide rail lock is at the front and the two keyed openings on the mounting bracket are aligned with the two locating pins on the side of the chassis.**

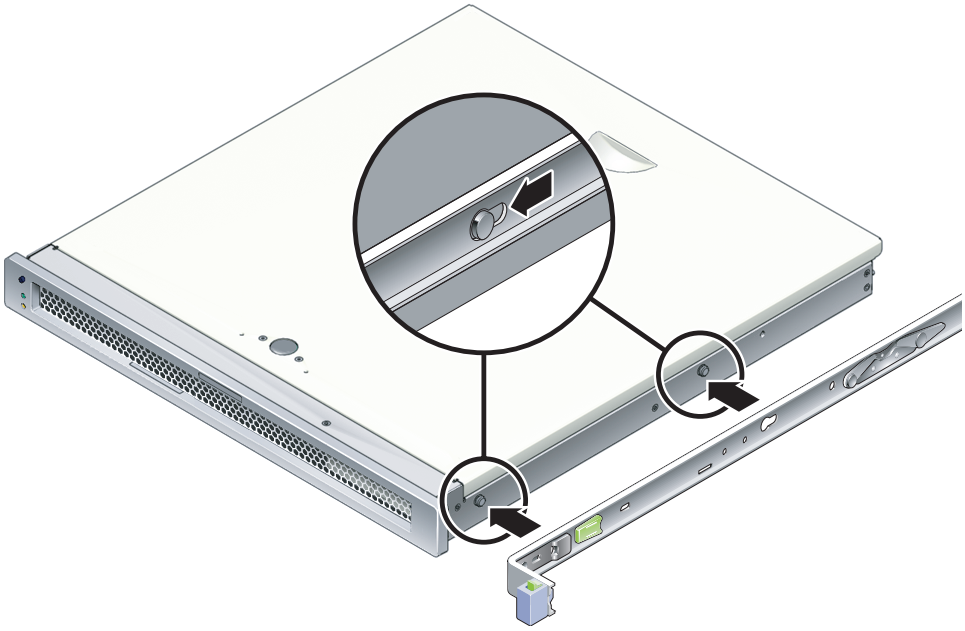

FIGURE 2-3 Attaching a Mounting Bracket to the Chassis

b. With the heads of the two locating pins protruding though the two keyed openings in the mounting bracket, slide the mounting bracket toward the front of the chassis until the bracket locks into place with an audible click.

c. Verify that both locating pins are trapped in the keyed openings and that the front locating pin has engaged the mounting bracket lock (FIGURE 2-3).

3. Attach the second mounting bracket to the left side of the server chassis.

▼ To Install the Slide Rails

1. **Determine which rack hole numbers you will use when attaching the slide rails to the rack posts.**

   Most racks have posts that are marked off by rack units (1.75 in. or 45 mm). The server occupies one rack unit.

2. **Determine which screws you will use to mount the slide rails.**
   - If your rack has threaded mounting holes in the rack posts, determine whether the threads are metric or standard. Select the appropriate screws from the package included in the mounting kit.
   - If your rack does not have threaded mounting holes, the mounting screws go through bracket and rack post, and are secured with a caged nut. Select the appropriate screws and nuts from the package included in the mounting kit.

3. **Loosen the two captive screws (**FIGURE 2-4**) approximately a quarter-turn on each slide rail.**

   This action allows movement of the rear section so that you can adjust the length of each slide rail.

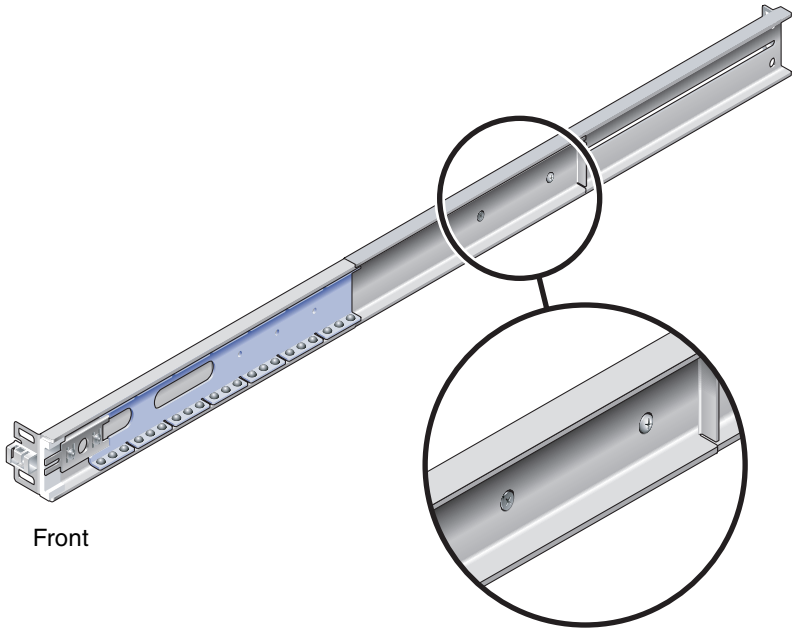

FIGURE 2-4 Captive Screws on the Slide Rail

4. **Determine if the slide rails require an extension bracket.**

   Most rack installations do not require slide rail extension brackets. However, you may need to install the extension brackets under the following conditions:

   - If your rack is deeper than 29.0 in (740mm).
   - If your rack requires the ends of the slide rails to be side mounted.

   If required, use M6 screws to attach an extension bracket to the rear of each slide rail, as shown in FIGURE 2-5.

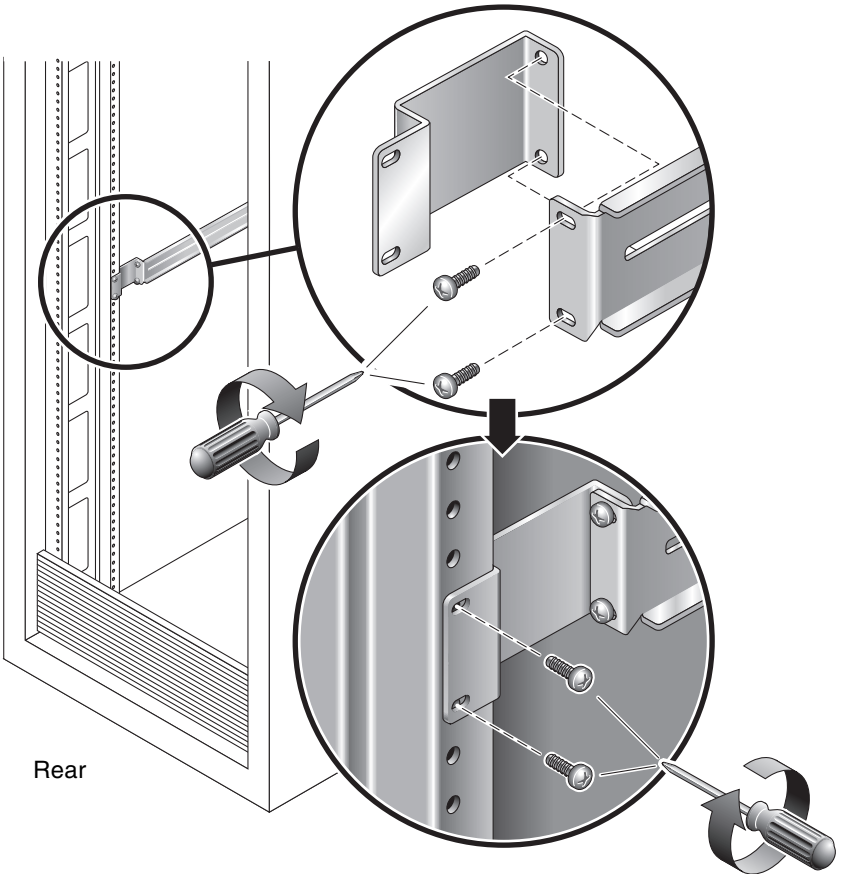

FIGURE 2-5 Using the Extension Bracket

Note – In some very rare cases, it may be necessary to mount the extension bracket with its side flange facing forward.

---

5. **Attach a slide rail to the right front rack post (FIGURE 2-6).**

   a. **Loosely attach the front of a slide rail to the right front rack post using two screws (M5 or M6, as appropriate to the size of the screw holes on the rack post).**

      Do not tighten the screws yet.

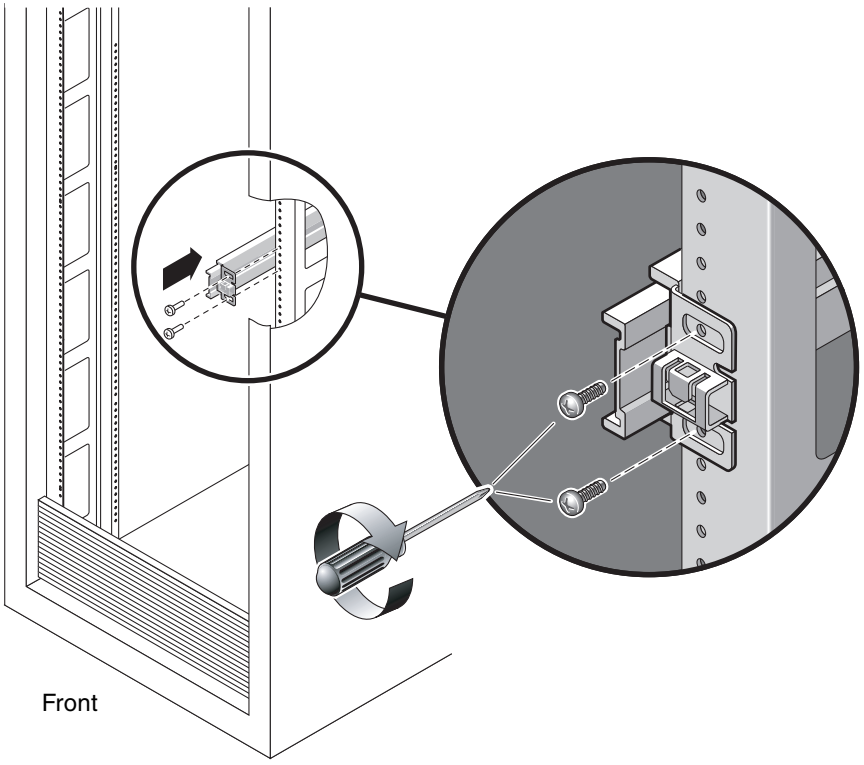

FIGURE 2-6 Mounting the Slide Rail

   b. **Adjust the length of the slide rail by sliding the rear section to reach the outside edge of the rear rack post, then tighten the captive screws (FIGURE 2-4) to freeze the length of the slide rail.**

   c. **Loosely attach the rear of the slide rail to the rear rack post with screws.**

6. **Attach the second slide rail to the left rack posts in a similar manner.**

   Do not tighten the attachment screws at the front or rear of the slide rail.

7. **Use the slide rail spacing tool to adjust the distance between the slide rails.**

a. At the rear of the rack, insert the left side of the tool into slots at the end of the middle section on the left slide rail (FIGURE 2-7).

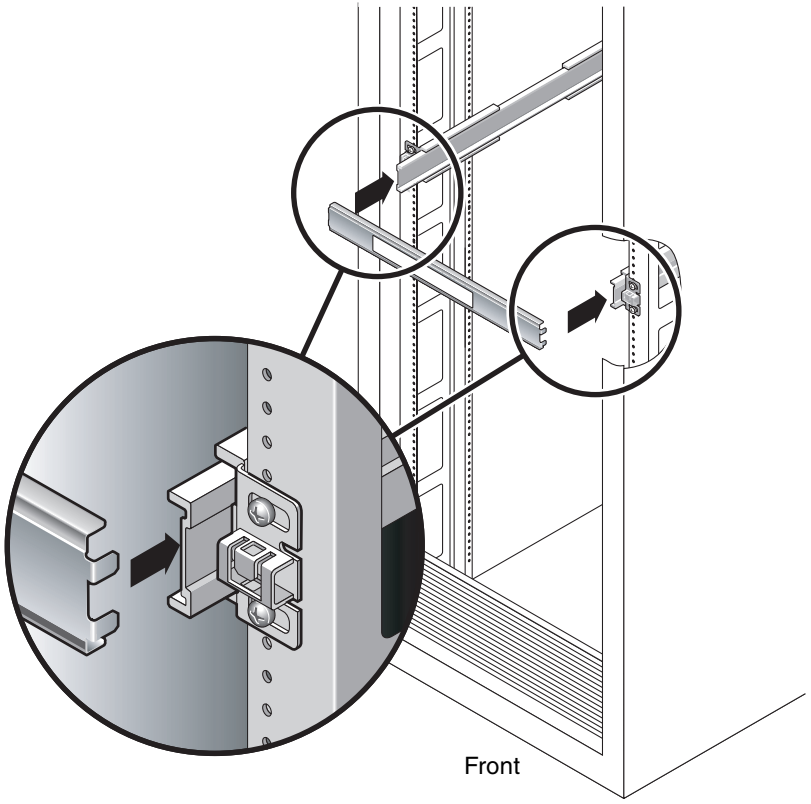

FIGURE 2-7 Using the Slide Rail Spacing Tool to Adjust the Distance Between the Slide Rails

b. Insert the right side of the tool into slots at the end of the right rail, while simultaneously sliding the end of the rail to the right or left as needed to allow the ends of the tool to enter both middle sections.

When the tool is properly inserted, the distance between the rails is 17.4 in. (442 mm).

c. Tighten the screws to lock the ends of the slide rails in place.

d. Remove the slide rail spacing tool.

e. At the front of the rack, use the spacing tool to adjust the distance between the front ends of the rails.

The front ends of the rails do not have slots for the spacing tool. Slide the rails sideways as needed until the sides of the spacing tool touch both rails. At this point, the distance between the ends of the rails is 17.4 in. (442 mm).

f. Tighten the two screws to lock the rails in place.

▼ To Install the Server in the Rack

1. Deploy the antitilt feature, if the rack is so equipped.

Caution – Deploy the antitilt feature on the rack before beginning an installation.

2. **Raise the server and insert the ends of the mounting brackets into the left and right slide rails (**FIGURE 2-8**).**

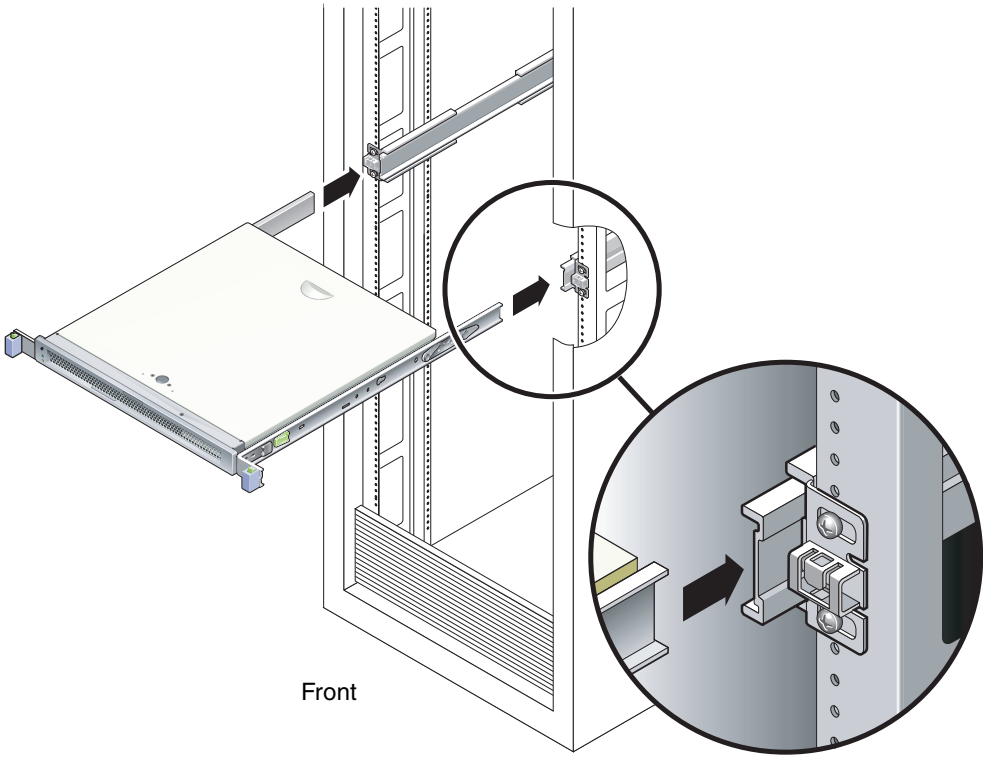

FIGURE 2-8 Mounting the Chassis on the Slide Rails

3. **Slide the chassis into the rack.**

Caution – Before continuing, verify that the server is securely mounted in the rack, and that the slide rails are locked in the mounting brackets.

▼ To Install the Cable Management Bracket

1. **Place the cable management bracket across the slide rail assemblies behind the system chassis.**
2. **Press down on each end of the cable management bracket until the ends click into place on the mounting brackets.**

Note – When you attach cables to the server, as in the following procedures, lay the cables over the cable management bracket, then use cable ties to hold each cable in place.

Removing the Server From the Rack for Service

To install or replace internal parts in the server, you must first remove the server from the rack.

For the removal procedure, refer to the *Sun SPARC Enterprise T1000 Server Service Manual*.

Connecting the Server Cables

To boot the server, you must connect and configure the network and serial ports. The procedures are given in the following sections.

- "To Connect the SC Serial Management Port" on page 22
- "To Connect the SC Network Management Port" on page 22
- "To Connect the Ethernet Network Cables" on page 23
- "To Connect the AC Power Cable to the Server" on page 23

FIGURE 2-9 shows the connectors on the rear panel of the server.

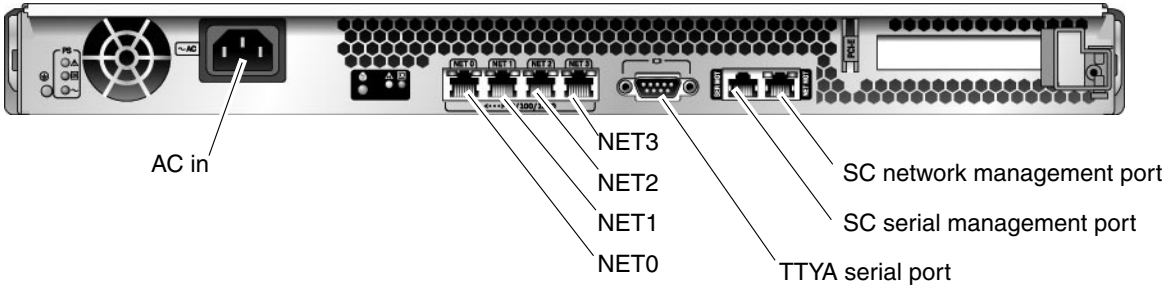

FIGURE 2-9 Rear Panel Connectors

▼ To Connect the SC Serial Management Port

The system controller serial management port is marked SER MGT (FIGURE 2-10).

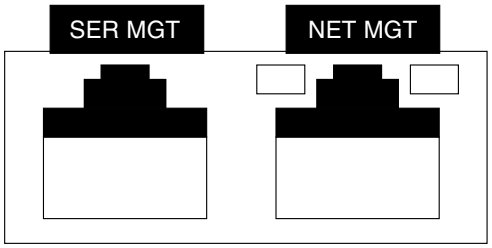

FIGURE 2-10 System Controller Serial and Network Ports, Rear of Chassis

---

Note – Use the SC serial management port *only* for server management. It is the default connection between the system controller and a terminal or a computer.

Caution – Do not attach a modem to this port.

- **Connect a Category 5 cable from the SER MGT serial management port to the terminal device.**

  When connecting either a DB-9 or a DB-25 cable, use an adapter to perform the crossovers given for each connector.

▼ To Connect the SC Network Management Port

The system controller network management port is marked NET MGT (FIGURE 2-10).

Note – The SC network management port is configured by default to retrieve network settings via Dynamic Host Configuration Protocol (DHCP) and allow connections using Solaris Secure Shell (SSH®). You might need to modify these settings for your network. Instructions are given in Chapter 3.

- **Connect a Category 5 cable from the NET MGT network management port to your network switch or hub.**

▼ To Connect the Ethernet Network Cables

The server has four network connectors, marked NET0, NET1, NET2, and NET3 (FIGURE 2-9). These connectors are RJ-45 Gigabit Ethernet.

1. **Connect a Category 5 cable from your network switch or hub to Ethernet Port 0 (NET0) on the rear of the chassis.**

   NET0 is the farthest left port in the 4-port network cluster in FIGURE 2-9.

2. **Connect Category 5 cables from your network switch or hub to the remaining Ethernet ports (NET1, NET2, NET3), as needed.**

TTYA Serial Port

The TTYA serial port has a DB-9 connector. A DB-9 to RJ-45 adapter cable is included in the shipping kit.

Note – This serial port is not the same as the SC serial management port. Use the serial port only for general-purpose serial data transfers.

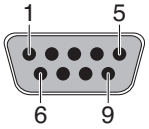

FIGURE 2-11 Serial Port (TTYA)

▼ To Connect the AC Power Cable to the Server

Powering on the system for the first time requires special preparation and procedures. For example, if you have not prepared a display before connecting the AC power cable, system messages might be lost.

1. **Finish the hardware procedures in this chapter, but do not attach the AC power cable yet.**

   Powering on the system for the first time requires special preparation and procedures. For example, if you have not prepared a display before connecting the AC power cable, system messages may be lost. You will be instructed to connect the server to AC power in "Powering On the Server for the First Time" on page 25.

Caution – The server goes into Standby mode and the system controller initializes as soon as the AC power cable is connected to the power source.

2. **Go to** "Powering On the Server for the First Time" on page 25**.**

CHAPTER 3

Powering On the System

This chapter includes instructions for booting the server and for enabling the system controller network management port.

The following topics are discussed:

- "Powering On the Server for the First Time" on page 25
- "Logging In To the ALOM CMT System Controller" on page 29
- "Using the ALOM CMT System Controller for Common Operations" on page 36
- "Booting the Solaris Operating System" on page 39

Powering On the Server for the First Time

Power On Overview

System Console

When you power on the system, the boot process begins under the control of the system console. The system console displays status and error messages generated by firmware-based tests during system startup.

Note – To see these status and error messages, connect a terminal or terminal emulator to the serial management port (SERIAL MGT). For a basic procedure to connect a terminal or terminal emulator, see "To Power On the System for the First Time" on page 27.

For a more detailed discussion on configuring the system console and connecting terminals, refer to the *Sun SPARC Enterprise T1000 Server Administration Guide*.

ALOM CMT System Controller

After the system console finishes its low-level system diagnostics, the ALOM CMT system controller initializes and runs a higher level of diagnostics. When you access the ALOM CMT system controller using a device connected to the serial management port, you see the output of the ALOM CMT diagnostics.

By default, the network management port is configured to automatically retrieve network configuration using Dynamic Host Configuration Protocol (DHCP) and to allow connections using Secure Shell (SSH).

Note – If you are unable to use DHCP and SSH on your network, you must connect to the ALOM CMT system controller using the serial management port to reconfigure the network management port. See "To Configure the System Controller Network Management Port" on page 31.

Once the network management port (NET MGT) has been assigned an IP address, you can connect to the ALOM CMT system controller using Telnet or SSH.

Passwords

There is no default password when connecting to the ALOM CMT system controller for the first time using the serial management port. To set the `admin` password, see "To Log In To the System Controller Using the Serial Management Port" on page 29.

When connecting to the ALOM CMT system controller using the network management port for the first time, the default password is the last eight digits of the chassis serial number. The serial number is located on the rear of the server. It is also printed on the system information sheet that shipped with the server.

▼ To Power On the System for the First Time

Tip – The serial terminal or a terminal emulator should be connected before you connect the power cable, or you will not see the system messages. The server goes into standby mode and the ALOM CMT system controller initializes as soon as the AC power cable is connected to the power source.

Note – If you are not logged in, ALOM CMT times out after 60 seconds and reverts to the system console. For more information, refer to the *Advanced Lights Out Management (ALOM) CMT Guide*.

The system controller runs on the 3.3v standby voltage. As soon as AC power is connected to the system, the system controller powers on, runs diagnostics, and initializes the ALOM CMT firmware.

1. **Connect a terminal or a terminal emulator (PC or workstation) to the SC serial management port.**

   Configure the terminal or terminal emulator with these settings:

   - 9600 baud
   - 8 bits
   - No parity
   - 1 Stop bit
   - No handshaking

2. **Turn on the terminal or terminal emulator.**

3. **Connect the AC power cable to the server and watch the terminal for system messages.**

FIGURE 3-1 AC Connector

After the system controller boots, the system controller login prompt is displayed on the serial console. The following example shows a partial output from the system controller boot sequence leading to the login prompt.

CODE EXAMPLE 3-1 Boot Sequence Example

```
ALOM BOOTMON v1.x
ALOM Build Release: 000
Reset register: f0000000 EHRS ESRS LLRS SWRS

ALOM POST 1.x

Dual Port Memory Test, PASSED.

TTY External - Internal Loopback Test
TTY External - Internal Loopback Test, PASSED.

TTYC - Internal Loopback Test
TTYC - Internal Loopback Test, PASSED.

.....................

ETHERNET CPU LOOPBACK TEST, PASSED

Full VxDiag Tests - PASSED

     Status summary  -  Status = 7FFF

        VxDiag    -          -  PASSED
        POST      -          -  PASSED
        LOOPBACK  -          -  PASSED

        I2C       -          -  PASSED
        EPROM     -          -  PASSED
        FRU PROM  -          -  PASSED

        ETHERNET  -          -  PASSED
        MAIN CRC  -          -  PASSED
        BOOT CRC  -          -  PASSED

        TTYD      -          -  PASSED
        TTYC      -          -  PASSED
        MEMORY    -          -  PASSED
```

CODE EXAMPLE 3-1 Boot Sequence Example *(Continued)*

```
        MPC885     -           -   PASSED


sc>
```

Note – If it receives no user input within 60 seconds, the ALOM CMT system controller console automatically connects to the system console.

Logging In To the ALOM CMT System Controller

You can log in to the system controller through either the serial management port or the network management port.

▼ To Log In To the System Controller Using the Serial Management Port

After the system controller boots, you can access the ALOM CMT command-line interface to configure and manage the system.

The `sc` prompt is displayed the first time the system controller is booted. The default configuration provides an ALOM CMT user account called `admin`. There is no default password, so you must create a password using the system controller password command.

1. **If this is the first time the system has been powered on, use the** `password` **command to set the** `admin` **password.**

```
.........................
TTYD - - PASSED
TTYC - - PASSED
MEMORY - - PASSED
MPC885 - - PASSED
sc> password
password: Changing password for admin
Setting password for admin.
New password: new-password

Re-enter new password: new-password

sc>
```

After the `admin` password has been set, on subsequent reboots, the `sc` login prompt is displayed.

2. **Enter** `admin` **for the login name followed by your password.**

```
TTYD - - PASSED
TTYC - - PASSED
MEMORY - - PASSED
MPC885 - - PASSED
Please login: admin
Please Enter password: password
       (Press Return twice)
sc>
```

▼ To Log In To the System Controller Using the Network Management Port

The SC network management port is configured by default to retrieve network settings through DHCP and allow connections using SSH.

After the network management port (NET MGT) has been assigned an IP address by a DHCP server, you can connect to the ALOM CMT system controller using SSH.

Note – If you are unable to use DHCP and SSH on your network, you must connect to the ALOM CMT system controller using the serial management port to reconfigure the network management port. See "To Configure the System Controller Network Management Port" on page 31.

1. **Open a Telnet or SSH session and connect to the system controller by specifying its network address.**

   The following example shows a Telnet session.

```
% telnet xxx.xxx.xx.xx
Trying xxx.xxx.xx.xx...
Connected to xxx.xxx.xx.xx.
Escape character is '^]'.
Copyright 2003 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
Sun(tm) Advanced Lights Out Manager 1.x
Please login:
```

2. **Login as** `admin` **using the password you previously set.**

```
Please login: admin
Please Enter password: password
sc>
```

▼ To Configure the System Controller Network Management Port

Note – If your network allows the use of DHCP and SSH, this configuration is performed automatically at the first time you boot the system.

Use this procedure only if:

- If you are unable to use DHCP and SSH on your network.
- If you need to modify the SC network management port settings.

In this procedure you connect to the ALOM CMT system controller using the serial management port to manually reconfigure the network management port.

Note – For more information on configuring ALOM CMT, refer to the *Advanced Lights Out Management (ALOM) CMT Guide.*

You set these network parameters according to the specific details of your network configuration:

- `if_network` – Specifies whether the SC is on the network or not
- `netsc_ipaddr` – IP address of the system controller
- `netsc_ipgateway` – IP address of the gateway for the subnet
- `netsc_ipnetmask` – Netmask for the system controller subnet

To configure these parameters, use the `setsc` command. The usage is:

```
sc> setsc parameter
```

1. **Set the `if_network` parameter to `true`.**

```
sc> setsc if_network true
```

2. **Set the `if_connection` parameter to the connection type, either `telnet` or `ssh`.**

```
sc> setsc if_connection value
```

where the value can be one of the following:

- `none`
- `telnet`
- `ssh`
- `netsc_dhcp` (The system controller obtains its network interface configuration through a DHCP server.)

See the *Advanced Lights Out Management (ALOM) CMT Guide* for more information about SSH support in ALOM CMT.

3. **Choose one of these methods to configure the system controller using information from your network administrator:**
   - Use DHCP to retrieve the network settings. Go to Step 4.
   - Configure a static IP configuration. Go to Step 5.

4. **If you choose to use DHCP, set** `netsc_dhcp` **to true.**

```
sc> setsc netsc_dhcp true
```

Go to Step 6.

5. **If you choose to use a static IP configuration, set the parameters** `netsc_ipaddr`, `netsc_ipgateway`, **and** `netsc_ipnetmask`, **as follows.**

   a. **Set the IP address for the system controller.**

```
sc> setsc netsc_ipaddr service-processor-IPaddr
```

   b. **Set the IP address for the system controller gateway.**

```
sc> setsc netsc_ipgateway gateway-IPaddr
```

   c. **Set the netmask for the system controller.**

```
sc> setsc netsc_ipnetmask 255.255.255.0
```

This example uses `255.255.255.0` to set the netmask. Your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

6. **Use the** `showsc` **command to verify that the parameters were set correctly.**

```
sc> showsc
Advanced Lights Out Manager CMT v1.x

parameter                value
---------                -----
if_network               true
if_connection            ssh
if_emailalerts           false
netsc_dhcp               true
netsc_ipaddr             xxx.xxx.xxx.xxx
netsc_ipnetmask          255.255.255.0
netsc_ipgateway          0.0.0.0
mgt_mailhost
mgt_mailalert
sc_customerinfo
```

```
sc_escapechars          #.
sc_powerondelay         false
sc_powerstatememory     false
sc_clipasswdecho        true
sc_cliprompt            sc
sc_clitimeout           0
sc_clieventlevel        2
sc_backupuserdata       true
diag_trigger            power-on-reset error-reset
diag_verbosity          normal
diag_level              max
diag_mode               normal
sys_autorunonerror      false
ser_baudrate            9600
ser_parity              none
ser_stopbits            1
ser_data                8
netsc_enetaddr          xx:xx:xx:xx:xx:xx
sys_enetaddr            yy:yy:yy:yy:yy:yy
```

Note – After setting the configuration parameters, you must reset the system controller for the new values to take affect. See "To Reset the System Controller" on page 34.

▼ To Reset the System Controller

- **Issue the `resetsc` command.**

  You are prompted to confirm that you want to reset the system controller. Type **`y`** when prompted.

```
sc> resetsc
Are you sure you want to reset the SC [y/n]? y
User Requested SC Shutdown
```

Note – To bypass the confirmation message, specify the `-y` flag to the `resetsc` command.

The system controller resets, runs diagnostics, and returns to the login prompt.

```
ALOM POST 1.x


Dual Port Memory Test, PASSED.

TTY External - Internal Loopback Test
          TTY External - Internal Loopback Test, PASSED.

TTYC - Internal Loopback Test
          TTYC - Internal Loopback Test, PASSED.

TTYD - Internal Loopback Test
          TTYD - Internal Loopback Test, PASSED.

.....................


Full VxDiag Tests - PASSED



    Status summary  -  Status = 7FFF

       VxDiag     -           -  PASSED
       POST       -           -  PASSED
       LOOPBACK   -           -  PASSED

       I2C        -           -  PASSED
       EPROM      -           -  PASSED
       FRU PROM   -           -  PASSED

       ETHERNET   -           -  PASSED
       MAIN CRC   -           -  PASSED
       BOOT CRC   -           -  PASSED

       TTYD       -           -  PASSED
       TTYC       -           -  PASSED
       MEMORY     -           -  PASSED
       MPC885     -           -  PASSED


Please login:
```

Using the ALOM CMT System Controller for Common Operations

Note – For more information on using ALOM CMT, refer to the *Advanced Lights Out Management (ALOM) CMT Guide.*

▼ To Initiate the Power On Sequence

Powering on the system requires you to use the `poweron` command at the SC console.

- **To initiate the power-on sequence, issue the `poweron` command.**

  You see an `sc>` alert message on the system console. This indicates that the system has reset.

```
sc> poweron
SC Alert: Host System has Reset
sc>
```

▼ To Connect to the System Console

Output from POST, OpenBoot, and the Solaris OS is displayed in the system console using the `console` command on the system controller.

- **Execute the `console` command, and use the `-f` option to force the console to be attached to your session.**

  Multiple users can be connected to the console, but only one can be attached.

```
sc> console -f
#. (Enter #. to return to ALOM)
```

▼ To Perform a Normal System Initialization

After you issue the `poweron` command, the CPU and memory controllers initialize and eventually OpenBoot initializes. After a number of system messages, the `ok` prompt appears.

The example output below is a small section of the complete output.

CODE EXAMPLE 3-2 Example of Normal System Initialization Output

```
sc> poweron -c
Enter #. to return to ALOM
SC Alert: Host System has Reset
0:0>
0:0>@(#) SPARC Enterprise T1000 Integrated POST 4.x.0 2005/06/14
12:19

0:0>Copyright © 2005 Sun Microsystems, Inc. All rights reserved
  Use is subject to license terms.
0:0>VBSC selecting POST MAX Testing.
0:0>VBSC enabling L2 Cache.
0:0>VBSC enabling Full Memory Scrub.

.....................

Find dropin, Copying Done, Size 0000.0000.0000.1110
Find dropin, (copied), Decompressing Done, Size
0000.0000.0006.06e0 ^Qcpu cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu
cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu cpu
cpu vpci mem32base, mem64base, cfgbase: e800000000 e000000000
e900000000
pci /pci@780: Device 0 pci pci
/pci@780/pci@0: Device 0 Nothing there
/pci@780/pci@0: Device 1 pci pci

.....................

/pci@7c0/pci@0: Device a Nothing there
/pci@7c0/pci@0: Device b Nothing there
/pci@7c0/pci@0: Device c Nothing there
/pci@7c0/pci@0: Device d Nothing there
/pci@7c0/pci@0: Device e Nothing there
/pci@7c0/pci@0: Device f Nothing there
Probing I/O buses

SPARC Enterprise T1000, No Keyboard
```

CODE EXAMPLE 3-2 Example of Normal System Initialization Output *(Continued)*

```
OpenBoot FW build_11***PROTOTYPE_BUILD***, 16376 MB memory
installed, Serial #51454515.
[firmware obp4.x #0]
Ethernet address xx:xx:xx:xx:xx:xx, Host ID: xxxxx.



{0} ok
```

For additional tests and to verify system functionality, see the *Sun SPARC Enterprise T1000 Server Administration Guide* and the OpenBoot firmware documentation.

To understand the various devices and their path names as represented in the OpenBoot device tree, refer to TABLE 3-1. The table identifies each of the devices, their full path name, and their location or NAC name used to identify their physical location.

TABLE 3-1 Server Device List

Identifier	Device	Device Path (Location)
MB/CMP0/P*n*	cpu*n*	/cpu@*n*, where *n* = {0..31}
MB/CMP0/CH0/R0/D0	dimm0	(CH0/R0/D0/J0501)
MB/CMP0/CH0/R0/D1	dimm1	(CH0/R0/D1/J0601)
MB/CMP0/CH0/R1/D0	dimm2	(CH0/R1/D0/J0701)
MB/CMP0/CH0/R1/D1	dimm3	(CH0/R1/D1/J0801)
MB/CMP0/CH3/R0/D0	dimm4	(CH1/R0/D0/J1001)
MB/CMP0/CH3/R0/D1	dimm5	(CH1/R0/D1/J1101)
MB/CMP0/CH3/R1/D0	dimm6	(CH1/R1/D0/J1201)
MB/CMP0/CH3/R1/D1	dimm7	(CH1/R1/D1/J1301)
MB/PCIEa	pci0	/pci@780
MB/PCIEb	pci1	/pci@7c0
PCIE0	slot0	/pci@780/pci@0
MB/GBE0	net0 net1	/pci@7c0/pci@0/network@4 /pci@7c0/pci@0/network@4,1
MB/GBE1	net2 net3	/pci@7c0/pci@0/pci@8/network@1 /pci@7c0/pci@0/pci@8/network@1,1
MB/HBA	SCSI	/pci@7c0/pci@0/pci@8/scsi@2

Booting the Solaris Operating System

The Solaris OS is preinstalled on the disk drive (for server configurations that include a hard drive). The Solaris OS is not configured. If you boot the server from this drive, you will be prompted to configure the Solaris OS for your environment.

▼ To Boot the Solaris Operating System

- **Type the `boot` command at the `ok` prompt.**

  You must append a target to the disk path. For example, the target can be disk0 or a device or network path.

  In the following example, the server is booted from disk 0 (zero).

CODE EXAMPLE 3-3 Example of Server Boot from Disk 0

```
ok boot disk0
Boot device: /pci@7c0/pci@0/pci@8/scsi@2/disk@0,0
File and args:
Notice: Unimplemented procedure 'encode-unit' in
/pci@7c0/pci@0/pci@2/pci@0/LSILogic,sas@4
Loading ufs-file-system package 1.4 04 Aug 1995 13:02:54.
FCode UFS Reader 1.12 00/07/17 15:48:16.
Loading: /platform/SUNW,T1000/ufsboot
Loading: /platform/sun4v/ufsboot
.....................
Hostname: wgs94-181
The system is coming up. Please wait.
NIS domain name is x.x.x.x
starting rpc services: rpcbind keyserv ypbind done.
Setting netmask of lo0 to 255.0.0.0
Setting netmask of bge0 to 255.255.255.0
Setting default IPv4 interface for multicast: add net 224.0/4:
gateway xxxx
syslog service starting.
volume management starting.
Creating new rsa public/private host key pair
Creating new dsa public/private host key pair
The system is ready.
wgs94-181 console login:
```

▼ (Optional) To Reset the System

- **If it is necessary to reset the system, use the** `init 6` **command.**

```
# init 6
```

Note – Do not power the system off and on.

▼ To Power Cycle the System

If a simple reset does not clear a system problem, you can power the system off and on with this procedure.

1. **Halt the Solaris OS.**

   At the Solaris OS prompt, issue the `init 0` command to halt the Solaris OS and to return to the `ok` prompt.

```
# init 0
WARNING: proc_exit: init exited
syncing file systems... done
Program terminated
ok
```

2. **Switch from the system console prompt to the SC console prompt by typing the** `#.` **escape sequence.**

```
ok #.
sc>
```

3. **Using the SC console, type the** `poweroff` **command.**

```
sc> poweroff -fy
SC Alert: SC Request to Power Off Host Immediately.
```

4. **Type the** `poweron` **command.**

```
sc> poweron
sc> SC Alert: Host System has Reset
```

5. **Reconnect to the system console using the** `console` **command.**

```
sc> console -f
Enter #. to return to ALOM.
```

The systems displays various messages, followed by the `ok` prompt.

APPENDIX **A**

Updating the Server Firmware

This appendix describes how to update the server firmware.

This appendix includes the following topics:

- Flash Image Overview
- Updating the Firmware

Flash Image Overview

The flash image consists of the following components:

- System controller firmware
- OpenBoot
- POST
- Reset/Comfit
- Sequencer
- Partition description

Updating the Firmware

The `flashupdate` command updates both the ALOM CMT system controller firmware and the host firmware.

To use the features and fixes in subsequent firmware releases, perform this procedure.

▼ To Update the Firmware

1. **Ensure that the ALOM CMT system controller network management port is configured.**

   This is required to access the new flash image over the network. See "To Configure the System Controller Network Management Port" on page 31.

2. **Open a Telnet or SSH session and connect to the system controller.**

   The following example is for Telnet.

```
% telnet xxx.xxx.xx.xx
Trying xxx.xxx.xx.xx...
Connected to xxx.xxx.xx.xx.
Escape character is'^]'.

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Sun(tm) Advanced Lights Out Manager CMT v1.x

Please login:
```

3. **Login as `admin`, using the password you defined during the configuration of the system controller.**

```
Please login: admin
Please Enter password: password
sc>
```

4. **Execute the `flashupdate` command.**

The `flashupdate` SC command updates the system controller flash image and the host firmware. The `flashupdate` command requires the following information:

- IP address of an FTP server on the network that can access the flash image.
- Full path name to the flash image that the IP address can access.
- Username and password of an account registered on the system that is specified by the IP address.

The command usage is as follows:

`flashupdate [-s` *IPaddr* `-f` *pathname*`] [-v]`

`where:`

- `-s` *IPaddr* is the IP address of any FTP server on the network that can access the flash image
- `-f` *pathname* is the full path name to the flash image

- -v is the flag to turn on verbose message output

```
sc> flashupdate -s xxx.xxx.xx.xx -f pathname
Username: username
Password: password
.....................................................................
Update complete. Reset device to use new image.
sc>
```

5. Reset the system controller.

After the flash has been updated, you must reset the system controller for the new image to take affect. To reset the system controller, issue the `resetsc` command, as shown below.

Note – To bypass the confirmation prompt, you can use the `-y` flag with the `resetsc` command. If `resetsc` is issued from a Telnet or SSH session, upon reset the Telnet or SSH session will be terminated. The output from the reset will be displayed on the serial console on the system controller.

```
sc> resetsc
Are you sure you want to reset the SC [y/n]? y
User Requested SC Shutdown
```

The system controller resets, runs diagnostics, and returns to the login prompt (on the serial console), similar to CODE EXAMPLE A-1.

CODE EXAMPLE A-1 Typical Boot Sequence Following Firmware Update

```
ALOM BOOTMON v1.2.0
ALOM Build Release: 000
Reset register: f0000000 EHRS ESRS LLRS SWRS


ALOM POST 1.0


Dual Port Memory Test, PASSED.

TTY External - Internal Loopback Test
TTY External - Internal Loopback Test, PASSED.

TTYC - Internal Loopback Test
TTYC - Internal Loopback Test, PASSED.
```

CODE EXAMPLE A-1 Typical Boot Sequence Following Firmware Update

```
...

ETHERNET CPU LOOPBACK TEST, PASSED

Full VxDiag Tests - PASSED



     Status summary  -  Status = 7FFF

        VxDiag    -          -  PASSED
        POST      -          -  PASSED
        LOOPBACK  -          -  PASSED

        I2C       -          -  PASSED
        EPROM     -          -  PASSED
        FRU PROM  -          -  PASSED

        ETHERNET  -          -  PASSED
        MAIN CRC  -          -  PASSED
        BOOT CRC  -          -  PASSED

        TTYD      -          -  PASSED
        TTYC      -          -  PASSED
        MEMORY    -          -  PASSED
        MPC885    -          -  PASSED

sc>
```

APPENDIX **B**

Selecting a Boot Device

The boot device is specified by the setting of an OpenBoot configuration variable called `boot-device`. The default setting of this variable is `disk net`. Because of this setting, the firmware first attempts to boot from the system hard drive, and if that fails, from the on-board NET0 Gigabit Ethernet interface.

This appendix includes the following topic:

- Connecting the Network Interface to the Network

Connecting the Network Interface to the Network

To boot from a network, you must connect the network interface to the network.

This procedure assumes that you are familiar with the OpenBoot firmware and that you know how to enter the OpenBoot environment. For more information, see the *Sun SPARC Enterprise T1000 Server Administration Guide*.

▼ To Connect the Network Interface to the Network

- **At the `ok` prompt, type:**

```
ok setenv boot-device device-specifier
```

where the *device-specifier* is one of the following:

- `disk` – Specifies the system boot disk (internal disk 0 by default)
- `disk0` – Specifies internal drive 0
- `net`, `net0`, `net1`– Specifies the network interfaces
- *full path name* – Specifies the device or network interface by its full path name.

Note – The Solaris OS modifies the `boot-device` variable to its full path name, not the alias name. If you choose a nondefault `boot-device` variable, the Solaris OS specifies the full device path of the boot device.

Note – You can specify the name of the program to be booted as well as the way the boot program operates. For more information, refer to the *OpenBoot 4.x Command Reference Manual* for your specific Solaris OS release.

If you want to specify a network interface other than an on-board Ethernet interface as the default boot device, you can determine the full path name of each interface by typing:

```
ok show-devs
```

The `show-devs` command lists the system devices and displays the full path name of each PCI device.

APPENDIX C

Configuring the Network Management Port

If your server uses Sun system firmware 6.2 or subsequent compatible versions, do not perform the following configuration. Your ALOM CMT system controller network management port is preconfigured at the factory.

If your server uses an earlier version of firmware than Sun system firmware 6.2, you must configure the network management port before you can use it.

This appendix includes the following topic:

- Configuring the System Controller Network Manager Port

Configuring the System Controller Network Manager Port

▼ To Configure the System Controller Network Management Port

To access the system controller using the network for the first time, you must first configure the SC network management port through the SC serial management port.

You set these network parameters according to the specific details of your network configuration:

- `if_network` – Specified whether the SC is on the network or not
- `netsc_ipaddr` – IP address of the system controller
- `netsc_ipgateway` – IP address of the gateway for the subnet

- `netsc_ipnetmask` – Netmask for the system controller subnet

Note – For more information on configuring ALOM CMT, refer to the *Advanced Lights Out Management (ALOM) CMT Guide.*

To configure these parameters you must use the `setsc` command. The usage is:

```
sc> setsc parameter
```

1. **Set the netmask for the system controller.**

```
sc> setsc netsc_ipnetmask 255.255.255.0
```

This example uses `255.255.255.0` to set the netmask. Your network environment subnet might require a different netmask. Use a netmask number most appropriate to your environment.

2. **Set the IP address for the system controller.**

```
sc> setsc netsc_ipaddr service-processor-IPaddr
```

3. **Set the IP address for the system controller gateway.**

```
sc> setsc netsc_ipgateway gateway-IPaddr
```

4. **Set the `if_network` parameter to `true`.**

```
sc> setsc if_network true
```

5. **Use the `showsc` command to verify that the parameters were set correctly.**

The `showsc` command displays all the configuration parameters and their values, as shown in the example below.

Note – The network addresses and parameters shown in the examples are for illustration purposes only. The four parameters marked with asterisks must be set according to the specific details of your network configuration for the network management port to function properly.

```
sc> showsc
Advanced Lights Out Manager CMT v1.x

parameter                value
---------                -----
if_network*              true
if_connection            ssh
if_emailalerts           false
netsc_dhcp               true
netsc_ipaddr*            xxx.xxx.xxx.xxx
netsc_ipnetmask*         255.255.255.0
netsc_ipgateway*         xxx.xxx.xxx.xx
mgt_mailhost
mgt_mailalert
sc_customerinfo
sc_escapechars           #.
sc_powerondelay          false
sc_powerstatememory      false
sc_clipasswdecho         true
sc_cliprompt             sc
sc_clitimeout            0
sc_clieventlevel         2
sc_backupuserdata        true
diag_trigger             power-on-reset error-reset
diag_verbosity           normal
diag_level               max
diag_mode                normal
sys_autorunonerror       false
ser_baudrate             9600
ser_parity               none
ser_stopbits             1
ser_data                 8
netsc_enetaddr           xx:xx:xx:xx:xx:xx
sys_enetaddr             yy:yy:yy:yy:yy:yy
```

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