



Avaya Call Management System
Sun Netra 210 Computer
Hardware Installation, Maintenance, and
Troubleshooting

07-600963
May 2006

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Preface

Avaya Call Management System (CMS) is an application for businesses and organizations that use Avaya communication servers to process large volumes of telephone calls using the Automatic Call Distribution (ACD) feature. Avaya CMS supports solutions for routing and agent selection, multi-site contact centers, remote agents, reporting, interfaces to other systems, workforce management, desktop applications, system recovery, and quality monitoring.

Avaya CMS is part of the Operational Effectiveness solution of the Avaya Customer Interaction Suite.

This section includes the following topics:

- [Purpose](#) on page 7
- [Intended users](#) on page 8
- [Overview](#) on page 8
- [Conventions and terminology](#) on page 9
- [Reasons for reissue](#) on page 9
- [Related documentation](#) on page 10
- [Support](#) on page 14

Purpose

Avaya Call Management System Sun Netra 210 Computer Hardware Installation, Maintenance, and Troubleshooting is written for technicians who install and maintain call center applications such as Avaya CMS.

Note:

The Sun Netra 210 is compatible with CMS R13.1, loads r13.1cb and r13.1auxcb, and all later loads.

Intended users

This document is written for:

- Avaya support personnel
- Customer maintainers and self-installers

Users of this document must be familiar with Avaya CMS and the Solaris operating system.

Overview

This document includes the following topics:

- [Installation](#) on page 15 - Describes how to assemble the computer, connect external devices, and turn on power.
- [Maintenance](#) on page 37 - Describes how to maintain the computer.
- [Troubleshooting](#) on page 61 - Describes how to troubleshoot the computer.
- [Glossary](#) on page 105
- [Index](#) on page 107

Conventions and terminology

If you see any of the following safety labels in this document, take careful note of the information presented.

**CAUTION:**

Caution statements call attention to situations that can result in harm to software, loss of data, or an interruption in service.

**WARNING:**

Warning statements call attention to situations that can result in harm to hardware or equipment.

**DANGER:**

Danger statements call attention to situations that can result in harm to personnel.

**SECURITY ALERT:**

Security alert statements call attention to situations that can increase the potential for unauthorized use of a telecommunications system.

Reasons for reissue

The May 2006 version of this document is the initial release of the document.

Related documentation

You might find the following Avaya CMS documentation useful. This section includes the following topics:

- [Change descriptions](#) on page 10
- [Administration documents](#) on page 10
- [Software documents](#) on page 11
- [Hardware documents](#) on page 11
- [Call Center documents](#) on page 12
- [Avaya CMS upgrade documents](#) on page 12
- [Documentation Web sites](#) on page 14

Change descriptions

For information about recent changes made in Avaya CMS and Avaya Call Center, see:

- *Avaya Call Management System (CMS) Release 13.1 Change Description*, 07-600955
- *Avaya Call Center Release 3.1 Change Description*, 07-300560
- *Avaya Call Center 3.0 and Call Management System Release 13 Change Description*, 07-300304

Administration documents

For more information about Avaya CMS administration, see:

- *Avaya Call Management System Release 13 Administration*, 07-600956
- *Avaya Call Management System (CMS) Release 13 Database Items and Calculations*, 07-300330
- *Avaya Call Management System Supervisor Release 13 Reports*, 07-300334
- *Avaya Call Management System (CMS) Supervisor Release 13 Installation and Getting Started*, 07-300333
- *Avaya Call Management System High Availability User Guide*, 07-300066
- *Avaya Call Management System High Availability Connectivity, Upgrade and Administration*, 07-600957

Software documents

For more information about Avaya CMS software, see:

- *Avaya Call Management System Release 13 Software Installation, Maintenance, and Troubleshooting Guide*, 07-600954
- *Avaya CMS Open Database Connectivity Version 4.2*, 585-780-701
- *Avaya Call Management System Release 13 LAN Backup User Guide*, 07-600953
- *Avaya Call Management System Release 13 External Call History Interface*, 07-300737
- *Avaya CMS Custom Reports*, 585-215-822
- *Avaya CMS Forecast User Guide*, 585-215-825
- *Avaya Visual Vectors Release 13 Installation and Getting Started*, 07-300353
- *Avaya Visual Vectors Release 13 User Guide*, 07-300354
- *Avaya Call Management System (CMS) Supervisor Release 13 Report Designer*, 07-300743

Hardware documents

For more information about Avaya CMS hardware, see:

- *Avaya Call Management System Sun Netra 210 Computer Hardware Installation, Maintenance, and Troubleshooting*, 07-600963
- *Avaya Call Management System Sun Fire V880/V890 Computer Hardware Installation, Maintenance, and Troubleshooting*, 07-600965
- *Avaya Call Management System Sun Blade 100/150 Workstation Hardware Installation, Maintenance, and Troubleshooting*, 07-600964
- *Avaya Call Management System Terminals, Printers, and Modems*, 585-215-874

Call Center documents

For more information about Avaya Call Center documents, see:

- *Avaya Communication Manager Call Center Software Basic Call Management System (BCMS) Operations*, 07-300061
- *Avaya Call Center Call Vectoring and Expert Agent Selection (EAS) Guide*, 07-300477
- *Avaya Call Center Automatic Call Distribution (ACD) Guide*, 07-300478
- *Avaya Business Advocate User Guide*, 07-300653
- *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*, 07-300739

Avaya CMS upgrade documents

There are several upgrade paths supported with Avaya CMS. There is a document designed to support each upgrade.

This section includes the following topics:

- [Base load upgrades](#) on page 12
- [Platform upgrades and data migration](#) on page 13
- [Avaya Call Management System Upgrade Express \(CUE\)](#) on page 13

Base load upgrades

Use a base load upgrade when upgrading CMS to the latest load of the same version (for example, r13ak.g to r13al.k). A specific set of instructions is written for the upgrade. The instructions are shipped to the customer site with the CMS software CD-ROM as part of a Product Correction Notice (PCN).

For more information about base load upgrades, see:

- *Avaya Call Management System Release 13 Base Load Upgrade*

Platform upgrades and data migration

Use a platform upgrade when upgrading to a new hardware platform (for example, upgrading from a SPARCserver 5 to a Sun Netra 210). The new hardware platform is shipped from the Avaya factory with the latest CMS load. Therefore, as part of the upgrade you will have the latest CMS load (for example, R3V9 to R13).

For more information about platform upgrades and data migration, see:

- *Avaya Call Management System Release 13 Platform Upgrade and Data Migration*, 07-600968

Avaya Call Management System Upgrade Express (CUE)

Use CUE when CMS is being upgraded from an earlier version (for example, R3V9) to the latest version (for example, R13).

A specific set of upgrade instructions is written for the upgrade. These instructions are included on the CUE software CD-ROM that is shipped to the customer site with the CUE kit.

For information about customer requirements for CUE upgrades, see:

- *Avaya Call Management System Release 13 CMS Upgrade Express (CUE) Customer Requirements*, 700356744

For information about CUE upgrade procedures, see:

- *Avaya Call Management System Release 13.1 Sun Blade 100/150 Workstation Mirrored and Nonmirrored Systems CMS Upgrade Express (CUE)*, 07-600763
- *Avaya Call Management System Release 13.1 Sun Fire V880/V890 Computer CMS Upgrade Express (CUE)*, 07-600764

Documentation Web sites

For Avaya product documentation, go to <http://www.avayadocs.com>. Additional information about new software or hardware updates will be contained in future issues of this book. New issues of this book will be placed on the Web site when available.

Use the following Web sites to view related support documentation:

- Information about Avaya products and service
<http://www.avaya.com>
- Sun hardware documentation
<http://docs.sun.com>
- Informix documentation
<http://www.informix.com>
- Tivoli Storage Manager documentation
<http://www.tivoli.com>

Support

Contacting Avaya technical support

Avaya provides support telephone numbers for you to report problems or ask questions about your product.

For United States support:

1- 800- 242-2121

For international support:

See the [1-800 Support Directory](#) listings on the Avaya Web site.

Escalating a technical support issue

Avaya Global Services Escalation Management provides the means to escalate urgent service issues. For more information, see the [Escalation Management](#) listings on the Avaya Web site.

Installation

This section describes how to install the computer and related peripheral equipment. Use the following table to check off each required procedure after completion.

Procedure	Completed
Preparing for installation on page 16	
Unpacking and inventorying the equipment on page 20	
Setting up power on page 24	
Peripheral connectivity on page 25	
Connecting the monitor, keyboard, and mouse on page 27	
Connecting the remote console modem on page 28	
Connecting to external interfaces:	
• Connecting the switch link on page 29	
• Connecting to the customer network on page 29	
• Connecting the tape drive on page 30	
Turning on the system and verifying POST on page 31	
Setting the remote console modem options on page 34	
Turning the system over for provisioning on page 36	

Preparing for installation

This section contains the following information that will help you prepare for the computer installation:

- [Safety precautions](#) on page 16
- [System precautions](#) on page 17
- [Required tools](#) on page 18
- [Electrical specifications](#) on page 18
- [Physical specifications](#) on page 18
- [Environmental specifications](#) on page 19
- [Noise specifications](#) on page 19

Safety precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions, warnings, and instructions that are marked on the equipment.
- Never push objects of any kind through openings in the equipment. They could touch dangerous voltage points or short out components. This could result in fire or electric shock.
- Refer servicing of equipment to qualified personnel.
- To protect both yourself and the equipment, observe the following precautions.

Precaution	Item	Problem
Wear a conductive wrist strap or foot strap when handling printed circuit boards.	Wrist or foot strap	Electro-Static Discharge (ESD)
Reinstall all cabinet cover panels after you perform any service work on the system.	Cover panels	System damage and overheating
Make sure that a filler panel is installed on all empty board slots.	Board slot filler panels	System damage and overheating

System precautions

**WARNING:**

DO NOT make mechanical or electrical modifications to the computer. Sun Microsystems is not responsible for regulatory compliance of modified computers.

**DANGER:**

For installations in Japan, the power cord set included in the shipment or associated with the Netra 210 is meant to be used with the Netra 210 only. Do not use the cord set for any other purpose. Any non-recommended usage could lead to hazardous incidents like fire disaster, electric shock, and faulty operation.

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Ensure that the voltage and frequency of the power outlet used matches the electrical rating labels on the equipment.

Wear antistatic wrist straps when handling any magnetic storage devices and printed circuit boards.

The computer uses nominal input voltages of 100-240 V AC at 50-60 Hz. The computer should be powered by an Uninterruptible Power Supply (UPS) or a non-switched, dedicated, 20-amp circuit. Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug Sun products into another type of power source. Contact your facilities manager or qualified electrician if you are unsure what type of power is supplied to your building.

A UPS provides a temporary electrical supply to a computer for several minutes, depending on the number of components connected to the UPS. For a CMS computer, a 2KVA minimum UPS is required for all installations. See your UPS documentation to determine the projected amount of backup battery time for your model. If the system is without power for longer than the backup time, the system may shut down improperly, and the customer could lose data.

Each of the following items requires a separate power cord:

- Computer
- External peripherals
- Monitor

Required tools

You need the following tools to do the installation:

- Phillips #2 screwdriver
- ESD grounding wrist strap
- Antistatic mat

Electrical specifications

Note:

For power integrity, a UPS is recommended for all installations.

Parameter	Value
Voltage	100-240 V AC, autosensing
Input current (maximum)	4.9 A RMS @ 100 V AC
Maximum input surge current	20 A
Wall plug type - United States - Non-United States	NEMA 5-15P Power cords must be obtained locally
CPU plug type	IEC 320

Physical specifications

Parameter	English value	Metric value
Height	1.72 inches	43.6 millimeters
Width	17.4 inches	442 millimeters
Depth	19.4 inches	493 millimeters
Weight (approx)	21.6 pounds	9.8 kilograms
Power cord	6 feet	1.8 meters

Environmental specifications

For the most reliable system operation:

- The room must have sufficient air conditioning capacity to support the cooling needs of the entire system.
- The air conditioning system must have controls that prevent excessive temperature changes.

See the table below for temperature, humidity, and altitude limits for units in operation and for units that are not in operation (that is, units that are in transit or in storage).

Parameter	Operating	Nonoperating
Ambient temperature	41°F to 104°F (5°C to 40°C) Short term: 23°F to 131°F (-5°C to 55°C)	-40°F to 158°F (-40°C to 70°C)
Humidity (max)	5% to 93% RH noncondensing, 80°F (27°C) max wet bulb	Up to 93% RH noncondensing, 100°F (38°C) max wet bulb
Altitude (max)	-1,300 feet to 13,100 feet (-400 meters to 4,000 meters)	-1,300 feet to 39,000 feet (-400 meters to 12,000 meters)

Noise specifications

The following table lists the declared noise emissions in accordance with ISO 9296.

Parameter	Value
Operating acoustic noise	7.0 decibels
Idling acoustic noise	7.0 decibels

Unpacking and inventorying the equipment



WARNING:

Never move the computer when the power is on. Excessive movement can cause catastrophic disk drive failure. Always power the system off before moving the computer.



WARNING:

Always wear an electrostatic discharge (ESD) strap when handling internal components.



CAUTION:

Always have up-to-date system backups before turning off and moving the computer.

Inspect all shipping cartons for evidence of physical damage. If a shipping carton is damaged, request that the carrier representative be present before the carton is opened.

Unpack the computer and associated peripheral equipment. Compare the contents of the carton to the shipping inventory list to verify that all equipment was delivered.

In the United States, contact Avaya technical support if any parts are defective on arrival. Contact Avaya customer service if any parts are missing.

Outside of the United States, contact your Avaya representative or distributor if any parts are missing or defective.

This section includes the following topics:

- [Parts list](#) on page 21
- [Determining the computer model](#) on page 22
- [Computer layout](#) on page 23

Parts list

Verify that you have the following components before you begin installation:

- Computer and power cord
- Tape drive, power cord, and SCSI cable
- Monitor, cable, and monitor AC power cord
- USB keyboard and cable
- USB mouse and cable
- A package of blank tapes for backups
- One tape that contains the Avaya factory configuration CMSADM filesystem backup
- Category 5 LAN cable
- Modem and cables
- Sun and CMS software

Note:

CMS computers do not ship with tape drive cleaning tapes. Avaya recommends that customers purchase at least one cleaning tape as soon as the computer is installed and in service.

Determining the computer model

This section describes how you can tell which model you have.

Features

Each of the different models have distinctive features that will assist you in determining what model you have.

Sun Netra 210, initial model:

- One 1.34 GHz CPU
- 1-GB RAM
- One Internal 73-GB SAS disk drive; two if mirrored
- Four built-in ethernet ports, autosensing 10/100/1000 Mbps, numbered bge0 through bge3
- Internal DVD-RW drive
- External DAT 72 tape drive
- Can be used as a desktop unit or can be configured for rack mounting

Note:

Contact Sun Microsystems for information about rack mounting kits.

Software check

Once the computer is operational, you can log in as root and enter the following command to identify the model:

```
prtconf -vp | grep banner-name
```

The name of the computer is displayed:

```
banner-name: 'Netra 210'
```

Computer layout

Familiarize yourself with the layout of the computer.

Front panel

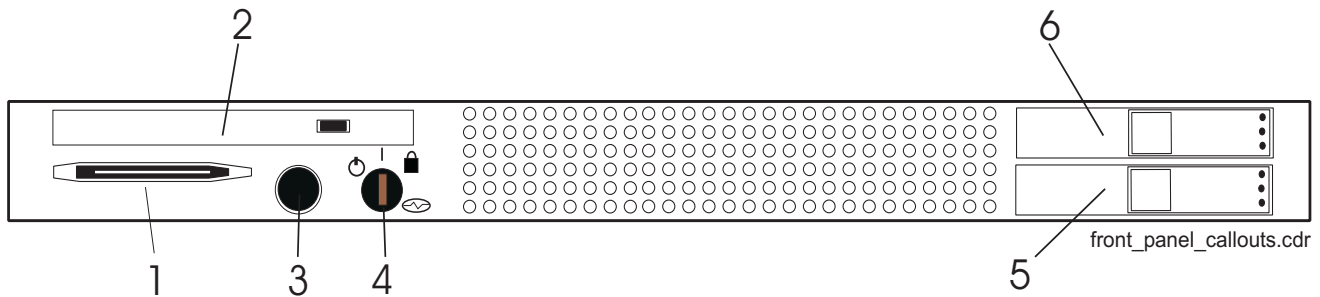


Figure notes:

- | | |
|------------------------------------|---|
| 1. System Configuration Card (SCC) | 4. Rotary switch |
| 2. DVD drive | 5. Hard disk drive 0 (primary) |
| 3. Power button | 6. Hard disk drive 1 (secondary mirror) |

Rear panel

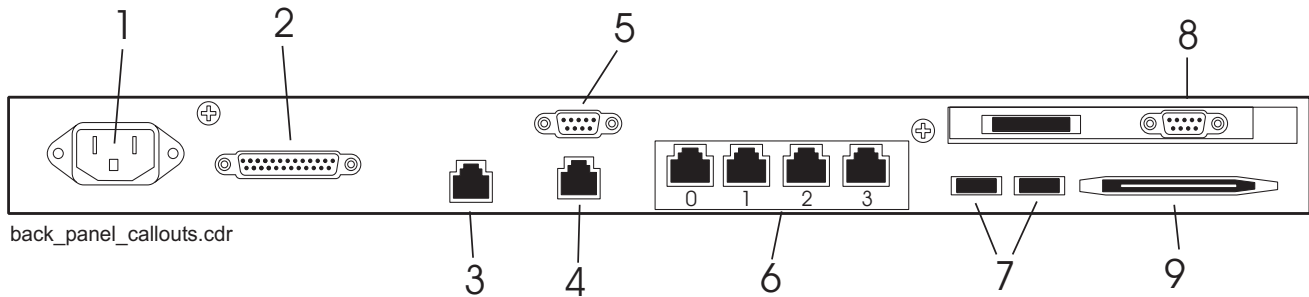


Figure notes:

- | | |
|--|--------------------------------------|
| 1. AC power connector | 6. Ethernet ports 0-3 (bge0-bge3) |
| 2. Alarm port (not used) | 7. USB ports (to mouse and keyboard) |
| 3. Network management port (not used) | 8. Video port (to console) |
| 4. Serial management port (not used) | 9. SCSI port (to tape drive) |
| 5. Serial port B (to remote console modem) | |

Setting up power

To set up the AC power:

1. Plug the IEC 320 end of the power cord into the AC connector.

For installations outside of the United States and Canada, obtain a power cord for your local configuration.

2. Plug the power cord from the computer into an outlet on the UPS.

A UPS provides a temporary electrical supply to a computer for several minutes, depending on the number of components connected to the UPS. For a CMS computer, a 2KVA minimum UPS is required for all installations. See your UPS documentation to determine the projected amount of backup battery time for your model. If the system is without power for longer than the backup time, the system may shut down improperly, and the customer could lose data.

If a UPS is not being used, you must use a grounded outlet on a dedicated 20-amp circuit.

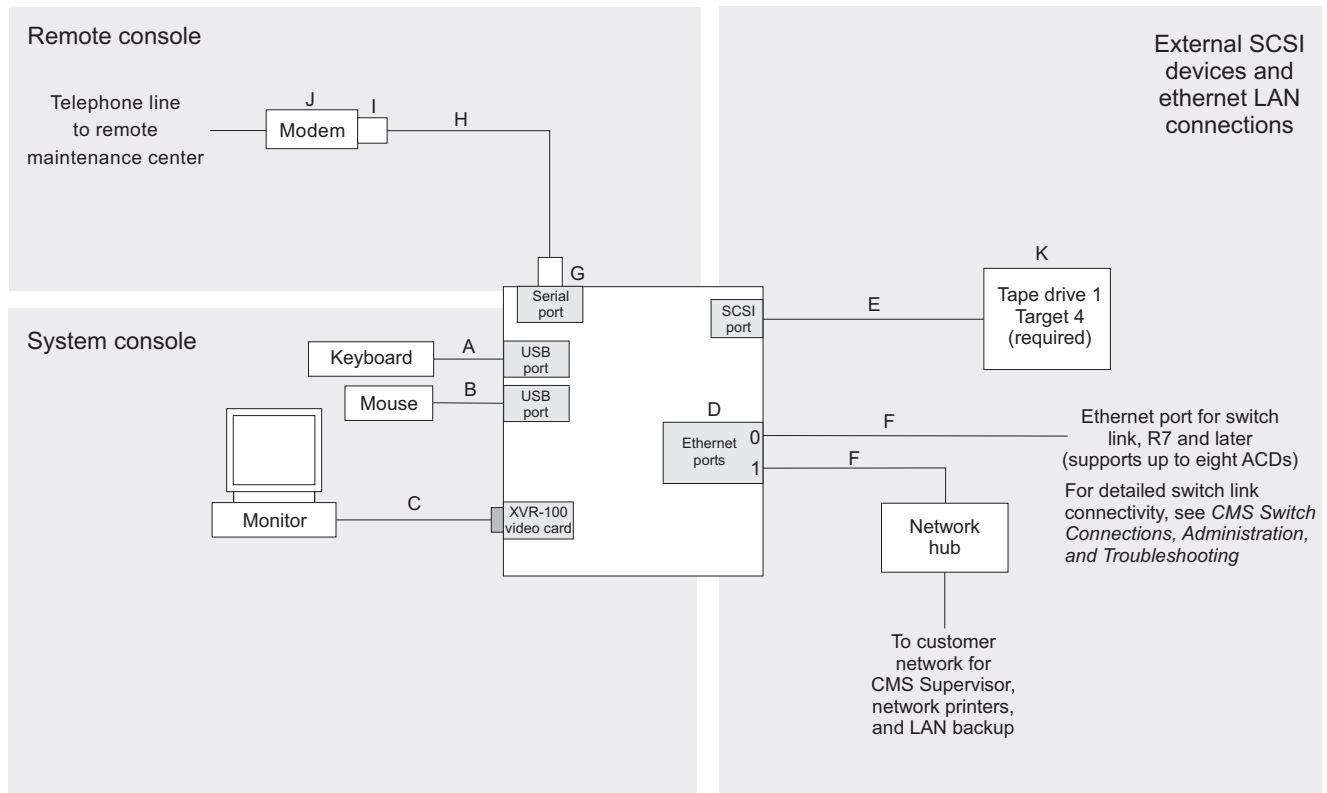


Important:

Do not turn on power at this time.

Peripheral connectivity

The following diagram shows in general how equipment connects to the computer. The callouts are described in [Parts list](#) on page 26.



sunnetra_conn.cdr

Parts list

The following table lists parts that are required to connect most of the external devices to the computer. For information about switch connections for CMS, see *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*.

Connectivity diagram call out	Comcode or part of comcode	Description
A ¹	N/A ²	USB keyboard with cable
B ¹		USB mouse with cable
C ¹		Monitor cable
D	N/A	Gigabit ethernet ports (built-in)
E ¹	407934470	HD-68 to VHDCI SCSI cable (3 feet, 0.8 meters)
F	407086826	Category 5 UTP cord (10 feet, 3 meters)
G	846373413	DB9-to-RJ45 straight-through modem adapter
H	846983039	10-wire modular cable (10 feet, 3 meters)
I	846362770	RJ45-to-DB25 remote console adapter
J	407633999 Varies	Sportster 33.6 Model 839 remote console modem Comsphere 3910 remote console modem
K ¹	N/A ²	Tape drive and AC power cord

1. Sun Microsystems provides maintenance spares for these parts.

2. The comcode for this bundle changes regularly and may not be ordered for maintenance spares, so it is not listed in the table. This bundle includes the processor, peripherals, and other equipment.

Connecting the monitor, keyboard, and mouse

The following figure shows how to connect the monitor, keyboard, and mouse to the computer.

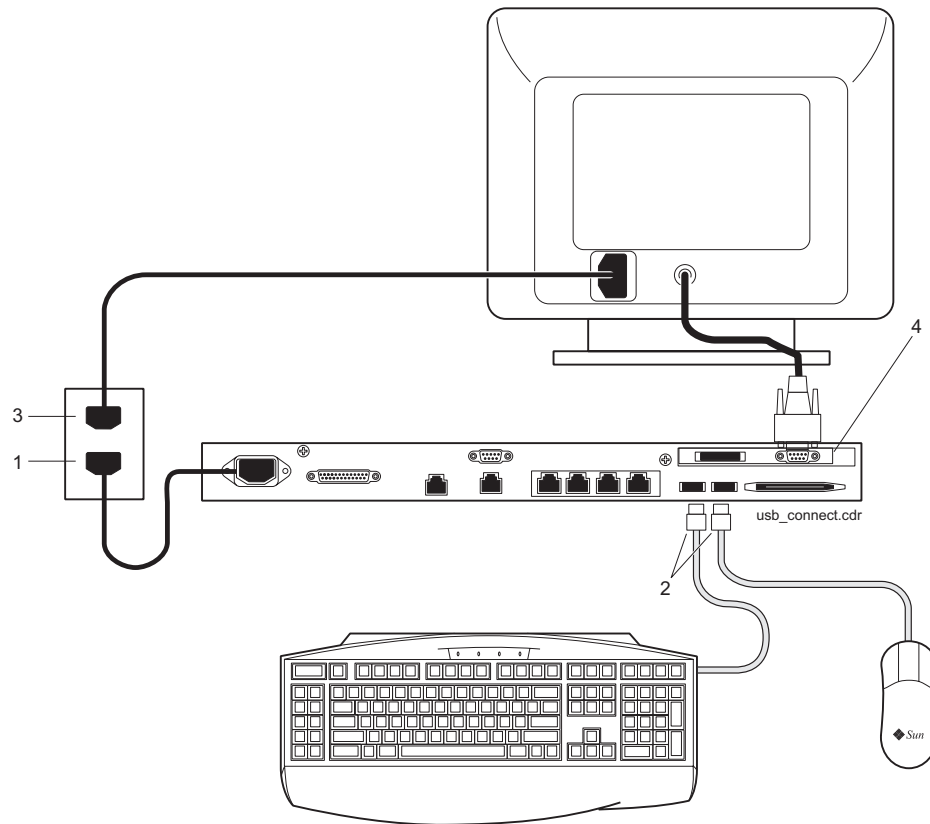


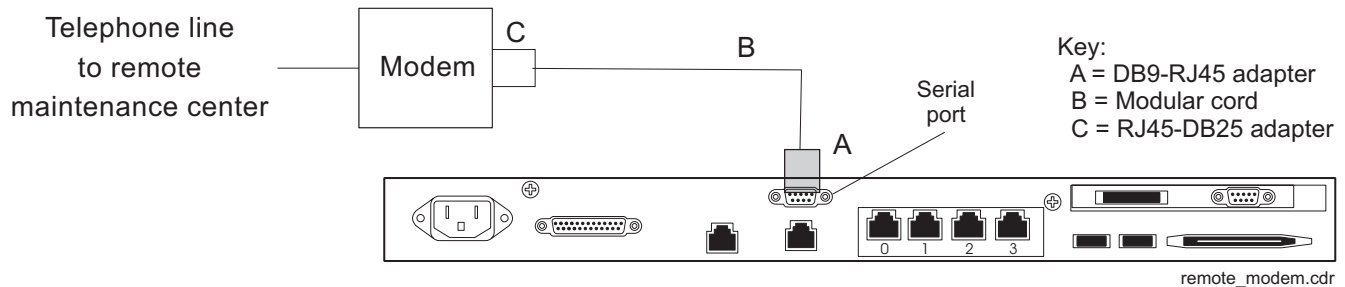
Figure notes:

1. Connect as described in [Setting up power](#) on page 24.
2. Connect the keyboard to one USB port and the mouse to the other USB port.
3. Connect the power cord from the monitor to the UPS or wall outlet.
4. Connect the video cable from the monitor to the computer.

Connecting the remote console modem

This section describes how to connect the remote console modem to the computer. This modem allows personnel at a remote support center to dial in and do maintenance. The modem is a U.S. Robotics Sportster 33.6 Faxmodem in the U.S. and Canada or a modem provided locally for installations outside of the U.S. and Canada.

The following figure shows remote console modem connectivity.



To connect the remote console modem:

1. Connect the DB9-to-RJ45 straight-through adapter (A) to the serial port on the back of the computer.
2. Connect the modular cord (B) to the RJ45 end of the adapter (A).
3. Connect the other end of the modular cord (B) to the RJ45 end of the RJ45-to-DB25 remote console adapter (C).
4. Connect the remote console adapter (C) to the RS-232C port on the modem. The RS-232C port on the Comsphere 3910 is labeled "DTE1."
5. Connect the telephone line to the jack labeled "LINE" on the Sportster modem, or labeled "DIAL" on the Comsphere 3910 modem.
6. Connect the power cord and transformer to the modem and plug the power cord into an AC wall outlet. Each modem comes with a power cord and transformer.

Do not turn on the power yet. Instructions for powering on the modem are given in [Setting the remote console modem options](#) on page 34.

Connecting to external interfaces

This section describes the external interfaces connected to the computer. This section includes the following topics:

- [Connecting the switch link](#) on page 29
- [Connecting to the customer network](#) on page 29
- [Connecting the tape drive](#) on page 30

Connecting the switch link

The CMS computer uses TCP/IP over a local area network (LAN) at 10/100 Mbps for a connection to the switch. One CMS computer can collect data from several switches. To the CMS computer, each switch represents one ACD.

Avaya recommends that you use ethernet port 0 for this connection.

For detailed information about how to connect and administer the switch link, see *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*.

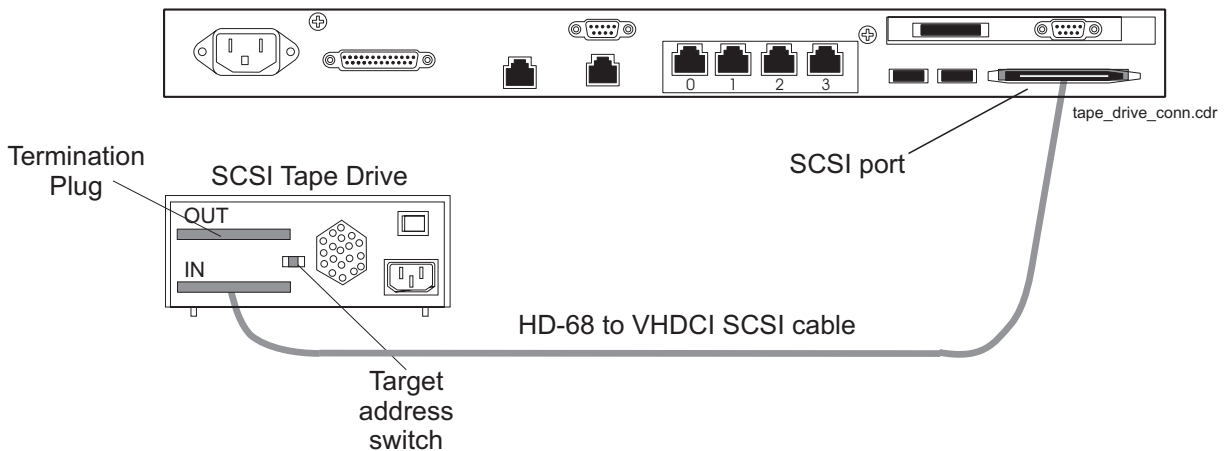
Connecting to the customer network

The computer supports built-in ethernet ports that support network speeds of 10/100/1000 Mbps. However, for CMS installations, Avaya recommends that you only use speeds at the 10/100 Mbps speed range. This ethernet connection is used for CMS Supervisor, network printers, and LAN backup.

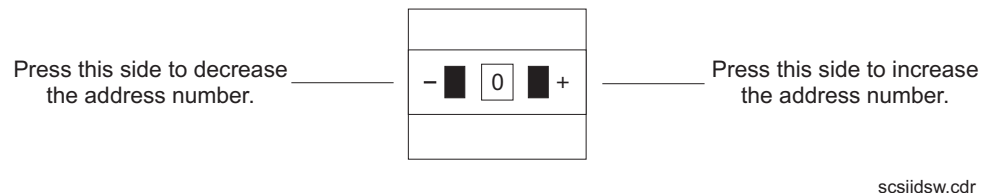
Avaya recommends that you use ethernet port 1 for this connection.

Connecting the tape drive

The following figure shows how to connect a tape drive to the SCSI port on the computer. An HD-68 to VHDCI SCSI cable connects from the SCSI port on the back of the computer to the IN connector on the back of the tape drive.



The addresses are set using the target address switches on the back of each tape drive. For the tape drive, set the address switch to 4. Before setting the target address, make sure that the power is off on the SCSI device.



The OUT connector of the DAT 72 tape drive must have a termination plug installed. The DAT 72 tape drive does not auto terminate. All DAT 72 tape drives delivered from the factory have termination plugs installed.

Turning on the system and verifying POST

Once you assemble the system, including the loose hardware that is shipped with the system that you installed with help from CMS Provisioning, turn on the system and verify the results of the Power-On Self Test (POST).

To turn on the system and verify POST:

1. Plug the power cord of the UPS into an AC outlet.
2. Turn on the power to the UPS.
3. Turn on tape drive.
4. Turn on the system monitor.
5. Open the front cover.
6. Turn the rotary switch to the ON position.
7. Press and release the power button.

POST diagnostics begin.

Note:

The POST diagnostics will occur each time you turn on the system. The POST tests the basic system components. This may take several minutes.

8. While the system is first booting up, press **Stop+A** simultaneously to put the system in the monitor mode.

The **ok** prompt is displayed.

9. Enter the following commands:

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

```
reset-all
```

The system resets to the **ok** prompt.

10. Enter:

probe-ide

This verifies that the system sees all integrated drive electronics (IDE) devices. On the Netra 210, the DVD drive is the only IDE device. A message similar to the following is displayed:

```
Device 0 ( Primary Master )
    Removable ATAPI Model: TSSTcorpCD/DVDW TS-L532A

Device 1 ( Primary Slave )
    Not Present

Device 2 ( Secondary Master )
    Not Present

Device 3 ( Secondary Slave )
    Not Present
```

In this example, the devices listed are as follows:

- Device 0 is the DVD-RW drive.
- Devices 1, 2, and 3 are not present.

11. Enter:

reset-all

The system resets to the **ok** prompt.

12. Enter:

probe-scsi-all

This verifies that the system sees all devices connected to the SCSI bus. On the Netra 210, the internal disks and external tape drive are on the SCSI bus. A message similar to the following is displayed:

```
/pci@1c,600000/LSILogic,sas@1

MPT Version 1.05, Firmware Version 1.05.00.00

Target 0
  Unit 0  Disk      SEAGATE ST913401LSUN72G 0556      143374738 Blocks, 73 GB
  SASAddress 500000e0115e0072  PhyNum 0
Target 1
  Unit 0  Disk      SEAGATE ST913401LSUN72G 0556      143374738 Blocks, 73 GB
  SASAddress 500000e0115e0072  PhyNum 1

pci@1c,600000/scsi@2,1
Target 4
  Unit 0      Removeable Tape      HP      C7438A      ZP5A

/pci@1c,600000/scsi@2
```


In this example, the devices listed are as follows:

- Target 0 is the primary disk drive.
- Target 1 is the secondary (mirror) disk drive.
- Target 4 is the external tape drive.

Note:

The actual devices listed depends on the devices installed on the SCSI bus.

13. When you have verified that the system recognizes all of its devices, enter the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
```

```
boot
```

The system reboots.

Setting the remote console modem options

The computer uses a modem for remote console access. The U.S. Robotics Sportster 33.6 Faxmodem is used in the U.S. and Canada. Outside of the U.S. and Canada, modems are purchased and set up according to local practices.

For instructions for connecting the modem, see [Connecting the remote console modem](#) on page 28.

New Sportster 33.6 faxmodems that come from the factory usually work with the CMS without any special option settings. All you have to do is set DIP switches 4 and 8 on the back panel of the modem to the down (ON) position and set all other DIP switches to the up (OFF) position. After doing this, test the modem for a connection. You may not have to do the procedure in this section.

To set the options on the Sportster 33.6 faxmodem:

1. Set DIP switches 1, 3, 7, and 8 on the back panel of the Sportster modem to the down (ON) position, and switches 2, 4, 5, and 6 to the up (OFF) position.
2. Turn on the remote console modem.
3. At the system console, log in as root.
4. Enter:

```
/cms/install/bin/abccadm -r ttyb
```

The following message is displayed:

```
ttyb is currently set to be incoming
Are you sure you want to change it? [y,n,?]
```

5. Enter: **y**

The following message is displayed:

```
ttyb administration removed
```

6. Enter:

```
cu -s 9600 -b 8 -l cua/b
```

The following message is displayed:

```
Connected
```

7. Enter the following commands:

AT

AT&F1 (loads the factory default configuration into active memory)

AT&W0 (writes the current configuration to NVRAM template Y0)

Note:

Use numerical ones and zeros when entering the options.

8. After you enter the options, disconnect from the modem by entering a tilde and a period (~.).

The following message is displayed:

```
Disconnected
```

9. Set DIP switches 4 and 8 on the back panel of the Sportster modem to the down (ON) position. Set all other DIP switches to the up (OFF) position.
10. Reset the modem by turning the power off and back on.
11. Enter:

/cms/install/bin/abcadm -i -b 9600 ttyb

The following message is displayed:

```
ttyb set to incoming port 9600 baud
```

12. Verify that the AA (auto-answer), TR (terminal ready), and CS (clear-to-send) LEDs are lit on the modem.
13. Have the provisioning team dial in to the modem for testing.

Additional references: For additional information, see the *U.S. Robotics Sportster Modems Users Guide*.

Turning the system over for provisioning

After completing the physical installation of the system, the installation continues with software provisioning. This is often done with the support of the Avaya CMS Provisioning group.

Provisioning the system consists of the following:

- Setting up CMS
- Authorizing features
- Adding logins and passwords
- Testing the software

To continue with provisioning, see the chapter "Turning the system over to the customer" in the CMS software installation, maintenance, and troubleshooting document for your CMS release.

Maintenance

This section describes the following maintenance procedures:

- [Precautions](#) on page 38
- [Computer layout](#) on page 39
- [Turning the computer off and on](#) on page 41
- [Using an ESD wrist strap](#) on page 42
- [Replacing the video card](#) on page 42
- [Maintaining disk drives](#) on page 43
- [Replacing the DVD-RW drive](#) on page 52
- [Maintaining tape drives](#) on page 53
- [Adding memory and replacing the CPU](#) on page 59
- [Using the System Configuration Card \(SCC\)](#) on page 59

Precautions



DANGER:

Hazardous energy levels are present inside the system when the system remains connected to a power source. Be sure to follow the safety procedures in the owner's guide or service manual.



WARNING:

Before replacing any component in the system, you must turn off the computer and disconnect the AC power cord.



CAUTION:

Printed circuit boards and hard disk drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or the work environment can destroy components. Do not touch the components or any metal parts without taking proper antistatic precautions. See [Using an ESD wrist strap](#) on page 42 for more information.



CAUTION:

Avoid keeping the cover off for extended periods of time while the system is operating. The cover must be installed to prevent automatic thermal shutdown.

Computer layout

The following figures identify the basic hardware components of the computer:

- [Front panel](#) on page 39
- [Rear panel](#) on page 40

Front panel

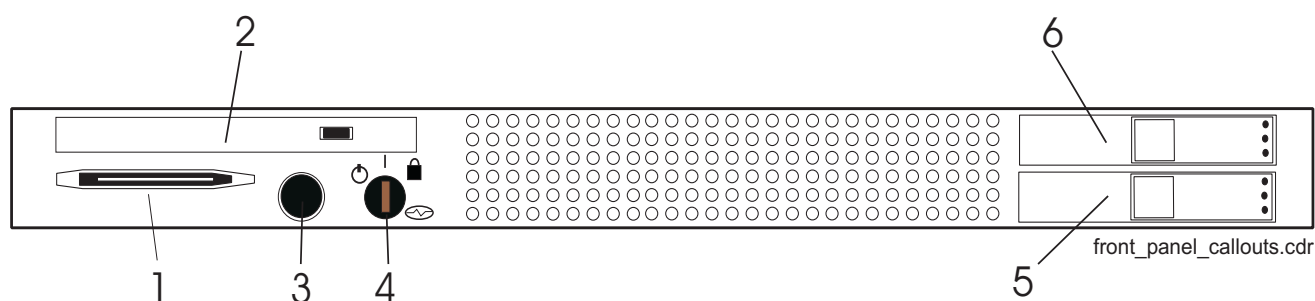


Figure notes:

- | | |
|------------------------------------|---|
| 1. System Configuration Card (SCC) | 4. Rotary switch |
| 2. DVD drive | 5. Hard disk drive 0 (primary) |
| 3. Power button | 6. Hard disk drive 1 (secondary mirror) |

Rear panel

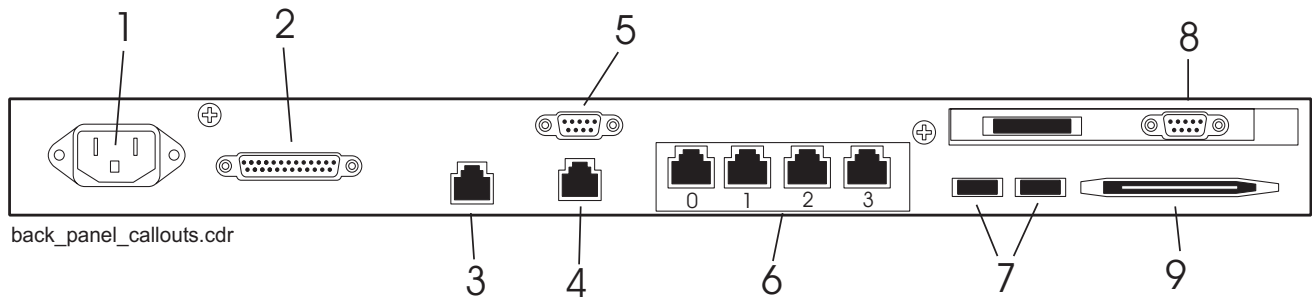


Figure notes:

- | | |
|--|--------------------------------------|
| 1. AC power connector | 6. Ethernet ports 0-3 (bge0-bge3) |
| 2. Alarm port (not used) | 7. USB ports (to mouse and keyboard) |
| 3. Network management port (not used) | 8. Video port (to console) |
| 4. Serial management port (not used) | 9. SCSI port (to tape drive) |
| 5. Serial port B (to remote console modem) | |

Turning the computer off and on

Use the following procedures to turn the computer off and on.

To turn off the computer:

1. Log in to the system as root.
2. Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system. The **ok** prompt is displayed at the local console.
3. Press and release the front panel power button to turn off the system.
Wait for the front panel Power/OK LED to turn off.
4. Turn the rotary switch to the Forced Off position.



DANGER:

Be sure to turn the rotary switch to the Forced Off position before handling any internal components. Otherwise, it is possible for a user to restart the system remotely while you are working inside it.

5. Turn off the system monitor.
6. Turn off any external SCSI devices, starting with the device that is closest to the system and working toward the farthest device.

To turn on the computer:

1. Turn on any external SCSI devices, starting with the device that is farthest from the system and working toward the system.
2. Turn on the system monitor.
3. Turn the rotary switch to the normal On position.
4. Press and release the power button to the left of the rotary switch to turn on the system.

Note:

The POST diagnostics occurs each time that you turn on the system. The POST tests the basic system components. This may take several minutes.

If the system is operating properly, a banner screen is displayed within about 5 minutes after it is turned on.

5. Log in to the system as root.

Using an ESD wrist strap

Before you work on components inside the computer:

1. Make sure that the computer is plugged in to AC power.
2. Make sure that the power is off.
3. Attach the Electro-Static Discharge (ESD) wrist strap to the chassis frame and to your wrist.
4. Unplug the AC power cord.

Replacing the video card

Contact Avaya support if the video card requires replacement. Sun technicians will replace the card.

Maintaining disk drives

This section includes the following topics:

- [Prerequisites](#) on page 43
- [Disk drive compatibility with CMS loads](#) on page 43
- [Required references](#) on page 43
- [Replacing the primary disk drive](#) on page 44
- [Adding or replacing the secondary disk drive](#) on page 46
- [Setting up the disk drives](#) on page 48
- [Partitioning and formatting a disk](#) on page 48

Prerequisites

If possible, do a CMSADM backup before you add or replace a disk drive. See your CMS software installation, maintenance, and troubleshooting document for this procedure.

Disk drive compatibility with CMS loads

When a new or replacement disk drive is installed in an older system, the CMS load may not be compatible with the disk drive if the CMS configuration files have not been updated. These configuration files (`/olds/disk.conf` and `/olds/olds-funcs`) must be edited to add the correct information or must be replaced with files that contain the correct information. Contact the Avaya technical support organization for assistance.

Required references

The following references are required when doing procedures in this section:

- The CMS software installation, maintenance, and troubleshooting document for your CMS release
- *Sun Netra 210 Service Manual* at the Sun documentation Web site:
<http://docs.sun.com>

Replacing the primary disk drive

This procedure describes how to replace the primary disk drive. If you are also adding or replacing the mirror disk drive, use these procedures in concert with [Adding or replacing the secondary disk drive](#) on page 46 while you have the front cover open.

This section includes the following topics:

- [Removing the primary disk drive](#) on page 44
- [Installing the new primary disk drive](#) on page 44
- [Turning on the system](#) on page 45

Removing the primary disk drive

To remove the primary disk drive:

1. If you have not already done so, use the following command to shut down the computer:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the `ok` prompt is displayed.
2. Open the front cover.
3. Turn the power switch to the OFF position.
4. Locate the primary disk drive. The primary disk drive is labeled HDD0.
5. Press the drive button to release the drive latch.
6. Pull firmly on the drive latch to slide the drive out of the drive bay.
7. Set the drive aside on an antistatic mat.
8. Continue with [Installing the new primary disk drive](#) on page 44.

Installing the new primary disk drive

To install the new primary disk drive:

1. Remove the replacement hard drive from its shipping container and antistatic packaging.
2. Press the drive button to release the drive latch.
3. Orient the hard drive with the drive latch towards you, and the label facing up.
4. Carefully slide the drive into the drive bay by pressing on the area between the drive button and the drive status LEDs.
5. When you feel resistance, press firmly so that the drive latch begins to close.
6. Press the drive latch closed.

7. Do one of the following procedures:
 - If you are adding or replacing the secondary mirror disk drive, continue with [Adding or replacing the secondary disk drive](#) on page 46.
 - If you are not adding or replacing the secondary mirror disk drive, continue with [Turning on the system](#) on page 45.

Turning on the system

To turn on the system:

1. Turn on the tape drive.
2. Turn on the system monitor.
3. Open the front cover.
4. Turn the rotary switch to the ON position.
5. Press and release the power button.
POST diagnostics begin.
6. Press **Stop+A** simultaneously after the console banner is displayed, but before the system starts booting.
7. Enter the following commands:


```
setenv auto-boot? false
reset-all
```

This resets the system and the **ok** prompt is displayed.
8. Enter:


```
probe-scsi
```

This checks to see that the system recognizes the new disk drive. If the new drive is not listed, make sure the disk drive is installed correctly.
9. Reboot the system by entering the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
boot -r
```

The system reboots.

10. Continue with [Setting up the disk drives](#) on page 48.

Adding or replacing the secondary disk drive

This section describes how to add or replace the secondary (mirror) disk drive in the computer.

This section includes the following topics:

- [Removing the secondary disk drive](#) on page 46
- [Installing the new secondary disk drive](#) on page 46
- [Turning on the system](#) on page 47

Removing the secondary disk drive

To remove the secondary disk drive:

1. If you have not already done so, use the following command to shut down the computer:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the `ok` prompt is displayed.
2. Open the front cover.
3. Turn the power switch to the OFF position.
4. Locate the secondary disk drive. The secondary disk drive is labeled HDD1.
5. Press the drive button to release the drive latch.
6. Pull firmly on the drive latch to slide the drive out of the drive bay.
7. Set the drive aside on an antistatic mat.
8. Continue with [Installing the new secondary disk drive](#) on page 46.

Installing the new secondary disk drive

To install the new secondary disk drive:

1. Remove the replacement hard drive from its shipping container and antistatic packaging.
2. Press the drive button to release the drive latch.
3. Orient the hard drive with the drive latch towards you, and the label facing up.
4. Carefully slide the drive into the drive bay by pressing on the area between the drive button and the drive status LEDs.
5. When you feel resistance, press firmly so that the drive latch begins to close.
6. Press the drive latch closed.
7. Continue with [Turning on the system](#) on page 47.

Turning on the system

To turn on the system:

1. Turn on the tape drive.
2. Turn on the system monitor.
3. Open the front cover.
4. Turn the rotary switch to the ON position.
5. Press and release the power button.
POST diagnostics begin.
6. Press **Stop+A** simultaneously after the console banner is displayed, but before the system starts booting.
7. Enter the following commands:

```
setenv auto-boot? false
reset-all
```

This resets the system and the **ok** prompt is displayed.

8. Enter:

```
probe-scsi
```

This checks to see that the system recognizes the new disk drive. If the new drive is not listed, make sure the disk drive is installed correctly.

9. Reboot the system by entering the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
boot -r
```

The system reboots.

10. Continue with [Setting up the disk drives](#) on page 48.

Setting up the disk drives

After you replace defective disk drives or add a secondary mirror disk drive, do one of the following:

Drive replaced	System	Procedure
Primary disk	Nonmirrored	Continue with the procedures in "Performing a CMSADM restore procedure of a mirrored or non mirrored system" in the maintenance chapter of the software installation, maintenance, and troubleshooting document for your version of CMS.
Both disk drives	Mirrored	Continue with the procedures in "Performing a CMSADM restore procedure of a mirrored or nonmirrored system" in the maintenance chapter of the software installation, maintenance, and troubleshooting document for your version of CMS.
One disk drive	Mirrored	Partition the new disk drive (see Partitioning and formatting a disk on page 48). Continue with the procedures in "Recovering a mirrored system after disk failure" in the maintenance chapter of the software installation, maintenance, and troubleshooting document for your version of CMS.

Partitioning and formatting a disk

If you are replacing a defective secondary mirror disk drive, you must manually partition the disk.

To partition and format a disk:

1. At the system prompt, enter:

format

A message similar to the following is displayed:

```
AVAILABLE DISK SELECTIONS:
  0. clt0d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
    /pci@1c,600000/LSILogic,sas@1/sd@0,0
  1. clt1d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
    /pci@1c,600000/LSILogic,sas@1/sd@1,0
Specify disk (enter its number):
```


2. Enter the disk number that corresponds to the disk that you added or replaced. Be sure to specify the number that *exactly* matches the disk added or replaced.

```
Specify disk (enter its number): 1
```

The device number of the disk that you are partitioning is displayed, for example, `c1t0d0`, and the Format Menu is displayed:

```
selecting c1t0d0
[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
    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
    !<cmd>    - execute <cmd>, then return
    quit
format>
```

3. Enter:

partition

The partition menu is displayed:

```
PARTITION MENU:
    0      - change `0' partition
    1      - change `1' partition
    2      - change `2' partition
    3      - change `3' partition
    4      - change `4' partition
    5      - change `5' partition
    6      - change `6' partition
    7      - change `7' partition
    select - select a predefined table
    modify - modify a predefined partition table
    name   - name the current table
    print  - display the current table
    label  - write partition map and label to the disk
    !<cmd> - execute <cmd>, then return
    quit
partition>
```

4. At the **partition>** prompt, enter:

print

The partition table currently assigned to the disk drive is displayed. The table for the boot disk after partitioning will look similar to the following example:

Current partition table (original):						
Total disk cylinders available: 14087 + 2 (reserved cylinders)						
Part	Tag	Flag	Cylinders	Size	Blocks	
0	root	wm	0 - 824	4.00GB	(825/0/0)	8395200
1	swap	wu	825 - 1031	1.00GB	(207/0/0)	2106432
2	backup	wm	0 - 14086	68.35GB	(14087/0/0)	143349312
3	unassigned	wm	1032 - 1650	3.00GB	(619/0/0)	6298944
4	unassigned	wm	1651 - 2063	2.00GB	(413/0/0)	4202688
5	unassigned	wm	2064 - 2476	2.00GB	(413/0/0)	4202688
6	unassigned	wm	2477 - 2889	2.00GB	(413/0/0)	4202688
7	unassigned	wm	2890 - 14086	54.33GB	(11197/0/0)	113940672
partition>						

5. Partition the disk by completing the following Steps a through g for partitions 0, 1, 3, and 4 as specified in the following table:

Partition	ID tag	Permission flag	Starting cylinder	Value
0	root	wm	0	4gb
1	swap	wu	Determine this value after you set up partition 0	1gb
2	backup	wm	Use the default values for partition 2.	
3	un	wm	Determine this value after you set up partition 1	3gb
4	un	wm	Determine this value after you set up partition 3	2gb
5-7	un	wm	Do not enter a value for partitions 5 through 7. These values are populated automatically when the boot disks resynchronize during the restore procedure.	

- a. At the **partition>** prompt, enter the partition number from the table. For example, for partition 0, enter 0.

The system prompts for the partition ID tag.

Enter partition id tag[unassigned]:

- b. Enter the partition ID tag from the table. For all partitions except 2, press **Enter** to accept the default (**unassigned**). Partition 2 is set to **backup**.

The system prompts for permission flags.

```
Enter partition permission flags[wm]:
```

- c. Press **Enter** to accept the default (**wm**). That indicates that the partition is writable and mountable.

The system prompts for the starting cylinder.

```
Enter new starting cyl[0]:
```

- d. Enter the number of the starting cylinder from the table. For example, for partition 0, enter 0.

The system prompts for the partition size.

```
Enter partition size[XXb, XXc, XXmb, XXgb]:
```

- e. Enter the partition size from the table.

The **partition>** prompt is displayed.

- f. Enter:

```
print
```

- g. Determine the starting cylinder for your next partition and continue with Step a.

6. Enter:

```
label
```



Important:

Do *not* forget to label the disk drive.

The following message is displayed:

```
Ready to label disk, continue?
```

7. Enter: **y**

The **partition>** prompt is displayed.

8. Enter: **q**

The **format>** prompt is displayed.

9. Enter:

format

The following message is displayed:

```
Ready to format. Formatting cannot be interrupted
and takes XX minutes (estimated). Continue?
```

10. Enter: **y**

A message similar to the following is displayed:

```
Begin format. The current time is <timestamp>
Formatting...
done

Verifying media...
    pass 0 - pattern = 0xc6dec6de
    4923/26/7

    pass 1 - pattern = 0x6db6db6d
    4923/26/7

Total of 0 defective blocks repaired.
format>
```

11. If you added more than one disk drive, enter **disk**, and repeat Step 2 through Step 10 for each drive.
12. After you have partitioned each drive, enter: **q**

Replacing the DVD-RW drive

On the Netra 210, there are two possible repair scenarios for the DVD-RW drive:

- Replacing the DVD module
- Replacing the DVD assembly

Contact Avaya support if the DVD-RW requires replacement. Avaya support and Sun technicians will determine which procedure is required. Sun technicians will replace the defective part.

Maintaining tape drives

This section include the following topics:

- [Tape drive compatibility](#) on page 53
- [Ordering tapes](#) on page 53
- [Cleaning the tape drive](#) on page 54
- [Adding, removing, or replacing tape drives](#) on page 55

Tape drive compatibility

When adding a newer model tape drive to a system, you may have to edit the `/kernel/drv/st.conf` file to add information about the new tape drive. If editing the file is required, you will receive a Design Change Letter (DCL) instructing you how to change the file.

Ordering tapes

Replacement backup data and tape drive cleaning cartridge tapes can be ordered from your local computer supply or office supply store. Depending on your tape drive model, order the following cartridge tapes:

Description	Tape drive
DAT 72 36/72-GB, 4mm, 170m	DAT 72
DDS-4 20/40-GB, 4mm, 150-155m	DDS-4
DDS 4mm cleaning cartridge	DDS-4 and DAT 72

**Important:**

If you are using the CMS High Availability feature and one of your systems uses a DDS-4 tape drive while the other uses a DAT 72 tape drive, you must use DDS-4 tape cartridges in both systems. Using the same size backup tapes allows you to do manual data restores on both systems, no matter which one may need the restore.

Cleaning the tape drive

This section describes how you clean the tape drive.

Note:

CMS computers do not ship with tape drive cleaning tapes. Avaya recommends that customers purchase at least one cleaning tape as soon as the computer is installed and in service.

The number of cleaning cycles available on a cleaning cartridge depends on the manufacturer of the cartridge. Regular cleaning is recommended to maximize tape drive performance. Avaya recommends that you clean the tape drive once a week or every five (5) data backups, whichever comes first.

The LEDs on the tape drives will indicate when the tape drives need cleaning. See [Tape drive status indicators](#) on page 90. If the Clean LED flashes, either the tape drive heads need cleaning, or the backup tape needs replacing.

To clean the tape drive:

1. Load the cleaning cartridge into the tape drive.

The cleaning cycle begins automatically, and the Tape LED flashes. When the cleaning cycle is complete, the cleaning cartridge is ejected automatically. If the cleaning cartridge does not eject automatically, it may be defective and may need replacing.

2. The first time you use the cleaning cartridge, record the date on the cleaning cartridge. Each time you clean the tape drive, mark an X in the box. After all boxes are filled, replace the cleaning cartridge.
3. Return the cleaning cartridge to the plastic protection box.

If the Clean LED continues to flash, repeat the cleaning procedure using a different cleaning cartridge. If the Clean LED is still flashing, repeat the backup operation with a different tape. If this clears the signal, the first backup tape is nearing the end of its life. Discard the old tape.

Adding, removing, or replacing tape drives

This section describes how to add, remove, or replace an external tape drive on an existing computer.

Note:

External tape drives are pre-installed and required at all times on a computer. Adding a second tape drive is usually only a temporary measure during the migration process.

Adding or replacing a tape drive

To add or replace a tape drive:

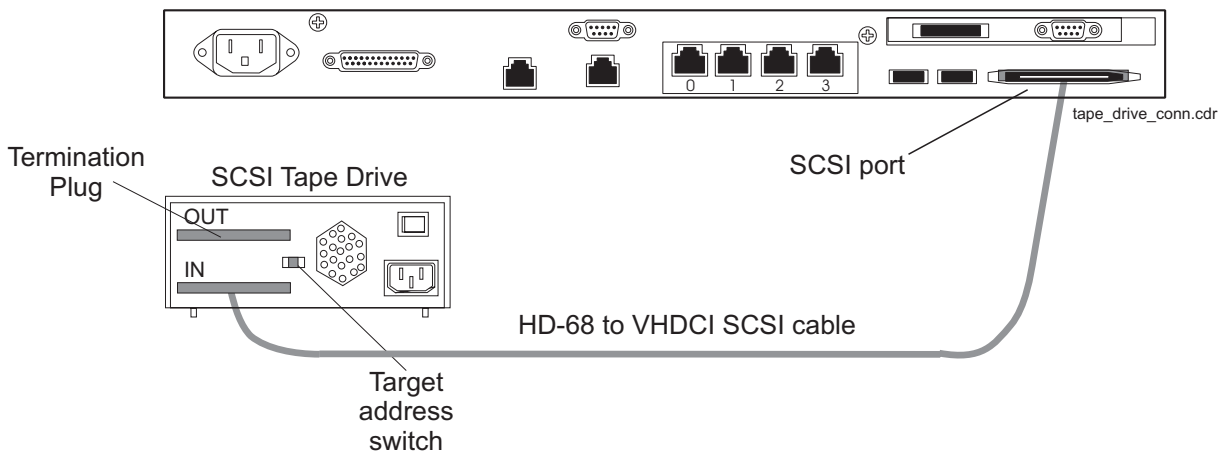
1. Remove any tapes from the tape drive.
2. Log in to the system as root.
3. Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

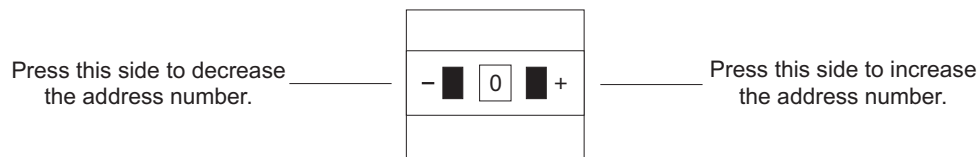
This shuts down the system and the `ok` prompt is displayed.
4. Open the front cover.
5. Turn the power switch to the OFF position.
6. Turn off the system monitor.
7. Turn off the tape drive.
8. If replacing a defective tape drive, disconnect the SCSI cables and power cables.
9. Connect the tape drive as shown in [Connecting tape drives](#) on page 56.

Connecting tape drives

The following figure shows how to connect tape drives to the SCSI port. An HD-68 to VHDCI SCSI cable connects from the SCSI port on the back of the computer to the IN connector on the back of the tape drive. An HD-68 to VHDCI SCSI cable connects from the OUT connector of that device to the IN connector of a second tape drive



The addresses are set using the target address switches on the back of each tape drive. Before setting the target address, make sure that the power is off on the SCSI device. Set the first tape drive to address 4, and the temporary tape drive to address 5.



scsiidsw.cdr

The OUT connector of the DAT 72 tape drive must have a termination plug installed. The DAT 72 tape drive does not auto terminate. All DAT 72 tape drives delivered from the factory have termination plugs installed.

Continue with [Turning on the system](#) on page 57.

Turning on the system

To turn on the system:

1. Connect the power cord from the tape drive to a power source.
2. Turn on the tape drives, starting with the tape drive that is farthest from the system and working toward the system.
3. Turn on the system monitor.
4. Open the front cover.
5. Turn the rotary switch to the ON position.
6. Press and release the power button.
POST diagnostics begin.
7. Press **Stop+A** simultaneously after the console banner is displayed, but before the system starts booting.

The **ok** prompt is displayed.

8. Enter the following commands:

```
setenv auto-boot? false
reset-all
```

This resets the system.

9. Enter:

```
probe-scsi-all
```

This checks to see that the system recognizes the new tape drive. The resulting display should list the new drive as Target 4 or Target 5. If the new drive is not listed, make sure there is a secure connection between the SCSI port and the new drive.

10. Reboot the system by entering the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
boot -r
```

The system reboots.

Removing the tape drive

To remove the tape drive:

1. Remove any tapes in the tape drive.
2. Log in to the system as root.
3. Enter the following commands:

```
cd /dev/rmt
```

```
pwd
```

The `pwd` command verifies that you are in the `/dev/rmt` directory.

4. Enter:

```
rm *
```

This removes SCSI device files. If you do not remove the device files before rebooting the system, the SCSI device files may not match the hardware configuration.

5. Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the `ok` prompt is displayed.

6. Open the front cover.
7. Turn the power switch to the OFF position.
8. Turn off the system monitor.
9. Turn off all tape drives, starting with the first tape drive.
10. Disconnect the tape drive from the SCSI port or SCSI chain.
11. Turn on all tape drives, starting with the second tape drive.
12. Turn on the system monitor.
13. Open the front cover.
14. Turn the rotary switch to the ON position.
15. Press and release the power button.
POST diagnostics begin.
16. Press **Stop+A** simultaneously after the console banner is displayed, but before the system starts booting.

The `ok` prompt is displayed.

17. Enter the following commands:

```
setenv auto-boot? false  
reset-all
```

This resets the system.

18. Enter:

```
probe-scsi-all
```

The current SCSI devices are displayed. The removed tape drive should not be listed.

19. Reboot the system by entering the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true  
boot -r
```

The system reboots.

20. Perform a CMSADM file system backup to back up the updated system configuration. See the CMS software installation, maintenance, and troubleshooting document for details.

Adding memory and replacing the CPU

Memory and CPU upgrades and repairs can be done by Sun technicians, Avaya technicians, or Avaya business partner technicians. Contact Avaya support or your business partner if your system needs any upgrades or repairs.

Using the System Configuration Card (SCC)

The SCC contains the MAC address and Host ID of the Netra 210 computer. Should you ever have to replace the entire unit, you must remove the SCC from the old unit and install it in the new unit. Other than moving the SCC to a new unit, do not remove the SCC from the unit at any time.

Troubleshooting

This section describes the following troubleshooting procedures:

- [Using the remote console](#) on page 62
- [Tools](#) on page 69
 - [Using the prtdiag command](#) on page 70
 - [System messages](#) on page 74
 - [OpenBoot PROM firmware tests](#) on page 75
 - [OpenBoot diagnostic tests](#) on page 81
 - [POST diagnostic messages](#) on page 84
 - [OpenBoot initialization commands](#) on page 85
 - [Diagnosing status indicators](#) on page 86
 - [Sun Validation Test Suite \(VTS\)](#) on page 91
- [Troubleshooting disk drives and the DVD-RW drive](#) on page 92
- [Troubleshooting tape drives](#) on page 94
- [Recovery procedures](#) on page 97

Additional troubleshooting: See the *Sun Netra 210 Service Manual* at the Sun documentation Web site for additional troubleshooting procedures:

<http://docs.sun.com>

Using the remote console

If your system does not boot, or if the system cannot be diagnosed locally, remote support personnel might want to redirect control of the console port from the local console to a dialed-in remote console. Redirecting the console allows support personnel to do remote maintenance as if they were at the local console. You can redirect the console using *either*:

- The Solaris operating system
- OpenBoot diagnostics

This section consists of the following procedures:

- [Redirecting the console using Solaris](#) on page 62. Use this procedure when the system will boot up to the Solaris operating system.
- [Redirecting the console using OpenBoot mode](#) on page 65. Use this procedure when the system will not boot up to the Solaris operating system.

Redirecting the console using Solaris

This procedure describes how to use the Solaris operating system to redirect the local console to the serial port. This procedure is usually done from the remote console that has dialed in to the system. Should you encounter any problems setting up the remote console, see [Remote console port problems](#) on page 100 for troubleshooting procedures.



CAUTION:

Use this procedure only when absolutely necessary. If the console redirects and the modem line drops, you may not be able to get back into the system.

Redirecting the local console to the remote console

To redirect control of the console port from the local console to a dialed-in remote console:

1. Dial in from the remote console to the remote console modem, and log in as root.
2. At the remote console, enter:

```
/cms/install/bin/abcmadm -r ttyb
```

The following message is displayed at the remote console:

```
ttyb is currently set to be incoming
Are you sure you want to change it? [y,n,?]
```

3. At the remote console, enter: **y**

The following message is displayed at the remote console:

```
ttyb administration removed
```

4. At the remote console, enter:

```
/cms/install/bin/abcmadm -c -b 9600 ttyb
```

The following message is displayed at the remote console:

```
This change requires a reboot to take affect  
Are you ready to reboot? [y,n,?]
```

5. At the remote console, enter: **y**

The following message is displayed at the remote console:

```
done  
desktop auto-start disabled  
Proceeding to reboot.
```

The following occurs:

- The system begins to shut down.
- Shutdown, reset, and reboot messages are displayed on the local console.
- When the system starts to come back up, the local console goes blank.
- The system boot diagnostics are displayed on the remote console.
- After the system reboots, a **console login:** prompt is displayed on the remote console.

6. Log in to the remote console as root.

Redirecting the remote console back to the local console



CAUTION:

Do not enter **Ctrl+D** from the remote console to exit the system without first redirecting control back to the local console. If you do, you may lock yourself from using the console locally or remotely.

To redirect control of the console port from the remote console back to the local console:

1. At the remote console, enter:

```
/cms/install/bin/abcadm -c local
```

The following message is displayed at the remote console:

```
Console set to local  
  
This change requires a reboot to take affect  
  
Are you ready to reboot? [y,n,?]
```

2. At the remote console, enter: **y**

The following occurs:

- The system begins to shut down.
 - Shutdown, reset, and reboot messages are displayed on the local console.
 - When the system starts to come back up, the system boot diagnostics are displayed on the local console.
 - After the system reboots, the **console login:** prompt is displayed on the remote console.
 - The login screen is displayed on the local console.
3. Log in to the local console as root.
 4. Log in to the remote console as root.

Control of the console port is redirected from the remote console back to the local console.

Redirecting the console using OpenBoot mode

This procedure describes how to use the OpenBoot mode to redirect the local console to serial port B. Use the OpenBoot mode to redirect the remote console port when the Solaris method does not work. This typically occurs when the system will not boot.

Redirecting the local console to the remote console

To redirect control of the console port from the local console to a dialed-in remote console:

1. If the system is not already at the **ok** prompt, enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the **ok** prompt is displayed.



CAUTION:

If the shutdown command fails, press **Stop+A** simultaneously after the console banner is displayed, but before the operating system starts booting.

2. At the local console, enter the following commands to set the remote console configuration parameters:

```
setenv input-device ttyb
setenv output-device ttyb
setenv ttyb-rts-dtr-off true
setenv ttyb-ignore-cd true
setenv ttyb-mode 9600,8,n,1,-
```

3. To verify the parameter changes, enter:

```
printenv
```

The following message is displayed:

Parameter Name	Value	Default Value
output-device	ttyb	screen
input-device	ttyb	keyboard
.		
.		
.		

4. If not already dialed in, dial in to the system from the remote console.
5. Log in to the system as root.

6. At the local console, enter:

boot

The following occurs:

- The system begins to shut down.
- Shutdown, reset, and reboot messages are displayed on the local console.
- When the system starts to come back up, the local console goes blank.
- The system boot diagnostics are displayed on the remote console.
- After the system reboots, a **console login:** prompt is displayed on the remote console.

7. Log in to the remote console as root.

Redirecting the remote console back to the local console



CAUTION:

Do not enter **Ctrl+D** from the remote console to exit the system without first redirecting control back to the local console. If you do, you may lock yourself from using the console locally or remotely.

Using OpenBoot mode, there are two ways to redirect control of the console port from the remote console back to the local console:

- [Method 1: from the remote console](#) on page 67 (recommended)
- [Method 2: from the local site](#) on page 68 (not recommended)

Method 1: from the remote console : To redirect control of the console port from the remote console back to the local console:

1. Do one of the following:

- If the system is in UNIX, enter the following commands at the remote console:

```
eeeprom output-device=screen
eeeprom input-device=keyboard
eeeprom ttyb-rts-dtr-off=true
eeeprom ttyb-ignore-cd=false
/usr/sbin/shutdown -y -i6 -g0
```

- If the system is in OpenBoot mode, enter the following commands at the remote console:

```
setenv output-device screen
setenv input-device keyboard
setenv ttyb-rts-dtr-off true
setenv ttyb-ignore-cd false
reset
```

The following occurs:

- The system begins to shut down.
 - Shutdown, reset, and reboot messages are displayed on the remote console.
 - When the system starts to come back up, the system boot diagnostics are displayed on the local console.
 - The login screen is displayed on the local console.
2. At the remote console, hang up the modem connection.
 3. Log in to the system as root at the local console.
 4. To see what is on the ttyb port, enter:

```
/cms/install/bin/abcaadm -k
```
 5. To start a port monitor on ttyb, enter:

```
/cms/install/bin/abcaadm -i -b 9600 ttyb
```

Method 2: from the local site: The onsite technician will use this procedure from the local site. Use this method only when Method 1 will not work.



CAUTION:

This method of redirecting the console port should be done only as a last resort. This procedure resets the NVRAM defaults to the Sun factory settings.

To redirect control of the console port from the remote console back to the local console:

1. Turn the power off and back on for the computer.
2. As the computer begins to boot up, double-click the power switch on the front of the system.

The prompt is displayed on the local console.

3. At the `ok` prompt, enter:

`boot`

4. When the system boots up, log in to the system as root at the local console.
5. To see what is on the ttyb port, enter:

`/cms/install/bin/abcadm -k`

6. To start a port monitor on ttyb, enter:

`/cms/install/bin/abcadm -i -b 9600 ttyb`

The following message is displayed:

```
ttyb set to incoming port 9600 baud
```

Tools

There are several tools available to help diagnose hardware problems:

- [Using the prtdiag command](#) on page 70
- [System messages](#) on page 74
- [OpenBoot PROM firmware tests](#) on page 75
- [OpenBoot diagnostic tests](#) on page 81
- [POST diagnostic messages](#) on page 84
- [OpenBoot initialization commands](#) on page 85
- [Diagnosing status indicators](#) on page 86
- [Sun Validation Test Suite \(VTS\)](#) on page 91

Using the prtdiag command

The **prtdiag** command displays system diagnostic information.

To display this diagnostic information, enter:

```
/usr/platform/'uname -m'/sbin/prtdiag -v | pg
```

The following is an example of the results for a Sun Netra 210 computer.

```
System Configuration: Sun Microsystems   sun4u Netra 210
System clock frequency: 167 MHz
Memory size: 1GB

===== CPUs =====
CPU   Freq      E$      CPU      CPU      Temperature
      Freq      Size      Implementation      Mask      Die      Amb.      Status      Location
-----
  0   1336 MHz   1MB      SUNW,UltraSPARC-IIIf  3.4      -      -      online      MB/P0

===== IO Devices =====
Bus   Freq      Slot +   Name +
Type  MHz      Status  Path      Model
-----
pci   66      MB      pci108e,1648 (network)
      okay    /pci@1f,700000/network@2

pci   66      MB      pci108e,1648 (network)
      okay    /pci@1f,700000/network@2,1

pci   33      MB      isa/su (serial)
pci   33      MB      isa/su (serial)
      okay    /pci@1e,600000/isa@7/serial@0,3f8

pci   33      MB      isa/su (serial)
      okay    /pci@1e,600000/isa@7/serial@0,2e8

pci   33      MB      pci10b9,5229 (ide)
      okay    /pci@1e,600000/ide@d

pci   66      MB      scsi-pci1000,21 (scsi-2)
      okay    /pci@1c,600000/scsi@2

pci   66      MB      scsi-pci1000,21 (scsi-2)
      okay    /pci@1c,600000/scsi@2,1

pci   66      MB      pci108e,1648 (network)
      okay    /pci@1d,700000/network@2

pci   66      MB      pci108e,1648 (network)
      okay    /pci@1d,700000/network@2,1
```

```

pci      66          PCI0  SUNW,XVR-100 (display)          SUNW,375-3290
okay    /pci@1d,700000/SUNW,XVR-100@1

pci      66          1    LSILogic,sas-pci1000,50 (scs+ LSI,1064
okay    /pci@1c,600000/LSILogic,sas@1

pci      33          7    isa/rmc-comm-rmc_comm (seria+
okay    /pci@1e,600000/isa@7/rmc-comm@0,3e8

pci      33          10   pciclass,0c0310 (usb)
okay    /pci@1e,600000/usb@a

===== Memory Configuration =====
Segment Table:
-----
Base Address          Size          Interleave Factor  Contains
-----
0x0                   1GB              1                BankIDs 0

Bank Table:
-----
          Physical Location
ID        ControllerID  GroupID   Size          Interleave Way
-----
0          0             0          1GB              0

Memory Module Groups:
-----
ControllerID  GroupID  Labels          Status
-----
0              0      MB/P0/B0/D0
0              0      MB/P0/B0/D1

===== usb Devices =====

Name          Port#
-----
device        USB0

===== device#1 Devices =====
Name          Port#
-----
keyboard
mouse

```

Troubleshooting

===== Environmental Status =====

Fan Speeds:

Location	Sensor	Status	Speed
F0	RS	okay	13500 rpm
F1	RS	okay	14361 rpm
F2	RS	okay	12980 rpm
F3	RS	okay	12980 rpm
PS0	F4	okay	0 rpm
PS0	F5	okay	0 rpm
PS0	FF_FAN	okay	

Temperature sensors:

Location	Sensor	Temperature	Lo	LoWarn	HiWarn	Hi	Status
MB/P0	T_CORE	66C	-	-	105C	108C	okay
SASPCI	SAS_CONTROLLER	55C	-	-	-	-	okay
MB	T_ENC	24C	-9C	-7C	57C	60C	okay
PS0	FF_OT	-	-	-	-	-	okay

Current sensors:

Location	Sensor	Current	Lo	LoWarn	HiWarn	Hi	Status
MB	FF_SCSI	-	-	-	-	-	okay
PS0	FF_OC	-	-	-	-	-	okay

Voltage sensors:

Location	Sensor	Voltage	Lo	LoWarn	HiWarn	Hi	Status
MB/P0	V_CORE	1.46V	-	1.26V	1.54V	-	okay
MB	V_VTT	1.24V	-	1.17V	1.43V	-	okay
MB	V_GBE_+2V5	2.51V	-	2.25V	2.75V	-	okay
MB	V_GBE_CORE	1.21V	-	1.08V	1.32V	-	okay
MB	V_VCCTM	2.53V	-	2.25V	2.75V	-	okay
MB	V_+2V5	2.49V	-	2.34V	2.86V	-	okay
MB	V_+1V5	1.52V	-	1.35V	1.65V	-	okay
MB/BAT	V_BAT	3.02V	-	2.70V	-	-	okay
PS0	P_PWR	-	-	-	-	-	okay

Keyswitch:

Location	State
SYSCTRL	UNKNOWN


```
-----
Led State:
```

```
-----
Location      Led              State      Color
-----
MB            ACT              on         green
MB            SERVICE         off        amber
MB            LOCATE          off        white
PS0           ACT              on         green
PS0           SERVICE         off        amber
HDD0          SERVICE         off        amber
HDD0          OK2RM           off        blue
HDD1          SERVICE         off        amber
HDD1          OK2RM           off        blue
MB            CRITICAL         off        red
MB            MAJOR            off        red
MB            MINOR            off        amber
MB            USER            off        amber
```

```
===== FRU Operational Status =====
```

```
-----
Fru Operational Status:
```

```
-----
Location      Status
-----
MB/SC         okay
PS0           okay
HDD0          present
HDD1          present
```

```
===== HW Revisions =====
```

```
ASIC Revisions:
```

```
-----
Path          Device          Status      Revision
-----
/pci@1f,700000 pci108e,a801    okay        4
/pci@1e,600000 pci108e,a801    okay        4
/pci@1c,600000 pci108e,a801    okay        4
/pci@1d,700000 pci108e,a801    okay        4
```

```
-----
System PROM revisions:
```

```
-----
OBP 4.18.5 2005/10/21 17:55 Sun Fire V210/V240,Netra 210/240
OBDIAG 4.18.5 2005/10/21 18:07
```

System messages

System messages can alert you to system problems, such as a device that is about to fail. By default, many of the messages are displayed on the system console and are stored in `/var/adm`.

You can display system messages with the `dmesg` command. Here are some factors to keep in mind:

- A list of the most recent messages is displayed.
- The `/var/adm` directory contains several message files. The most recent messages are in `/var/adm/messages` and in `/var/adm/messages.0`. The oldest are in `/var/adm/messages.3`.
- Periodically, a new file is created, and the `/var/adm/messages.3` file is deleted, `/var/adm/messages.2` is renamed `/var/adm/messages.3`, `/var/adm/messages.1` is renamed `/var/adm/messages.2`, and `/var/adm/messages.0` is renamed `/var/adm/messages.1`.

The message files may contain not only system messages, but also core dumps and other data, which can cause `/var/adm` to grow quite large. To keep the directory to a reasonable size and ensure that future core dumps can be saved, you should remove unneeded files periodically. You can automate the task by using `crontab`. See your Sun system documentation for information on `crontab`.

OpenBoot PROM firmware tests

The OpenBoot PROM (OBP) on-board firmware performs a routine set of firmware and hardware tests.

Note:

Different versions of Solaris have different versions of the OpenBoot commands. Not all commands are available with every version.

This section includes the following topics:

- [Using the OpenBoot PROM tests](#) on page 75
- [Test descriptions](#) on page 76
- [Probing IDE devices](#) on page 77
- [Probing SCSI devices](#) on page 78

Using the OpenBoot PROM tests

To use the OpenBoot PROM tests:

1. From the root login, turn off CMS.
2. Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the `ok` prompt is displayed.

3. At the `ok` prompt, enter the following commands:

```
setenv auto-boot? false
reset-all
```

The system resets and the `ok` prompt is displayed.

4. Use the commands that are shown in [Test descriptions](#) on page 76.
5. When you finish testing, enter the following commands:

**CAUTION:**

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
boot
```

The system reboots.

Test descriptions

The following table lists some of the OpenBoot PROM On-Board firmware test commands. Note that some commands give responses for the tests. Other tests just display the `ok` prompt when the test passes.

Command	Description	
<code>probe-ide</code>	Displays the devices connected to the IDE bus.	
<code>probe-scsi</code>	Displays the disk drives connected to the SCSI bus.	
<code>probe-scsi-all</code>	Displays disk drives and tape drives connected to the SCSI bus.	
<code>reset-all</code>	Permanently stores the parameter changes and boots automatically.	
<code>setenv</code>	Sets environment variables.	
<code>show-devs</code>	Displays all the devices known to the system directly beneath a given device in the device hierarchy. When using <code>show-devs</code> by itself, the command shows the entire device tree.	
<code>show-disks</code>	Displays all disk devices.	
<code>test-all</code>	Runs a series of tests on the network and on hardware components. The test may take several minutes to complete. Use Stop+A to stop this test.	
<code>test [alias]</code>	Runs the self-test method of the specified device. Possible values for device-specifier are listed in the Alias column:	
	Alias	Description
	net	network
	ide	IDE bus
	dload	devices
	floppy	floppy
	screen	video
	keyboard	keyboard
<code>watch-clock</code>	Tests the clock function.	
<code>watch-net</code>	Displays packet activity on the primary network connection.	

Additional references: See *Sun OpenBoot 4.x Command Reference Manual* at the Sun documentation Web site for more information:

<http://docs.sun.com>

Probing IDE devices

Symptom: The internal IDE disk drives are reporting errors.

Solution: Check the status of the IDE disk drives.

1. Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the **ok** prompt is displayed.

2. At the **ok** prompt, enter the following commands:

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

```
reset-all
```

The system resets and the **ok** prompt is displayed.

3. Enter:

```
probe-ide
```

A message similar to the following is displayed:

```
Device 0 ( Primary Master )
    Removable ATAPI Model: TSSTcorpCD/DVDW TS-L532A

Device 1 ( Primary Slave )
    Not Present

Device 2 ( Secondary Master )
    Not Present

Device 3 ( Secondary Slave )
    Not Present
```

In this example, the devices listed are as follows:

- Device 0 is the DVD-RW drive.
- Devices 1, 2, and 3 are not present.

- When finished with testing, enter the following commands:

**CAUTION:**

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
```

```
boot
```

The system reboots.

Probing SCSI devices

Symptom: The SCSI tape or disk drives are reporting errors.

Solution: To check the status of the SCSI devices:

- Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the `ok` prompt is displayed.

- At the `ok` prompt, enter the following commands:

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

```
reset-all
```

The system resets.

- Enter:

```
probe-scsi-all
```

A message similar to the following is displayed:

```
/pci@1c,600000/LSILogic,sas@1
MPT Version 1.05, Firmware Version 1.05.00.00

Target 0
  Unit 0   Disk      SEAGATE ST913401LSUN72G 0556      143374738 Blocks, 73 GB
  SASAddress 500000e0115e0072  PhyNum 0
Target 1
  Unit 0   Disk      SEAGATE ST913401LSUN72G 0556      143374738 Blocks, 73 GB
  SASAddress 500000e0115e0072  PhyNum 1

pci@1c,600000/scsi@2,1
Target 4
  Unit 0   Removeable Tape      HP      C7438A      ZP5A

/pci@1c,600000/scsi@2
```

In this example, the devices listed are as follows:

- Target 0 is the primary disk drive.
- Target 1 is the secondary (mirror) disk drive.
- Target 4 is the external tape drive.

Note:

The actual devices listed depends on the devices installed on the SCSI bus.

4. If there are drives other than what was shown in the message, shut down the system and check the drive cabling.
5. When finished with testing, enter the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
```

```
boot
```

The system reboots.

Symptom: The SCSI tape or disk drives are reporting errors.

Solution: The system might have duplicate SCSI target addresses on one bus.

Note:

Two targets may have the same target number if they are on different SCSI busses.

To check for duplicate SCSI target addresses:

1. Unplug all but one of the disks.
2. Enter:

```
probe-scsi-all
```

Record the target number and its corresponding unit number.

3. Plug in another disk, and perform Step 2 again.
4. If you get an error message, change the target number of this disk to one of the unused target numbers.

5. When you finish testing, enter the following commands:

**CAUTION:**

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
```

```
boot
```

The system reboots.

OpenBoot diagnostic tests

OpenBoot Diagnostics (OBdiag) is a menu-driven tool that diagnoses system hardware. OBdiag performs root-cause failure analysis on the referenced devices by testing internal registers, confirming subsystem integrity, and verifying device functionality.

To use the OpenBoot diagnostic tests:

1. From the root login, turn off CMS.

2. Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

The system shuts down and the `ok` prompt is displayed.

3. Set the rotary switch to the diagnostics position.
4. At the `ok` prompt, enter the following commands:

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

```
reset-all
```

The system resets.

5. Enter:

```
obdiag
```

This loads the test program and the test menu is displayed.

6. Enter:

```
test <command number>
```

See [Test descriptions](#) on page 82 for a description of each command.

7. When finished with testing, set the key switch to the normal position.
8. Enter the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
```

```
boot
```

The system reboots.

Test descriptions

See the following table for a summary of OpenBoot Diagnostic test commands. The command numbers are not shown since they vary for the different computers.

Command name	Description	Solution
LSILogic,sas@1	Checks the SAS board.	SAS board not properly seated into slot. Reseat the SAS board in the slot or replace it.
SUNW,XVR-100@1	Checks the video card.	Problem with the video card. Reseat the card or replace if necessary.
flashprom@2,0	Checks headers and checksums.	Problem with the flash PROM on system board. Check the system board and replace if necessary.
i2c@0,320	Checks for the presence of the I2C devices and memory PROMs.	Problem on the I2C bus or controller, system board SEEPROM, DIMM SEEPROM or system board clock generator. Check the DIMM memory or the system board.
ide@d	Checks the IDE controller and provides the identity of devices attached to the IDE bus.	Problem with the hard drive, optical drive, IDE cables, or I/O subsystem chip.
keyboard@0	Tests the USB keyboard.	Reconnect keyboard. Replace if necessary.
network@2	Tests the network controller chip.	Problem with the network or Gigabit Ethernet controller on system board.
network@2		
network@2		
network@2,1		
rmc-comm@0,3e8	Checks the ALOM support circuits.	Problem with the serial/network management chips and circuitry on system board.
rtc@0,70	Tests the real-time clock.	Problem with the battery or the M5819 chip. Check the battery or system board.

Command name	Description	Solution
scsi@2	Tests the SCSI host controllers.	Problem with the external SCSI device, internal hard drive, SCSI backplane interface cable, or the LSA0725 chip. check the connection to the SCSI port at the rear panel or the hard drive and its cabling, or the system board.
scsi@2,1		
serial@0,2e8	Tests the secondary or primary serial port at different baud rates.	Problem with the item connected to the serial port or I/O subsystem chip. If not the item, check the system board
serial@0,3f8		

Additional references: See *Sun OpenBoot 4.x Command Reference Manual* at the Sun documentation Web site for more information:

<http://docs.sun.com>

POST diagnostic messages

To use the Power On Self Test (POST) messages (during a reboot) to diagnose remote hardware problems:

1. At the `ok` prompt, enter:
`boot`
2. Scan the displayed messages on the screen. Watch for error messages.

You can identify problems more accurately if you are familiar with the system power-on initialization messages. These messages show you the types of functions the system performs at various stages of system start-up. These messages can also show the transfer of control from OpenBoot firmware to POST.

Memory failure

The operating system, diagnostic program, or POST will display a DIMM address as part of a memory error message. The following table lists physical memory addresses to locate a defective DIMM.

DIMM slot	DIMM address
DIMM0	00000000.40000000
DIMM1	00000000.20000000

If a DIMM failure occurs, you may see similar messages during OpenBoot diagnostics:

```
0>WARNING: TEST = Probe and Setup Memory
0>H/W under test = CPU0 Memory
0>MSG = DIMM size does not match for dimm
set 0, Dimm0=00000000.40000000, Dimm1=
00000000.20000000
0>END_WARNING
```

OpenBoot initialization commands

The following table describes OpenBoot initialization commands that are provided by the system. These commands are useful in some situations in which the system fails to boot.

Command	Description
Press Stop	Bypass POST. This command does not depend on the security mode. Note: Some systems bypass POST as a default. In such cases, use the Stop+A key combination to start POST.
Press Stop+A	Abort. This command does not work during the first few seconds after the system is reset.

Diagnosing status indicators

Many hardware components of the computer have status indicators that can be used to diagnose problems. This section describes the following status indicators:

- [Front cover status indicators](#) on page 86
- [Alarm status indicators](#) on page 87
- [Hard disk drive status indicators](#) on page 88
- [Ethernet ports status indicators](#) on page 88
- [Power supply status indicators](#) on page 89
- [Rear panel status indicators](#) on page 89
- [Tape drive status indicators](#) on page 90

Front cover status indicators

The computer status indicators provide the general health of the computer. During system startup, the front panel LEDs are individually toggled on and off to verify that each one is working correctly. After that, the front panel LEDs operate as described in the following table:

Name	Color	State	Status
Locator	White	On	Computer is identified with the superuser <code>locator</code> command
		Off	Normal state
Fault	Amber	On	The computer has detected a problem and requires the attention of service personnel.
		Off	The computer has no detected faults.
Activity	Green	On	The computer is powered up and running the Solaris OS.
		Off	Either power is not present or the Solaris software is not running.

Alarm status indicators

The dry contact alarm card has four LED status indicators. They are located vertically on the front cover. Information on the alarm indicators and dry contact alarm states is provided in the following table.

Name	Color	State	Condition or Action	System State	Alarm State	Notes
Critical	Red	Computer state (power on/off and Solaris functional/not functional)	No power input	Off	Off	Default state
			System power off	Off	Off	Input power connected
			System power turns on; Solaris not fully loaded	Off	Off	Transient state
			Solaris loaded	On	Off	Normal operating state
			Watchdog time-out	Off	On	Transient state; reboot Solaris
			Solaris shutdown initiated by user	Off	Off	Transient state
			Lost input power	Off	Off	Default state
			System power shutdown by user	Off	Off	Transient state
		Application state	User sets critical alarm to ON	N/A	On	Critical fault detected
			User sets critical to OFF	N/A	Off	Critical fault cleared
Major	Red	Application state	User sets major alarm to ON	N/A	On	Major fault detected
			User sets major alarm to OFF	N/A	Off	Major fault cleared
Minor	Amber	Application state	User sets minor alarm to ON	N/A	On	Minor fault detected
			User sets minor alarm to OFF	N/A	Off	Minor fault cleared

Name	Color	State	Condition or Action	System State	Alarm State	Notes
User	Amber	Application state	User sets user alarm to ON	N/A	On	User fault detected
			User sets user alarm to OFF	N/A	Off	User fault cleared

Hard disk drive status indicators

The hard disk drive indicators can be seen on the right side when the front cover is open. The indicators are described in the following table:

Name	Color	State	Status
Service Allowed	Blue	On	Hard drive can be safely removed.
		Off	Hard drive is not ready for removal. Do not remove the hard drive.
Service Required	Amber	On	The hard drive has a fault and requires attention.
		Off	Normal state.
Activity	Green	Flashing	Disk activity.
		Off	No disk activity.

Ethernet ports status indicators

The ethernet status indicators are near the ethernet ports. The indicators are described in the following table:

Name	Color	State	Status
Link	Green	On	Link established.
		Flashing	Transferring data.
		Off	Link down
Speed	Green	On	High speed.
		Off	Low speed.

Power supply status indicators

The power supply status indicators are located on the power supply and can be seen on the rear panel. The indicators are described in the following table:

Name	Color	State	Status
Attention	Amber	On	Power supply has shut down as a result of overvoltage, undervoltage, or unknown fault.
		Flashing	Power supply has shut down as a result of overcurrent or overtemperature.
		Off	No faults detected.
DC Output	Green	On	Output voltage is within normal range.
		Off	Output voltage failure or power supply is off.
AC Input	Green	On	Input voltage is satisfactory.
		Off	Input voltage failure or voltage too low for operation.

Rear panel status indicators

The rear panel status indicators are located between the power supply and the ethernet connector on the rear panel. The indicators are described in the following table:

Name	Color	State	Status
Activity	Green	On	The computer is powered up and running the Solaris OS.
		Off	Either power is not present or the Solaris software is not running.
Fault	Amber	On	The computer has detected a problem and requires the attention of service personnel.
		Off	The computer has no detected faults.
Locator	White	On	Computer is identified with the <code>locator</code> command.
		Off	Normal state.

Tape drive status indicators

The tape drive indicators show the following status:

- Tape LED (green) - The LED flashes to show activity (loading, unloading, reading, and writing). The LED is steady when a cartridge is loaded and the tape drive is ready to begin operation.
- Clean LED (amber) - The LED flashes to indicate that a cartridge is near the end of its life, or that the heads need cleaning.

The following table describes the LED combinations that occur during normal tape drive operation.

	Tape drive state					
	Activity (load or unload)	Activity (read or write)	Cartridge loaded	Media caution signal	Fault	Power is turned on (starts with two steady lights)
Tape LED (green)	Flashing	Flashing Fast	On	Any	Any	Flashing
Clean LED (amber)	Off	Off	Off	Flashing	On	Off

The tape drive monitors the number of correctable errors that occur during reading and writing. If the number of errors becomes excessive, the tape may be nearing the end of its useful life, or the tape heads may need cleaning.

- If the media caution signal is displayed (flashing amber), clean the tape drive.
- If the signal remains after cleaning the heads, repeat the operation with a different tape. If this clears the signal, the first tape is nearing the end of its life. Copy the data onto a new tape and discard the old one.

The media caution signal is cleared when a new tape is loaded or when the tape drive is turned off and turned back on.

Sun Validation Test Suite (VTS)

The SunVTS supports diagnostics in the following areas:

- Connection test - Minimal access of device to verify its accessibility and availability.
- Functional test (default) - Detailed tests to thoroughly test the device or system when offline the system is offline (CMS must be turned off). A stress mode in the system or test option can be set only within the offline mode. The stress mode is an extension of offline.
- Functional test (from system monitor) - Safe tests that can be executed on the device or system when it is online (CMS can be on, but testing is safer when it is turned off).

There are two ways to run SunVTS. We recommend that you use either local access through the Common Desktop Environment (CDE) interface, or remote access using an ASCII interface.

Prerequisites

CMS must be turned off.

Using SunVTS

To use SunVTS:

1. Enter:

```
BYPASS_FS_PROBE=1; export BYPASS_FS_PROBE
```

This bypasses the file system probe.

2. Do one of the following:

- Enter:

```
/opt/SUNWvts/bin/sunvts
```

This accesses the CDE interface.

- Enter:

```
/opt/SUNWvts/bin/sunvts -t
```

This accesses the TTY mode (ASCII interface).

Additional references: For more information about using VTS, see `/opt/SUNWvts/README` and `/opt/SUNWvts/bin/vtstty.help`.

Troubleshooting disk drives and the DVD-RW drive

This section provides hard drive and DVD-RW drive failure symptoms and suggested actions.

Symptom: A hard drive read, write, or parity error and a DVD-RW drive read or parity error is reported by the operating system.

Solution: Replace the drive indicated by the failure message. The operating system identifies the internal drives as indicated in the following table.

Operating system address	Drive physical location and target
c1t0 or c1t1	Hard drives, primary or secondary
c0t0	DVD-RW drive

Symptom: The hard drive or DVD-RW drive fails to respond to commands.

Solution: When the hard drive or DVD-RW drive fails to respond to commands:

1. Enter:

```
/usr/sbin/shutdown -y -i0 -g0
```

This shuts down the system and the **ok** prompt is displayed.

2. At the **ok** prompt, enter the following commands:

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

```
reset-all
```

The system resets.

3. Enter:

probe-ide

A message similar to the following is displayed:

```
Device 0 ( Primary Master )
    Removable ATAPI Model: TSSTcorpCD/DVDW TS-L532A

Device 1 ( Primary Slave )
    Not Present

Device 2 ( Secondary Master )
    Not Present

Device 3 ( Secondary Slave )
    Not Present
```

In this example, the devices listed are as follows:

- Device 0 is the DVD-RW drive.
- Devices 1, 2, and 3 are not present.

If the **probe-ide** test fails to show the DVD-RW drive, you may have to replace the drive.

4. At the **ok** prompt, enter the following command:

reset-all

The system resets.

5. Enter:

probe-scsi

A message similar to the following is displayed:

```
MPT Version 1.05, Firmware Version 1.05.00.00

Target 0
  Unit 0  Disk      SEAGATE ST913401LSUN72G 0556      143374738 Blocks, 73 GB
  SASAddress 500000e0115e0072  PhyNum 0
Target 1
  Unit 0  Disk      SEAGATE ST913401LSUN72G 0556      143374738 Blocks, 73 GB
  SASAddress 500000e0115e0072  PhyNum 1
```

Note:

The actual message (devices listed) depends on the devices installed on the SCSI bus. This example shows the primary and secondary disk drives.

6. When finished with testing, enter the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
```

```
boot
```

The system reboots.

Troubleshooting tape drives

Use the following procedures to troubleshoot tape drives:

- [Checking tape status](#)
- [Reassigning device instance numbers for tape devices](#) on page 96

Checking tape status

For many procedures, you must identify what tape drive, by device path, you will use for the procedure. Tape drives are assigned to particular device paths, usually one of the following:

- `/dev/rmt/0`
- `/dev/rmt/0c`
- `/dev/rmt/1`
- `/dev/rmt/1c`

Note:

The letter `c` at the end of the device name indicates that the tape device can operate in compressed mode. We recommend that you use compressed mode at all times.

To determine what device paths are available on your system:

1. Insert a tape into the tape drive.
2. Enter the following commands:

```
mt -f /dev/rmt/0 status
```

```
mt -f /dev/rmt/1 status
```

If the device path is correct and there is a tape in the tape drive, a message similar to the following is displayed:

```
HP DAT-72 tape drive:
sense key(0x0)= Unit Attention      residual= 0    retries= 0
file no= 0    block no= 0
```

If there is no tape in the tape drive, a message similar to the following is displayed:

```
/dev/rmt/0c: No tape loaded or drive offline
```

If the device path is incorrect, a message similar to the following is displayed:

```
/dev/rmt/0c: No such file or directory
```

If the tape drive is busy, a message similar to the following is displayed:

```
/dev/rmt/0c: Device busy
```

Reassigning device instance numbers for tape devices

As tape drives are added to and removed from a system, the device instance numbers can get out of sequence with the number of tape drives. For example, if a system has two tape drives, and one is removed, the system may accidentally try to use a tape drive that no longer exists.

To reassign device instance numbers for tape devices:

1. Log in to the system as root.
2. Make sure that the target addresses for any SCSI tape drives are set correctly.
Typically, the internal tape drive is SCSI address 5, and an external tape drive is SCSI address 4. If you change the SCSI address, you must turn the tape drive power off and back on.
3. Insert the Solaris software disk into the disk drive.
4. After about 15 seconds, enter the following commands:

```
boot cdrom -sw
```

```
fsck -y /dev/dsk/c1t0d0s0
```

```
mount /dev/dsk/c1t0d0s0 /a
```

```
devfsadm -vCc tape -r /a -p /a/etc/path_to_inst
```

This reassigns the device instance numbers for the tape devices.

5. Enter:

```
eject cdrom
```
6. Remove the Solaris software disk.

Recovery procedures

This section provides solutions for the following problems:

- [Preserving data after a system failure](#) on page 97
- [Loss of power](#) on page 98
- [Probe command warnings](#) on page 99
- [Remote console port problems](#) on page 100

Preserving data after a system failure

Enter the **sync** command at the **ok** prompt to force any information on its way to the hard disk to be written out immediately. This is useful if the operating system fails or is interrupted before preserving all data.

The **sync** command returns control to the operating system and performs the data-saving operations. After the disk data is synchronized, the operating system begins to save a core image of itself. If you do not need this core dump, you can interrupt the operation by pressing **Stop+A**.

Loss of power

If the system loses power, it is recommended (but not required) that you empty the CD-ROM and tape drives. The system boots from the disk by default.

To turn on the computer:

1. Turn on all external SCSI devices, starting with the device that is farthest from the system and working toward the system.
2. Turn on the system monitor.
3. Open the front cover.
4. Turn the rotary switch to the ON position.
5. Press and release the power button.

POST diagnostics begin. If the system is operating properly, a banner screen is displayed up to 3 minutes after it is turned on.

```
|-----| <Product Name>, Keyboard Present
|       | Copyright 2005 Sun Microsystems, Inc. All rights reserved.
|       | OpenBoot X.X.X, XXXX MB memory installed, Serial #XXXXXXXXXX
|-----| Ethernet address X:X:XX:XX:XX:XX, Host ID: XXXXXXXXX
```

To turn off the computer:

1. Log in to the system as root.
2. Enter:

 `/usr/sbin/shutdown -y -i0 -g0`

 This shuts down the system and the `ok` prompt is displayed.
3. Open the front cover.
4. Turn the power switch to the OFF position.
5. Turn off the system monitor.
6. Turn off all external SCSI devices, starting with the device that is closest to the system and working toward the farthest device.

Probe command warnings

Symptom: When using any of the "probe" commands, the following message is displayed:

```
This command may hang the system if a Stop-A or halt command has been executed. Please
type reset-all to reset the system before executing this command. Do you wish to
continue [Y/N].
```



CAUTION:

Do not continue. Answer **n**. Do not answer **y**.

Solution: To recover from this condition:

1. Enter: **n**
This stops the probe command.
2. Enter the following commands:

```
setenv auto-boot? false
reset-all
```
3. Now it is acceptable to execute any of the "probe" commands and perform any other boot PROM-level diagnostics.
4. After you finish probing the system devices, enter the following commands:



CAUTION:

If you fail to enter these commands, any reboots that you do in the future will stop at the boot prompt instead of proceeding through the normal boot-up process.

```
setenv auto-boot? true
```

```
boot
```

The system reboots.

Remote console port problems

This section contains problems you may encounter with the remote console port.

Symptom: The remote console port will not initialize for dialing in or dialing out.

Solution: To correct this problem:

1. Enter:

```
sacadm -l
```

If the system status reports `NO_SAC`, the port is not working properly.

2. Enter:

```
/cms/install/bin/abccadm -i -b 9600 ttyb
```

The following message should be displayed:

```
ttyb set to incoming port 9600 baud
```

If this message is not displayed, continue with Step 3.

3. Enter:

```
/cms/install/bin/abccadm -r ttyb
```

The following message is displayed:

```
ttyb is currently set to be incoming
Are you sure you want to change it? [y,n,?]
```

4. Enter: **y**

The following message is displayed:

```
ttyb administration removed
```

The port monitor turns off.

5. Enter:

```
ps -ef | grep sac
```

This finds any SAC processes that are running. If any processes are found, continue with Step 6. Otherwise, continue with Step 7.

6. Enter:

```
kill -9 <pid>
```

Use this command to kill any SAC processes still running. Process numbers are represented by `<pid>`.

7. Enter:

```
/usr/lib/saf/sac -t 300
```

This restarts SAC.

8. Enter:

```
sacadm -l
```

Confirm that SAC is running. The system should report the port status as `ENABLED`.

9. Enter:

```
/cms/install/bin/abcadm -i -b 9600 ttyb
```

The following message should be displayed:

```
ttyb set to incoming port 9600 baud
```

If this message is not displayed, escalate the problem using the normal channels.

Symptom: The system cannot dial out to report alarms using the Alarm Origination Manager (AOM).

Solution: To correct this problem:

1. Enter:

```
tail /etc/uucp/Devices
```

The system should display the following:

```
ACU cua/b - Any Hayes
Direct cua/a - Any Direct
Direct cua/b - Any Direct
```

2. Check the settings on the remote console modem. For the U.S. Robotics modem, make sure that DIP switches 4 and 8 are down (ON). If these switches are not set correctly, you may still be able to dial in, but it may not dial out.

3. Enter:

```
/opt/cc/install/aot.cssrlXxx.x/bin/setup
```

This restarts AOM. The release number **Xxx.x** depends on your installation.

To send a test alarm:

1. Enter the following commands to set up the test environment:

```
. /opt/cc/aot/bin/aom_env
cd /opt/cc/aot/bin
aom start
export PRODUCT_TYPE=TEST
```

2. Enter:

```
./log_error -e 30001 -d "test alarm"
```

This sends a test alarm.

3. Enter:

```
./alarm_view -p TEST -a TEST_ALARM
```

This will display the test alarm.

4. Enter:

```
./alarm_resolve -p TEST -a TEST_ALARM
```

This resolves the test alarm.

5. Enter:

```
tail -f aom_log
```

The AOM log file is displayed.

6. If you change an AOM parameter, such as the product ID or the telephone number, you must turn AOM off and back on again to recognize the new parameters. These parameters are in `/opt/cc/aot/data/admin/sysSetup.cfg` file. Be sure to set the port to value 1 for ttyb.
7. If the `/opt/cc/aom/data/log` file has the message "aom cms alarm is disabled", enter:

```
export PRODUCT_TYPE=TEST
```

This enables the alarm.

Glossary

Automatic Call Distribution (ACD)	<p>A switch feature. ACD is software that channels high-volume incoming call traffic to agent groups (splits or skills).</p> <p>Also an agent state where the extension is engaged in an ACD call (with either the agent talking to the caller or the call waiting on hold).</p>
Boot disk	<p>A disk that contains the Solaris operating system and customer data.</p>
CMS	<p>Call Management System (CMS). A software product used by business customers that have an Avaya telecommunications switch and receive a large volume of telephone calls that are processed through the Automatic Call Distribution (ACD) feature of the switch.</p>
DIMM	<p>Dual In-line Memory Module. A narrow printed circuit board that holds memory chips. It plugs into a DIMM socket on the motherboard or memory board.</p>
IDE	<p>Integrated Drive Electronics</p>
Non-Volatile Random Access Memory (NVRAM)	<p>A random access memory (RAM) system that holds its contents when external power is lost.</p>
SCSI	<p>See Small Computer System Interface (SCSI).</p>
SCSI Bus	<p>An industry standard peripheral bus that is used to connect intelligent peripherals to a computer. It uses a daisy-chained cabling arrangement that originates at the Host Adapter to interconnect up to seven intelligent peripheral controllers on the bus. The Sun computer uses a fast SCSI-2 implementation.</p>
SCSI ID	<p>Each tap on the SCSI bus is required to have a unique identification or address, which is the SCSI ID. The ID is set by a push button located on each device.</p>
SCSI Single-Ended Bus	<p>A version of the SCSI bus designed to minimize cost and space. Cable lengths up to 6 meters are supported. A SCSI single-ended bus is not compatible with the differential version of the SCSI bus.</p>
Small Computer System Interface (SCSI)	<p>A hardware interface that allows the connection of devices (such as hard disks) to a computer system.</p>
Solaris	<p>The operating system package on the Sun computer. Solaris is a version of the UNIX System V Release 4. CMS requires Solaris to run on the Sun computers.</p>
SSO	<p>Services Support Organization. The Avaya organization that provides technical support for Avaya products.</p>

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