

Avaya Call Management System

Sun Netra X4270 Computer Hardware Installation, Maintenance, and Troubleshooting

December 2011

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http://www.avaya.com/support

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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
- Support on page 10

Purpose

Avaya Call Management System Sun Netra X4270 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 X4270 is compatible with CMS R16.3 and later versions.

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 11 - Describes how to assemble the computer, connect external devices, and turn on power.
- Maintenance on page 35 - Describes how to maintain the computer.
- Troubleshooting on page 45 - Describes how to troubleshoot the computer.
- Glossary on page 57.

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

Initial issue.

Note:
Oracle Corporation now owns Sun Microsystems. Instead of rebranding references to Sun Microsystems with the Oracle name, all occurrences of Sun and Sun Microsystems will remain as is in this document.

Documentation Web sites

All CMS documentation can be found at http://www.avaya.com/support. New issues of CMS documentation will be placed on this 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

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:

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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 12	
Unpacking and inventorying the equipment on page 14	
Mounting the Server Using the 19-Inch, 4-Post Sliding Rail Mount Rack Kit on page 19	
Setting up power on page 26	
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Connecting to external interfaces on page 30	
Turning on the system and verifying POST on page 32	
Setting the remote console modem options on page 32	
Turning the system over for provisioning on page 34	

Preparing for installation

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

- Safety precautions on page 12
- System precautions on page 13

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 you have installed a filler panel 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 included in the shipment or associated with the Sun Netra X4270 is meant to be used with the Sun Netra X4270 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.

本製品に同梱または付属している電源コードセットは、本製品専用です。本製品以外の製品ならびに他の用途で使用しないでください。火災、感電、故障の原因となります。

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.

Each power supply 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 1.5KVA minimum is required for each power supply. 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

Keep in mind the following:

- 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.

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 15
- Determining the computer model on page 15
- Computer layout on page 16

Parts list

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

- Computer and power cord
- Optional Tape drive, power cord, SAS cable, and SAS HBA
- Monitor, VGA cable, and monitor AC power cord
- USB keyboard and cable
- USB mouse and cable
- Category 5 LAN cable
- Remote modem cables (no modem included)
- 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

CMS R16.3 supports the Sun Netra X4270 computer model. See Sun Netra X4270 on page 15 for more information.

Sun Netra X4270

November 2011 model (used for CMS R16.3)

- One 2.13 GHz quad core Intel L5518 processor
- 4 GB RAM
- Two internal 600 GB SAS disks
- Internal DVD-RW disc drive
- Two hot-swappable 700 W AC power supplies
- Mirrored system only
- One RAID controller card
- Can be used as a desktop unit or can be configured for rack mounting
- Optional backup device

Software check

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

```
prtdiag -v | grep System
```

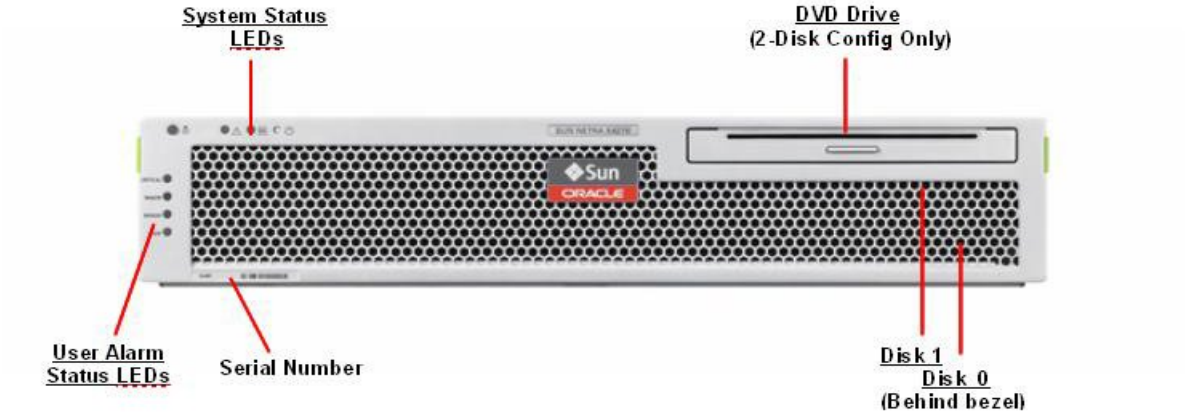
The system displays the name of the computer:

```
System Configuration: SUN MICROSYSTEMS SUN NETRA X4270 SERVER.
```

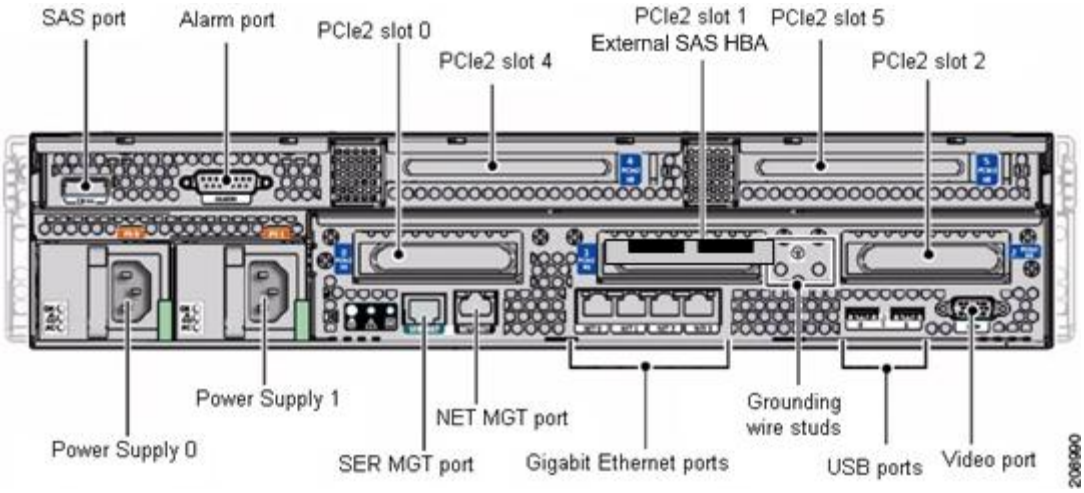
Computer layout

Familiarize yourself with the layout of the computer.

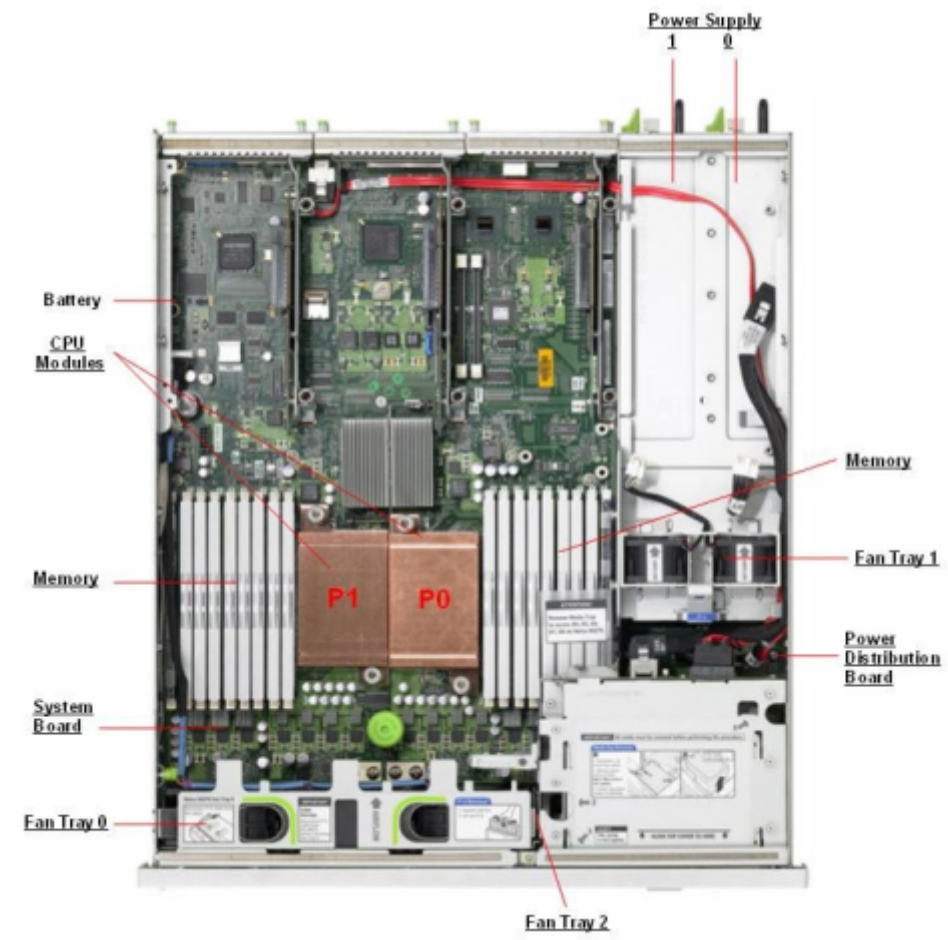
Netra X4270 front panel



Netra X4270 Rear view



Netra X4270 Top level view



Mounting the Server Using the 19-Inch, 4-Post Sliding Rail Mount Rack Kit

You also need the hardmount brackets from the standard rackmount kit that came with the server.

Contents of the Sliding Rail 19-Inch, 4-Post Kit

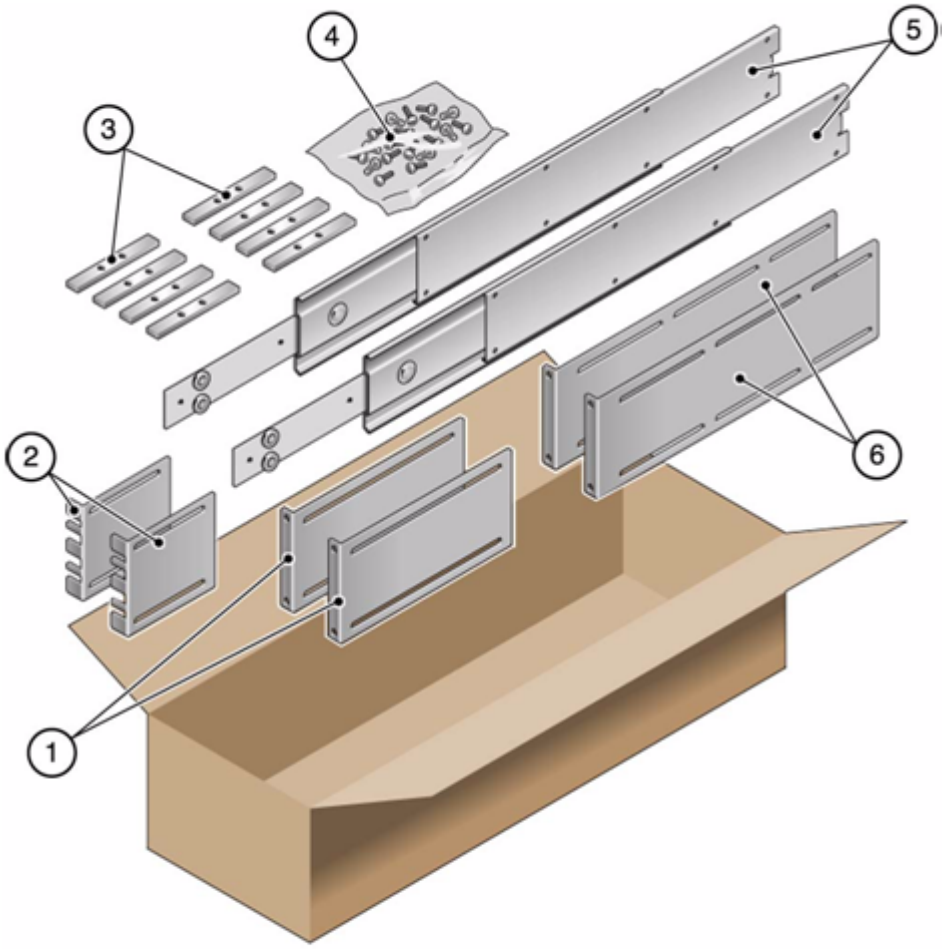


Figure Legend
1 Short brackets (2) **4** Screws
2 Extension brackets (2) **5** Telco slide assemblies (2)
3 Threaded strips – M6 (4) 10-32 (4) **6** Long brackets (2)

19-Inch, 4-Post Sliding Rail Mount Screw Kit Contents

Number	Description	Where used
10	M4 x 0.5 mm x 5 mm Phillips panhead screws	8 for glides, 2 extra
10	M6 brass collar screws	4 for short brackets, 4 for long brackets, 2 extra
8	M5 panhead screws, nuts, plain washers andstar washers	8 for slides
10	M5 x 12.7 mm screws	10 for rack, if appropriate
12	M6 x 13 mm screws	10 for rack, if appropriate
9	M6 square clip nuts	9 for rack, if appropriate
10	10–32 collar screws 4 short, 4 long, 2 extra	8 for racks with 10 to 32 holes, if appropriate
12	10-32 x 0.5 in. combo head screws	12 for rack, if appropriate
12	12-24 x 0.5 in. combo head screws	12 for rack, if appropriate

Note:

The front-to-back rail spacing must be at least 392 mm (15.43 inches) and not more than 863.6 mm (34 inches) from the outside face of the front rail to the outside face of the back rail.

1. Get the hardmount brackets and M5 x 4.5 mm flathead Phillips screws from the standard rack kit. These hardmount brackets and screws are shipped with the standard server ship kit, not as part of the sliding rail 19-inch, 4-post rackmount ship kit.
2. Use four of the supplied M5 x 4.5 mm flathead Phillips screws to secure each of the hardmount brackets to the sides of the server.



3. Get the telco slide assemblies from the rack kit.
4. Press in the button on each slide and pull the glide completely out of the slide.

Dismantling the Slide

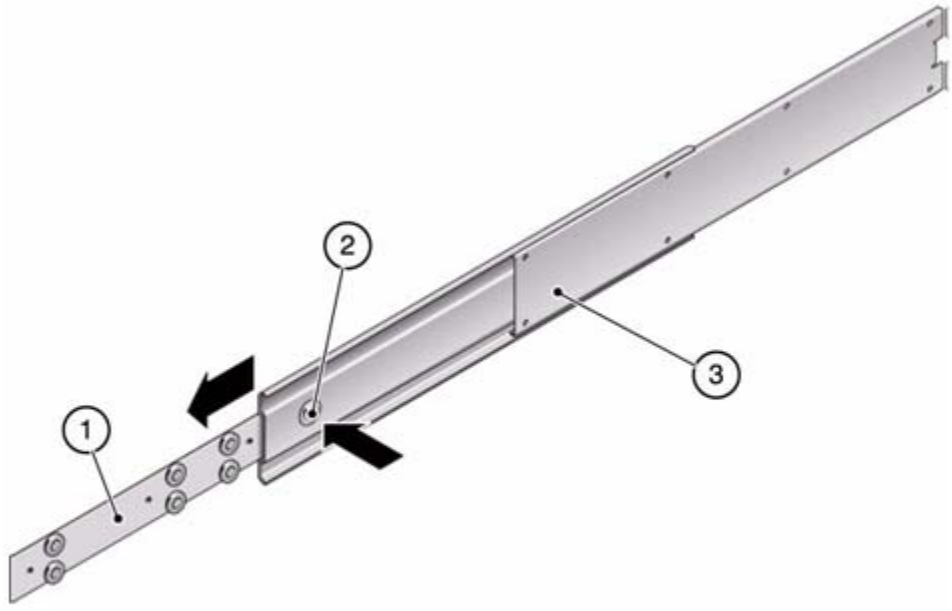
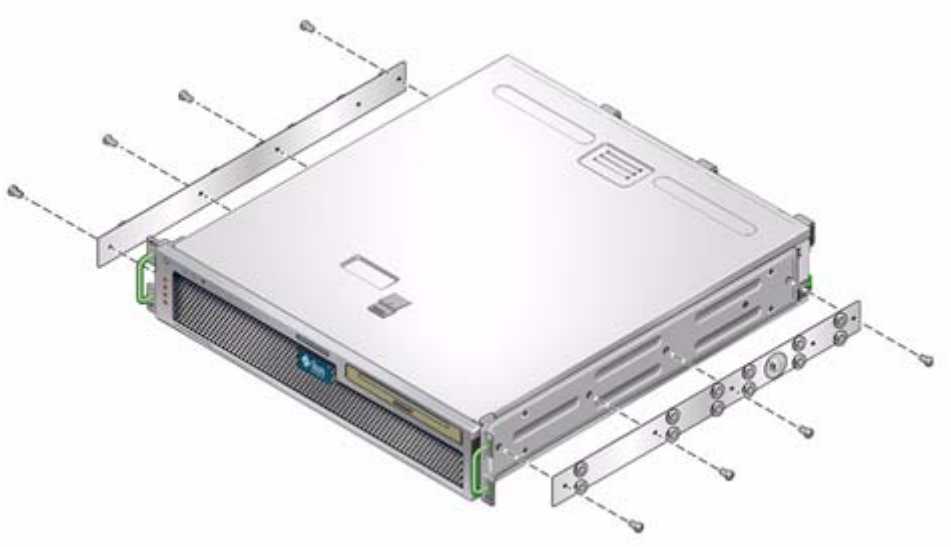


Figure Legend
1 Glide
2 Button
3 Slide (in two parts)

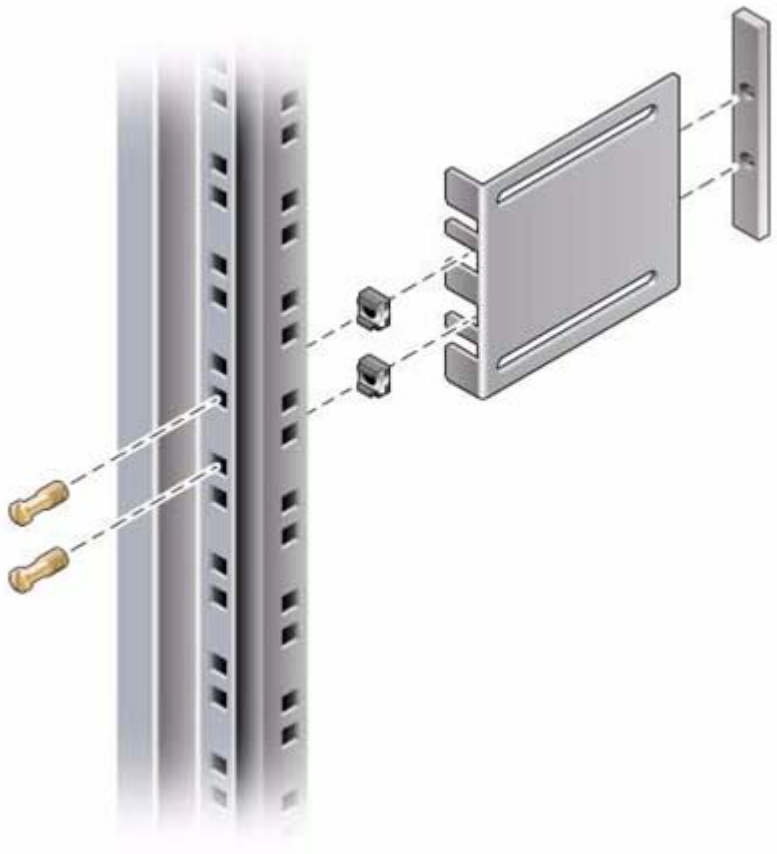
5. Using eight of the M4 x 0.5 x 5 mm panhead Phillips screws from the rackmount kit (four for each side), screw each glide to the side of the server chassis.



6. Get the short brackets and long brackets from the rackmount kit.
7. Lift each short bracket to the desired position at the front of the rack and attach a short bracket to each of the front rack uprights.

   Use two of the brass M6 collar screws and M6 cage nuts (if required), and one threaded strip, to secure each bracket.
8. Lift each long bracket to the desired position at the rear of the rack and attach a long bracket to each of the rear rack uprights.

   To secure each bracket, use two of the brass M6 collar screws and M6 cage nuts (if required) and one threaded strip, exactly as you did for the front rack uprights in the previous step.



Note:

If your rack has 10-32 holes, use the 10-32 collar screws and 10-32 threaded strips.

9. Extend a slide to line up the access holes with the front screw holes.
10. Secure the slide onto the short and long brackets at the front and rear of the rack.

    Use the M5 panhead screws from the inside. Use the M5 nuts, plain washers, and star washers from the outside. Use extension brackets instead of the long brackets if the dimension is greater than 665 mm.

Securing the Slide to the Brackets

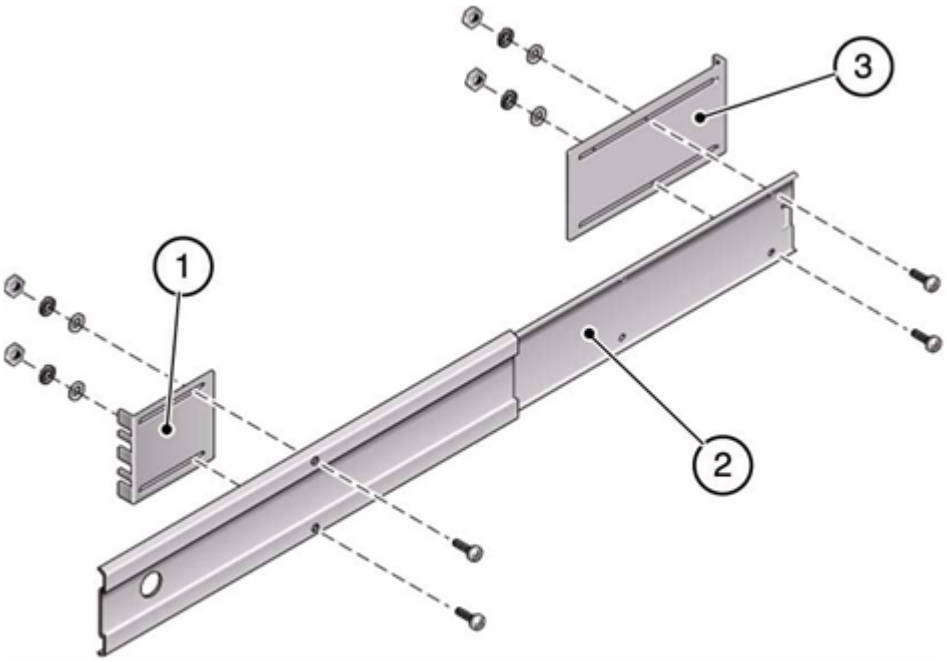
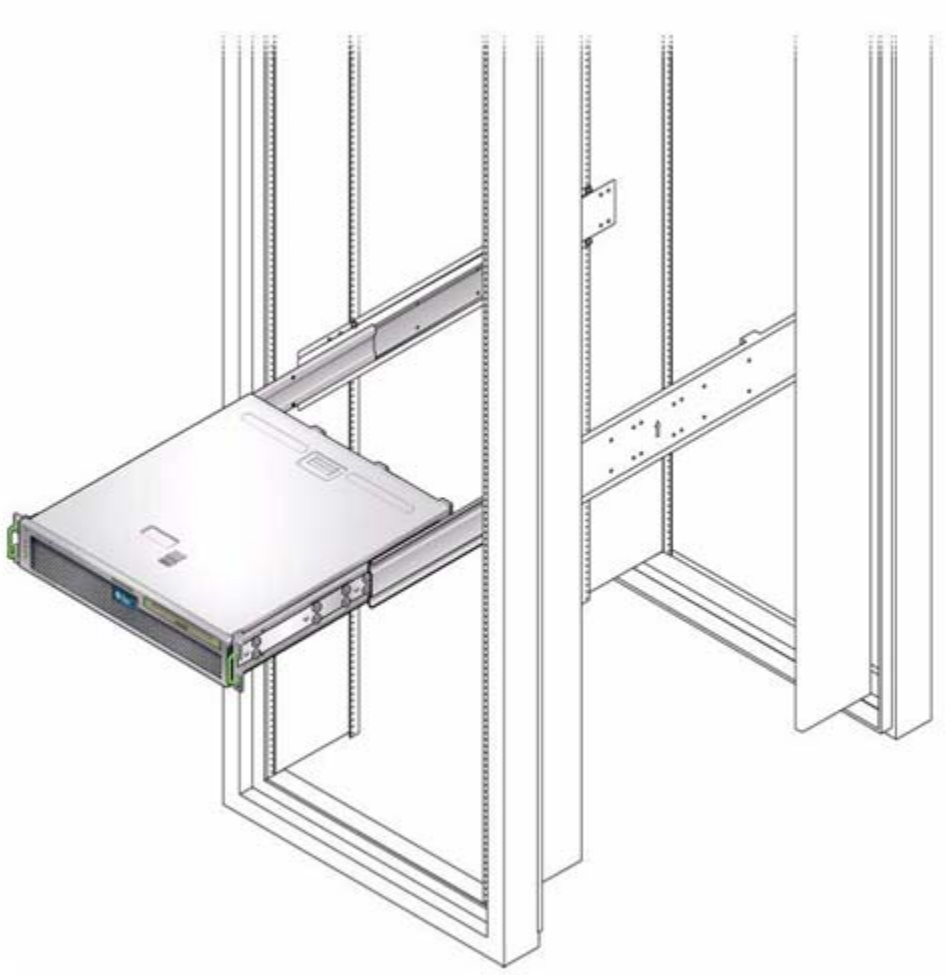


Figure Legend
1 Short bracket
2 Slide
3 Long bracket

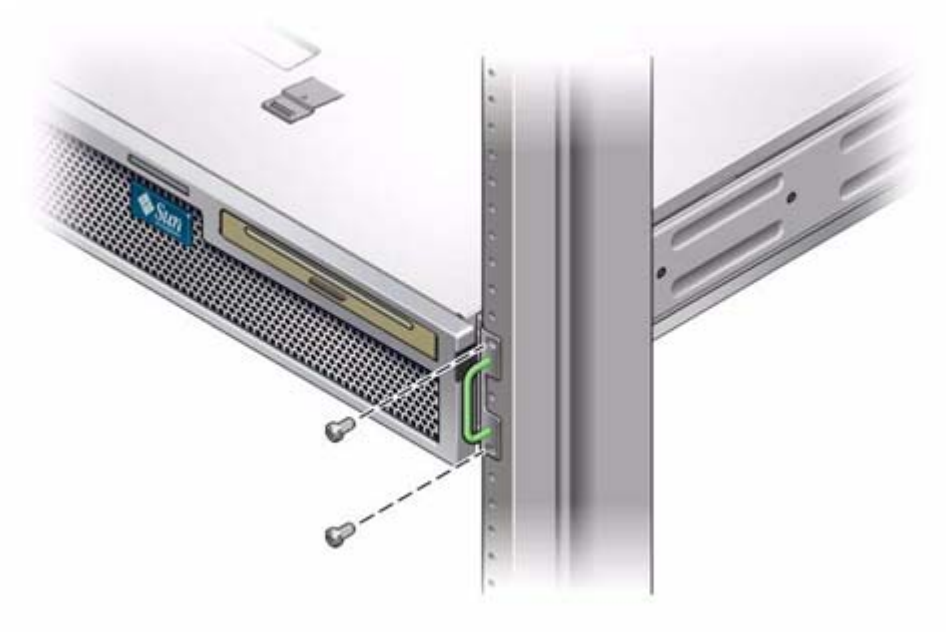
11. Repeat Step 9 and Step 10 for the slide on the other side of the rack.
12. Push the slides completely into the assembly on each side of the rack and release the stop catches.
13. Align the glides attached to the server with the slide assemblies in the rack.

    You might find that there is too much or too little room between the two slides mounted in the rack. Consequently, the glides attached to the server might not align correctly with the slides in the rack. If either situation occurs, loosen the M6 collar screws and cage nuts on the long and short brackets (Step 7 and Step 8), move the brackets inward or outward to the appropriate points, then tighten them.
14. Push in the slide buttons and slide the server all the way into the rack enclosure.



15. Using two screws per side, secure the front of the hardmount brackets that are attached to the sides of the server to the front of the rack.

    The size of the screws varies, depending on your particular rack.



For more information about mounting the server using the 19-Inch, 4-Post Sliding Rail Mount Rack Kit, see http://docs.oracle.com/cd/E19591-01/821-0572/821-0572.pdf starting on page 31.

Setting up power

To set up the AC power:

1. Plug the IEC end of the power cord in to the AC outlet.

   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 if a UPS is available.

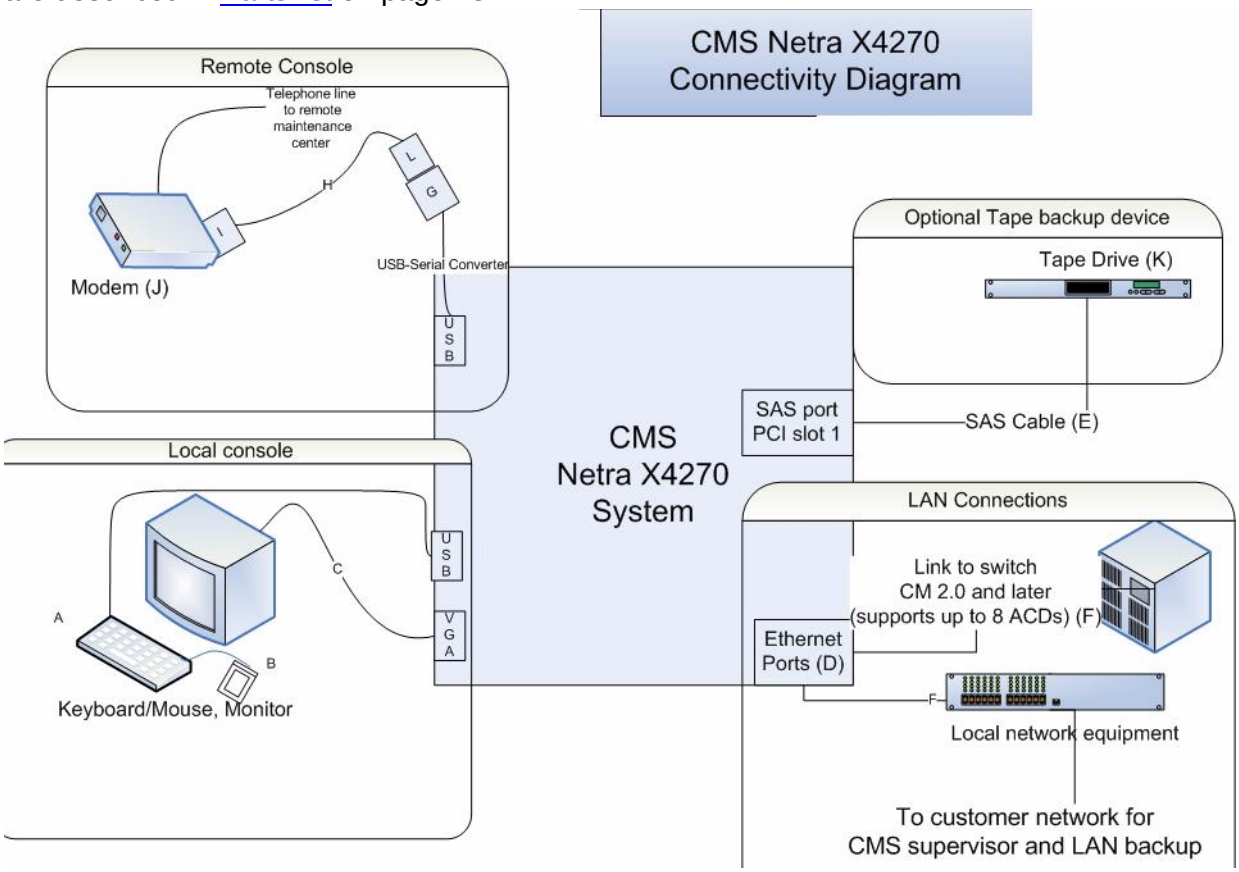
   A UPS provides a temporary electrical supply to a computer for several minutes, depending on the number of components connected to the UPS. For a CMS computer, a 1.5KVA minimum is required for each power supply. See your UPS documentation to determine the projected amount of backup battery time for your 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 minimum 15-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 28.



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]		VGA Monitor cable
D	N/A	Gigabit ethernet ports (built-in)
E[1]	407934470	HD-68 to VHDCI SCSI cable (3 feet, 0.8 meters) (or) SAS to SAS cable (0.5 meters)
F	407086826	Category 5 UTP cord (10 feet, 3 meters)
G	700502166	USB to serial converter
H	846983039	10-wire modular cable (10 feet, 3 meters)
I	846362770	RJ45-to-DB25 remote console adapter
J	Customer provided	U.S. Robotics 33.6 Sportster and the U.S. Robotics 5686G Comsphere 3910 remote console modem
K[1]	N/A[2]	Tape drive and AC power cord
L	846373413	DB9-to-RJ45 straight-through modem adapter

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.

Support for KVM and headless CMS systems

It has come to the attention of Avaya that several customers have requested support for headless and/or KVM solutions for CMS systems. CMS does not support the use of headless or KVM solutions for CMS systems. Use of these solutions is only by *Permissive Use*.

Note:

For Netra X4270 systems, if you are using USB as the backup device, a KVM switch cannot be used because the USB drive must plug into the keyboard that is directly connected to the server.

Connecting the keyboard and mouse

Connect the keyboard and mouse to the USB ports.

Connecting the monitor

1. Connect the power cord from the monitor to the UPS or wall outlet.
2. Connect the VGA cable to the VGA connection at the rear of the system and connect the opposite end to the VGA port on the Monitor.

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 faxmodem in the U.S. and Canada or a modem provided locally for installations outside of the U.S. and Canada.

To connect the remote console modem:

1. Connect the USB to Serial Converter to one of the USB ports on the back of the computer.
2. Connect the straight-through adapter (L) to the serial end of the USB to Serial converter.
3. Connect the modular cord to the RJ45 end of the adapter.

4. Connect the other end of the modular cord to the RJ45 end of the RJ45-to-DB25 remote console adapter.
5. Connect the remote console adapter to the RS-232C port on the modem. The RS-232C port on the Comsphere 3910 is labeled "DTE1".
6. Connect the telephone line to the jack labeled "LINE" on the U.S. Robotics modem, or labeled "DIAL" on the Comsphere 3910 modem.
7. 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 32.

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 30.
- Connecting to the customer network on page 30.
- Installing the External SAS HBA and Connecting a SAS LTO-4 tape drive on page 31.

Connecting the switch link

The CMS computer uses TCP/IP over a local area network (LAN) at only 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.

You must use ethernet port 1 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, you must use only speeds of 10/100 Mbps. This ethernet connection is used for CMS Supervisor, network printers, and LAN backup.

You must use ethernet port 0 for this connection.

Installing the External SAS HBA and Connecting a SAS LTO-4 tape drive

This section discusses the installation procedure of external SAS HBA and connecting a SAS LTO-4 tape drive.

Installing the External SAS HBA

1. Shutdown the system as explained in "Turning the computer off and on".
2. Remove the cable connections to the system, and remove system from rack.
3. Place system on a ESD safe surface and remove cover as shown on the cover of the system. Depress the button near the front center of the system with a screwdriver, and push the cover backwards to remove.

   Note:
   This is done better with two sets of hands, one to depress the button and another to use two hands to push back the cover.
4. Check the system cover for pictorial descriptions of removing specific items.
5. Remove the PCI Mezzanine by first disconnecting the five cable connections to the mezzanine. The five cable connections are for FT0, FT1, Front Panel LED, 12V Power, and SAS connection. Loosen 4 green captive screws on the mezzanine board, then lift the mezzanine straight up from the system.

   Note:
   The Front Panel LED cable is difficult to remove so be very careful.
6. Remove the PCIe2 slot 1 riser which is the center slot in the system, loosen 3 green captive screws of which two are on the outside of system in rear, and one is at the other end of riser to motherboard. Gently lift the riser up.
7. Remove the PCI card blank by removing the screw holding it in, then pulling out.
8. Insert the external SAS HBA in the riser, replace the screw to hold the HBA in place.
9. Re-install the riser and tighten the 3 green captive screws.
10. Re-install the Mezzanine, be careful not to cover over any of the 5 cables that you disconnected earlier, and tighten the 4 green captive screws to hold the Mezzanine in place.
11. Re-connect the 5 cable connections, FT0, FT1, Front Panel LED, 12V Power, and SAS connection.

    Note:
    The Front Panel LED cable is difficult to connect so be very careful.
12. Replace the cover.

13. Put the system back in the rack.
14. Power up as explained in "Turning the computer off and on".

Connecting a SAS LTO-4 tape drive

A Serial Attached SCSI (SAS) cable connects from the SAS port, which is the left connection in PCIe2 slot 1 as viewed from the system rear, on the back of the computer to the SAS port, which is the right port as viewed from tape unit rear, on the back of the tape drive rack mount assembly. You must install the tape drive in the left-side slot of the rack mount assembly (while facing the assembly front).

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. Press and release the power button.
6. The system boots.

Setting the remote console modem options

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

New U.S. Robotics faxmodems that come from the factory usually work with 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/abcadm -r tty0

   The following message is displayed:

```
tty0 is currently set to be incoming

Are you sure you want to change it? [y,n,?]
```

5. Enter: **y**.

   The following message is displayed:

```
tty0 administration removed
```

6. Enter:

   cu -s 9600 -b 8 -l cua/0

   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 tty0`

    The following message is displayed:

```
tty0 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
- Setting up system alarming

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 35
- Computer layout on page 36
- Turning the computer off and on on page 37
- Using an ESD wrist strap on page 38
- Maintaining disk drives on page 38
- Maintaining tape drives on page 40
- Adding memory and replacing the CPU on page 44

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 38 for more information.

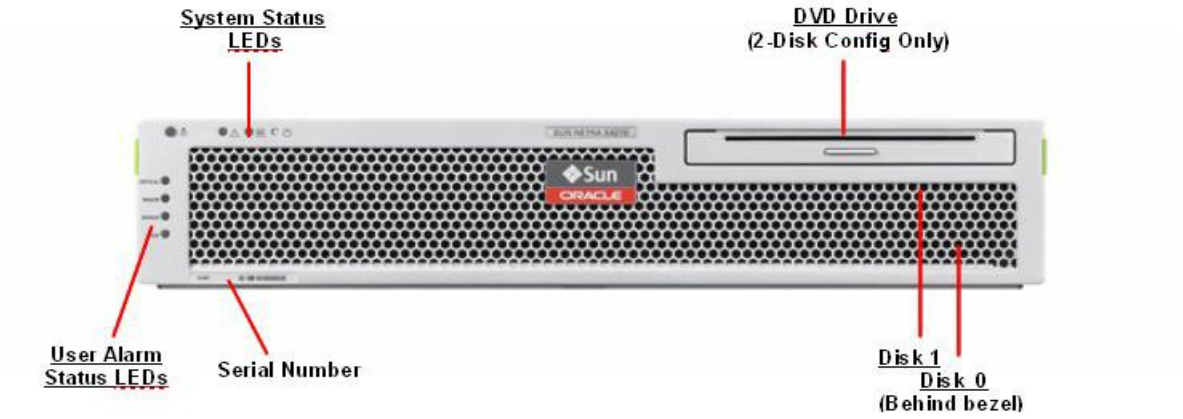
CAUTION:
Avoid keeping the cover off for extended periods of time while the system is operating. The cover must be installed to prevent automatic thermal shutdown.

Computer layout

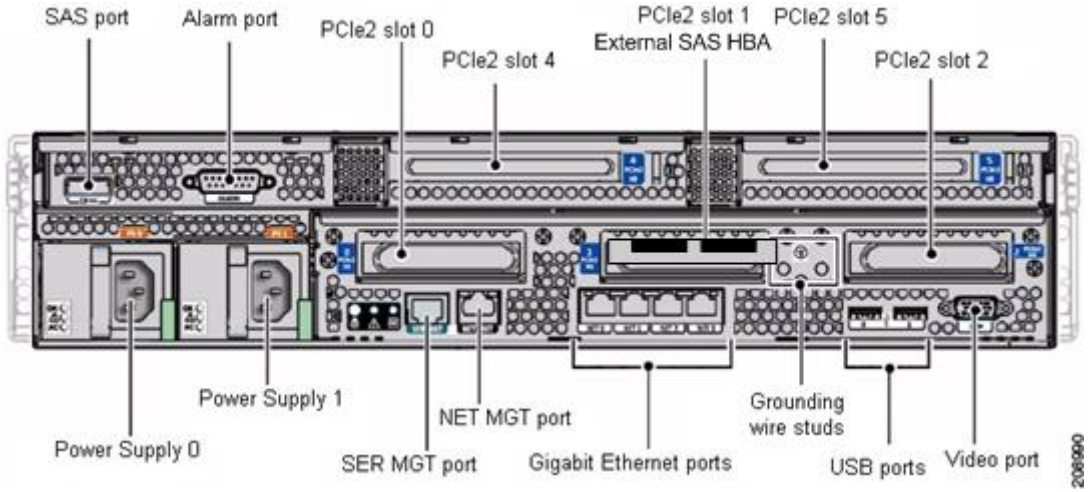
The following figures identify the basic hardware components of the computer:

- Netra X4270 front panel on page 36
- Netra X4270 Rear view on page 36
- Netra X4270 Top level view on page 37

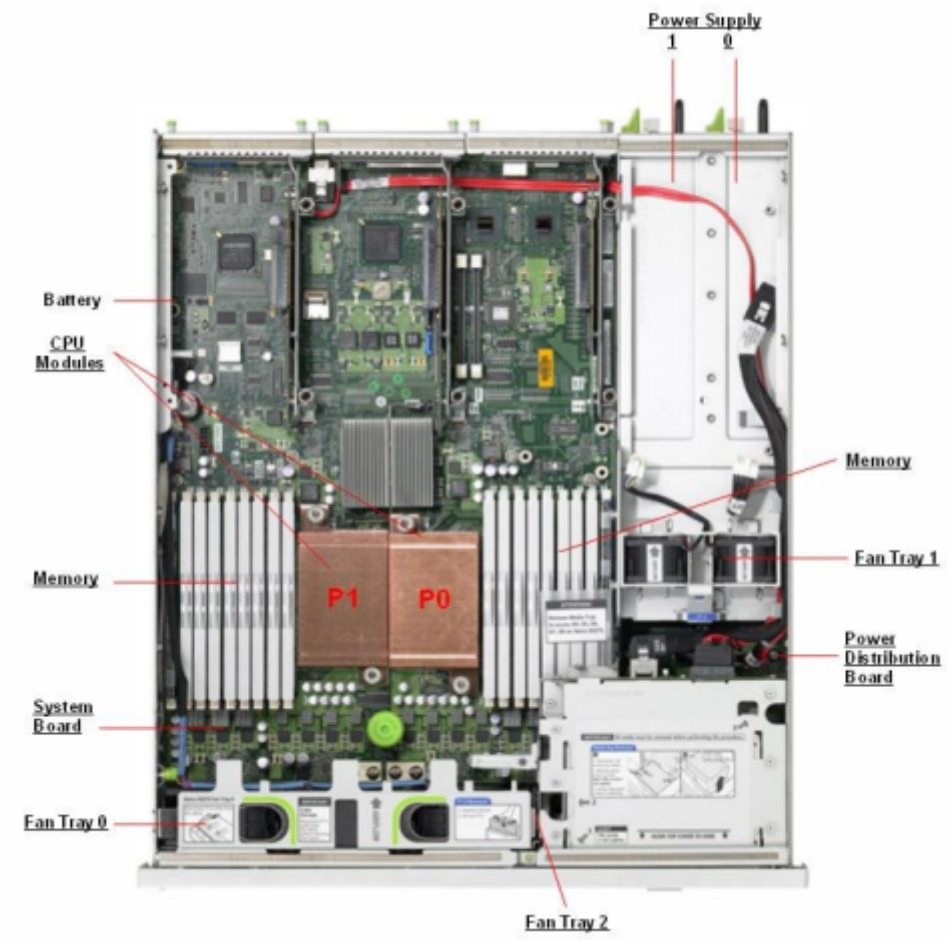
Netra X4270 front panel



Netra X4270 Rear view



Netra X4270 Top level view



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 -i5 -g0`

   This shuts down the system.
3. Turn off the system monitor.

4. Turn off any external 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 devices, starting with the device that is farthest from the system and working toward the system.
2. Turn on the system monitor.
3. Press and release the power button.

   If the system is operating properly, a banner screen is displayed within about 5 minutes after it is turned on.
4. 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.

Maintaining disk drives

This section includes the following topics:

- Prerequisites on page 38
- Required references on page 39
- Replacing a disk drive on page 39

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.

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 X4270 Server* at the Oracle documentation Web site:

  http://docs.sun.com

Replacing a disk drive

This procedure describes how to replace a disk drive.

To remove a disk drive:

Note:
This procedure should be followed multiple times if replacing multiple disk drives.

1. Sun SAS disks are hot-swappable. Follow the instructions in the Software Installation, Maintenance, and Troubleshooting for your version of CMS for procedures to be completed before removal of the disk.
2. Locate the disk drive to be removed. A map of drive locations is located on the front right side of the system.
3. Press the drive button to release the drive latch.
4. Pull firmly on the drive latch to slide the drive out of the drive bay.
5. Set the drive aside on an antistatic mat.
6. Remove the replacement hard drive from its shipping container and antistatic packaging.
7. Press the drive button to release the drive latch.
8. Orient the hard drive with the drive latch towards you, and the label facing up.
9. Carefully slide the drive into the drive bay by pressing on the area between the drive button and the drive status LEDs.
10. When you feel resistance, press firmly so that the drive latch begins to close.
11. Press the drive latch closed.

Replacing the DVD/USB module

Contact Avaya support if the DVD/USB module 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 includes the following topics:

- Tape drive compatibility on page 40
- Ordering tapes on page 40
- Cleaning the tape drive on page 40
- Adding, removing, or replacing tape drives on page 41

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. For the LTO-4 drive, order LTO-4 Ultrium blank data cartridges.

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 47. 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 -i5 -g0
   ```

   This shuts down the system.

4. Turn off the system monitor.

5. Turn off the tape drive.
6. If replacing a defective tape drive, disconnect the SAS cables and power cables.
7. Connect the tape drive as told in Connecting to external interfaces on page 42.

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 42.
- Connecting to the customer network on page 42.
- Connecting the tape drive on page 42.

Connecting the switch link

The CMS computer uses TCP/IP over a local area network (LAN) at only 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.

You must use ethernet port 1 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.

You must use ethernet port 0 for this connection.

Connecting the tape drive

Connections to the tape drive are for the x86 platform specific SAS LTO-4 tape drive.

Connecting a SAS LTO-4 tape drive

A Serial Attached SCSI (SAS) cable connects from the SAS port (left connection in PCIe2 slot 1 as viewed from the system rear) on the back of the computer to the SAS (right port as viewed from tape unit rear) port on the back of the tape drive rack mount assembly. The tape drive should be installed in the left-side slot of the rack mount assembly (while facing the assembly front).

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. Press and release the power button.

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 SAS device files. If you do not remove the device files before rebooting the system, the SAS device files may not match the hardware configuration.
5. Enter:

   `/usr/sbin/shutdown -y -i5 -g0`

   This shuts down the system.
6. Turn off the system monitor.
7. Turn off all tape drives, starting with the first tape drive.
8. Disconnect the tape drive from the SAS port.

9. Turn on the system monitor.
10. Press and release the power button.

    The system reboots.
11. 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.

Troubleshooting

This section describes the following troubleshooting procedures:

- Tools on page 45
  - Using the prtdiag command on page 45
  - System messages on page 47
  - Tape drive status indicators on page 47
  - Sun Validation Test Suite (VTS) on page 49
- Troubleshooting tape drives on page 50
- Recovery procedures on page 52

Additional troubleshooting: See the *Sun Netra X4270 Service Manual* at the Sun documentation Web site for additional troubleshooting procedures:

http://www.oracle.com/technetwork/indexes/documentation/index.html

Tools

There are several tools available to help diagnose hardware problems:

- Using the prtdiag command on page 45
- System messages on page 47
- Tape drive status indicators on page 47
- Sun Validation Test Suite (VTS) on page 49

Using the prtdiag command

The prtdiag command displays system diagnostic information.

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

The following is an example of the results for a Netra X4270 computer.

```
System Configuration: SUN MICROSYSTEMS SUN NETRA X4270 SERVER
BIOS Configuration: American Megatrends Inc. 14010205 05/25/2010
BMC Configuration: IPMI 1.5 (KCS: Keyboard Controller Style)

==== Processor Sockets ================================

Version                          Location Tag
-------------------------------- --------------------------
Intel(R) Xeon(R) CPU           L5518  @ 2.13GHz CPU 0

==== Memory Device Sockets ============================

Type    Status Set Device Locator      Bank Locator
------- ------ --- ------------------- --------------------
Unknown empty  0   D2                  BANK2
Unknown empty  0   D1                  BANK1
Unknown empty  0   D0                  BANK0
Unknown empty  0   D5                  BANK5
Unknown empty  0   D4                  BANK4
Unknown empty  0   D3                  BANK3
Unknown in use 0   D8                  BANK8
Unknown empty  0   D7                  BANK7
Unknown empty  0   D6                  BANK6
Unknown empty  0   D2                  BANK2
Unknown empty  0   D1                  BANK1
Unknown empty  0   D0                  BANK0
Unknown empty  0   D5                  BANK5
Unknown empty  0   D4                  BANK4
Unknown empty  0   D3                  BANK3
Unknown empty  0   D8                  BANK8
Unknown empty  0   D7                  BANK7
Unknown empty  0   D6                  BANK6
FLASH   in use 0

==== On-Board Devices =================================
 Intel 82576 Ethernet Controller.

==== Upgradeable Slots ================================

ID  Status    Type             Description
--- --------- ---------------- ---------------------------

0   available PCI Express      PCIE0
1   in use    PCI Express      PCIE1
2   available PCI Express      PCIE2
3   in use    PCI Express      PCIE3
4   available PCI Express      PCIE4
5   available PCI Express      PCIE5
```

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:

- The system displays a list of the most recent messages.
- 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 can 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**.

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 tape drives

Use the following procedures to troubleshoot tape drives:

- Checking tape status
- Reassigning device instance numbers for tape devices on page 51

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/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

   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 (SAS drives do not use target addresses). If using a SCSI tape drive, the 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 disc into the disc 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 disc.

Recovery procedures

This section provides solutions for the following problems:

- Loss of power on page 52
- Remote console port problems on page 53

Loss of power

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

To turn on the computer:

1. Turn on all external SAS devices, starting with the device that is farthest from the system and working toward the system.
2. Turn on the system monitor.
3. Press and release the power button.

To turn off the computer:

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

   `/usr/sbin/shutdown -y -i5 -g0`

   This shuts down the system.
3. Turn off the system monitor.
4. Turn off all external SAS devices, starting with the device that is closest to the system and working toward the farthest device.

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/abcadm -i -b 9600 tty0

   The following message should be displayed:

```
tty0 set to incoming port 9600 baud
```

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

3. Enter:

   /cms/install/bin/abcadm -r tty0

   The following message is displayed:

```
tty0 is currently set to be incoming

Are you sure you want to change it? [y,n,?]
```

4. Enter: **y**

   The following message is displayed:

```
tty0 administration removed
```

   The port monitor turns off.

5. Enter:

   svcs -a |grep sac

   Check whether the sac service is online or disabled. If the service is online, continue with Step 6, if it is disabled, continue with step 7.

6. Enter:

   svcadm disable svc:/system/sac

7. Enter:

   svcadm enable svc:/system/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 tty0

   The system should display the following message:

```
tty0 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 might still be able to dial in, but it might not dial out.

3. Enter:

   /opt/cc/install/aot.cssr1Xxx.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 ttya.

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)	A switch feature. ACD is software that channels high-volume incoming call traffic to agent groups (splits or skills). 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).
Boot disk	A disk that contains the Solaris operating system and customer data.
CMS	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.
FB- DIMM	Dual In-line Memory Module. A narrow printed circuit board that holds memory chips. It plugs into a FB-DIMM socket on the motherboard or memory board.
IDE	Integrated Drive Electronics
Non-Volatile Random Access Memory (NVRAM)	A random access memory (RAM) system that holds its contents when external power is lost.
SAS	Serial Attached SCSI.
SCSI	See Small Computer System Interface (SCSI).
SCSI Bus	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.
SCSI ID	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.
SCSI Single-Ended Bus	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.
Small Computer System Interface (SCSI)	A hardware interface that allows the connection of devices (such as hard disks) to a computer system.
Solaris	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.
SSO	Services Support Organization. The Avaya organization that provides technical support for Avaya products.

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