



Avaya Call Management System

Release 12

Software Installation, Maintenance, and
Troubleshooting Guide

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Preventing toll fraud

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, anyone who is not a corporate employee, agent, subcontractor, or person working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

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<http://www.avaya.com>

Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Providing telecommunications security

Telecommunications security (of voice, data, and video communications) is the prevention of any type of intrusion to (that is, either unauthorized or malicious access to or use of) your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or person working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Use (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including, but not limited to, human and data privacy, intellectual property, material assets, financial resources, labor costs, and legal costs).

Your responsibility for your company's telecommunications security

The final responsibility for securing both this system and its networked equipment rests with you, an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources, including, but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure:

- Your Avaya-provided telecommunications systems and their interfaces
- Your Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
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Avaya support

Avaya provides a telephone number for you to use to report problems or to ask questions about your contact center. The support telephone number is 1-800-242-2121 in the United States. For additional support telephone numbers, see the Avaya Web site:

<http://www.avaya.com>

Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Comments

To comment on this document, send e-mail to crminfodev@avaya.com.

Acknowledgment

This document was written by the CRM Information Development group.

Avaya Call Management System
Release 12
Software Installation, Maintenance, and Troubleshooting Guide

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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 11
- [Intended users](#) on page 12
- [Overview](#) on page 12
- [Conventions and terminology](#) on page 13
- [Reasons for reissue](#) on page 13
- [Availability](#) on page 14
- [Related documentation](#) on page 15
- [Support](#) on page 19

Purpose

The purpose of this document is to describe how to install, configure, and maintain Avaya CMS.

Intended users

This document is written for:

- Avaya support personnel
- Avaya factory personnel
- Contact center administrators

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

Overview

This document includes the following topics:

- [Introduction](#) on page 21
Provides an overview of the supported Avaya CMS software, supported hardware platforms and required software.
- [Installing the Solaris operating system](#) on page 23
Outlines the Solaris operating system installation procedures. These procedures are used by technicians at customer sites and personnel at the factory.
- [Configuring the Solaris operating system](#) on page 39
Outlines the Solaris operating system configuration procedures. These procedures are used by technicians at customer sites and personnel at the factory.
- [Installing Avaya CMS and supporting software](#) on page 65
Outlines the Avaya CMS software installation and setup procedures. These procedures are used by technicians at customer sites and by personnel at the factory.
- [Turning the system over to the customer](#) on page 163
Provides the procedures that a technician performs before turning the system over to the customer and a worksheet that the technician fills out for the customer.
- [Customer security recommendations](#) on page 185
Provides procedures to make your CMS system more secure.
- [Maintaining the Avaya CMS software](#) on page 191
Discusses file system backups and other maintenance procedures.

- [Recovering an Avaya CMS system](#) on page 245
Provides recovery procedures.
- [Troubleshooting](#) on page 285
Discusses how to fix various software - related problems.

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

This document differs from the previous issue in the following ways:

- Updated the procedures for [Recovering a mirrored system after a single disk fails](#) on page 267 and [Recovering a mirrored system after a single disk fails](#) on page 267.
- Updated [Avaya CMS disk partition values](#) on page 334 with values for the 80 GB disk drive.
- A general update and correction of a variety of small problems, such as typographical errors, was done.

Availability

Copies of this document are available from one or both of the following sources:

Note:

Although there is no charge to download documents through the Avaya Web site, documents ordered from the Avaya Publications Center must be purchased.

- The Avaya online support Web site, <http://www.avayadocs.com>
- The Avaya Publications Center, which you can contact by:

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Mail:

GlobalWare Solutions
200 Ward Hill Avenue
Haverhill, MA 01835 USA
Attention: Avaya Account Manager

E-mail:

totalware@gwsmail.com

Related documentation

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

- [Change description](#) on page 15
- [Software documents](#) on page 15
- [Administration documents](#) on page 16
- [Avaya CMS upgrade documents](#) on page 16
- [Hardware documents](#) on page 17
- [Communication Manager documents](#) on page 18
- [Documentation Web sites](#) on page 18

Change description

For information about the changes made in Avaya CMS R12, see:

- *Avaya Call Center 2.0 and CMS Release 12 Change Description*, 555-245-400

Software documents

For more information about Avaya CMS software, see:

- *Avaya Call Management System R12 Software Installation, Maintenance, and Troubleshooting*, 585-215-117
- *Avaya CMS Open Database Connectivity*, 585-780-701
- *Avaya Call Management System R12 LAN Backup User Guide*, 585-215-721
- *Avaya CMS R3V11 External Call History Interface*, 585-780-700
- *Avaya CMS Custom Reports*, 585-215-822
- *Avaya CMS Forecast*, 585-215-825
- *Avaya Visual Vectors Version 11 Installation and Getting Started*, 585-210-706
- *Avaya Visual Vectors Version 11 User Guide*, 585-210-709

Administration documents

For more information about Avaya CMS administration, see:

- *Avaya Call Management System Release 3 Version 11 Administration*, 585-215-515
- *Avaya Call Management System Database Items and Calculations*, 07-300011
- *Avaya CMS Supervisor Release 12 Reports*, 07-300012
- *Avaya CMS Supervisor Release 12 Installation and Getting Started*, 07-300009

Avaya CMS upgrade documents

There are several upgrade paths supported with Avaya CMS. There is a document designed to support each upgrade. None of the following upgrade documents are available from the publications center.

This section includes the following topics:

- [Base load upgrades](#) on page 16
- [Platform upgrades and data migration](#) on page 16
- [Avaya Call Management System Upgrade Express \(CUE\)](#) on page 17

Base load upgrades

Use a base load upgrade when upgrading CMS to the latest load of the same version (for example, R3V9 ak.g to R3V9 al.k). A specific set of instructions is written for the upgrade and is shipped to the customer site with the CMS software CD-ROM as part of a Quality Protection Plan Change Notice (QPPCN).

For more information about base load upgrades, see:

- *Avaya CMS R12 Base Load Upgrades*

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 Blade 150). 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 R12 or the latest load of the same CMS version). For R12, a specific set of instructions is written for the upgrade and is shipped to the customer site with the new hardware.

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

- *Avaya Call Management System Release 3 Version 11 Platform Upgrade and Data Migration*

Avaya Call Management System Upgrade Express (CUE)

Use CUE in the following conditions:

- CMS is being upgraded from an earlier version (for example R3V6) to the latest version (for example, R12).
- The hardware platform is not changing.

A specific set of upgrade instructions is written for the upgrade and is shipped to the customer site with the CUE kit.

For more information about CUE upgrades, see:

- *Avaya Call Management System (CMS) Release 12 CMS Upgrade Express (CUE) Customer Requirements, 07-300010*
- *Avaya Call Management System Release 12 Sun Blade 100 Workstation CMS Upgrade Express*
- *Avaya Call Management System Release 12 Sun Blade 100 Workstation Mirrored System CMS Upgrade Express*
- *Avaya Call Management System Release 12 Sun Enterprise 3500 Computer CMS Upgrade Express*
- *Avaya Call Management System Release 12 Sun Enterprise 3500 Computer Mirrored System CMS Upgrade Express*
- *Avaya Call Management System Release 12 Sun Fire V880 Computer CMS Upgrade Express*

Hardware documents

For more information about Avaya CMS hardware, see:

- *Avaya Call Management System Sun Fire V880 Computer Hardware Installation, Maintenance, and Troubleshooting, 585-215-116*
- *Avaya Call Management System Sun Fire V880 Computer Connectivity Diagram, 585-215-612*
- *Avaya Call Management System Sun Blade 100/150 Computer Hardware Installation, Maintenance, and Troubleshooting, 585-310-783*
- *Call Management System Sun Blade 100/150 Computer Connectivity Diagram, 585-310-782*

- *Avaya Call Management System Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting*, 585-215-873
- *Call Management System Sun Enterprise 3500 Computer Connectivity Diagram*, 585-215-877
- *Avaya Call Management System Terminals, Printers, and Modems*, 585-215-874

Communication Manager documents

For more information about Avaya CMS communication servers, see:

- *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*, 585-215-876
- *Avaya Communication Manager Call Center Guide to Call Vectoring and Expert Agent Selection (EAS) R2.0 Guide*, 555-245-783
- *Avaya Communication Manager Guide to ACD Call Center R2.0*, 555-245-784

Documentation Web sites

For product documentation for all Avaya products and related 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>
- Okidata printer documentation
<http://www.okidata.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.

■ ■ ■ ■ ■ ■

Introduction

This section lists the hardware platforms and software that is supported by Avaya Call Management System (CMS) Release 12 (R12).

This section includes the following topics:

- [Supported hardware platforms for R12](#) on page 21
- [Software for Avaya CMS Release 12](#) on page 22

Supported hardware platforms for R12

Avaya CMS is supported on the following platforms:

- Sun Enterprise 3500 computer
- Sun Blade 100 computer
- Sun Blade 150 computer
- Sun Fire V880 computer

Note:

Unless specified otherwise:

- All information and procedures in this document apply to all of the supported Avaya CMS hardware platforms.
- Sun Blade refers to either the Sun Blade 100 computer or the Sun Blade 150 computer.

Software for Avaya CMS Release 12

Avaya CMS utilizes the following software packages (optional packages are noted):

- Solaris 9 Software 4/03; CD-ROM discs 1 and 2
- Software Supplement for the Solaris 9 Operating Environment CD-ROM, contains:
 - Sun Online Validation Test Suite (VTS)
 - Sun Remote System Control (RSC) software (optional)
 - Sun Fire V880 backplane firmware upgrade package (required for Sun Fire V880 platforms)
- Avaya CMS Hardware Drivers CD-ROM (optional)
- Annex Communication Server R10.0(B) Annex Host Tools CD-ROM (required only for systems using Network Terminal Server [NTS])
- Informix SQL CD-ROM (optional)
- Informix IDS CD-ROM
- Informix ESQL SDK CD-ROM
- Informix ILS CD-ROM
- Avaya CMS Supplemental Services R12 CD-ROM
- Avaya Call Management System Release 12 CD-ROM, also contains:
 - Sun Solaris patches
 - Avaya CMS patches
 - Avaya security script
- Avaya CMS OPENLINK Open Database Connectivity (ODBC) Driver CD-ROM (optional)
- Avaya Visual Vectors Server R12 for CMS R12 CD-ROM (optional)



Installing the Solaris operating system

The Solaris installation program guides you step by step through the Solaris software installation. The installation program also has on line help to answer your questions. Depending on your platform type, not all of the installation screens described in this section will be displayed by your system.



Important:

If the software was installed at the factory, proceed to [Installing Avaya CMS and supporting software](#) on page 65.

To bring the Avaya Call Management System (CMS) up to factory standards after a system re-configuration or repair, use the procedures in this section and [Installing Avaya CMS and supporting software](#) on page 65.

This section includes the following topics:

- [Prerequisites](#) on page 24
- [Booting from the Solaris software CD-ROM](#) on page 25
- [Selecting your network settings](#) on page 26
- [Configuring your Kerberos security policy](#) on page 27
- [Selecting your regional settings](#) on page 28
- [Selecting the Solaris software packages](#) on page 28
- [Configuring the disk drives](#) on page 34
- [Assigning a root password](#) on page 37
- [Completing the Solaris installation](#) on page 37

Prerequisites

Before you begin the installation procedures, perform the following tasks:

- Obtain the *Solaris 9 Software 4/03 1 of 2* and *Solaris 9 Software 4/03 2 of 2* CD-ROMs.
- Identify the host name of the system, which is designated by the Technical Service Center (TSC).
- Identify the Internet Protocol (IP) address of the system (this may be the factory default or an address in a customer's network).
- Identify the default router for the system (this may be the factory default or an address in a customer's network).
- Identify the subnet mask for the system (this may be the factory default or an address in a customer's network).
- Identify the number and size of disk drives on the system.
- Verify that all power cords are fully connected to all hardware devices, and that power is applied to all hardware devices.
- Identify the tape devices on the system.
- Verify that all hardware components of the system, including port cards, external disk drives, and tape drives, are correctly installed.

Booting from the Solaris software CD-ROM

To boot the system from the Solaris 9 Software CD-ROM using the local console:

1. Turn on the power to all of the external devices, such as disk drives and tape drives.
2. Turn on the monitor.
3. Turn on the Avaya CMS system.

Note:

Depending on the model, it can take several minutes for the system to boot up.

4. As the console shows that the system is booting up, press **Stop+A**

The system displays an `ok` prompt.

Note:

Stop+A will not work on a Sun Fire V880 if the key switch is in the locked position. If the key switch is in the locked position, turn the key to the unlocked position. Press **Stop+A** again and continue with the remainder of this procedure.

5. Load the CD-ROM, *Solaris 9 Software 1 of 2* into the CD-ROM drive.

6. Enter:

```
boot cdrom
```

The system boots from the CD-ROM, and displays a list of languages.

7. Select the language that is appropriate for your location, and press **Enter**.

The system displays a list of locales.

8. Enter the number for the **English (C- 7-bit ASCII)** option.

The system displays the **sysidtool** window.



Important:

The **sysidtool** window provides useful information about how to navigate through the Solaris installation windows. Use the arrow keys to move the cursor left, right, up, and down. Press the **Enter** key to expand, select or unselect an option.

Selecting your network settings

To select your network settings:

1. Press **F2** to continue.

Note:

The keyboard options for the Solaris installation will only function when your mouse cursor is inside the installation window.

2. Press **F2** to continue.

The system displays the **Network Connectivity** options.

3. Select **Yes**, and then press **F2** to continue.

The system displays the **DHCP** options.

4. Select **No**, and then press **F2** to continue.

Note:

If the system is equipped with more than one network interface, the system displays the Primary Network Interface options.

- If the system is an Enterprise 3500, select **hme0**
- If the system is a Sun Blade, select **eri0**. If there is no option for **eri0**, select **ce0**.
- If the system is a Sun Fire V880, select **eri0**. If there is no option for **eri0**, select **ce0**.

The system displays a **Host Name** field.

5. Enter a host name, and then press **F2** to continue.

The system displays an **IP Address** field.

6. Enter an IP address, and then press **F2** to continue. Unless there is a network address for the site, enter the factory default address. The IP address 192.168.2.1 is the factory default.

The system displays the **Subnets** options.

7. Choose one of the following steps:

- If the Avaya CMS system is on a subnet, perform the following steps:

- i. Select **Yes**.
- ii. Press **F2** to continue.

The system displays a prompt for a netmask.

- iii. Enter the appropriate subnet mask. The factory default subnet mask is 255.255.255.0.

- If the Avaya CMS system is not on a subnet, select **No**.
8. Press **F2** to continue.
The system displays the **IPv6** options.
 9. Select **No**, and then press **F2** to continue.
The system displays the **Set the Default Route** options.
 10. Choose one of the following steps:
 - If the Avaya CMS system connects to the network through a router, perform the following steps:
 - i. Select **Specify One**.
 - ii. Press **F2** to continue.
The system displays a router IP address field.
 - iii. Enter the appropriate IP address.
 - If the Avaya CMS system is not on a subnet, select **None**.
 11. Press **F2** to continue.
The system displays your current network settings.
 12. Verify that the settings are correct. If the settings are correct, press **F2** to continue.
The system displays the **Configure Security Policy** options.

Configuring your Kerberos security policy

To configure your security policy:

1. Verify that **No** is selected, and then press **F2** to continue.
The system displays your current security settings.
2. Verify that the settings are correct. If the settings are correct, press **F2** to continue.
The system displays the **Name Service** options.

Selecting your regional settings

To select your regional settings:

1. Select **None** for name service, and then press **F2** to continue.
The system displays your current name service settings.
2. Verify that the settings are correct. If the settings are correct press **F2** to continue.
The system displays the **Time Zone** options.
3. Select the appropriate continent or ocean, and then press **F2** to continue.
The system displays the **Country or Region** options.
4. Select the appropriate country or region, and then press **F2** to continue.
The system displays additional **Time Zone** options.
5. Select the appropriate time zone, and then press **F2** to continue.
The system displays the **Date and Time** options.
6. Enter the correct date and time, and then press **F2** to continue.
The system displays your current regional settings.
7. Verify that the settings are correct. If the settings are correct, press **F2** to continue.
The system displays a **suninstall** window.

Selecting the Solaris software packages

To select the Solaris software packages:

Note:

The **suninstall** window might require you to select an additional option before you can continue with the Solaris installation.

1. Choose one of the following steps:
 - a. If the system displays an **Initial** option in the **suninstall** window, press **F4**.
 - b. If the system does not display an **Initial** option in the **suninstall** window, go to Step 2.
2. Press **F2** for the **Standard** option.
The system displays the **Select Geographic Regions** options.

3. Expand the **North America** option list.

4. Select the following options:

- **U.S.A (UTF-8)**
- **U.S.A (en_US.ISO8859-1)**

5. Press **F2** to continue.

Note:

Some platforms will display a 64-bit option. Verify that the **Select To Include Solaris 64-bit Support** option is selected. Press **F2** to continue.

The system displays the **Select Software** options.

6. Select **End User System Support 64-bit**.

7. Press **F4** to select the **Customize** option.

The system displays a list of software packages.

8. Select or unselect the following software options:



Important:

Depending on your platform type, some of the options might be automatically selected or unselected.

If the platform is a Sun Fire V880, the software packages will not be displayed in the order shown in the following lists.

a. Unselect the following options:

- **64-bit iconv conversion for Eastern European locales**
- **64-bit iconv conversion for ISO Latin character sets**
- **A Windows SMB/CIFS fileserver for UNIX**
- **Admin/Install Java Extension Libraries**

b. Expand the **Audio drivers and applications** option and unselect:

- **Audio Applications**
- **Audio Sound Files**

c. Select the following option:

- **Basic Networking**

d. Expand the **CDE End User Software** option and unselect:

- **Java Media Framework Player**
- **PDA Synchronization for Solaris**
- **Solaris CDE Image Viewer**

e. Select the following options:

- **CPU Performance Counter driver and utilities**
 - **CPU Performance Counter driver and utilities (64-bit)**
- f. Unselect the following options:
- **Font Downloader**
- g. Expand the **Font Server Cluster** option and unselect:
- **X Window System Font server**
 - **X Windows System optional fonts**
- h. Unselect the following options:
- **FreeType 2.1.2 Font library**
 - **FreeType 2.1.2 Font library (64-bit)**
- i. Expand the **Freeware Compression Utilities** option and unselect:
- **GNU Zip (gzip) compression utility**
- j. Unselect the following options:
- **Freeware Shells**
 - **GLIB - Library of useful routines for C programming**
 - **GTK - The GIMP Toolkit**
 - **IEEE 1394 Video Conferencing Class Driver (64-bit)**
 - **IEEE 1394 Video Conferencing Support, (Usr) (64-bit)**
 - **International Components for Unicode User Files**
 - **International Components for Unicode User Files (64-bit)**
 - **JDK 1.4 I18N run time environment**
 - **Java Plug-in**
 - **Java SNMP API**
 - **Locale Conversion Library**
 - **Locale Conversion Library (64-bit)**
 - **Localization common files**
- k. Select the following options:
- **Modular Debugger**
 - **Modular Debugger (64-bit)**
- l. Unselect the following options:
- **Netscape**
 - **Netscape Communicator**

- **Netscape Componentization Support for CDE**
- m. Select the following option:
- **On-Line Manual Pages**
- n. Unselect the following option:
- **PNG - Portable Network Graphics library**
- o. Expand the **Perl 5** option and unselect:
- **Perl 5.00_03**
- p. Unselect the following options:
- **Power Management OW Utilities**
 - **Power Management Software**
 - **Power Management Software (64-bit)**
- q. Expand the **Programming tools and libraries** option and select:
- **CCS tools bundled with SunOS**
 - **Solaris Bundled tools**
- r. Expand the **Remote network services and commands** option and unselect:
- **Network Routing daemons/commands (Usr)**
 - **Trivial File Transfer Server (Root)**
 - **Trivial Name Server (Root)**
 - **Trivial Name Server (Usr)**
- s. Unselect the following options:
- **Resource Management WBEM Instrumentation (64-bit)**
 - **Resource Management WBEM Instrumentation (root)**
 - **Resource Management WBEM Instrumentation (usr)**
 - **Root pkg partial locales**
 - **SLP (64-bit)**
 - **SLP, (Root)**
 - **SLP, (Usr)**
- t. Expand the **Solaris PPP** option and select:
- **Solaris PPP Device Drivers**
 - **Solaris PPP Tunneling**
 - **Solaris PPP configuration files**
 - **Solaris PPP daemon and utilities**

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- u. Select the following option:
 - **Solaris PPP (64-bit)**
- v. Unselect the following options:
 - **Solaris User Registration**
 - **Solstice Enterprise Agents**
 - **Solstice Enterprise Agents (64-bit)**
 - **Spell Checking Engine - Base Release (English)**
 - **Sun IEEE1394 Framework (64-bit)**
- w. Select the following option:
 - **System Accounting**
- x. Unselect the following option:
 - **Tcl - Tool Command Language**
- y. Select the following option:
 - **Terminal Information**
- z. Unselect the following options:
 - **Thai partial locale pkgs**
 - **The XSLT Library**
 - **The XSLT Library (64-bit)**
 - **Tk -TCL GUI Toolkit**
 - **WBEM Providers (usr)**
 - **Web Based Enterprise Management (WBEM) Services**
 - **X Windows System Minimum Required Fonts for Multibyte Locales**
- aa. Expand the **X Windows System Runtime Environment** option and unselect:
 - **X Windows System Virtual Servers**
 - **X Windows System demo images**
 - **X Windows System demo programs**
- ab. Select the following option:
 - **X Window system online user man pages**
- ac. Unselect the following options:
 - **X11 Arabic required fonts**
 - **X11 ISO-8859-x optional fonts**
- ad. Expand the **X11 ISO-8859-x required fonts** option and unselect:

- **Russian 1251 fonts**
- **X11 KOI8-R fonts**

ae. Unselect the following options:

- **XSH4 conversion for Eastern European locales**
- **XSH4 conversion for ISO Latin character sets**

af. Unselect the following options:

- **en_us.UTF-8**
- **en_us.UTF-8 (64-bit)**
- **gcmn - Common GNU package**
- **ggrep - GNU grep utilities**
- **gtar - GNU tar**
- **jpeg - The Independent JPEG Groups JPEG software**
- **libtiff – library for reading and writing TIFF**

ag. Select the following option:

- **tcpd - access control facility for internet services**

9. Press **F2** to select **OK**.

The system displays a warning screen about required packages.

10. Press **F2** to select **OK**.

The system displays the **Select Software** options for a second time.

11. Press **F2** to continue.

Note:

If you return to the **Select Software** options after you have selected to continue, the Solaris installation will reset the software packages to their default values. You must repeat steps 7 through 11.

The system displays the **Select Disks** options.

Note:

If all of the disks are not displayed, contact your Avaya authorized service representative.

Configuring the disk drives

To configure the disk drives:

1. Select the correct boot device, and then press **F2** to continue.

The system displays the **Preserve Data?** options.

2. Press **F2** to continue.

The system displays the **Automatically Layout File Systems?** options.

3. Press **F4** to select **Manual Layout**.

The system displays the current file system and disk layout.

4. Press **F4** to select the **Customize** option.

The system displays the current partition information.

5. Enter the boot disk partition information and any mirrored boot disk partition information according to the [Boot disk partition table](#) on page 35 and [Supported disk drives table](#) on page 35.

Note:

When setting up disk partitions for mirrored Sun Blade 100, Sun Blade 150, Sun Fire V880, or Enterprise 3500 systems, the system will use the following disks for the boot and mirrored boot devices:

- Sun Blade:
 - Boot - c0t0d0
 - Mirrored boot - c0t2d0
- Sun Fire V880:
 - Boot - c1t0d0
 - Mirrored boot - c1t3d0
- Enterprise 3500:
 - Boot - c0t0d0
 - Mirrored boot - c1t4d0

**WARNING:**

Do not change the slice 2 value or name. If the slice 2 value or name is changed, you will have to reinstall Solaris.

Boot disk partition table

Slice	Slice name	Partition size (MB)
0	/ or (Leave blank if alternate boot on mirrored systems)	4096 ¹
1	swap or (Leave blank if alternate boot on mirrored systems)	1024
2	overlap ²	(Do not change)
3	/cms or (Leave blank if alternate boot on mirrored systems)	3072
4	(Leave blank)	2048
5	(Leave blank)	(Leave blank)
6	(Leave blank)	(Leave blank)
7	(Leave blank)	(Leave blank)

1. Some systems will automatically increase the partition size by one MB. Do not change the new partition size.
2. The default size of the overlap file system is always the size of the entire disk. Occasionally, the name *backup* will appear instead of *overlap*. Do not change the slice 2 value or name.

Supported disk drives table

	Disk description	Platforms
Boot disks	18 GB FCAL	Enterprise 3500
	20 GB EIDE	Sun Blade 100
	36 GB FCAL	Enterprise 3500
	40 GB EIDE	Sun Blade 100 Sun Blade150
	80 GB EIDE	Sun Blade150
	73 GB FCAL	Sun Fire V880

Supported disk drives table

	Disk description	Platforms
Data disks	9.1 GB FCAL	Enterprise 3500
	18 GB SCSI	Sun Blade 100 Sun Blade 150
	18 GB FCAL	Enterprise 3500
	36 GB FCAL	Enterprise 3500
	36 GB SCSI	Sun Blade 100 Sun Blade 150
	40 GB EIDE	Sun Blade 100 Sun Blade150
	80 GB EIDE	Sun Blade150
	73 GB FCAL	Sun Fire V880



Important:

No values are entered for the data disk partitions. The data disks and remaining space on the boot disks will be configured automatically during the installation.

6. Verify that the correct slice name and partition size has been entered for each partition.

7. Press **F2** to select **OK**.

The system displays the new file system layout.

8. Press **F2** to continue.

The system displays the **Mount Remote File Systems?** options.

9. Press **F2** to continue.

The system displays the current instillation profile.

10. Press **F2** to continue.

The system displays an unused disk space warning.

11. Ignore the unused disk space warning and press **F2** to continue.

The system displays the **Reboot After Installation?** options.

12. Verify that **Auto reboot** is selected and press **F2**.

The disk partitioning process begins, and the system displays the **Installing Solaris Software - Progress** window.

This process might take some time to complete. The actual amount of time depends on the number of disks being partitioned, the hardware platform, and the speed of your CD-ROM drive.

When the installation is finished, the system reboots and displays a prompt for a root password.

Assigning a root password

To assign a root password:

1. Enter the root password. If you do not know what root password is assigned to the system, it is recommended that you press **Enter** to assign a blank password.

The system displays a prompt to enter the root password again.

2. Re-enter the root password, or press **Enter** for a blank password.

The system displays the **Specify Media** window.

Completing the Solaris installation

To complete the Solaris installation:

1. In the **Specify Media** window select **CD/DVD**. Then select **Next>**.

The system ejects the *Solaris 9 Software 1 of 2* CD-ROM. The system then displays the **Insert Disc** window.

2. Load the *Solaris 9 Software 2 of 2* into the CD-ROM drive, and select **OK**.

The system installs the software.

3. Select **Next >**.

The system displays the **Reboot** window and ejects the CD-ROM.

4. Select **Reboot Now**.

The system reboots, and the console login appears.

Installing the Solaris operating system

5. Enter `root` for the user name, followed by your password (if you submitted one to the system).

The system displays the Common Desktop Environment (CDE).



Configuring the Solaris operating system

This section contains the procedures used to configure the Solaris operating system software for your Avaya CMS hardware platform.

This section includes the following topics:

- [Prerequisites](#) on page 40
- [Remote terminal access tip](#) on page 40
- [Opening a terminal window](#) on page 41
- [Enabling the Korn shell](#) on page 41
- [Displaying and setting the EEPROM parameters](#) on page 42
- [Creating an alternate boot device](#) on page 44
- [Resetting a device alias](#) on page 46
- [Turning on the system activity recorder](#) on page 49
- [Installing the Sun Online Validation Test Suite](#) on page 51
- [Setting up the RSC software](#) on page 53
- [Installing the Sun Fire V880 backplane firmware upgrade package](#) on page 59
- [Installing the Solaris patches](#) on page 60
- [Installing the Avaya CMS security script](#) on page 63

Prerequisites

Before you begin any of the installation procedures:

- Verify that the Solaris 9 operating system has been installed
- Verify that all hardware components of the system, including port cards, external disk drives, and tape drives, are correctly installed. Otherwise, the system hardware will not be recognized.
- Verify that you are logged in as **root**.

Remote terminal access tip

When executing commands that take a long time to complete, (such as `cpio` commands), use the `nohup` command to ensure that the command will complete without interruption if the data line disconnects. An example of the `nohup` command is shown below:

```
nohup cpio -icmudf -C 10240 -I /dev/rmt/0c "cms" | tee
```

When system reboots are required, verify that your terminal type is set correctly after the reboot.

Opening a terminal window

This section describes how to open a terminal window. You must open a terminal window to input keyboard commands at the system prompt.

To open a terminal window:

1. Use the mouse to move the cursor to an empty area of the desktop display and press the right button on the mouse.

The system displays the **Workspace menu**.

2. Select the **Tools** option.

The system displays the **Tools menu**.

3. Select the **Terminal** option.

The system displays a terminal window with the active cursor at the command prompt.

Enabling the Korn shell

To enable the Korn shell:

1. Enter:

```
stty erase Backspace
```

The system displays the **Backspace** as ^H . On some systems **Backspace** will not work. If this is the case, substitute " ^H " for **Backspace**.

2. Enter:

```
ksh -o vi
```

Displaying and setting the EEPROM parameters

The current EEPROM settings must be displayed to determine if a firmware value must be changed from a factory setting.



Important:

If the system is an Enterprise or Sun Fire V880 system, make sure the key is in the unlocked position. The locked position provides bootrom security. After setting the EEPROM parameters, return the key switch to its original position.

This section includes the following topics:

- [Displaying the EEPROM values](#) on page 42
- [Required EEPROM settings](#) on page 42
- [Changing EEPROM settings](#) on page 43

Displaying the EEPROM values

To display the firmware EEPROM values for an Avaya CMS system:

1. Enter:

```
eepr om | s ort | m ore
```

The system displays the current EEPROM settings.

Note:

Not all options are displayed for all Avaya CMS systems. In addition, some options will show "data not available" messages. Ignore those options.

2. Compare the displayed settings with the [Required EEPROM settings](#) to determine if any of the values must be changed from the factory setting.

Required EEPROM settings

The following table contains the Avaya CMS EEPROM settings that might need to be reset manually. Additional EEPROM settings are set automatically during the installation. For a

complete list of required EEPROM settings, see [Avaya CMS EEPROM settings](#) on page 342.

Option name	Required setting
ansi-terminal?	true
boot-command	boot
diag-level	min
local-mac-address?	true

Changing EEPROM settings

To change an EEPROM setting, enter:

```
eeeprom option_name=option_value
```

where *option_name* is the name of the option, and *option_value* is the new setting.

Example:

To change the output device, you would enter:

```
eeeprom diag-level=min
```

Creating an alternate boot device

This section provides information for creating the mirrored boot device for a mirrored system. This procedure is for *mirrored systems* only.

To create the alternate boot device:

- 1. Log in as **root** and enter:

```
ls -l /dev/rdisk/newbootdev
```

where *newbootdev* is the device name of the mirrored boot disk. The following table contains the mirrored boot device names.

Hardware platform	Mirrored boot device
Enterprise 3500	c1t4d0s0
Sun Blade	c0t2d0s0
Sun Fire V880	c1t3d0s0

The system responds, for example:

```
lrwxrwxrwx  1 root      root          74 Apr 30 14:40 /dev/rdisk/c1t3d0s0 ->
../../../../devices/pci@8,600000/SUNW,qlc@2/fp@0,0/ssd@w21000004cf707d9f,0:a,raw
```

- 2. Identify and record the device definition from the output generated in Step 1. The device definition is the character sequence that starts after “/devices” and ends before “:a,raw”.

Note:

In the previous example, the device definition is:

```
/pci@8,600000/SUNW,qlc@2/fp@0,0/ssd@w21000004cf707d9f,0
```

- 3. Enter:

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

The system displays the `ok` prompt.

- 4. Create a device alias for the alternate boot device by entering:

```
nvalias bootdevice2 device_definition
```

where *device_definition* is the character sequence recorded in Step 2.

5. At the `ok` prompt, enter:

`devalias`

The output includes a line that is similar to the following example:

```
bootdevice2 /pci@8,600000/SUNW,q1c@2/fp@0,0/ssd@w21000004cf707d9f,0
```

6. Enter:

`boot`

When the computer restarts, log in as **root** at the console login.

Note:

You must set up a cron job for `chkDisk` after configuring the Avaya CMS software.

Resetting a device alias

This section is only for Enterprise 3500 systems and Sun Fire V880 systems. If a boot disk is replaced, or if the NVRAM chip is ever reset to the Sun factory defaults, the boot disk and EEPROM values must be reset to the Avaya factory defaults. This can happen when any of the following occurs:

- The boot disk (primary or alternate) is defective and is replaced with a new disk
- The NVRAM chip on the system clock board is replaced
- The `set-defaults` or `setenv use-nvramrc? false` command is run
- A PROM patch is applied
- **Stop + N** was used to reset the system

To reset the NVRAM to bootable options for the boot disks:

1. Verify the proper boot device alias by entering:

```
ls -l /dev/rdisk/newbootdev
```

where `newbootdev` is the device to be used as the mirrored boot disk.

Hardware platform	Mirrored boot device
Enterprise 3500	c1t4d0s0
Sun Blade	c0t2d0s0
Sun Fire V880	c1t3d0s0

The system responds, for example:

```
lrwxrwxrwx 1 root root 74 Nov  5 15:41 /dev/dsk/c0t1d0s0 ->
../../devices/sbus@2,0/SUNW,socal@d,10000/sf@0,0/ssd@w2100002037a
82d85,0:a,raw
```

2. Identify and record the device definition from the output generated.
3. Enter:

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

The system displays the `ok` prompt.

4. At the `ok` prompt, enter:

show-disks

The system displays a list of disk drives similar to the following:

```
a) /sbus@3,0/SUNW,fas@3,8800000/sd
b) /sbus@3,0/SUNW,socal@d,10000/sf@1,0/ssd
c) /sbus@3,0/SUNW,socal@d,10000/sf@0,0/ssd
d) NO SELECTION
Enter selection, q to quit:
```

5. Select the letter for the proper boot device.

The system saves the device string in the edit clipboard. The system then displays a message similar to the following:

```
/sbus@3,0/SUNW,socal@d,10000/sf@0,0/ssd has been selected
Type ^Y (Control-Y) to insert it in the command line e.g. ok
nvalias mydev ^Y
      for creating devalias mydev for
/sbus@3,0/SUNW,socal@d,10000/sf@0,0/ssd
```

Note:

The message displayed will vary from platform to platform. To decode the path, first look at `/sbus@3` and divide the number (3) found after the `@` symbol by two, and throw away the remainder, which gives you one. This represents the first slot on your system. An SBus+ I/O or Graphics+ I/O board will be in your first slot. Next, look at `sf@0`. The zero represents what controller that drive is attached to. You should look for `sf@0` for your primary boot device and `sf@1` for your secondary boot device if you are working on a mirrored system. After looking at the paths offered, select the letter representing that path.

6. Enter:

nvalias disk

Ctrl + Y

(that is, press and hold the **Ctrl** key. Then press the **Y** key)

The system displays the disk alias saved in the clipboard and the cursor is at the end of the line.

```
/sbus@3,0/SUNW,socal@d,10000/sf@0,0/ssd
```

7. Add `@0,0` at the end of the line as shown in the following example:

```
nvalias disk /sbus@3,0/SUNW,socal@d,10000/sf@0,0/ssd@0,0
```

Adding `@0,0` gives the command the target and slice of the primary boot device.

Configuring the Solaris operating system

8. If you are working on a mirrored system, repeat the above procedure using *bootdevice2* as your mirror boot device alias, as shown in the following example:

```
nvalias bootdevice2 /sbus@3,0/SUNW,socal@d,10000/sf@1,0/ssd@4,0
```

Note:

Adding @4,0 gives the command the target and slice of the mirror boot device.

9. Enter:

```
devalias
```

The system displays the device aliases. Verify that *disk* and *bootdevice2* are set to the correct alias values.

10. Do one of the following:

- To set the boot environment for a nonmirrored system, enter:

```
setenv boot-device disk
```

- To set the boot environment for a mirrored system, enter:

```
setenv boot-device disk bootdevice2
```

11. After setting the disk device alias, check the EEPROM values by entering:

```
printenv
```

12. At the *ok* prompt enter:

```
boot
```

Turning on the system activity recorder

To turn on the system activity recorder:

1. Log in with the `sys` login id by entering:

```
su - sys
```

Note:

Be sure to use a space between “-” and “sys”.

The prompt changes to a dollar sign (\$).

2. Confirm that you are using the `sys` id by entering:

```
id
```

The system displays the following message:

```
uid=3(sys) gid=3(sys)
```

3. Enter the following commands to create and edit the **cron.sys** file:

```
cd /tmp
```

```
crontab -l > cron.sys
```

```
vi cron.sys
```

The **cron.sys** file looks similar to the following example:

```
#ident "@(#)sys 1.5      92/07/14 SMI"    /* SVr4.0 1.2    */
#
# The sys crontab should be used to do performance collection.
# See cron and performance manual pages for details on startup.
#
# 0 * * * 0-6 /usr/lib/sa/sa1
# 20,40 8-17 * * 1-5 /usr/lib/sa/sa1
# 5 18 * * 1-5 /usr/lib/sa/sa2 -s 8:00 -e 18:01 -i 1200 -A
```

4. Remove the leading pound (#) characters that were used to comment out the last three lines in the file.

Example:

```
#ident "@(#)sys 1.5      92/07/14 SMI"    /* SVr4.0 1.2    */
#
# The sys crontab should be used to do performance collection.
# See cron and performance manual pages for details on startup.
#
0 * * * 0-6 /usr/lib/sa/sa1
20,40 8-17 * * 1-5 /usr/lib/sa/sa1
5 18 * * 1-5 /usr/lib/sa/sa2 -s 8:00 -e 18:01 -i 1200 -A
```

Configuring the Solaris operating system

5. Press **Esc**. Then enter:

:wq!

The system saves and closes the file.

6. Enter the following commands:

crontab -r

crontab cron.sys

7. Enter the following command to confirm that the changes you made are intact:

crontab -l

The system displays the **cron.sys** file.

8. Exit superuser mode by entering:

exit

The prompt changes back to a pound (#) prompt.

Note:

You may have to repeat this step twice.

Installing the Sun Online Validation Test Suite

This section describes how to install the Sun Online Validation Test Suite (VTS) software. The Sun Online VTS software provides test facilities for the system.

To install the Sun VTS software:

1. Load the CD-ROM, *Software Supplement for the Solaris 9 Operating Environment* into the CD-ROM drive.

2. Log into the system as **root**.

3. Enter:

```
cd /
```

4. Enter:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0/SunVTS_5.1_PS2/Product
```

The system displays a list of the VTS software packages that can be installed.

5. Enter the numbers associated with the `SUNWvts`, `SUNWvtsmn`, and `SUNWvtsx` software packages.

 Important:

Verify that the correct packages are selected for installation. The screens in this section are representative of a typical installation. Not all screens will match your installation.

Example:

Enter: 4 5 6

The system displays the following message:

```
Processing package instance <SUNWvts> from
</cdrom/solarisx_xxx_suppcd/SunVTS_5.1_PS2/Product>
.....
.....
.....
Do you want to enable the Kerberos V5 based security?
```

6. Enter: **n**

Configuring the Solaris operating system

Note:

It might be necessary to enter **y** several times in order to continue the installation.

The system displays a message similar to the following:

```
## Checking for setuid/setgid programs.  
.....  
.....  
.....  
Select package(s) you wish to process (or 'all' to process  
all packages). (default: all) [?,??,q]:
```

7. Enter: **q**

Setting up the RSC software

This section describes how to install the Sun Remote System Control (RSC) software. The RSC software works in conjunction with the RSC card to allow remote administration of a Sun Fire V880 system.

This section includes the following topics:

- [Installing the RSC software](#) on page 53
- [Default setup of the RSC software](#) on page 54

Installing the RSC software

To install the RSC server software on a Sun Fire V880 platform:

1. Verify that the CD-ROM, *Software Supplement for the Solaris 9 Operating Environment* is in the CD-ROM drive.

2. Log into the system as **root**.

3. Enter:

```
cd /
```

4. Enter:

```
cd /cdrom/solaris9_403_suppcd/RSC_2.2.1/Product
```

5. Enter:

```
ls
```

The system displays a list of the RSC packages.

6. Enter:

```
pkgadd -d .
```

The system displays a list of the RSC packages.

7. Enter the numbers that are associated with the `SUNWrsc`, `SUNWrscd`, and `SUNWrscj` packages.

Note:

It may be necessary to press **Enter** several times to display additional RSC packages in the installation menu.

The system displays the following message:

```
Processing package instance <SUNWrsc> .....
.....
.....
The following files are already installed on the system and are being
used by another package:
  /usr/share/man/sman1m <attribute change only>

Do you want to install these conflicting files [y,n,?,q]
```

8. Enter: **y**

The system displays the following message:

```
## Checking for setuid/setgid programs.

Installing Remote System Control as <SUNWrsc>
.....
.....
.....
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,?,q]:
```

9. Enter: **q**

10. Verify that the RSC packages were installed by entering:

```
ls /usr/platform/*880/rsc
```

The system displays the following message:

```
rsc-config      rsc-initscript  rscadm
```

Default setup of the RSC software

To set up the RSC server software on a Sun Fire V880 platform:

1. Log into the system as **root**.

2. Enter:

```
/usr/platform/*880/rsc/rsc-config
```

The system displays the following message:

```
Continue with RSC setup (y|n):
```

3. Enter: **y**

The system displays the following message:

```
Set RSC date/time now (y|n|?) [y]:
```

4. Enter: **y**

The system displays the following message:

```
Server Hostname [cms1]:
```

5. Press **Enter**.

The system displays the following message:

```
Edit customer info field (y|n|?) [n]:
```

6. Enter: **n**

The system displays the following message:

```
Enable RSC Ethernet Interface (y|n|s|?) [n]:
```

7. Enter: **n**

The system displays the following message:

```
Enable RSC Alerts (y|n|s|?) [n]:
```

8. Enter: **n**

The system displays the following message:

```
Enable RSC Modem Interface (y|n|s|?) [n]:
```

9. Enter: **y**

The system displays the following message:

```
Modem data bits (7|8) [8]:
```

10. Enter: **8**

The system displays the following message:

```
Modem parity (even|odd|none) [even]:
```

Configuring the Solaris operating system

11. Enter: **none**

The system displays the following message:

```
Modem stop bits (1|2) [1]:
```

12. Enter: **1**

The system displays the following message:

```
Enable PPP over modem (y|n) [n]:
```

13. Enter: **n**

The system displays the following message:

```
Enable RSC Serial Port Interface (y|n|s|?) [n]:
```

14. Enter: **y**

The system displays the following message:

```
Serial port baud rate (9600|19200|38400|57600|115200) [9600]:
```

15. Enter: **9600**

The system displays the following message:

```
Serial port data bits (7|8) [8]:
```

16. Enter: **8**

The system displays the following message:

```
Serial port parity (even|odd|none) [none]:
```

17. Enter: **none**

The system displays the following message:

```
Serial port stop bits (1|2) [1]:
```

18. Enter: **1**

The system displays the following message:

```
Setup RSC User Account (y|n|?) [y]:
```

19. Enter: **y**

The system displays the following message:

```
Username []:
```

20. Enter:

cmsrsc

The system displays the following message:

```
User Permissions (c,u,a,r|none|?) [cuar]:
```

21. Enter: **cuar**

The system displays a series of messages that show the current RSC settings.

22. Choose one of the following steps:

- If the settings are *not* correct, enter: **n**

The system will return to that section of the installation.

- If the settings are correct, enter: **y**

The system displays the next set of settings for you to verify. After you have verified all of the settings, the system displays the following message:

```
This script will now update RSC, continue? (y|n):
```

23. Enter: **y**

The system displays the following message:

```
Updating flash, this takes a few minutes
.....
.....
.....
A valid password is between 6 and 8 characters, has at least two
alphabetic characters, and at least one numeric or special
character.The password must differ from the user's login name and any
reverse or circular shift of that login name.
Setting User Password Now ...

Password:
```

24. Enter the cmsrsc password.

**Important:**

The Avaya CMS services RSC login is used only by services. Do not give out the Avaya CMS RSC password. This login is for accessing only the RSC, not the Avaya CMS software.

The system displays the following message:

```
Re-enter Password:
```

25. Re-enter the cmsrsc password.

The system displays the following message:

```
User has been added to RSC
.....
.....
.....
*****
RSC has been successfully setup
*****
```

Installing the Sun Fire V880 backplane firmware upgrade package

To install the Sun Fire V880 backplane firmware upgrade package:

1. Verify that the CD-ROM, *Software Supplement for the Solaris 9 Operating Environment* is in the CD-ROM drive.
2. Verify that you are logged into the system as **root**.

3. Enter:

```
cd /
```

4. Enter the following command on a single line at the command prompt:

```
pkgadd -d  
/cdrom/cdrom0/Sun_Fire_880_FC-AL_Backplane_Firmware_1.0/Product
```

The system displays a list of Solaris packages that can be installed.

5. Enter the number that is associated with the **SUNWfcbpl.u** package.

The system installs the Sun Fire V880 backplane firmware upgrade package.

6. Enter: **q**

Installing the Solaris patches

Sun periodically provides updates for the Solaris operating system. The Solaris patches are delivered with the Avaya CMS software.

To install the Solaris patches:

1. If the system is a Sun Fire V880 or Enterprise 3500 system, record the original position of the key switch. You must return the key switch to this original position at the end of this procedure. If the key switch is in the “Locked” or “Diagnostics” position, move the key switch to the “On” position.
2. Verify that you are logged into the system as **root**.
3. Load the Avaya Call Management System CD-ROM into the CD-ROM drive.
4. Enter:

```
cd /
```

5. Enter:

```
/cdrom/cdrom0/spatches_conf
```

The system displays a message similar to the following:

```
Warning: you must close all applications before running this script
.....
.....
.....
Solaris patches have been spooled to your machine.  The patches will
beinstalled after rebooting.  During the installation of patches your
server will not be available.

The estimated time to install all patches is: 15 minutes

Ready to install Patches. Please leave the CD in the drive.
You will need to reboot the server for patches to install.

Do you want to reboot now?  [y,n,?]
```

Note:

The system will display the approximate amount of time needed to install the Solaris patches.

6. Choose one of the following steps:

- To install the Solaris patches:

- i. Enter: **y**

The system boots into single user mode and installs the Solaris patches.

Note:

If there are no Solaris patches to install the system displays the following message.

```
There are no Solaris patches to install
```

ii. Choose one of the following steps:

- If Solaris patches were installed, go to Step 7.
- If no Solaris patches were installed, log into the system as **root**. Then go to Step 9.

- To cancel installation of the Solaris patches, enter: **n**

The system displays the following message:

```
Terminating at user's request.
You will need to run spatches_conf again to install Operating System
patches.
```

**CAUTION:**

If you cancel installation of the Solaris patches, you will have to install them before installing Avaya CMS.

7. Log into the system as **root**.

8. Verify that all of the Solaris patches have been installed by entering:

```
tail -10 /var/cms/spatches/spatches.log
```

The system displays the following message in the log:

```
All patches installed successfully.
```

Note:

If the installation procedure fails for any of the patches, the following message is displayed:

```
Installation failed for one or more Solaris patches.

- Customers in the US should call the CMS Technical Services
  Organization at 1-800-242-2121

- Customers outside the US should contact your Avaya
  representative or distributor.
Patch installation completed: Fri Jan 18 13:28:19 MST 2002
```

If the message shown above is displayed, continue with this procedure and the remaining Avaya CMS base load upgrade procedures. When the upgrade is complete, notify your Avaya CMS support organization as instructed.

Configuring the Solaris operating system

9. Enter:

```
eject cdrom
```

10. If the system is a Sun Fire V880 or Enterprise 3500 system, return the key switch to the position it was in at the beginning of this procedure.

For additional information on Solaris patches, see [Working with Solaris patches](#) on page 221.

Installing the Avaya CMS security script

To install the Avaya security script:

**Important:**

You will be able to log into the console only as **root** after you run the Avaya CMS security script. If you are logging into the system remotely, you will need to log in as another user and then su to root.

1. Verify that you are logged into the system as **root**.
2. Load the Avaya Call Management System CD-ROM into the CD-ROM drive.
3. Enter:

```
cd /
```

4. Enter:

```
/cdrom/cdrom0/security/cms_sec
```

The system configures your security settings and then displays the following message when the process is complete:

```
Avaya CMS security configuration completed: date
```

Note:

If the system displays a configuration failed message, contact your Avaya services representative.

5. Reboot the system by entering:

```
/usr/sbin/shutdown -i6 -g0 -y
```

Log into the system as **root**.

■ ■ ■ ■ ■ ■ Installing Avaya CMS and supporting software

This section contains the procedures used to install and set up the Avaya Call Management System (CMS) software and other supporting software.

This section includes the following topics:

- [Installation rules](#) on page 66
- [Setting up the Bay Networks Annex NTS](#) on page 67
- [Installing the Informix software packages](#) on page 73
- [Installing the Avaya CMS Supplemental Services software](#) on page 85
- [Installing the Avaya CMS packages](#) on page 91
- [Configuring the IDS dbspaces](#) on page 101
- [Installing the Open Database Connectivity server software](#) on page 104
- [Setting up Avaya CMS data storage parameters](#) on page 108
- [Setting up LAN connections](#) on page 111
- [Configuring the Avaya CMS software](#) on page 115
- [Installing feature packages](#) on page 130
- [Installing the Avaya Visual Vectors Server software](#) on page 136
- [Setting up a mirrored system](#) on page 139
- [Setting up the remote console](#) on page 146
- [Setting up the Alarm Origination Manager](#) on page 150
- [Starting the Avaya Visual Vectors Server software](#) on page 153
- [Setting the Informix configuration parameters for Avaya CMS](#) on page 154
- [NTS setup](#) on page 160
- [Factory system backup](#) on page 161

Installation rules

If the software was installed at the factory, the only procedures required at the customer site are:

- [Configuring Avaya CMS authorizations](#) on page 93
- [Installing feature packages](#) on page 130
- [Factory system backup](#) on page 161

If the Avaya CMS software was not installed at the factory, use the procedures in [Installing the Solaris operating system](#) on page 23, [Configuring the Solaris operating system](#) on page 39, and this chapter to bring the Avaya CMS system up to factory standards after a system re-configuration or repair.

Setting up the Bay Networks Annex NTS

This section describes how to install the NTS drivers and create symbolic links.

**Important:**

If your system is not using an NTS, skip this procedure.

This section includes the following procedures:

- [Installing the NTS drivers](#) on page 67
- [Configuring the NTS start-up files](#) on page 71

Installing the NTS drivers

To install the NTS drivers:

Note:

If you are reinstalling the NTS drivers, the options presented will differ slightly.

1. Log into the system as **root**.
2. Load the CD-ROM, *Annex Communication Server R10.0(B) Annex Host Tools* into the CD-ROM drive.

3. Enter:

```
cd /
```

4. Enter:

```
/cdrom/cdrom0/install
```

The system displays the following message:

```
Do you want to continue (y/n/q=quit)  [y]:
```

5. Press **Enter**.

The system displays the following message:

```
After installing one product you will be asked if you want to
install the other product.
Indicate desired action:
    1) Install Comm.Server Software
    2) Install Annex Manager
    3) Quit

Enter desired action [1]:
```

6. Press **Enter**.

The system displays the following message:

```
Enter the name of the Comm. Server Software installation directory.

Directory name [/usr/annex/cs_R10.0B]:
```

7. Press **Enter**.

The system displays the following message:

```
Comm. Server Software Installation Script

This installation shell script will examine your system and
possibly ask you questions to generate the needed configuration to
allow you to compile the Comm. Server host utilities.

Type carriage return to continue. Your cursor should be here-->
```

8. Press **Enter**.

The system displays the following message:

```
Where do you want the Annex utilities installed?
Utility directory [/usr/annex]:
```

9. Press **Enter**.

The system displays the following message:

```
BFS directory [/usr/spool/erpcd/bfs]:
```

10. Press **Enter**.

The system displays the following message:

```
Do you wish to install manual pages at this time? [y]:
```

11. Press **Enter**.

The system displays the following message:

```
On-line manual pages will be installed in the appropriate
subdirectory (i.e., ANNEX and index) of the manual base directory.

What is the manual page base directory? (q=quit) [/usr/man]:
```

12. Press **Enter**.

The system displays the following message:

```
Available installation options are:
  1. Install binary images only (7MB)
  2. Install source code only, but do not compile (11MB)
  3. Get both binary images and source code, but do not compile (13MB)
  4. Quit

Enter installation choice [1]:
```

13. Press **Enter**.

The system displays the following message:

```
Are you ready to continue (y/q=quit) [y]:
```

14. Press **Enter**.

The system displays a message similar to the following:

```
1)      Com-Server Annex 3
2)      Com-Server MicroAnnex
3)      Install all images

Please select the annex model(s) you will be using.
You can specify a list separated by spaces or 'N' for none:
```

15. Enter the number associated with the Install all images option.

The system displays the following message:

```
To save room on your system, the above directories can be removed.
You may want to enter "?" at the prompt below to get more help.

Remove these directories (y/n) [n]:
```

16. Enter: **y**

The system displays a message similar to the following:

```
What is your default security regime:
  1) acp
  2) native UNIX
  3) SecureID
  4) safeword
  5) kerberos
  6) deny (access will be denied)
  7) none (access is unconditionally granted)
  8) radius

Enter security regime [1]:
```

17. Enter the number associated with the `none` option.

The system displays the following message:

```
Do you want the restrictions to apply to PPP and SLIP? [n]:
```

18. Press **Enter**.

The system displays the following message:

```
Do you want the erpcd daemon to provide access control (y/n) [y]:
```

19. Enter: **n**

The system displays the following message:

```
Copies of the following files have been updated:
    service annex-initd
Do you want to install any of these files (y/n) [y]
```

20. Press **Enter**.

The system displays the following message:

```
Copy file save/modified/service to /etc/services
(y/n) [y]:
```

21. Press **Enter**.

The system displays the following message:

```
Copy file save/modified/annex-initd
/etc/rc2.d/annex-initd

(y/n) [y]:
```

22. Press **Enter**.

The system displays the following message:

```
No more system files to create or update

Do you want to start-up the new version of the erpcd
daemon? (y/n) [y]:
```

23. Press **Enter**.

The system displays the following message:

```
Starting-up the new version of the erpcd daemon.
      Comm.Server Software Installation Script

Do you wish to install the Annex Manager (y/n/q=quit) [y]:
```

24. Enter: **n**

The system displays the command prompt.

If you have problems with NTS installation, see *Avaya CMS Terminals, Printers, and Modems*, 585-215-874.

Configuring the NTS start-up files

To configure the NTS start-up files:

1. Enter:

```
chmod 744 /etc/rc2.d/annex-initd
```

2. Enter:

```
ln -s /etc/rc2.d/annex-initd /etc/rc2.d/S99annex-initd
```

3. Enter:

```
ls -l /etc/rc2.d/annex-initd
```

4. Review the first column of the output to verify that file permissions are set correctly. The correct file permissions will exhibit the following format:

```
-rwxr--r--
```

5. Enter:

```
ls -l /etc/rc2.d/S99annex-initd
```

The system displays permissions for the linked file similar to the following example:

```
-rwxr--r-- 1 root other 2 current date S99annex-initd ->
/etc/rc2.d/annex-initd
```

Installing Avaya CMS and supporting software

6. Enter the following commands:

```
ln -s /usr/annex/na /usr/bin/na
ln -s /usr/annex/rtnet /usr/bin/rtnet
ln -s /usr/annex/aprint /usr/bin/aprint
```

7. Enter the following commands, and review the output to verify that the symbolic links are set correctly.

```
ls -l /usr/bin/na
ls -l /usr/bin/rtnet
ls -l /usr/bin/aprint
```

If the symbolic links are set correctly, the `ls` command output will indicate the link at the end of each line.

Example:

The `ls -l /usr/bin/na` command generates the following output:

```
lrwxrwxrwx 1 root other 563072 current date usr/bin/na -> usr/annex/na
```

8. Enter:

```
eject cdrom
```

Installing the Informix software packages

Informix provides the relational database management system used to organize Avaya CMS data. Avaya CMS works in conjunction with the Informix software.

This section includes the following topics:

- [Prerequisites](#) on page 73
- [Setting up the Informix environment](#) on page 73
- [Installing Informix SQL 7.32](#) on page 74
- [Installing IDS 9.40](#) on page 75
- [Installing Informix Client SDK 2.70](#) on page 77
- [Installing Informix ILS 3.30](#) on page 80
- [Initializing IDS](#) on page 82

Prerequisites

Before you begin installing the Informix software packages, perform the following tasks:

- Verify that you are logged in as **root** at the console.
- If you are using Informix SQL custom reports, obtain the CD-ROM, *Informix SQL version 7.32.UC1*.
- Obtain the CD-ROM, *Informix IDS 9.40.UC1G2*.
- Obtain the CD-ROM, *Informix Client SDK 2.70*, License Serial Number, and Serial Number Key.
- Obtain the CD-ROM, *Informix Int'l Language Supplement Version 3.30*.
- Obtain the CD-ROM, *Avaya Call Management System Release 12*.

Setting up the Informix environment

To set up the Informix environment:

1. If you are setting up the Informix environment from the console, enter the following commands:

```
TERM=xterm
export TERM
```

2. Add a new group to the system by entering:

```
groupadd -g 100 informix
```

3. Add a new user to the system by entering the following command:

```
useradd -g informix -u 100 -m -d /opt/informix informix
```

The system displays the following message:

```
64 blocks
```

4. Set the environment variables by entering the following commands:

```
INFORMIXDIR=/opt/informix
```

```
export INFORMIXDIR
```

```
PATH=$PATH:$INFORMIXDIR/bin
```

```
export PATH
```

The Informix installation environment is now set.

Installing Informix SQL 7.32

To install the Informix SQL software:



Important:

This software package is required only if you are using Informix SQL custom reports. If you do not need this package, skip this section. Continue with [Installing IDS 9.40](#) on page 75.



CAUTION:

The ISQL software must be installed before the other Informix software packages. If the ISQL software is installed at a later time, the other Informix packages will need to be reinstalled. Do NOT reinitialize IDS or else customer data will be lost.

1. Load the CD-ROM, *Informix SQL version 7.32* into the CD-ROM drive.
2. Change to the Informix directory by entering:

```
cd $INFORMIXDIR
```

3. Verify that you are in the Informix directory by entering:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

4. Enter:

```
tar xvf /cdrom/cdrom0/sql.tar
```

The system copies the Informix SQL files from the CD-ROM to the current directory.

5. Start the installation of the Informix SQL packages by entering:

```
./installsql
```

The system displays the following message:

```
IBM INFORMIX-SQL Version 7.XX.XXX
. . . . .
. . . . .
. . . . .
Press RETURN to continue,
or the interrupt key (usually CTRL-C or DEL) to abort.
```

6. Press **Enter**.

The system displays a software licensing message.

7. Press **Enter**.

The system completes the SQL installation, and then displays the following message:

```
Installation of INFORMIX-SQL complete.
```

8. Enter:

```
eject cdrom
```

Installing IDS 9.40

To install the IDS software:

1. Load the CD-ROM, *Informix IDS 9.40.UC1G2* into the CD-ROM drive.

2. Enter:

```
su informix
```

The prompt changes to \$.

3. Change to the Informix directory by entering:

```
cd $INFORMIXDIR
```

4. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

5. Enter:

```
tar xvf /cdrom/cdrom0/SERVER/IIF.tar
```

The system copies the IDS files from the CD-ROM to the current directory.

6. Start the installation of the IDS software packages by entering:

```
./installserver
```

Note:

It might be necessary to enter **y** several times to continue the installation.

The system displays the following message:

```
Press RETURN to continue, or the interrupt key (usually CTRL-C or  
DEL) to abort.
```

7. Press **Enter**.

The system displays a software licensing message.

8. Press **Enter**.

The system installs the IDS software packages, and then displays the following message:

```
Informix user portion of installation of Informix Dynamic Server  
complete.
```

9. Enter:

```
exit
```

The prompt changes to #.

Note:

Some systems will not default to root the first time the **exit** command is run. It may be necessary to enter the **exit** command a second time. If you enter **id** at the command prompt, the system should display a **uid=0(root)** message.

10. Enter:

```
cd /opt/informix
```

11. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

12. Enter:

```
./RUN_AS_ROOT.server
```

The system completes the IDS installation, and then displays the following message:

```
Installation of Informix Dynamic Server complete.
```

13. Enter:

```
eject cdrom
```

Installing Informix Client SDK 2.70

To install the Informix Client SDK software:

1. Use the following table to record the serial number and serial number key for this Informix package.

Serial number	
Serial number key	

2. Load the CD-ROM, *Informix Client SDK 2.70* into the CD-ROM drive.
3. Set the environment variables by entering the following commands:

```
INFORMIXDIR=/opt/informix
export INFORMIXDIR
PATH=$PATH:$INFORMIXDIR/bin
export PATH
```

4. Enter:

```
su informix
```

The prompt changes to \$.

5. Change to the Informix directory by entering:

```
cd $INFORMIXDIR
```

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6. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

7. Enter the following command to copy the Informix Client SDK files from the CD-ROM to the current directory:

```
tar xvf /cdrom/cdrom0/CLISDK/csdk.tar
```

8. Enter the following to start the installation of the Informix Client SDK software packages:

```
./installclientsdk
```

The system installs the Informix Client SDK installation software and then displays the following message:

```
Is ClientSDK being installed along with Informix database server  
version 9.x (required to be run as user "informix")?  
(yes or no)
```

9. Enter: **y**

The system begins installing the software and then displays the following message:

```
Press RETURN to continue,  
or the interrupt key (usually CTRL-C or DEL) to abort.
```

10. Press **Enter**.

The system displays the following message:

```
Enter your serial number (for example, INF#X999999) >
```

11. Enter the 11-character license S/N that is on your license.

The system displays the following message:

```
Enter your serial number KEY (uppercase letters only) >
```

12. Enter the 6-character serial number key that is on your license.

The system displays the following message:

```
Press RETURN to continue,  
or the interrupt key (usually CTRL-C or DEL) to abort.
```

13. Press **Enter**.

The system installs the SDK software packages and then displays the following message:

```
Informix user portion of installation of INFORMIX-Client SDK
complete.
```

14. Enter:

```
exit
```

The prompt changes to a pound (#).

Note:

Some systems will not default to root the first time the `exit` command is run. It may be necessary to enter the `exit` command a second time. If you enter `id` at the command prompt the system should display a `uid=0(root)` message.

15. Enter:

```
cd /opt/informix
```

16. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

17. Enter:

```
./RUN_AS_ROOT.clientsdk
```

The system completes the SDK installation and then displays the following message:

```
Installation of INFORMIX-Client SDK complete.
```

18. Enter:

```
eject cdrom
```

Installing Informix ILS 3.30

To install the Informix ILS software:



CAUTION:

Various steps in the Informix ILS installation require that you select multiple options. All of the indicated options are required. If the indicated options are not selected, the software will not function correctly.

1. Load the CD-ROM, *Informix ILS version 3.30* into the CD-ROM drive.
2. Set the environment variables by entering the following commands:

```
INFORMIXDIR=/opt/informix
export INFORMIXDIR
PATH=$PATH:$INFORMIXDIR/bin
export PATH
```

3. Enter:

```
cd $INFORMIXDIR
```

4. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

5. Enter:

```
/cdrom/cdrom0/install
```

The system displays a list of languages.

6. Enter the number associated with the language that you want to use during the installation.

Note:

If you select a language other than English, you must also select a display character set.

After you select a language, the system displays a message similar to the following:

```

                                INFORMIX INTERNATIONAL LANGUAGE SUPPLEMENT (ILS)
                                INSTALLER FOR ALL UNIX PLATFORMS

Choose install type:
  (1) Express Install
      Installs everything relating to one or more languages.

  (2) Custom Install
      You specify exactly what you want to install.
Other options:
  (3) Help
      Displays information on the contents of this package,
      and explains the options on this screen.
  (4) Exit
      Exit this installer.

(E)nglish (D)eutsch/German (F)rancais/French e(S)panol/Spanish
(R)ussian (P)oliski/Polish (C)ekych/Czech s(L)ovych/Slovak
(K)orean (J)apanese (T)rad Chinese S(I)mp Chinese

Enter one choice, and hit ENTER:

```

7. Enter the number associated with the Custom Install option.

The system displays a list of custom install options.

8. Enter the numbers associated with the Locale and Code set conversion options.

Example:

Enter: 2 4

The system displays a list of languages.

9. Enter the numbers associated with the English and Japanese options.

The system displays a list of territories.

10. Enter the number associated with the option for United States.

The system displays a list of codesets for English language locales.

11. Enter the number associated with the option for UTF8.

The system displays a list of codesets for Japanese language locales.

12. Enter the number associated with the option for UTF8.

The system displays a list of codeset conversion regions.

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13. Enter the numbers associated with the `Japanese` and `Western European` options.

The system displays a list of Japanese codeset conversion tables.

14. Enter the numbers associated with the `Shift-JIS+JISX0212`, `Standard-Shift-JIS`, and `UTF8` options.

The system displays a list of Western European codeset conversion tables.

15. Enter the numbers associated with the `ISO 8859-1` and `UTF8` options.

The system displays a summary of your selections.

16. Verify that your selections are correct and then press **Enter**.

The system installs the IDS software and then displays the following message:

Hit ENTER to return to main menu...

17. Press **Enter**.

The system displays the ILS main menu.

18. Enter the number associated with the `Exit` option.

19. Enter:

`eject cdrom`

Initializing IDS

To initialize Informix Dynamic Server (IDS) for Avaya CMS:

1. Load the CD-ROM, *Avaya Call Management System Release 12* into the CD-ROM drive.
2. Enter:

`cd /cdrom/cdrom0/postids`

Note:

The `postids` tool is used to automatically configure the IDS software to run with Avaya CMS. The tool will initialize the `/etc/system` and `/opt/informix` files.

3. Enter:

```
./postids_config
```

The system displays the following message:

```
x ., 0 bytes, 0 tape blocks
.....
.....
.....
Installing Informix IDS configuration information for CMS...
Setting UNIX system tunable parameters for Informix IDS.
Postids Configuration successful.

*** IMPORTANT NOTICE ***

This machine must now be rebooted in order to insure sane
operation. Execute:

shutdown -y -i6 -g0

and wait for the Console Login: prompt.
```

Note:

The "This machine must now be rebooted in order to insure sane operation", message might not display on some systems. If it does not display, continue with Step 6.

4. Enter:

```
/usr/sbin/shutdown -y -i6 -g0
```

5. Log in as **root**.

6. Change permissions to partition 4 by entering the following commands:

```
chown informix:informix /dev/rdisk/cXtXd0s4
```

```
chmod 660 /dev/rdisk/cXtXd0s4
```

where **cX** is the device controller number, and

where **tX** is the device target number.

7. Enter:

```
. /opt/informix/bin/setenv
```

8. Enter:

```
oninit -iy
```

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9. Check the IDS software by entering:

onstat

The system displays several sets of data:

```
Informix Dynamic Server 2000 Version X.XX.UCX      -- On-Line -- Up 00:00:55 -- 18432
Kbytes

Userthreads
address  flags    sessid   user      tty        wait      tout locks nreads  nwrites
a30c018  ---P--D 1      root      -          0          0    0    27     37510
a30c608  ---P--F 0      root      -          0          0    0    0     1132
.....
.....
.....
ovlock   ovuserthread ovbuff    usercpu   syscpu    numckpts  flushes
0         0             0        17.64    1.99      2         5

bufwaits lokwaits lockreqs deadlks  dltouts  ckpwaits compress seqscans
6         0          33350    0        0         1        925    529

ixda-RA  idx-RA    da-RA    RA-pgsused lchwaits
4         0        47       51         0
```

10. Enter:

eject cdrom

Installing the Avaya CMS Supplemental Services software

To install the Supplemental Services software:

1. Verify that you are logged in as **root** at the console.
2. Record the Avaya CMS Supplemental Services version number printed on the CD-ROM disk, *Avaya CMS Supplemental Services R12*. You will need this number during the procedure.

Version number	
----------------	--

3. Load the CD-ROM, *Avaya CMS Supplemental Services R12* into the CD-ROM drive.
4. Re-initialize the IDS software by entering:
 - . /opt/informix/bin/setenv
5. Check the IDS software by entering:

onstat

The system displays several sets of data:

```
Informix Dynamic Server 2000 Version X.XX.UCX      -- On-Line -- Up 00:00:55
-- 18432 Kbytes

Userthreads
address  flags    sessid   user      tty        wait      tout locks nreads
nwrites

.....
.....
.....
ixda-RA  idx-RA   da-RA    RA-pgsused lchwaits
4         0        47       51         0
```

Installing Avaya CMS and supporting software

6. Enter:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0 LUim
```

The system loads the Installation Manager, Explorer and Memory tools software. The system displays the following message when the installation is complete:

```
Processing package instance <LUim> from </cdrom/cvs>

Avaya Installation Manager
(sparc) 0.XX
.....
.....
.....
Installation of <LUim> was successful.
```

7. Enter:

```
/opt/LUim/bin/install 2>&1|tee -a /opt/LUim.log
```

The system displays the following message:

```
=====
===== Avaya Installation Manager, Version .XX
===== Current date and time
=====
.....
.....
.....

Where should this package be installed? [/opt/SUNWexplo]:
```

8. Press **Enter**.

The system displays the following message:

```
Company name [Avaya_Inc/Avaya_CMS]:
```

9. Press **Enter**.

The system displays the following message:

```
Contract ID []:
```

Note:

The contract ID and system serial number prompts can be left blank if the information is not available, but should be answered where possible in order to facilitate customer support. The configuration file **/etc/default/explorer** can be updated at a later date.

10. Enter the services contract ID.

The system displays the following message:

```
System serial number []:
```

11. Enter the serial number for the system.

The system displays the following series of messages:

```
Contact name [Avaya CMS Tier 3 Maintenance]:  
Contact email address [cms-support@avaya.com]:  
Phone number [800-242-2121, x15235]:  
Address (line 1) [8744 Lucent Blvd]:  
Address (line 2) []:  
City [Highlands Ranch]:  
State [CO]:  
Zip [80129]:  
Country [USA]:
```

12. Perform one of the following actions:

- Press **Enter** to accept the default settings
- Enter settings that are appropriate for your location.

The system displays a prompt to select a geographic region.

```
Geographic Region  
1 - AMERICAS - North and South America  
2 - EMEA      - Europe, Middle-east and Africa  
3 - APAC      - Asia, Pacific  
[AMERICAS]:
```

13. Select the appropriate geographic region for the customer.

The system displays the following message:

```
Automatic Email Submission  
Would you like all explorer output to be sent to:  
    explorer-database-americas@sun.com  
at the completion of explorer when -mail or -e is specified?  
[y, n]
```

14. Enter: **y**

The system displays the following message:

```
Alternate Email Submission

Would you like explorer output to be sent to an alternate email
addresses at the completion of explorer? If not, enter a single -
only for your reply.

To enter multiple addresses, separate them with a comma (,). []:
```

15. Perform one of the following steps:

- Enter any alternate e-mail addresses.
- Press **Enter** if there are no alternate e-mail addresses.

The system displays the following message:

```
Return address for explorer email output [xxxxxxx]
```

16. Press **Enter**.

The system displays the following message:

```
You have answered:
  Company name: xxxxxx
.....
.....
.....
Are these values okay? [y, n]
```

17. If the information is correct, enter: **y**

The system displays the following message:

```
We recommend running explorer once a week and emailing the results
to the explorer database. If you agree to this the root crontab
will be modified.

Do you wish to run explorer once a week? [y, n]
```

18. Enter: **n**

The system displays the following message:

```
If this is a new install of explorer, please run explorer and mail
the results to Sun.
.....
.....
.....
Would you like to do this now? [y, n]
```

19. Enter: **n**

The system displays the following message:

```
Using </opt/SUNWexplo> as the package base directory.
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

20. Enter: **y**

```
Using </opt/SUNWexplo> as the package base directory.
.....
.....
.....
Do you want to continue with the installation of <SUNWexplo> [y,
n]
```

21. Enter: **y**

The system displays the following message:

```
Installing Sun(TM) Explorer Data Collector as <SUNWexplo>
.....
.....
.....
Installation of <SUNWexplo> was successful.

===== Installation Completed === current date and time
```

Note:

The system will display a warning message for any default values that were left blank, for example, the serial # and contract ID. Ignore these warning messages.

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22. Enter:

```
/opt/cc/install/ahl.cssr12XX.X/bin/setup
```

where **xx.x** is the Avaya CMS Supplemental Services version number you recorded earlier in Step 2 of [Installing the Avaya CMS Supplemental Services software](#) on page 85.

The system displays the following message:

```
No previous version is in place.
enable crontab entry...
set up output log configuration...
AHL setup completed successfully.
```

23. Enter:

```
/opt/cc/install/aot.cssr12XX.X/bin/setup
```

where **xx.x** is the Avaya CMS Supplemental Services version number you recorded earlier in Step 2 of [Installing the Avaya CMS Supplemental Services software](#) on page 85.

The system displays the following message:

```
No previous version is in place.
copy previous log files...
no log files exist for tag "LAN_Admin_Log"
linking new version...
registering server with Orbix daemon
.....
.....
.....
[786: New Connection (cms3,IT_daemon,*,root,pid=645,optimised) ]

AOM setup completed successfully.
```

24. Enter:

```
eject cdrom
```

Installing the Avaya CMS packages

This section contains procedures for the installation and configuration of the Avaya CMS software.

This section includes the following topics:

- [Prerequisites](#) on page 91
- [Installing the Avaya CMS software](#) on page 91
- [Configuring Avaya CMS authorizations](#) on page 93
- [Installing the Avaya CMS patches](#) on page 99

Prerequisites

Before you install any of the Avaya CMS packages, perform the following tasks:

- Verify that you are logged in as **root** at the console.
- Obtain the CD-ROM, *Avaya Call Management System Release 12*.
- Obtain the current CMSSVC password.



Important:

The CMSSVC login is used only by Avaya services personnel. Do not give out the CMSSVC password.

Installing the Avaya CMS software

To install the Avaya CMS software:

1. Load the CD-ROM, *Avaya Call Management System Release 12* into the CD-ROM drive.
2. Enter:

```
cd /
```
3. Add the Avaya CMS package by entering:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0 cms
```

The system begins the installation and then displays the following message:

```
Assigning a new password for cms
New password:
```

Installing Avaya CMS and supporting software

4. Enter the password for the Avaya CMS login.

The system displays the following message:

```
Re-enter new password:
```

5. Re-enter the password for the Avaya CMS login.

The system displays the following message:

```
passwd (SYSTEM): passwd successfully changed for cms

Creating cmssvc user id
6 blocks
Assigning a new password for cmssvc
New password:
```

6. Enter the password for the CMSSVC login.

The system displays the following message:

```
Re-enter new password:
```

7. Re-enter the password for CMSSVC.

The system begins to install the Avaya CMS software.

8. Press the **Enter** key to continue the display.

Note:

It might be necessary to enter **y** several times to install any conflicting files.

The system finishes installing the Avaya CMS software, and displays the following message:

```
If CMS was installed by choosing cms from the pkgadd menu, type q and press
return to exit.

If cms was installed using pkgadd -d /cdrom/cdrom0 cms, press return.

Installation of <cms> was successful.
```

9. Press **Enter**.

10. Perform one of the following tasks:

- If the system prompts you to reboot the system, perform the following steps:

- i. Enter:

```
/usr/sbin/shutdown -y -i6 -g0
```

The system reboots.

- ii. Log in as **root**.

- If the system does not prompt you to reboot the system, go to the next procedure.

Note:

If you have problems installing the Avaya CMS software, see [Avaya CMS installation fails](#) on page 322.

Configuring Avaya CMS authorizations

This section describes how TSC personnel set authorizations for Avaya CMS features that are purchased by the customer. Authorizations apply to all ACDs that are administered. You can use the `auth_set` option in the **Avaya Call Management System Services Menu** to:

- Set the purchased version of Avaya CMS
- Authorize packages and features
- Change the number of agents, ACDs, or Supervisor logins

To set authorizations for Avaya CMS features:

1. TSC personnel should verify that the on-site technicians have completed the following tasks:

- Connected the console to the Avaya CMS system
- Connected the Avaya CMS system to the TSC's Remote Maintenance Center (remote console)
- Connected additional terminals and printers to the NTS ports
- Connected the link between the Avaya CMS system and the switch

Note:

If the hardware link or the Automatic Call Distribution (ACD) feature and Avaya CMS is not properly administered, the Avaya CMS software cannot communicate with the switch. For switch administration procedures, see *CMS Switch Connections, Administration, and Troubleshooting*, 585-215-876.

- Connected the NTS and the Avaya CMS system to the network hub unit
See *Avaya CMS Terminals, Printers, and Modems*, 585-215-874.

2. Enter:

cmssvc

The system displays a warning that IDS is off. The system then displays the **Avaya Call Management System Services Menu**.

```
Select a command from the list below.
 1) auth_display Display feature authorizations
 2) auth_set     Authorize capabilities/capacities
 3) run_ids      Turn Informix Database on or off
 4) run_cms      Turn CMS on or off
 5) disk_space   Format/Assign disk space to Database Server
 6) setup        Set up the initial configuration
 7) swinfo       Display switch information
 8) swsetup      Change switch information
 9) patch_inst   Install a single CMS patch from CD
10) patch_rmv    Backout an installed CMS patch
11) load_all     Install all CMS patches found on CD
12) back_all     Backout all installed CMS patches from machine
Enter choice (1-12) or q to quit:
```

3. Enter the number associated with the `auth_set` option.

The system displays the following message:

```
Password:
```

4. Enter the appropriate password.



Important:

The `auth_set` password is available only to authorized Avaya personnel.

Note:

Some of the following questions may not be displayed if the authorization cannot be changed at this time.

The system displays the following message:

```
Is this an upgrade? (y/n):
```

Note:

This question occurs the first time you run `auth_set` on the system.

5. Perform one of the following actions:

- If this is not an upgrade,

i. Enter: **n**

The system displays the following message:

```
Purchased version is R12. Is this correct? (y/n):
```

ii. Enter: **y**

- If this is an upgrade, enter: **y**

The system displays the following message:

```
Authorize installation of disk mirroring package? (y/n):(default: n)
```

6. Perform one of the following actions:



WARNING:

Mirroring should only be authorized if it will be configured as a mirrored system immediately after the system is set up. If the system operates as a non-mirrored system with mirroring authorized, the database will need to be rebuilt when the system is mirrored.

- If the customer purchased the disk mirroring package, enter: **y**
- If the customer did not purchase the disk mirroring package, enter: **n**

The system displays the following message:

```
Authorize installation of forecasting package? (y/n):(default: n)
```

7. Perform one of the following actions:

- If the customer purchased the forecasting package, enter: **y**
- If the customer did not purchase the forecasting package, enter: **n**

The system displays the following message:

```
Authorize installation of vectoring package? (y/n):(default: n)
```

8. Perform one of the following actions:

- If the customer purchased the vectoring package, enter: **y**
- If the customer did not purchase the vectoring package, enter: **n**

The system displays the following message:

```
Authorize use of graphics feature? (y/n): (default: n)
```

9. Perform one of the following actions:

- If the customer purchased the graphics feature, enter: **y**
- If the customer did not purchase the graphics feature, enter: **n**

The system displays the following message:

```
Authorize use of external call history feature? (y/n): (default: n)
```

10. Perform one of the following actions:

- If the customer purchased the external call history feature, enter: **y**
- If the customer did not purchase the external call history feature, enter: **n**

The program responds (if the vectoring package is authorized):

```
Authorize use of expert agent selection feature? (y/n): (default: n)
```

11. Perform one of the following actions:

- If the customer purchased the expert agent selection feature, enter: **y**
- If the customer did not purchase the expert agent selection feature, enter: **n**

The system displays the following message:

```
Authorize use of external application feature? (y/n):(default: n)
```

12. Perform one of the following actions:

- If the customer purchased the external application feature, enter: **y**
- If the customer did not purchase the external application feature, enter: **n**

The system displays the following message:

```
Authorize use of global dictionary/ACD groups feature? (y/n):  
(default: n)
```

13. Perform one of the following actions:

- If the customer purchased the global dictionary/ACD groups feature, enter: **y**
- If the customer did not purchase the global dictionary/ACD groups feature, enter: **n**

The system displays the following message:

```
Enter the number of simultaneous Avaya CMS Supervisor logins the  
customer has purchased (2-maximum): (default: 2)
```

14. Enter the number of simultaneous logins purchased by the customer.

The system displays the following message:

```
Has the customer purchased Avaya Report Designer? (y/n): (default:  
n)
```

15. Perform one of the following actions:

- If the customer purchased the Avaya CMS Supervisor Report Designer package, enter: **y**

- If the customer did not purchase the Avaya CMS Supervisor Report Designer package, enter: **n**

The system displays the following message:

Enter the maximum number of split/skill members that can be administered (1-maximum):

For R12, “split or skill members” are defined as the number of CMS-measured agent-split and agent-skill combinations that are logged in at the same time. Each split that an agent logs into is an agent-split combination. Each skill that is assigned to an agent while the agent is logged in is an agent-skill combination.

The minimum size configuration for Avaya CMS is 0-20. The maximum number of split skill members across all ACDs is 100,000. Your platform configuration and switch interval could change the number of split skill members you can have on your system.

You can limit the split or skill random access memory (RAM) allocation to the size that is actually needed for the current configuration of agents and splits or skills. This is accomplished by the total split/skill members summed over all splits/skills fields, which is accessed through the `setup` option of the `cmssvc` command.

The recommended numbers for Expert Agent Selection (EAS) and non-EAS systems are shown in the following table.

CMS agent RTU	Total logged-in agents across all ACDs	Split/skill members provisioning	
		Non-EAS (Maximum of 4 splits per agent)	EAS (Maximum of 60 skills per agent)
20	20	100	1200
100	100	400	6000
200	200	1000	12,000
300	300	1200	18,000
400	400	1600	24,000
500	500	2000	30,000
600	600	2400	36,000
700	700	2800	42,000
800	800	3200	48,000
900	900	3600	54,000

CMS agent RTU	Total logged-in agents across all ACDs	Split/skill members provisioning	
		Non-EAS (Maximum of 4 splits per agent)	EAS (Maximum of 60 skills per agent)
1000	1000	4000	60,000 ¹
1500	1500	6000	90,000
2000	2000	8000	100,000 ²
3000	3000	12,000	100,000
4000	4000	16,000	100,000
5200	5200 or greater	20,800 up to 100,00	100,000

1. Going above 1000 logged-in agents in the single switch environment requires that the average skills per agent be less than 60 since 60,000 skill pairs is the limit of the largest switch configuration (S8700 Media Server).
2. Going above 1666 logged-in agents in a multi-ACD environment requires that the average skills per agent be less than 60 (or above 5000 requires less than 20 skills per agent) due to the CMS limit of 100,000 skill pairs. The ACD switch maximum is 5200 agents and 60,000 skill pairs.

16. Enter the maximum possible number of split or skill members that the customer might use based on the size of the switch agent purchased.

The system displays the following message:

```
Enter the maximum number of ACDs that can be installed (1-8):
(default: 1)
```

17. Enter the number of ACDs the customer purchased.

The system displays the following message:

```
Enter the number of authorized agents(Right To Use):
```

18. Enter the number of authorized agents.

The system displays the command prompt, and all authorizations have been set.

19. Verify that authorizations were set by entering:

```
tail /cms/install/logdir/admin.log
```

- The system displays the **admin.log** file. The **admin.log** file contains information related to Avaya CMS administration procedures.

```
CMS Version XXXX.XX installation successful<date/time>
Authorization command started <date/time>
Capabilities/capacities authorized <date/time>
```

Note:

You can also verify the authorizations by using the `auth_display` option of the `cmssvc` command.

Installing the Avaya CMS patches

To install Avaya CMS patches:



Important:

The features must be authorized on your system before patches can be installed. To have authorizations installed, call the Avaya helpline. We recommend that you always install all available patches. For more information about patch requirements, see [Avaya CMS patch requirements](#) on page 226.

If you believe that you should not be installing a particular patch, call the National Customer Care Center at 1-800-242-2121, or consult with your product distributor or representative, before you decide not to install it.

1. Verify that the CD-ROM, *Avaya Call Management System Release 12* is in the CD-ROM drive.

2. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

3. Choose one of the following actions:

- To load all of the patches, enter the number associated with the `load_all` option.
- To load one patch at a time, enter the number associated with the `patch_inst` option.

The system checks for patches on the CD-ROM.

- If no patches are found on the CD-ROM the system displays the following message:

```
No CMS patches found on the CD.
Please check the CD and try again.
```

Installing Avaya CMS and supporting software

- If patches are available for installation, the system responds:

```
The following patches are available for installation:
.....
.....
.....
Are you sure you want to install all these patches? (y|n)
```

4. Choose one of the following actions:

- If no patches are found on the CD-ROM continue with Step 5.
- If patches are found on the CD-ROM, enter **y** to install all of the patches, or enter the patch number if you are installing only one patch.

The system installs the patch or patches. As it does so, it displays messages similar to the following for each patch that is installed:

```
@(#) installpatch 1.0 96/04/01
cmspx-s
Generating list of files to be patched...
Creating patch archive area...
Saving a copy of existing files to be patched...
xxxx blocks
      File compression used
Installing patch packages...

Doing pkgadd of cmspx-s package:
Installation of <cmspx-s> was successful.

Patch packages installed:
      cmspx-s

Patch installation completed.
```

5. Enter:

eject cdrom

Configuring the IDS dbspaces

The Avaya CMS Disk_Space Manager tool is used to automatically configure IDS. The tool will set up the Informix partitions and configure a mirrored system.

To configure the IDS dbspaces:

1. Verify that Informix IDS has been installed and initialized.
2. Verify that Avaya CMS has been installed.
3. Verify that you are logged into the system as **root**.
4. Enter:

```
cmssvc
```

The system displays a warning that IDS is off. The system then displays the **Avaya Call Management System Services Menu**.



Important:

The CMSSVC login is used only by services. Do not give out the CMSSVC password.

5. Enter the number associated with the `run_ids` option.

The system displays the following message:

```
Select one of the following
```

- ```
1) Turn on IDS
2) Turn off IDS
```

```
Enter choice (1-2):
```

6. Enter the number associated with the `Turn on IDS` option.

The system displays the following message:

```
IDS is down.
Please wait for initialization

.

***** IDS is now up *****
```

7. Enter:

```
. /opt/informix/bin/setenv
```

8. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

9. Enter the number associated with the `disk_space` option.

The system displays the following message if this is the first time the `disk_space` option is selected:

```
Initializing the boot disk (this may take several minutes!) ...

Disk_space_manager options 5) are:

 1) Add New Disks
 2) Initiate Mirroring
 3) Sync Primary and Mirror

Enter choice (1-3) or q to quit:
```

**Note:**

The system will not display the mirroring options if disk mirroring has not been authorized.

10. Enter the number associated with the `Add New Disks` option.

If the system has more than one disk, it displays a list of disks or displays a list of disk pairs if the system is mirrored.

```
The choices for primary disks are:
.....
.....
.....
Enter choice (X-X) or q to quit:
```

**Note:**

The system may display different menu options for mirrored systems.

11. Add the disk. Repeat Steps 8 through 10 for every hard drive installed on the system.

When all disks have been added, the system displays the following message:

```
disk_space command completed.
```

**Note:**

If IDS fails to turn on after the configuration of the IDS dbspaces, the system displays the following message:

```
oninit: Fatal error in shared memory initialization
```

Contact the National Customer Care Center (1-800-242-2121), or consult with your product distributor or representative.

## Installing the Open Database Connectivity server software

Open Database Connectivity (ODBC) is an optional Avaya Call Management System (CMS) feature. It allows you to access data in the Avaya CMS database for use in other software applications such as spreadsheet programs. With ODBC, you can access the Avaya CMS data directly from your application without needing to understand database connectivity or format. ODBC allows access to data at multiple sites for reports. The following procedures allow you to install or upgrade your ODBC software. For more information about the ODBC client software, see *Avaya CMS Open Database Connectivity*, 585-780-701.

This section includes the following topics:

- [Prerequisites](#) on page 104
- [Installing ODBC version 4.2](#) on page 104

---

### Prerequisites

Before you install the ODBC software, perform the following tasks:

- Verify that all the preceding factory software installation requirements have been completed
- Obtain the CD-ROM, *Avaya CMS OPENLINK ODBC Driver*
- Verify that you are logged in as **root** at the console

---

### Installing ODBC version 4.2

To install ODBC version 4.2:

1. Load the CD-ROM, *Avaya CMS OPENLINK ODBC Driver* into the CD-ROM drive.
2. Enter:  

```
cd /usr
```

The system displays the command prompt.
3. Choose one of the following procedures:
  - If this is *not* an upgrade of the ODBC software, go to Step 4.
  - If this is an upgrade of the ODBC software, perform the following procedure:

- i. Shut down the request broker by entering:

```
/cms/dc/odbc/odbc_init -r 0
```

- ii. Remove the old **/openlink** directory by entering:

```
rm -fr /usr/openlink
```

4. Enter:

```
mkdir /usr/openlink
```

The system creates the OpenLink directory.

5. Enter:

```
cd /usr/openlink
```

6. Verify that you are in **/usr/openlink** by entering:

```
pwd
```

7. Copy the server components from the CD-ROM by entering:

```
cp /cdrom/cdrom0/server/cmsv9v11/* /usr/openlink
```

8. Install the server components on the system by entering:

```
./install.sh
```

The system displays a message similar to the following:

```
Extracting (srami9zz.taz) ...
.....
.....
.....
Enter the port number the the broker will listen on for
client connections [Enter=Default] :
```

**Note:**

On some systems, the following message may be displayed:

```
Saving existing CMS odbc settings
```

9. Accept the default setting by pressing **Enter**.

The system displays the following message:

```
Welcome to the OpenLink Admin Assistant Setup.
This program will install the HTTP based OpenLink Admin Assistant,
thereby enabling remote configuration for all OpenLink Server
Components (Rule Book,
Service and Database Agents) from any Web Browser.

TCP/IP Port to use? [ENTER=8000] :
```

## Installing Avaya CMS and supporting software

10. Accept the default setting by pressing **Enter**.

The system displays the following message:

```
Log File? [ENTER=www_sv.log]
```

11. Accept the default setting by pressing **Enter**.

The system displays the following message:

```
Log all requests (y/n)? [ENTER=n]
```

12. Accept the default setting by pressing **Enter**.

The system displays the following message:

```
Administrator account? [ENTER=admin]
```

13. Accept the default setting by pressing **Enter**.

The system displays the following message:

```
Administrator's password? [ENTER=admin]
```

14. Accept the default setting by pressing **Enter**.

The system displays the following message:

```
The OpenLink Admin Assistant is now ready for use.
.....
.....
.....
Enter the name of the user that will own the programs [ENTER=Use
Current User Settings] :
```

15. Enter:

**root**

The system displays the following message:

```
Enter the name of the group that will own the programs [ENTER=Use
Current Group Settings] :
```

16. Enter:

**root**

The system displays the following message:

```
Changing ownership ...

End of installation.
```

17. Choose one of the following commands to configure and initiate the ODBC software:

- If this is a new install, enter:

```
/cms/dc/odbc/odbc_init
```

The system displays the following message:

```
ODBC driver initialization complete
```

- If this is an upgrade or reinstallation, enter:

```
/cms/dc/odbc/odbc_init -r 1
```

The system displays the following message:

```
oplrqb has been activated
```

18. Verify that the ODBC Request Broker is active on the server by entering:

```
ps -ef | grep oplrqb
```

The system displays a message similar to the following:

```
root 3446 3443 0 09:57:28 ? 0:03 /usr/openlink/bin/oplrqb -f
+configfile /cms/dc/odbc/cmsrqb4.2_init +loglevel 7
```

 **Important:**

At this point, the software is registered, installed, and running. If you do not see an *oplrqb* process running in **/usr/openlink/bin** after completing Step 18, repeat the installation as if it were an upgrade.

19. Enter:

```
eject cdrom
```

For more information about the ODBC feature, see Avaya CMS Open Database Connectivity.

---

## Setting up Avaya CMS data storage parameters

This section describes how TSC personnel modify specific data storage parameters on the Avaya CMS system. These storage parameters affect the operation of the Avaya CMS software.

**Important:**

Throughout the setup, you are prompted to enter values that are specific to the system being installed. These values differ between switch releases. For each question, an appropriate range of values is displayed. These values represent the limits of each range.

To modify Avaya CMS data storage parameters:

1. Change to the Avaya CMS installation directory by entering:

```
cd /cms/install/cms_install
```

2. Enter:

```
vi storage.def
```

**Note:**

The **storage.def** file contains the data storage parameters. The Avaya CMS system is installed with a set of standard default values. If you delete or damage the **storage.def** file, you can find a copy of this file (**storage.skl**) in the same directory.

The default storage parameters are listed in the [Default Avaya CMS data storage parameters table](#) on page 108 in the order in which they appear in the **storage.def** file.

**Default Avaya CMS data storage parameters table**

| Parameter                                                                          | Default  |
|------------------------------------------------------------------------------------|----------|
| # Intrahour interval (15, 30, 60 minutes):                                         | 30       |
| # Week start day (Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday): | Sunday   |
| # Week end day (Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday):   | Saturday |
| # Daily start time (regular time):                                                 | 12:00 AM |
| # Daily stop time (data will be collected for seconds of last minute):             | 11:59 PM |

**Default Avaya CMS data storage parameters table**

| Parameter                                                       | Default |
|-----------------------------------------------------------------|---------|
| # Number of agent login/logout records (0-999999):              | 10000   |
| # Number of agent trace records:                                | 10000   |
| # Number of call records (0-5000 internal or 0-99999 external): | 0       |
| # Number of exceptions records (1-2000):                        | 250     |
| # Days of intrahour for splits (1-62):                          | 31      |
| # Days of daily splits (1-1825):                                | 387     |
| # Weeks of weekly splits (1-520):                               | 53      |
| # Months of monthly splits (1-120):                             | 13      |
| # Days of intrahour for agents (1-62):                          | 31      |
| # Days of daily agents (1-1825):                                | 387     |
| # Weeks of weekly agents (1-520):                               | 53      |
| # Months of monthly agents (1-120):                             | 13      |
| # Days of intrahour for trunk groups (1-62):                    | 31      |
| # Days of daily trunk groups (1-1825):                          | 387     |
| # Weeks of weekly trunk groups (1-520):                         | 53      |
| # Months of monthly trunk groups (1-120):                       | 13      |
| # Days of intrahour for trunks (1-62):                          | 31      |
| # Days of daily trunks (1-1825):                                | 387     |
| # Weeks of weekly trunks (1-520):                               | 53      |
| # Months of monthly trunks (1-120):                             | 13      |
| # Days of intrahour for call work codes (1-62):                 | 0       |
| # Days of daily call work codes (1-1825):                       | 0       |
| # Weeks of weekly call work codes (1-520):                      | 0       |
| # Months of monthly call work codes (1-120):                    | 0       |
| # Days of intrahour for vectors (1-62):                         | 31      |

**Default Avaya CMS data storage parameters table**

| Parameter                            | Default |
|--------------------------------------|---------|
| # Days of daily vectors (1-1825):    | 387     |
| # Weeks of weekly vectors (1-520):   | 53      |
| # Months of monthly vectors (1-120): | 13      |
| # Days of intrahour for VDNs (1-62): | 31      |
| # Days of daily VDNs (1-1825):       | 387     |
| # Weeks of weekly VDNs (1-520):      | 53      |
| # Months of monthly VDNs (1-120):    | 13      |

3. Review the default data storage values for each authorized ACD. The default values are found on the line immediately below each storage parameter.
4. Enter the values determined by the account executive, system consultant, and design center. These values are based on the customer configuration.
5. Press **Esc**. Then enter:

:wq!

The system saves and closes the file.

**Note:**

After the Avaya CMS software is running, the system administrator can change the data storage parameters using the **Data Storage Allocation** window and the **Storage Intervals** window. Both windows are accessed from the **CMS System Setup** menu.

For more information about changing Avaya CMS data storage parameters, see *Avaya Call Management System Release 3 Version 11 Administration*, 585-215-515.

---

# Setting up LAN connections

This section describes how to set up a network connection to a LAN-enabled switch and other Avaya CMS system peripherals. For more information about LAN switch configurations, see *CMS Switch Connections, Administration, and Troubleshooting*, 585-215-876.

This section includes the following topics:

- [Prerequisites](#) on page 111
- [Editing the /etc/hosts file](#) on page 111
- [Setting up a second network interface](#) on page 112
- [Editing the /etc/defaultrouter file](#) on page 114

---

## Prerequisites

Before you begin setting up the network for LAN connections, perform the following tasks:

- Verify that you are logged in as **root**.
- Verify that the Avaya CMS software is turned off and the IDS software is on.
- Verify that all file systems are mounted.
- Verify that Release 8 or later Avaya switches are installed.

---

## Editing the /etc/hosts file

To edit the **/etc/hosts** file:

1. Enter:

```
vi /etc/hosts
```



### Important:

The items in this file must be separated by tabs, not spaces, and any comments must begin with a #. The entry for `localhost` must remain on line four and the entry for `loghost` must remain on line five.

The `loghost` line should contain the Avaya CMS system:

- IP address
- Host name

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- Hostname.fully qualified domain name
- loghost

The fully qualified domain name is either the customer domain name or the default entry `tempdomain.net`

Example:

```
#
Internet host table
#
127.0.0.1 localhost
192.168.2.1 cms cms.tempdomain.net loghost
```

2. Add a new line to this file for each ethernet card that is installed in this computer using TCP/IP. You must enter the IP address and the host name.

This example shows the recommended default IP addressing scheme for a closed network. There is one ACD and two NTS units (`cmsterm1` and `cmsterm2`).

```
#
Internet host table
#
127.0.0.1 localhost
192.168.2.1 cms cms.tempdomain.net loghost
216.25.242.138 cms_1 #2nd network card on seperate subnet
192.168.2.2 switch
192.168.2.101 cmsterm1
192.168.2.102 cmsterm2
192.168.2.103 router
```

### Note:

Only the primary network card needs the fully qualified domain name.

3. Press **Esc**. Then enter:

**:wq!**

The system saves and closes the file.

---

## Setting up a second network interface

If the Avaya CMS system has two network interfaces, you must set up the second network interface. The primary network interface was set up during the Solaris installation.

To set up a second network interface:

1. Enter:

```
vi /etc/hosts
```

2. Add a new line in the **/etc/hosts** file for each ACD that will connect to this computer using TCP/IP. You must enter the IP address and the host name.
3. If the system is a Sun Fire V880, add a line for the Remote System Control (RSC) card. You must enter the IP address and the device name. The device name for the RSC card is the Avaya CMS system hostname with “-rsc” as a suffix.

The following example shows the recommended default IP addressing scheme for a second network interface. The host name for the second network interface is the Avaya CMS system hostname with “\_1” as a suffix.

```
#
Internet host table
#
127.0.0.1 localhost
192.168.2.1 cms cms.tempdomain.net loghost
192.168.2.2 switch1
192.168.2.6 switch2
192.168.2.108 cms-rsc
192.168.2.3 cms_1 #2nd network card
192.168.2.101 cmsterm1
192.168.2.102 cmsterm2
192.168.2.103 router
```

4. Press **Esc**. Then enter:

```
:wq!
```

The system saves and closes the file.

5. If you are not sure what the second network interface type is, enter the following command:

```
/usr/platform/`uname -m`/sbin/prtdiag | egrep "SUNW" | more
```

The system displays a message that is similar to the following example:

|   |     |    |    |                                  |               |
|---|-----|----|----|----------------------------------|---------------|
| 0 | pci | 33 | 0  | SUNW,hme-pci108e,1001 (network)  | SUNW,cheerio  |
| 0 | pci | 33 | 4  | SUNW,isptwo-pci1077,1020 (scsi)  | QLGC,ISP1040B |
| 0 | pci | 33 | 12 | network-pci108e,1101.1 (network) | SUNW,pci-eri  |
| 0 | pci | 33 | 19 | SUNW,m64B (display)              | ATY,RageXL    |

**Note:**

Depending on the system type, the fourth or fifth column will display the network card slot number. The system may not display the primary network interface if the interface is integrated.

6. Create a new host name file for the second network interface by entering:

```
vi /etc/hostname.network_interfaceX
```

where *network\_interface* is the type of network interface, and

where *x* is the instance of the network interface.

Example:

On a Sun Blade 100 with a SunSwift card, enter:

```
vi /etc/hostname.hme0
```

7. Add a line to this new file with the host name you added to the **/etc/hosts** file.

Example:

```
cms_1
```

8. Press **Esc**. Then enter:

```
:wq!
```

The system saves and closes the file.

---

## Editing the /etc/defaultrouter file

If the connection between the Avaya CMS system and the switch is going through a customer's network, you will have to set up a default network router.

To edit the **/etc/defaultrouter** file:

1. Enter:

```
vi /etc/defaultrouter
```

The system creates a default router file.

2. Add a line to this new file with the IP address for the default system router on the customer's network. This address must be obtained from the customer.

Example:

```
192.168.2.254 router
```

3. Press **Esc**. Then enter:

```
:wq!
```

The system saves and closes the file.

4. Add the router information to the **/etc/hosts** file. See [Editing the /etc/hosts file](#) on page 111.

---

# Configuring the Avaya CMS software

The Avaya CMS software provides monitoring and recording of ACD calls and agents handling these calls, and the use of Vector Directory Numbers (VDNs) for these calls to measure call center performance.

This section includes the following topics:

- [Prerequisites](#) on page 115
- [About the configuration methods](#) on page 115
- [Configuring Avaya CMS interactively](#) on page 115
- [Configuring Avaya CMS using a flat file](#) on page 123

---

## Prerequisites

Before you configure the Avaya CMS software, perform the following tasks:

- Verify that you are logged in as **root**.
- Verify that if TCP/IP is being used to connect to an ACD, the switch/LAN setup is done.
- Verify that all file systems are mounted.

---

## About the configuration methods

You can choose either one of two ways to configure the Avaya CMS software:

- If you use the interactive option, the program automatically prompts you for the necessary information to configure the Avaya CMS software. For more information, see [Configuring Avaya CMS interactively](#) on page 115.
- If you use the flat file option, you edit a UNIX system flat file that contains the necessary information to set up the Avaya CMS software. When you execute the install program, the program runs in the background and uses the flat file data to configure Avaya CMS. For more information, see [Configuring Avaya CMS using a flat file](#) on page 123.

---

## Configuring Avaya CMS interactively

To configure Avaya CMS interactively:

1. If you are not sure of the device path for the tape drive:

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- a. Insert a tape into the tape drive.
- b. In another xterm window, enter the following commands:

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

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

The system will display a message similar to the following for the device that has the tape inserted:

```
HP DDS-4 DAT (Sun) tape drive:
 sense key(0x0)= No Additional Sense residual= 0 retries= 0
 file no= 0 block no= 0
```

2. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

3. Enter the number associated with the `setup` option.

The system displays the following message:

```
Select the language for this server:

All languages are ISO Latin except Japanese. Selection of the
server language assumes that existing customer data is compatible.
(Upgrade from any ISO Latin language to any ISO Latin language or
from Japanese to Japanese is supported).

1) English
2) Dutch
3) French
4) German
5) Italian
6) Portuguese
7) Spanish
8) Japanese
Enter choice (1-8): (default: 1)
```

### Note:

When the `cmssvc setup` command is running, no other `cmsadm` or `cmssvc` commands are allowed. Any attempt to run other `cmsadm` or `cmssvc` commands will be rejected, and the system will display the error message "Please try later, setup is active".

**Note:**

If system setup has already been done, the program responds:

```
Warning!!! Setup has already been performed.
Running this command will remove all CMS data in the database.
Do you wish to proceed and re-configure CMS? (y/n): (default: n)
```

If the warning message is displayed, perform one of the following actions:

- Enter **n** to exit the setup.
- Enter **y** to continue with the setup.

4. Enter the number for the language to be used on this system.

The system initializes the customer Avaya CMS data. This can take up to 30 minutes. When finished, the system displays the following message:

```
Initializing Customer CMS data . . .
.....
Customer CMS data successfully initialized.
Creating database tables
.....
Enter a name for this UNIX system (up to 256 characters):
(default: cms3)
```

5. Enter the host name of the computer.

This name was assigned during the factory installation procedures and is used by the TSC to maintain and identify this specific system.

The system displays a list of tape devices.

The following table lists the models of tape drives that are supported for CMS R12.

| Tape drive | Tape cartridge                                            | CMS computers                                     |
|------------|-----------------------------------------------------------|---------------------------------------------------|
| DDS-4      | DDS compliant 150 meter<br>20/40-GB DAT cartridge<br>4 mm | Sun Blade<br>Sun Enterprise 3500<br>Sun Fire V880 |
| Mammoth    | 170-meter AME 20/40-GB<br>8 mm                            | Sun Enterprise 3500                               |

6. Enter the number to specify the type of tape cartridge you are using as the backup device.

The system displays the following message:

```
Enter the default backup device path:(default: /dev/rmt/0c)
```

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7. Enter the default backup device path.

The system displays the following message:

```
Enter number of ACDs being administered (1-8):
```

8. Enter the number of ACDs to be administered. This number may be less than the number of ACDs authorized.

The system displays the following message:

```
Information for ACD 1

Enter switch name (up to 20 characters):
```

9. Enter the name for the switch that is associated with ACD 1.

The system displays a list of switch models.

10. Enter the number that represents the switch model that is associated with the ACD.

Use the following table to determine the correct switch model. See *CMS Switch Connections, Administration, and Troubleshooting*, 585-215-876 for additional information.

**Switch model table**

| If the switch release is: | Then enter this switch model choice: |
|---------------------------|--------------------------------------|
| Release 8                 | Definity-R8                          |
| Release 9<br>Release 10   | Definity-R9/R10                      |
| Release 11                | MultiVantage R1                      |
| Release 12                | Communication Manager R2             |

If the switch supports vectoring and vectoring is authorized, the following message appears; otherwise, go to Step 13.

```
Is Vectoring enabled on the switch? (y/n):
```

11. Perform one of the following actions:

- If vectoring is enabled on this switch, enter: **y**

- If vectoring is not enabled on this switch, enter: **n**

The following message appears if vectoring is enabled, the switch supports EAS, and EAS is authorized. If the message does not appear, go to Step 13.

Is Expert Agent Selection enabled on the switch? (y/n):

12. Perform one of the following actions:

- If EAS is enabled on this switch, enter: **y**
- If EAS is not enabled on this switch, enter: **n**

The system displays the following message:

Does the Central Office have disconnect supervision? (y/n):  
(default: y)

13. Perform one of the following actions:

- If the Central Office has disconnect supervision, enter: **y**
- If the Central Office does not have disconnect supervision, enter: **n**

The system displays the following message:

If the Central Office has disconnect supervision, enter 0. Otherwise, ACD calls shorter than the Phantom Abandon Call Timer value will be counted as abandoned.  
Enter the Phantom Abandon Call Timer value in seconds (0-10):

14. Enter the Phantom Abandon Call Timer value.

The system displays the following message:

Enter the local port assigned to switch. (1-64):

**Note:**

The standard Avaya CMS provisioning procedure is to set the local and remote port assignments equal to the switch processor channel assignment. For example, for switch processor channel 2, the remote and local port assignments would both be set to a value of 2.

15. Enter the local port or channel number on the switch.

The system displays the following message:

Enter the remote port assigned to switch (1-64):

16. Enter the remote port or channel number on the switch.

You must now select how the Avaya CMS platform transports messages to the switch.

The system displays the following message:

```
Select the transport to the switch
1) TCP/IP
Enter choice (1-1):
```

17. Select TCP/IP.

The system displays the following message:

```
Enter switch host name or IP Address:
```

18. Enter the host name or IP address of the switch that is connected to this ACD.

**Note:**

If you enter a host name that has not been added to the computer's **/etc/hosts** file, the system displays the following message:

```
Switch_name has not been administered in a DNS or
/etc/hosts file. The DNS or /etc/hosts file must be
corrected or the link to the switch will not work.
```

See [Editing the /etc/hosts file](#) on page 111 for more information about setting up the hosts file.

The system displays the following message:

```
Enter switch TCP port number (minimum-maximum):(default: 5001)
```

19. Press **Enter** to use the default TCP port number.

**Note:**

This number must match the port number administered on the switch.

The system displays the following message:

```
Number of splits/skills (0-Maximum):
```

20. Enter the number of splits/skills in this ACD.

The system displays the following message:

```
Total split/skill members, summed over all splits/skills
(0-Maximum):(default 500)
```

21. Enter the maximum number of split/skill members that will be logged into this ACD simultaneously, considering shift overlap.

- For non-EAS, sum all agent-split combinations, counting each split an agent will log into (maximum is 4) as a split member.
- For EAS, sum all agent-skill combinations that will be logged in at the same time. Count the maximum number of skills the supervisors expect to assign to each agent (maximum is 20) during a shift.

If it is not possible to sum the number of splits/skills for each agent, you can determine the capacity that is needed by multiplying the total number of agents by the average number of splits/skills per agent.

The system displays the following message:

```
Number of shifts (1-4):(default 1)
```

22. Enter the number of shifts.

The system displays the following message:

```
Enter the start time for shift 1 (hh:mmXM):(default 8:00 AM)
```

23. Enter the start time for shift 1.

Example:

08:00AM

The system displays the following message:

```
Enter the stop time for shift 1 (hh:mmXM) : (default 5:00 PM)
```

24. Enter the stop time for shift 1.

Example:

05:00PM

The system displays the following message:

```
Number of agents logged into all splits/skills during
shift 1 (0-maximum):(default 500)
```

25. Enter the number of agents logged in during the shift.

**Note:**

Repeat Steps 23 through 25 for the number of shifts entered in Step 22.

When all shifts have been set up, the system displays the following message:

```
Number of trunk groups (0-maximum):(default 500)
```

26. Enter the number of trunk groups that are associated with this ACD.

The system displays the following message:

```
Number of trunks (0-maximum):(default 1000)
```

27. Enter the number of trunks associated with this ACD.

The system displays the following message:

```
Number of unmeasured facilities (0-maximum):(default 300)
```

28. Enter the number of unmeasured trunk facilities that are associated with this ACD.

**Note:**

The recommended assignment per ACD for unmeasured facilities is 25% of the measured trunks.

If the switch supports call work codes, the system displays the following message:

```
Number of call work codes (1-maximum):(default 1000)
```

29. Enter the number of call work codes.

If vectoring is enabled on the switch, that is if a `y` was entered in Step 11, the system displays the following message:

```
Enter number of vectors (0-maximum):(default 500)
```

30. Enter the number of vectors.

The system displays the following message:

```
Enter number of VDNs (0-maximum):(default 4000)
```

31. Enter the number of VDNs.

The program repeats Steps 9 through 30 for each ACD that you entered in Step 8.

After you define the last ACD, the system displays the following message:

```
Updating database.

Creating database tables
.....

Computing space requirements and file system space
availability.

Setup completed successfully.
```

**Note:**

If the setup determines that you do not have enough file space, the system displays the following warning message:

```
Failed to find sufficient file space for CMS data.

WARNING: You do not currently have sufficient file space for your
existing CMS data. At this point you should turn on CMS, go to the
"Data Storage Allocation" screen, and verify/modify the
administration, or go to the "Free Allocation" screen and
verify/modify your existing free space.

Setup completed with warnings.
```

32. To verify that the installation completed successfully, enter:

```
tail /cms/install/logdir/admin.log
```

All failure messages are logged in this file. The Avaya CMS software is successfully set up when the system displays a message similar to the following:

```
Setup completed successfully <data/time>
```

You may edit this file and add comments about the packages that were installed or authorized.

33. Perform one of the following actions:

- If you need to install additional CMS-related feature packages such as Forecasting or External Call History, go to [Installing feature packages](#) on page 130.
- If you are not installing any other feature packages, perform the following procedure:
  - i. Enter:
 

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.
  - ii. Enter the number associated with the `run_cms` option.
  - iii. Enter the number associated with the `Turn on CMS` option.

---

## Configuring Avaya CMS using a flat file

To configure Avaya CMS using a flat file, you must edit a copy of the **cms.inst.skl** file and start the install program.



### Important:

This procedure is not necessary if you already performed the Avaya CMS configuration interactively.

This section includes the following topics:

- [Creating the flat file](#) on page 124
- [Example flat file](#) on page 124
- [Using the flat file](#) on page 127

## Creating the flat file

To configure Avaya CMS with a flat file:

1. Change to the Avaya CMS installation directory by entering:

```
cd /cms/install/cms_install
```

2. Make a copy of the Avaya CMS installation file by entering:

```
cp cms.inst.skl cms.install
```

3. Change permissions on the copied Avaya CMS installation file by entering:

```
chmod 644 cms.install
```

4. Edit the copied Avaya CMS installation file by entering:

```
vi cms.install
```

The file contains a series of questions and value ranges for the ACD configuration.

### Note:

When selecting a switch model in the file, refer to the [Switch model table](#) on page 118.

5. Enter the appropriate values for your configuration. The entries must be added on the blank lines after each question. For more information, see [Example flat file](#) on page 124.



### CAUTION:

Use the computer's host name for the UNIX system name. The computer's host name was assigned during the factory installation.

6. Press **Esc**. Then enter:

```
:wq!
```

The system saves and closes the file.

## Example flat file

The following section shows an example flat file. Example values are in bold.

```
Enter a name for this UNIX system (up to 256 characters):
cms
Select the type of backup device you are using
1) 40.0 Gbyte 4mm or 8mm tape
2) 14.0 Gbyte 8mm tape
3) SCSI 4-8 SLR cartridge tape - 4GB tape (8GB compressed)
Enter choice (1-3):
1
Default backup device paths based on device type:
Device Default backup path
40.0 Gbyte 4mm or 8mm tape /dev/rmt/0c
14.0 Gbyte 8mm tape /dev/rmt/0c
SCSI 4-8 SLR cartridge tape -4GB tape (8GB compressed) /dev/rmt/0c
Enter the default backup device path:
/dev/rmt/0c
Enter number of ACDs being administered (1-8):
2

The following information is required per ACD:

Information for ACD 1:
Enter switch name (up to 20 characters):
acd1
Select the model of switch for this ACD
1) Definity-R8
2) Definity-R9/R10
3) MultiVantage R1
4) Communication Mgr R2
Enter choice (1-4):
4
Is Vectoring enabled on the switch? (y/n):
y
Is Expert Agent Selection enabled on the switch? (y/n):
y
Does the Central Office have disconnect supervision? (y/n):
y
If the Central Office has disconnect supervision, enter 0. Otherwise,
ACD calls shorter than the Phantom Abandon Call Timer
value will be counted as abandoned.
Enter the Phantom Abandon Call Timer value in seconds (0-10):
0
Enter the local port assigned to switch (1-64):
1
Enter the remote port assigned to switch (1-64):
1
TCP/IP available on DEFINITY R8 and later switches.
Select the transport to the switch
1) TCP/IP
Enter choice (1-1):
1
Skip the next two questions if you did not enter choice TCP/IP.
These are used for TCP/IP connections only.
If a host name is entered, the host name must be administered in a DNS or
/etc/hosts file or the link to the switch will not work.
```

## Installing Avaya CMS and supporting software

```
Enter switch host name or IP Address:
switch1
Enter switch TCP port number (5001-5999):
5001
Maximum number of splits/skills based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10/MultiVantage R1 999
Communication Mgr R2 2000
Number of splits/skills (0-Maximum):
2000
Maximum number of split/skill members based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10 10000
MultiVantage R1/Communication Mgr R2 60000
Total split/skill members, summed over all splits/skills (0-Maximum):
40500
Number of shifts (1-4):
1
Enter the start time for shift 1 (hh:mmXM):
8:00am
Enter the stop time for shift 1 (hh:mmXM):
5:00pm
Number of agents logged into all splits/skills during shift 1 (1-Maximum):
40500
Maximum number of trunk groups based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10 666
MultiVantage R1/Communication Mgr R2 2000
Number of trunk groups (0-Maximum):
1350
Maximum number of trunks based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10 4000
MultiVantage R1/Communication Mgr R2 8000
Number of trunks (0-Maximum):
1000
Number of unmeasured facilities (0 to (Maximum trunks - Number of trunks)):
300
Minimum number of call work codes based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10/MultiVantage R1 1
Communication Mgr R2 1
1
Maximum number of call work codes based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10/MultiVantage R1 1999
Communication Mgr R2 1999
Number of call work codes (0-Maximum):
750
Maximum number of vectors based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10/MultiVantage R1 999
Communication Mgr R2 999
Enter number of vectors (0-Maximum):
350
```

```
Maximum number of VDNs based on switch type:
Release(s) Value
Definity-R8/Definity-R9/R10/MultiVantage R1 20000
Communication Mgr R2 20000
Enter number of VDNs (0-Maximum):
2000

Information for ACD 2:
```

## Note:

The file repeats the preceding statements for ACDs 2 through 8. Enter data for only the required number of ACDs.

## Using the flat file

To use the flat file to configure Avaya CMS:

1. Enter `cd /` to change to the root directory.
2. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

3. Enter the number associated with the `setup` option.

If setup has been done previously, the system displays the following message:

```
Warning!!! Setup has already been performed.
Running this command will remove all CMS data in the database.
Do you wish to proceed and re-configure CMS? (y/n): (default: n)
```

4. Enter: `y`

The system displays the following message:

```
Select the language for this server:

All languages are ISO Latin except Japanese. Selection of the
server language assumes that existing customer data is compatible.
(Upgrade from any ISO Latin language to any ISO Latin language or
from Japanese to Japanese is supported).

1) English
2) Dutch
3) French
4) German
5) Italian
6) Portuguese
7) Spanish
8) Japanese
Enter choice (1-8): (default: 1)
```

## Installing Avaya CMS and supporting software

5. Enter the number associated with the language that is used on the system.

The system displays the following message:

```
The input will be read from
 1) the terminal
 2) a flat file
Enter choice (1-2):
```

6. Enter the number associated with the flat file option.

The system displays the following message:

```
*** The rest of this command is running in the background ***
```

7. Verify that the installation completed successfully by entering:

```
tail -f /cms/install/logdir/admin.log
```

The `-f` option in the `tail` command updates the console as messages are written to the **admin.log** file. All failure messages are logged in this file. The Avaya CMS software is successfully set up when you see a message similar to the following:

```
File systems/space available:
 /cms 12994480

File systems/current blocks free:
 /cms 12994480
/cms: VDN,TKGRP,VECTOR,TRUNK,AGENT_LOG_REC,
AGENT_TRACE_REC,SPLIT,AGENT,EXCEPTIONS_REC,WORKCODE, CALL_REC,
Number of calls to fill_fs():12
Setup completed successfully <data/time>
```

You can edit this file and add comments about the packages that were installed or authorized.

8. Press **Delete** to exit the `tail -f` command.

9. Choose one of the following:

- If you need to install additional CMS-related feature packages (Forecasting or External Call History), go to [Installing feature packages](#) on page 130.
- If you are not installing any other feature packages, do the following to turn on the Avaya CMS software:

- i. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

- ii. Enter the number associated with the `run_cms` option.
- iii. Enter the number associated with the `Turn on CMS` option.



**Important:**

If no additional configuration of the Avaya CMS software is needed, see [Setting the Informix configuration parameters for Avaya CMS](#) on page 154.

---

## Installing feature packages

Customers can install Avaya CMS feature packages if the packages have been authorized during Avaya CMS setup. You can contact the National Customer Care Center (1-800-242-2121), or consult with your product distributor or representative to additional feature packages, see [Configuring Avaya CMS authorizations](#) on page 93 for additional information.

This section includes the following topics:

- [Prerequisites](#) on page 130
- [Installing the Forecasting package](#) on page 130
- [Installing the External Call History package](#) on page 132

---

## Prerequisites

Before you begin the installation procedures, perform the following tasks:

- Verify that you are logged in as **root**.
- Verify that all file systems are mounted.

---

## Installing the Forecasting package

To install the Forecasting package:

1. Enter:

```
cmsvc
```

The system displays the **Avaya Call Management System Services Menu**.

2. Enter the number associated with the `auth_display` option.

The system lists the current authorizations.

3. Verify that the system is authorized to install the Forecasting package.

**Note:**

If Forecasting is not authorized but should be, see [Configuring Avaya CMS authorizations](#) on page 93.

4. Enter:

`cmsadm`

The system displays the **Avaya Call Management System Administration Menu**.

**Note:**

Different options may be displayed in the **Avaya Call Management System Administration Menu** depending on the current version of Avaya CMS on your system.

5. Enter the number associated with the `pkg_install` option.

The system displays the following message:

```
The CMS Features that can be installed are
 1) forecasting
 2) external call history
Enter choice (1-2) or q to quit:
```

**Note:**

The `pkg_install` option menu displays only those feature packages that are authorized but not yet installed. The Forecasting package does not require the Avaya CMS software to be off during the installation. If Forecasting is added at a later date, the Avaya CMS software can be left on.

6. Enter the number that corresponds to the `forecasting` package.

The system displays the following message:

```
Installation was successful

At this point you should go to the "Free Space Allocation Screen"
and verify that you have enough space for Forecasting on each ACD.
If there is not enough space allocated, then modify your existing
free space.
```

If the installation fails, the system displays the following message:

```
Forecasting package installation failed.
```

7. If you are not installing any other feature packages, do the following to turn on the Avaya CMS software:

- a. Enter: `cmssvc`

The system displays the **Avaya Call Management System Services Menu**.

- b. Enter the number associated with the `run_cms` option.

- c. Enter the number associated with the `Turn on CMS` option.

8. Go to the **Free Space Allocation** window that is located in the Avaya CMS System Setup subsystem, verify that there is enough space for Forecasting on each ACD, and make any necessary modifications.

For more information about Free Space Allocation, see *Avaya Call Management System Release 3 Version 11 Administration*, 585-215-515.

9. Verify that the installation completed successfully by entering:

```
tail /cms/install/logdir/admin.log
```

If the Forecasting package was successfully installed, the system displays the following message:

```
.
.
Forecasting package installed (date/time)
```

You can edit this file in order to add comments about the packages that were installed or authorized.

---

## Installing the External Call History package

To install the External Call History (ECHI) package:



### Important:

Once the External Call History package is installed, you can no longer access any call record data directly from the Avaya CMS software. For more information about administering the UUCP link port on an NTS, see *Avaya CMS R3V11 External Call History Interface*, 585-780-700.

1. Verify that:

- A separate computer is available for the storage and reporting of call records.
- The storage computer and the Avaya CMS system are administered in UNIX-to-UNIX copy (UUCP). If the storage machine is not running the UNIX operating system, then the storage machine must use a DOS version of UUCP.
- The Avaya CMS software is off and the IDS software is on.

2. Enter:

```
cms svc
```

The system displays the **Avaya Call Management System Services Menu**.

3. Enter the number associated with the `auth_display` option.

The system displays the current authorizations. Different authorizations may be displayed depending on the version of Avaya CMS on your system.

4. Verify that the system is authorized for the ECHI package. If ECHI is not authorized but should be, see [Configuring Avaya CMS authorizations](#) on page 93.

5. Enter:

```
cmsadm
```

The system displays the **Avaya Call Management System Administration Menu**.

6. Enter the number associated with the `pkg_install` option.

The system displays the following message:

```
The CMS Features that can be installed are
 1) forecasting
 2) external call history
Enter choice (1-2) or q to quit:
```

**Note:**

The system displays only feature packages that are authorized but not yet installed.

7. Enter the number that corresponds to the ECHI package (in this example, 2).

The system displays the following message:

```
Enter name of computer to which to send call records
(up to 256 characters)
```

8. Enter the name of the computer where call records will be collected.

The system displays the following message:

```
Enter full path of the program to transmit the external call
history files: (default: /cms/dc/chr/uucp_copy)
```

9. Press **Enter**.

The system displays the following message:

```
Enter full path of the program to check the external call history
file transmission: (default: /cms/dc/chr/uucp_check)
```

10. Press **Enter**.

The system displays the following message:

```
Enter password for nuucp login on computer (up to 8 characters)
```

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11. Enter the password for nuucp on the receiving computer that was administered in uucp.

The system displays the following message:

```
Enter CMS port for connection to computer (s_pdevxxx):
```

12. Enter the Avaya CMS port that is administered for the Call History Reporting machine. For more information on administering the ports on the NTS, see *Avaya CMS Terminals, Printers, and Modems*, 585-215-874.

The system displays the following message:

```
Select a speed for this connection
1) 19200
2) 38400
Enter choice (1-2):
```

13. Enter the speed that the connection between the Avaya CMS system and the call history reporting system.

The system displays the following message:

```
Number of call segments to buffer for ACD xxxxx (0-99999):
```

14. Enter the number of call records to be held in the buffer if the Call History machine cannot accept the data. Repeat this step for each administered ACD.

**Note:**

This step reserves disk space; therefore, sufficient disk space must be available.

The system displays the following message:

```
Use the extended ECH record format (y/n):(default: n)
```

Select whether ECHI will use the extended ECH record format.

```
Start ECH in the on or off state: (default off)
```

15. Select whether ECHI will start in the on or off state (default is off). If the receiving system has not yet been set up, the recommended state is off. ECHI can be turned on

at a later date with the `run_pkg` option in the **Avaya Call Management System Administration Menu**.

The system displays the following message:

```
Computing space requirements and file system space availability.
External Call History package installed.
```

If the setup determines that you do not have enough file space, you will get the following warning message:

```
Failed to find sufficient file space for CMS data.

WARNING: You do not currently have sufficient file space for your
existing CMS data. At this point you should turn on CMS, go to the
"Data Storage Allocation" screen, and verify/modify the
administration, or go to the "Free Allocation" screen and
verify/modify your existing free space.

External call history package installed with warnings.
```

16. Verify that the installation completed successfully by entering:

```
tail /cms/install/logdir/admin.log
```

If the ECHI package was installed successfully, the system displays the following message:

```
External Call History package installed (date/time)
```

You may edit this file in order to add comments about the packages that were installed or authorized.

17. If you are not installing any other feature packages, do the following to turn on the Avaya CMS software:

- a. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

- b. Enter the number associated with the `run_cms` option.
- c. Enter the number associated with the `Turn on CMS` option.

For more information about the ECHI feature, see *Avaya CMS R3V11 External Call History Interface*, 585-780-700.

---

## Installing the Avaya Visual Vectors Server software

The Visual Vectors Server software is installed on the same server as the Avaya CMS software. The Visual Vector Server software supports Visual Vectors client software installed on PC workstations. Using the client software, administrators can change certain properties of call center entities, as well as create and edit vectors, assign Vector Directory Numbers (VDNs) to vectors, and set VDN Skill Preferences.

To install the Avaya Visual Vectors Server software:

1. Log into the system as **root**.
2. Load the CD-ROM, *Avaya Visual Vectors Server R12 for CMS R12* into the CD-ROM drive.
3. Enter:

```
pkgadd -d /cdrom/cdrom0 LUfaas
```

If this is the first time that Visual Vectors has been installed, the system displays the following message:

```
Processing package instance <LUfaas> from </cdrom/untitled>

Visual Vectors Server Software
(sparc) vvsXX.X
.....
.....
.....
Do you want this directory created now [y,n,?,q]
```

4. Enter: **y**

The system displays the following message:

```
Using </cms/aas> as the package base directory.

Processing package information.
Processing system information.
Verifying package dependencies.
Verifying disk space requirements.
Checking for conflicts with packages already installed.

The following files are already installed on the system and are
being used by another package:

* /cms/aas <attribute change only>
* - conflict with a file which does not belong to any package.

Do you want to install these conflicting files [y,n,?,q]
```

5. Enter: **y**

The system displays the following message:

```
Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user permission during the process of installing this
package.

Do you want to continue with the installation of <LUfaas> [y,n,?]
```

## Note:

The system may display a message about creating the user ID aasadmin. If the system displays this message, enter: **y**

6. Enter: **y**

The system displays the following message:

```
Installing Visual Vectors Server Software as <LUfaas>

Installing part 1 of 1.
.....
.....
.....
Installation of <LUfaas> was successful.
```

7. Enter:

**setupaas**

The system displays the **Avaya Visual Vectors System Services Menu**.

```
Avaya Visual Vectors Server System Services Menu

Select a command from the list below.

 1) init_vvs Setup the initial configuration
 2) run_vvs Turn VVS on or off
 3) auth_display Display simultaneous VVS logins
 4) auth_set Change simultaneous VVS logins
 5) backup Backup vector steps and layout files
 6) restore Restore vector steps and layout files

Enter choice (1-6) or q to quit:
```

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8. Enter the number associated with the `init_vvs` option.

The system displays the following message:

```
This version of VVS functions only with CMS.

CMS name used : cms3
Maximum concurrent VVS logins[1-100] (q to quit):
```

9. Enter the number of allowable concurrent logins. The maximum login number must not exceed the number of licenses that were purchased.
10. Enter:

```
eject cdrom
```

---

## Setting up a mirrored system

This section describes how to set up a mirrored system. Mirroring allows you to create two complete sets of data on separate disk drives. This data redundancy greatly reduces the risk of data loss in the event of a disk drive failure or a system crash. For additional information about disk mirroring, see [About mirrored systems](#) on page 349.

This section includes the following topics:

- [Prerequisites](#) on page 139
- [Required hardware](#) on page 139
- [Initiating mirroring](#) on page 144

---

### Prerequisites

Before you initiate mirroring, perform the following tasks:

- Verify that any additional hardware required for disk mirroring has been installed. See [Required hardware](#) on page 139 for more information.
- If you have an Enterprise 3500, Enterprise 3501 or Enterprise 3503 system, verify that the device alias has been set. See [Resetting a device alias](#) on page 46 for more information.
- Verify that the EEPROM settings are correct for a mirrored system. See [Displaying and setting the EEPROM parameters](#) on page 42 for more information.
- Verify that the alternate boot device is set up. See [Creating an alternate boot device](#) on page 44 for more information.

---

### Required hardware

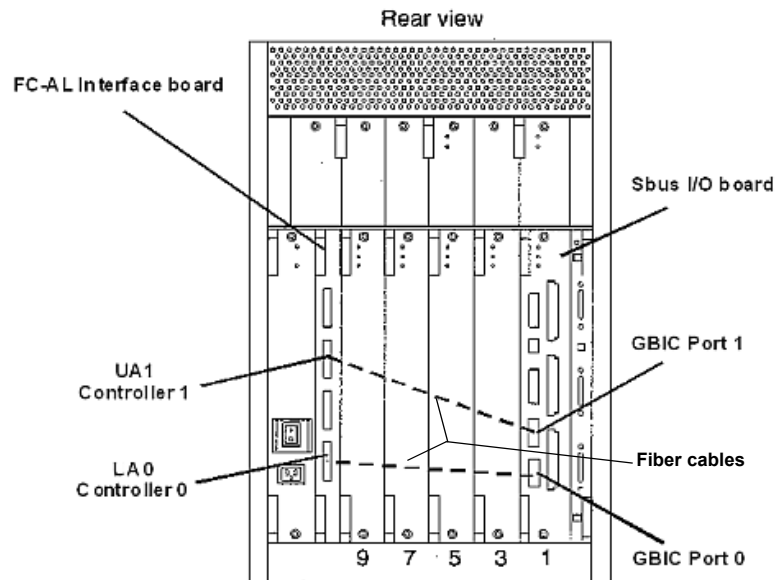
An Avaya CMS system must have additional hardware installed in order to function as a mirrored system:

- You must have twice the number of disk drives needed for an unmirrored system. Each disk pair must be the same size. For example, the first pair of data disks could be 18 GB and the second pair could be 36 GB. For more information on supported disk drives, see [Supported disk drives table](#) on page 35.
- For a Sun Blade system, you must have a second internal EIDE hard drive and a secondary HDD cable.
- Boot disks must be 18 GB minimum.

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- For a Sun Enterprise 3500 system, you must have four GigaByte Interface Converter (GBIC) modules. A GBIC is a small hardware insert. One will be installed into the UA slot 0 on the FC-AL Interface board, and the other will be installed into GBIC Port 0 on the first I/O board. See the [Enterprise 3500 rear view diagram](#) on page 140.
- For a Sun Enterprise 3500 system, you must have two fiber cables to connect the UA port GBICs to the GBIC ports on the I/O board.

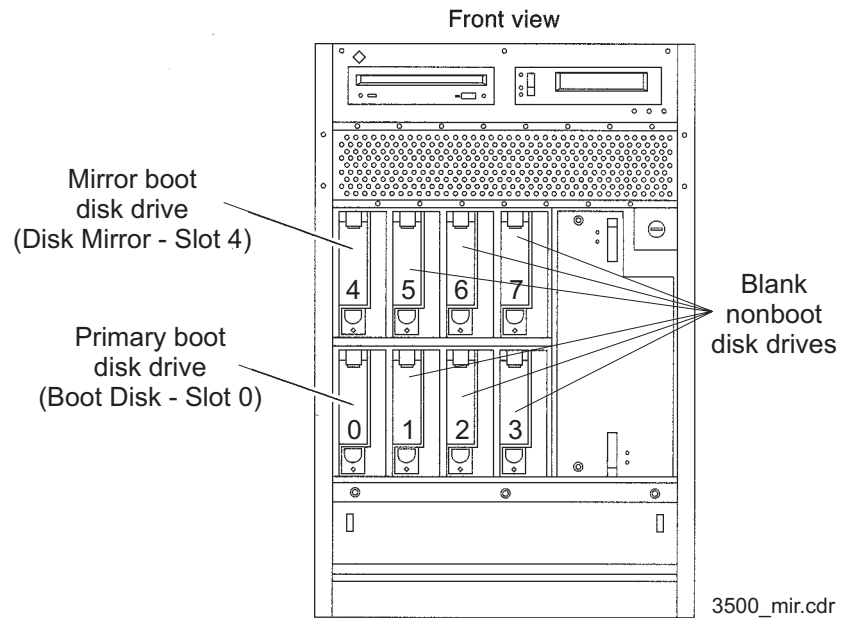
### Enterprise 3500 rear view diagram



### Enterprise 3500 disk configuration

In an Enterprise 3500 computer, there are eight disk drive slots, four in each of two bays. The slots in the lower bay are labeled 0 through 3 and are on controller 0; the slots in the upper bay are numbered 4 through 7 and are on controller 1.

In a mirrored system, slots 0 through 3 are reserved for the primary disks, and slots 4 through 7 are reserved for the mirror disks.



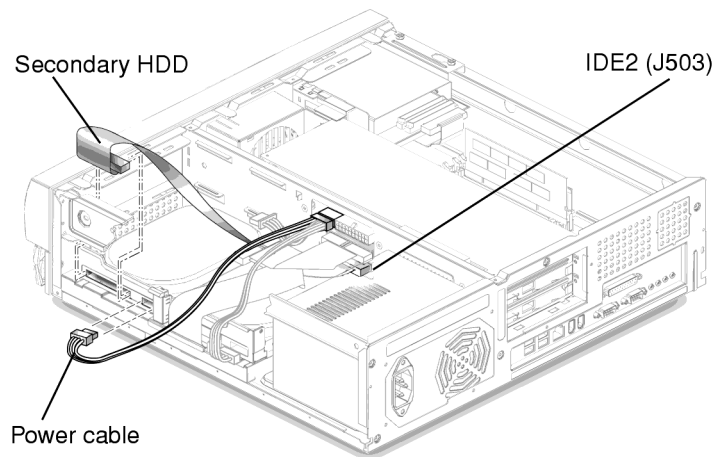
### Sun Blade disk configuration

In a Sun Blade computer, there are 2 internal hard drive bays, and a SCSI card that will allow up to four 18 GB external SCSI drives. This will allow up to 3 disks for each mirror.

## Installing Avaya CMS and supporting software

The second internal hard drive will not be used for a data disk. The second internal hard drive will only be used for the mirror boot device.

|             | Primary | Mirror |
|-------------|---------|--------|
| Boot disks: | c0t0d0  | c0t2d0 |
| Data disks: | c1t0d0  | c1t2d0 |
|             | c1t1d0  | c1t3d0 |

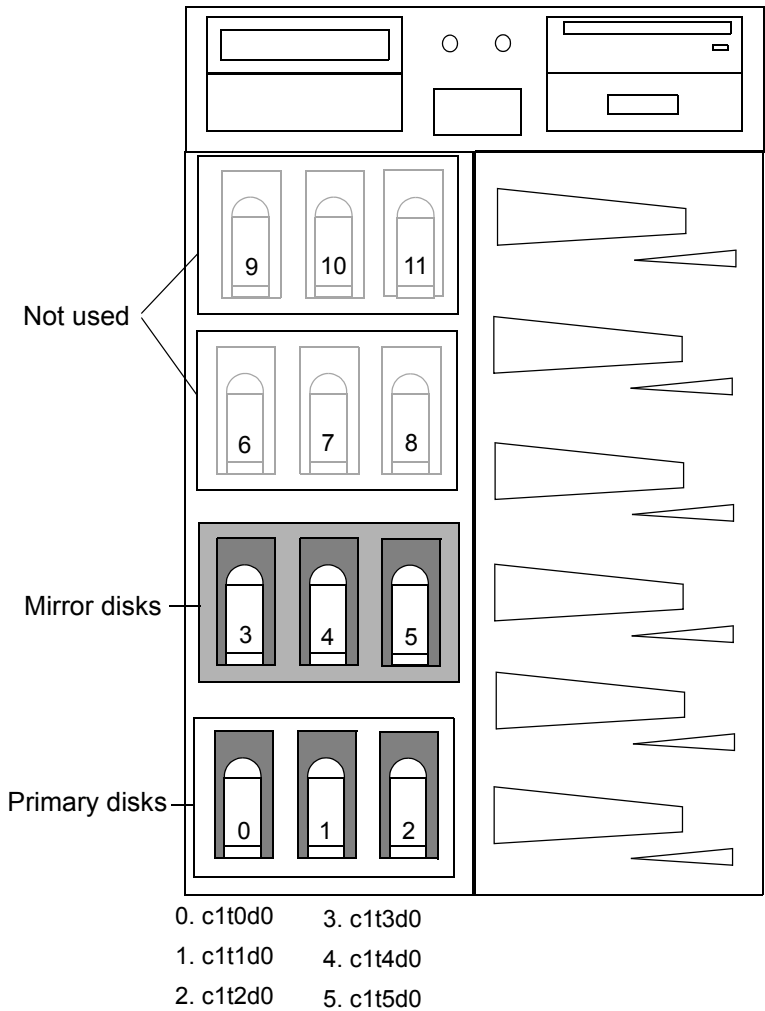


## Sun Fire V880 disk configuration

In a Sun Fire V880 computer, there are twelve disk drive slots, three in each of four bays. The slots are labeled 0 through 11 and are on controller 1. Currently, disk drives are only

put in slots 0, 1, 3, and 4 for an Avaya CMS system. The Sun Fire V880 computer is only available as a mirrored system and is delivered from the factory already mirrored.

|             | Primary disk | Mirrored disk |
|-------------|--------------|---------------|
| Boot disks: | c1t0d0       | c1t3d0        |
| Data disks: | c1t1d0       | c1t4d0        |
|             | c1t2d0       | c1t5d0        |



---

## Initiating mirroring

To initiate mirroring:

1. Turn the Avaya CMS software off, and leave the IDS software on.
2. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

3. Enter the number associated with the `auth_display` option.

The system displays the current authorizations.

**Note:**

Different authorizations may be displayed depending on the current version of Avaya CMS on your system.

4. Verify that the system is authorized for disk mirroring. If disk mirroring is not authorized but should be, see [Configuring Avaya CMS authorizations](#) on page 93.
5. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu**.

6. Enter the number associated with the `disk_space` option.

The system displays the following message:

```
Initializing the boot disk (this may take several minutes!) ...

Disk_space_manager options are:

 1) Add New Disks
 2) Initiate Mirroring
 3) Sync Primary and Mirror

Enter choice (1-3) or q to quit:
```

**Note:**

The system will not display the mirroring options if disk mirroring has not been authorized.

7. Enter the number associated with the `Initiate Mirroring` option.

The system initiates mirroring. The system then displays a prompt to reboot the system.

```
Mirroring has been started.
You MUST reboot the system for mirroring to take effect. Execute
 '/usr/sbin/shutdown -i6 -y -g0'
to shut the system down
disk_space command completed Wed Apr 18 17:12:23 MDT 2001
```

8. Enter:

```
/usr/sbin/shutdown -i6 -y -g0
```

The system reboots and begins to resync the disks.

```
Proceeding to mirror the IDS dbspaces ...
Archive to tape device '/dev/null' is complete.

Program over.
Synchronizing disks in the background.
```

9. Log into the system as **root**.
10. Set the Informix environment by entering:
11. Enter the following command:

```
metastat | pg
```

The system displays the status of the Solaris Volume Manager metadevices.

12. Verify that the metadevices `d1`, `d2`, and `d3` are synced and in an Okay state before continuing with this procedure.
13. Enter:

```
onstat -d | egrep "MD|PD|R|X"
```

You may have to enter this command several times. When the system only displays the command prompt as output, the mirroring and resync process is complete.

### **CAUTION:**

Do not reboot the system until the resync is complete. If you reboot the system before the resync is complete you will have to wait for Solaris to finish resyncing before resyncing Informix. The Solaris resync can take several hours to complete.

If the system displays any error messages, see [Common error messages with mirrored systems](#) on page 364.

14. Turn the Avaya CMS software on.

---

## Setting up the remote console

This section describes how to set up and redirect the remote console port using the Solaris software package. The remote console allows the TSC or COE to dial in and perform maintenance.

This section includes the following topics:

- [The remote console access port](#) on page 146
- [Administering the remote console port](#) on page 147
- [Using the remote console port](#) on page 147

---

### The remote console access port

The port that is used for remote console access differs, depending on the hardware platform:

| Hardware platform   | Port A                      | Port B   |
|---------------------|-----------------------------|----------|
| Sun Fire V880       | Remote console              | Not used |
| Sun Enterprise 3500 | Remote console              | Not used |
| Sun Blade           | Remote console <sup>1</sup> | N/A      |

1. The Sun Blade 100 and Sun Blade 150 platforms have only one serial port.

---

## Administering the remote console port

To administer the remote console port on the back of the Avaya CMS system:

1. Remove the current port administration by entering:

```
/cms/install/bin/abcadm -r ttyX
```

where **X** is **a** or **b**.

The system displays the following message:

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

2. Enter: **y**

The system displays the following message:

```
ttyX administration removed
```

3. Enter the following to administer the remote console port:

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

where **X** is **a** or **b**.

The system displays the following message:

```
ttyX set to incoming port 9600 baud
#
```

The remote console port has been administered.

---

## Using the remote console port

To use the remote console port functions on an Avaya CMS system:

1. Dial in from the remote console to the remote console modem on the Avaya CMS system and log in as **root**.

2. Remove the port monitor by entering:

```
/cms/install/bin/abcadm -r ttyX
```

where *X* is **a** or **b**.

The system displays the following message:

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

3. Enter: **y**

The system displays the following message:

```
ttyX administration removed
```

4. Redirect the console to the remote console port by entering:

```
/cms/install/bin/abcadm -c -b 9600 ttyX
```

where *X* is **a** or **b**.

The system displays the following message:

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

5. Enter: **y**

The system displays the following message at the remote console:

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

The system will automatically reboot, and the remote console port will come up as the console.

The following occurs:

- The system begins to shut down.
- Shut down, reset and reboot messages appear 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 into the remote console as **root**.

**CAUTION:**

You may lock yourself from using the console locally or remotely if you enter **Ctrl+D** or **exit** from the remote console to exit the system without first redirecting control back to the local console.

7. Redirect the console back to the local console by entering:

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

The system displays the following message:

```
Console set to local

This change requires a reboot to take affect

Are you ready to reboot? [y,n,?]
```

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

The following occurs:

- The system begins to shut down.
- Shutdown, reset, and reboot messages appear on the remote 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.

9. Log into the local console as **root**.

10. Log into the remote console as **root**.

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

If you experience problems with the remote console, see [Diagnosing dial-In access problems](#) on page 306 for additional information.

---

## Setting up the Alarm Origination Manager

Use this section to set up the Alarm Origination Manager (AOM) on the Avaya CMS system. The AOM feature is available only for Avaya CMS systems in the US and Canada with a current maintenance warranty agreement in effect.

This section includes the following topics:

- [Prerequisites](#) on page 150
- [Setting up the AOM config files](#) on page 150
- [Creating an AOM test alarm](#) on page 152

---

### Prerequisites

Before you set up AOM, perform the following tasks:

- The Avaya CMS Supplemental Services packages must be installed and set up.
- A “Product ID” number must be obtained from the Avaya CMS database administration group. (Avaya CMS technical support personnel must contact the database group at 800-248-1111, extension 07425 and provide them with the customer IL number.)

---

### Setting up the AOM config files

To set up the AOM config files:

1. Use the appropriate password (available only to Avaya CMS technical support personnel) to log in as **root2** or **cmssvc**.

2. Enter:

```
pkginfo -x | grep LU
```

3. Verify that the following packages are installed:

- LUahl
- LUaot
- LUim
- LUorbutil

4. Enter:

```
pkginfo -x cms
```

The system displays the version of Avaya CMS that is installed.

5. Record the Avaya CMS version information. The version information is used in Step 9.

6. Identify the communications port used by the system modem by entering: `tty`

The system displays the communications port, either `/dev/term/a` or `/dev/term/b`.

7. Record the port information. The port information is used in Step 10.

8. Enter the following commands:

```
cd /opt/cc/aot/data/admin
```

```
vi prodSetup.cfg
```

The system displays the **prodSetup.cfg** file.

9. Edit the fields in the **prodSetup.cfg** file to be similar to the following example:

| Product | NumberInstances | ServiceVehicle | Enabled |
|---------|-----------------|----------------|---------|
| TEST    | 1               | rlv0           | 1       |
| CMS     | 1               | xxxxxx.x       | 1       |

where *xxxxxx.x* is the Avaya CMS version number you recorded in Step 4.

10. Enter:

```
vi sysSetup.cfg
```

The fields contained in the **sysSetup.cfg** file are displayed.

Only three fields require revision:

- **ProductID** - this is the first field in the **sysSetup.cfg** file. It is a unique system identifier obtained from the database administration group. See [Prerequisites](#) on page 150.
- **TelephoneNum** - this is the fifth field in the **sysSetup.cfg** file. It is the telephone number of the Initialization and Administration (INADS) alarm receiver: 800-535-3573. The number must be preceded by the modem “dial tone” command and followed by all digits required for an outgoing call. For example, if a “9” is required to gain outside access, the entry in the **TelephoneNum** field would be:  
ATDT918005353573
- **ModemPort** - this is the eighth field in the **sysSetup.cfg** file. It is the modem port that you identified in Step 6, expressed in numeric form (ttya = 1 and ttyb = 2).

11. Set the `Test` variable by entering:

```
export PRODUCT_TYPE=TEST
```

12. Stop and restart AOM by entering the following commands:

```
aom stop
aom start
```

---

## Creating an AOM test alarm

To create a test alarm to verify that AOM is properly set up:

1. Log in as **root2** or **cmssvc**

2. Enter:

```
cd /opt/cc/aot/bin
```

3. Enter the following commands:

```
. ./aom_env
env | grep AOM
```

If the environment is set correctly, the system displays the following line of output:

```
AOM_SH=/usr/bin/aom
```

4. Send the test alarm by entering:

```
./log_error -e 30001
```

5. Log off the system. Wait about 5 minutes to give the system time to send the alarm before logging back in.

6. Enter:

```
cd /opt/cc/aot/data/log
```

7. Enter:

```
cat alarm_log
```

When the test succeeds, The system displays a message at the end of the log file similar to the following example:

```
07/04/00 14:17:30|30001|TEST|1|TEST_ALARM|MINOR|2|Call Attempt(1)|06/28/00
+73935305-5:
07/04/00 14:17:30|30001|TEST|1|TEST_ALARM|MINOR|2|Call Attempt(2)|06/28/00
+74149665-5:
07/04/00 14:17:30|30001|TEST|1|TEST_ALARM|MINOR|2|Positive Acknowledge|
07/04/00 14:17:30|
```

In addition, technical support personnel should find an open case for this test alarm in the CMSALM folder in the MAESTRO case system.

---

# Starting the Avaya Visual Vectors Server software

To start the Avaya Visual Vectors Server software:

1. Stop and restart AOM by entering the following commands:

```
aom stop
aom start
```

2. Enter:

```
setupaas
```

The system displays the **Avaya Visual Vectors System Services Menu**.

```
Avaya Visual Vectors Server System Services Menu

Select a command from the list below.

1) init_vvs Setup the initial configuration
2) run_vvs Turn VVS on or off
3) auth_display Display simultaneous VVS logins
4) auth_set Change simultaneous VVS logins
5) backup Backup vector steps and layout files
6) restore Restore vector steps and layout files

Enter choice (1-6) or q to quit:
```

3. Enter the number associated with the `run_vvs` option.

The system displays the following message:

```
1) Turn VVS On
2) Turn VVS Off

Enter choice (1-2) or q to quit:
```

4. Enter the number associated with the `Turn VVS On` option.

## Setting the Informix configuration parameters for Avaya CMS

The IDS configuration parameters for Avaya CMS can be adjusted to optimize system performance. Adjusting these parameters allows a system to fully use additional processors and memory. It may be necessary to adjust these parameters in the future if additional memory or CPUs are added to a system.

This section includes the following topics:

- [Obtaining system information](#) on page 155
- [Setting the physical log configuration parameters](#) on page 155
- [Setting the system configuration parameters](#) on page 157
- [Setting the shared memory parameters](#) on page 157
- [Setting miscellaneous Informix parameters](#) on page 158

## Obtaining system information

To obtain system processor and memory information:

1. Enter:

```
/usr/platform/`uname -i`/sbin/prtdiag -v | pg
```

The system displays information similar to the following:

```
System Configuration: Sun Microsystems sun4u 5-slot Sun Enterprise E3500

System clock frequency: 84 MHz
Memory size: 256Mb

===== CPUs =====
Brd CPU Module Run Ecache CPU CPU
---- --- -
3 6 0 336 4.0 US-II 2.0
3 7 1 336 4.0 US-II 2.0

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

System Board PROM revisions:

Board 1: FCODE 1.8.26 2000/05/09 19:05 iPOST 3.4.26 2000/05/09 19:11
Board 3: OBP 3.2.26 2000/05/09 19:07 POST 3.9.26 2000/05/09 19:13

(EOF) :
```

2. Record the quantity of CPUs for use later.
3. Press **Enter** to display additional system information.
4. Go to [Setting the physical log configuration parameters](#) on page 155.

## Setting the physical log configuration parameters

To set the physical log configuration parameters:

1. Turn off the Avaya CMS software and the IDS software.
2. Enter:

```
cd /opt/informix/etc
```

## Installing Avaya CMS and supporting software

3. Enter:

```
vi onconfig.cms
```

The system displays the IDS configuration parameters for Avaya CMS.

```

#
INFORMIX SOFTWARE, INC.
#
Title:onconfig.cms
Description: Informix Dynamic Server Configuration Parameters for CMS
#

Root Dbspace Configuration

ROOTNAME rootdbs # Root dbspace name
ROOTPATH /dev/rdisk/c0t0d0s4 # Path for device containing root dbspace
ROOTOFFSET 0 # Offset of root dbspace into device (Kbytes)
ROOTSIZE 190000 # Size of root dbspace (Kbytes)
.....
.....
.....
VPJAVAVM libjava.so
VPCLASSPATH
```

4. Scroll through the **onconfig.cms** file and locate the # Physical Log Configuration options.
5. Change the value of the `PHYSFILE` setting according to the [Physical log configuration settings table](#) on page 156.

**Physical log configuration settings table**

| Setting  | Value |
|----------|-------|
| PHYSFILE | 65000 |

**Note:**

PHYSFILE may reset to the default system value after `disk_space` has been run from the **CMSSVC** menu.

6. Go to [Setting the system configuration parameters](#) on page 157.

## Setting the system configuration parameters

To set the system configuration parameters:

1. Scroll through the **onconfig.cms** file and locate the # System Configuration settings.
2. Change the value of `NETTYPE` according to the [Informix NETTYPE settings table](#) on page 157.

**Informix NETTYPE settings table**

| System type                | NETTYPE setting  |
|----------------------------|------------------|
| System with 1 to 3 CPUs    | ipcshm,1,300,CPU |
| System with 4 or more CPUs | ipcshm,2,300,CPU |
| Sun Fire V880 system       | ipcshm,2,900,CPU |

3. Change the values of `MULTIPROCESSOR`, and `NUMCPUVPS` according to the [Informix processor settings table](#) on page 157.

**Informix processor settings table**

| Processor                                       | MULTIPROCESSOR | NUMCPUVPS                            |
|-------------------------------------------------|----------------|--------------------------------------|
| Single processor system                         | 0              | 1                                    |
| Multi-processor system with less than four CPUs | 1              | Enter the number of CPUs             |
| Multi-processor system with four or more CPUs   | 1              | Enter the number of CPUs minus (-) 1 |

4. Go to [Setting the shared memory parameters](#) on page 157.

## Setting the shared memory parameters

To set the shared memory parameters:

1. Scroll through the **onconfig.cms** file and locate the # Shared Memory Parameters settings.

2. Change the value of `BUFFERS` according to the [Informix BUFFERS settings table](#) on page 158.

**Informix BUFFERS settings table**

| Platform                                | BUFFERS setting |
|-----------------------------------------|-----------------|
| Sun Blade system                        | 10000           |
| Enterprise 3500 or Sun Fire V880 system | 20000           |

3. Change the value of `CLEANERS` according to the [Informix CLEANERS settings table](#) on page 158.

**Informix CLEANERS settings table**

| Platform                                | CLEANERS setting |
|-----------------------------------------|------------------|
| Sun Blade system                        | 8                |
| Enterprise 3500 or Sun Fire V880 system | 16               |

4. Change the value of `LRUS` according to the [Informix LRUS settings table](#) on page 158.

**Informix LRUS settings table**

| Platform                                | LRUS setting |
|-----------------------------------------|--------------|
| Sun Blade system                        | 8            |
| Enterprise 3500 or Sun Fire V880 system | 16           |

5. Go to [Setting miscellaneous Informix parameters](#) on page 158.

---

## Setting miscellaneous Informix parameters

To change the miscellaneous Informix parameters:

1. Scroll through the **onconfig.cms** file and locate the following settings:
  - `RESIDENT`
  - `DS_TOTAL_MEMORY`

2. Change the value of the `RESIDENT` setting according to the [RESIDENT settings table](#) on page 159.

**RESIDENT settings table**

| Setting  | Value |
|----------|-------|
| RESIDENT | 0     |

3. Change the value of the `DS_TOTAL_MEMORY` setting according to the [DS\\_TOTAL\\_MEMORY settings table](#) on page 159.

**DS\_TOTAL\_MEMORY settings table**

| Platform                                | DS_TOTAL_MEMORY setting |
|-----------------------------------------|-------------------------|
| Enterprise 3500 or Sun Fire V880 system | 200000                  |
| All other platforms                     | 100000                  |

4. After all changes to the file have been made, press **Esc** and enter:

**:wq!**

5. Turn on the Avaya CMS software and the IDS software.

**Note:**

If the Informix configuration parameters are ever modified after their initial configuration, you will have to turn IDS off and then turn IDS on in order for the new settings to take effect.

## NTS setup

Each Network Terminal Server (NTS) must be set up so that it will be recognized on the network.

Obtain the network IP address and NTS IP address for each NTS you are administering. The NTS number depends on the total number of ports that are required for the system and the type of NTS.

| Device         | IP address <sup>1</sup> | Network name |
|----------------|-------------------------|--------------|
| Host computer  | 192.168.2.1             | hostname     |
| First NTS      | 192.168.2.101           | cmsterm1     |
| Second NTS     | 192.168.2.102           | cmsterm2     |
| Third NTS      | 192.168.2.103           | cmsterm3     |
| <i>Nth</i> NTS | 192.168.2.1xx           | cmstermX     |

1. The IP addresses shown here are the factory defaults. Use the actual system addresses if available.

To set up an NTS, see *Avaya CMS Terminals, Printers, and Modems*, 585-215-874.

---

## Factory system backup

The factory creates a CMSADM backup of the system. The file system backup saves all of the file systems on the computer onto a tape. To perform a CMSADM backup, see [The CMSADM backup](#) on page 213.

**CAUTION:**

You must *not* use the original set of factory backup tapes or provisioning backup tapes. This backup contains the default factory configuration. These tapes must be saved and never reused in case the system needs to be reinstalled in the field.





# Turning the system over to the customer

This section describes how to test the Avaya Call Management System (CMS) software to ensure that the application is working properly before the system is turned over to the customer. Perform these procedures after:

- Completing the initial computer installation and Avaya CMS setup
- Completing an Avaya CMS software package upgrade

This section includes the following topics:

- [Prerequisites](#) on page 164
- [Verifying the system date and time](#) on page 164
- [Forwarding Avaya CMS system warning messages](#) on page 165
- [Checking free space allocation](#) on page 166
- [Testing the remote access port](#) on page 167
- [Key position for Enterprise and Sun Fire systems](#) on page 170
- [Testing the ACD link](#) on page 171
- [Testing the alternate boot device](#) on page 172
- [Assigning customer passwords](#) on page 173
- [Customizing the Sun Remote System Control](#) on page 174
- [Testing the Sun Remote System Control card](#) on page 177
- [Testing the Avaya CMS software](#) on page 179
- [Finalizing the on-site installation](#) on page 183
- [Customer system acceptance worksheet](#) on page 184

## Prerequisites

Before you begin the procedures described in *Turning the system over to the customer*, the technicians must:

- Locate the two sets of backup tapes (the original set from the factory and the set created by provisioning) that were delivered with the new system and set these tapes to write-protect mode
- Connect the Avaya CMS system to the switch
- Translate the switch with the Avaya CMS feature enabled
- Connect the switch to an active link

---

## Verifying the system date and time

Verify that the Solaris operating system time and the current local time are the same.

Follow the procedures in [Changing the system date and time](#) on page 219. Then continue with [Checking free space allocation](#) on page 166.

---

# Forwarding Avaya CMS system warning messages

The CMS system can forward warning messages to specific customer e-mail addresses. If you do not enable the CMS system to forward warning messages, the messages will remain in the CMS system root e-mail account.

To forward CMS system warning messages:

1. Obtain the e-mail addresses of any customer CMS administrators who want to receive the warning messages.

2. Enter:

```
cd /
```

3. Create the file for the e-mail addresses by entering:

```
vi /.forward
```

4. Enter an e-mail address on a single line in the file. You can enter more than one e-mail address but each e-mail address must be on a single line as shown in the following example:

```
admin1@company.com
admin2@company.com
admin3@company.com
```

5. Save and quit the file by pressing **Esc** and entering:

```
:wq!
```

6. Change the file permissions by entering the following command:

```
chmod 600 /.forward
```

## Checking free space allocation

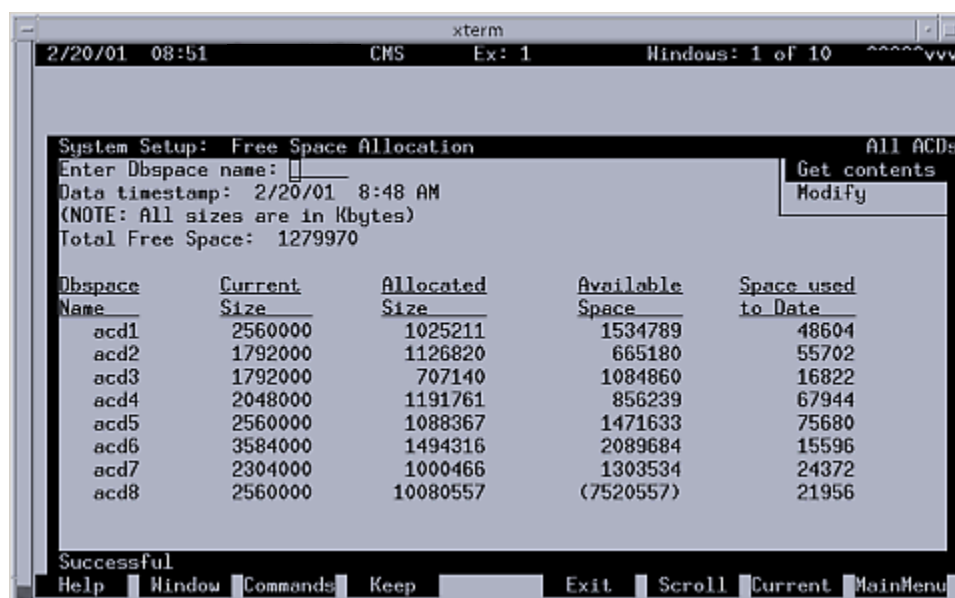
To check free space allocation:

1. Go to the **Free Space Allocation** window that is located in the CMS System Setup subsystem.
2. Verify that the amount of available space is positive for each ACD and make any necessary adjustments.

For more information about free space allocation, see *Avaya Call Management System Release 3 Version 11 Administration*, 585-215-515.

Example:

In the following **Free Space Allocation** window, acd8 has negative space available.



| Dbspace Name | Current Size | Allocated Size | Available Space | Space used to Date |
|--------------|--------------|----------------|-----------------|--------------------|
| acd1         | 2560000      | 1025211        | 1534789         | 48604              |
| acd2         | 1792000      | 1126820        | 665180          | 55702              |
| acd3         | 1792000      | 707140         | 1084860         | 16822              |
| acd4         | 2048000      | 1191761        | 856239          | 67944              |
| acd5         | 2560000      | 1088367        | 1471633         | 75680              |
| acd6         | 3584000      | 1494316        | 2089684         | 15596              |
| acd7         | 2304000      | 1000466        | 1303534         | 24372              |
| acd8         | 2560000      | 10080557       | (7520557)       | 21956              |

If the **Total Free Space:** field shows that there is not enough space available to make the adjustment, you must modify data storage allocation or add an additional hard drive.

---

## Testing the remote access port

You must test the remote access port to verify that the TSC or COE can connect to the Avaya CMS system. The remote access port allows the TSC or COE to perform remote maintenance. The port that is used for remote console access differs depending on the hardware platform. See the following table for more information.

| Hardware platform   | Port A                      | Port B   |
|---------------------|-----------------------------|----------|
| Sun Fire V880       | Remote console              | Not used |
| Sun Enterprise 3500 | Remote console              | Not used |
| Sun Blade           | Remote console <sup>1</sup> | N/A      |

1. The Sun Blade 100 and Sun Blade 150 platforms have only one serial port.

This section includes the following topics:

- [Redirecting the console to the remote console](#) on page 167
- [Redirecting the console back to the local console](#) on page 169

---

## Redirecting the console to the remote console

To redirect the console to the 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/abcaadm -r ttyX
```

where *X* is **a** or **b**.

The system displays the following message:

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

## Turning the system over to the customer

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

The system displays the following message:

```
ttyX administration removed
```

4. Check the speed of the modem by entering:

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

**Note:**

All remote access ports have a default speed of 9600 bps.

5. Redirect the console to the remote console port by entering:

```
/cms/install/bin/abcadm -c -b 9600 ttyX
```

where **X** is **a** or **b**.

The system displays the following message:

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

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

The system displays the following message at the remote console:

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

The system automatically reboots, and the remote console port comes up as the console.

The following occurs:

- The system begins to shut down.
- Shut down, reset and reboot messages appear 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 into the remote console as **root**.

The local console is blank.

**CAUTION:**

You may lock yourself from using the console locally or remotely if you enter **Control+D** or exit from the remote console to exit the system without first redirecting control back to the local console.

---

## Redirecting the console back to the local console

To redirect the console back to the local console:

1. Enter:

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

The system displays the following message:

```
Console set to local

This change requires a reboot to take affect

Are you ready to reboot? [y,n,?]
```

2. Enter: **y**

The following occurs:

- The system begins to shut down.
- Shutdown, reset, and reboot messages appear on the remote 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 into the local console as **root**.

4. Log into the remote console as **root**.

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

If you have problems with the remote access port, see [Diagnosing dial-In access problems](#) on page 306.

---

## Key position for Enterprise and Sun Fire systems

The Enterprise 3500 and Sun Fire V880 systems have a key switch which has several settings.

To correctly set the key switch:

1. Locate the key switch on the front panel of the system.
2. Insert the key.
3. Turn the key switch to the “Locked” position.



**Important:**

The locked position provides bootrom security. If it is necessary to install bootrom patches, modify the EEPROMs, or administer the RSC card, the key switch may be moved temporarily to the “On” position. After the installation process is complete, the key switch should be moved back to the “Locked” position.

---

## Testing the ACD link

After the Avaya CMS software has been installed or upgraded, the on-site technician must test the link from the Avaya CMS system to the switch that is using the Automatic Call Distribution (ACD) feature.

To test the ACD link:

1. Verify that:
  - The Common Desktop Environment (CDE) is active
  - Avaya CMS is on.
2. In one of the windows at a console, log into the system by using a CMS administrator's login ID (**su - cms**). Enter the correct password if prompted.
3. Enter:

**cms**

4. Enter the correct terminal type.

The **CMS Main Menu** is displayed.

The CMS Main Menu has indicators that show whether the link to the ACD is active. The link indicator consists of the carets (^ and v) at the right side of the banner line. There should be one caret for each ACD, and all should be pointed up (^).

Example:

If you have four ACDs, the link indicator should look like this: ^^^^, which means that all four ACDs are up and operating.

5. Select **Maintenance** from the **CMS Main Menu**.

The system displays the **Maintenance Menu**.

6. Select **Connection Status** from the **Maintenance Menu**.

The **Connection Status** window displays the following information:

- The name of the ACD
- Whether the application is in data transfer
- Whether the session is in data transfer
- Whether the connection is operational
- The date, time, and any errors

7. Press the **Exit** screen-labeled key (SLK) once.

## Testing the alternate boot device

The alternate boot device on a mirrored system should be tested after system set up is complete. This procedure is the recommended method for testing the alternate boot device.

To test the alternate boot device on a mirrored system:

1. From the `ok` prompt, enter:

```
boot bootdevice2
```

The system boots from the mirrored boot device.

2. At the console, log in as **root**.

3. Enter:

```
metadb -i
```

The system displays the status of the database replicas. The master replica tag is associated with the mirror boot device.

Example:

|   | flags |     | first blk | block count |                   |
|---|-------|-----|-----------|-------------|-------------------|
| a | p     | luo | 16        | 1034        | /dev/dsk/c0t0d0s1 |
| a | p     | luo | 1050      | 1034        | /dev/dsk/c0t0d0s1 |
| a | p     | luo | 2084      | 1034        | /dev/dsk/c0t0d0s1 |
| a | m     | p   | luo       | 16          | /dev/dsk/clt4d0s1 |
| a | p     | luo | 1050      | 1034        | /dev/dsk/clt4d0s1 |
| a | p     | luo | 2084      | 1034        | /dev/dsk/clt4d0s1 |

o - replica active prior to last mddb configuration change  
 u - replica is up to date  
 l - locator for this replica was read successfully  
 c - replica's location was in /etc/lvm/mddb.cf  
 p - replica's location was patched in kernel  
 m - replica is master, this is replica selected as input  
 W - replica has device write errors  
 a - replica is active, commits are occurring to this replica  
 M - replica had problem with master blocks  
 D - replica had problem with data blocks  
 F - replica had format problems  
 S - replica is too small to hold current data base  
 R - replica had device read errors

4. Verify that the system is not displaying any warning messages for the disk.

5. Reboot once again to return system control to the regular boot disk:

```
/usr/sbin/shutdown -y -g0 -i6
```

6. Log into the system as **root**.

---

# Assigning customer passwords

This section describes how the customer assigns passwords to each of its logins on the Avaya CMS system. The customer must assign passwords to each of the following logins:

- root
- cms
- Any other administration logins that have been added for the customer

To assign a password to a customer login:

1. Log in as **root**.
2. At the system prompt, have the customer enter:

```
passwd login
```

where *login* is root, cms, and so on.

The system displays the following message:

```
New password:
```

3. Have the customer enter the new password.

The system displays the following message:

```
Re-enter new password:
```

4. Have the customer enter the password again.

**Note:**

Have the customer record the passwords for each login on the provided [Customer system acceptance worksheet](#) on page 184. The technician should *not* know these passwords.

5. Repeat this procedure for each customer login.

---

## Customizing the Sun Remote System Control

This section describes how to configure the Sun Remote System Control (RSC) software for a specific location. Administrators can monitor and control the Sun Fire V880 platform from a remote location through the RSC card. The RSC card has an ethernet port, serial port and a modem port that can be used to access the system. If additional modem or ethernet connections are added to the RSC card, the card can be configured to:

- Allow remote access
- Send out E-mail alerts
- Add additional RSC logins

This section includes the following topics:

- [Customizing the RSC server software](#) on page 174
- [Setting up additional RSC logins](#) on page 175



**Important:**

If a second ethernet interface or phone line will not be connected to the RSC, go to [Testing the Avaya CMS software](#) on page 179.

---

## Customizing the RSC server software

To customize the RSC server software on the Sun Fire V880 platform:

1. If the system is a Sun Fire V880 or Enterprise 3500 system, record the original position of the key switch. You must return the key switch to this original position at the end of this procedure. If the key switch is in the “Locked” or “Diagnostics” position, move the key switch to the “On” position.
2. Log into the system as **root**.

**! Important:**

You can modify certain RSC configuration variables without re-running the RSC setup. For example, E-mail alerts or networking information. To modify a single variable, enter:

```
cd /usr/platform/*880/rsc
./rscadm set variable value
```

where *variable* is the configuration variable, and

where *value* is the configuration value.

For more information about the RSC configuration variables and commands, see *Sun Remote System Control (RSC) User's Guide*.

3. Start the RSC installation by entering:

```
/usr/platform/*880/rsc/rsc-config
```

The system displays a series of prompts for configuration information.

4. Enter the appropriate information for the location.

**! WARNING:**

The configuration procedure updates the RSC flash PROM. If the installation is interrupted, you must repeat this procedure.

At the end of the installation the system displays the following message:

```

RSC has been successfully setup

```

5. If the system is a Sun Fire V880 or Enterprise 3500 system, return the key switch to the position it was in at the beginning of this procedure.

---

## Setting up additional RSC logins

Additional logins can be added to the Sun Fire V880 RSC card for customer use. If no additional logins are needed, go to [Testing the Sun Remote System Control card](#) on page 177.

To add a new RSC login:

1. Log into the system as **root**.
2. Access the RSC card from Solaris by entering:

```
cd /usr/platform/*880/rsc
```

## Turning the system over to the customer

3. Enter:

```
./rscadm useradd user_name
```

where *user\_name* is the name of the customer login.

4. Enter:

```
./rscadm userperm user_name ua
```

where *user\_name* is the name of the customer login.

5. Enter:

```
./rscadm userpassword user_name
```

where *user\_name* is the name of the customer login.

The system displays the following message:

Password:

6. Have the customer enter the new password.

The system displays the following message:

Re-enter Password:

7. Have the customer re-enter the new password.

8. Have the customer record the password for the login on the provided [Customer system acceptance worksheet](#) on page 184. The technician should *not* know this password.

### Note:

RSC can be accessed by two different user interfaces:

- Command-line interface (CLI) – For information on how to use the CLI interface, see [Using Sun Remote System Control](#) on page 304 and *Sun Remote System Control (RSC) User's Guide*.
- Graphical user interface (GUI) – For information on how to set up and use the GUI interface, see *Sun Remote System Control (RSC) User's Guide*.

---

# Testing the Sun Remote System Control card

This section describes how to test the Sun Remote System Control (RSC) software setup on a Sun Fire V880 platform.

**Important:**

If a second ethernet interface or phone line will not be connected to the RSC, go to [Testing the Avaya CMS software](#) on page 179.

To test the RSC card on a Sun Fire V880 platform:

1. Enter:

```
telnet hostname-rsc
```

where *hostname* is the host name of the Avaya CMS system.

The system displays a message similar to the following:

```
Trying 135.9.88.166...
Connected to cms1-rsc.
.....
.....
.....
Please login:
```

2. Enter:

```
cmssvc
```

The system displays a message similar to the following:

```
Please Enter password:
```

3. Enter the cmssvc RSC password.

The system displays the RSC command prompt.

```
rsc>
```

4. Enter:

```
logout
```

5. Choose one of the following options:

- If E-mail alerts are enabled on the system, perform the following procedure:

## Turning the system over to the customer

- i. Enter the following commands:  

```
cd /usr/platform/*880/rsc
./rscadm send_event -c "Testing RSC alerting"
```
  - ii. Verify that the test alert was received by the appropriate personnel.
  - If E-mail alerts are not enabled on the system, go to Step 6
6. Create a backup of the RSC card configuration. For more information, see [Backing up the RSC card configuration](#) on page 218.

---

# Testing the Avaya CMS software

After the Avaya CMS software has been installed or upgraded, the on-site technician must test the Avaya CMS software to verify its sanity.

To test the Avaya CMS software:

1. Verify that:
  - The Common Desktop Environment (CDE) is active
  - Avaya CMS is on.
2. Test the Real-Time Reports subsystem.
  - a. Enter  
**CMS**  
The system displays the **CMS Main Menu**.
  - b. Select `Reports`.
  - c. Select `Real-time`.
  - d. Select `Split/Skill`.
  - e. Select `Split Status` or `Skill Status`.
  - f. Verify that the Split/Skill Status Report input window is displayed.
  - g. Enter a valid split number in the `Split:` or `Skill:` field.
  - h. Select the `Run` action list item, and run the report.
    - i. Verify that the Split or Skill Status Report window is displayed.
    - j. If the switch link is not operating, the report fields are blank and the status line reads `Switch link down`.
  - k. Press the **Commands** SLK.
    - l. Select `Print window` to send the report to the printer.
  - m. Look at the message line near the bottom of the window, and verify that there is a confirmation message about sending the report to the printer.
  - n. Verify that the report was printed by checking the printer for the report.
  - o. Return to the CMS Main Menu screen by pressing the **Exit** SLK twice.
3. Test the Historical Reports subsystem.
  - a. On the **CMS Main Menu**, select `Reports`.
  - b. Select `Historical`.
  - c. Select `Split/Skill`.

## Turning the system over to the customer

- d. Select `Status`.
- e. Verify that the Split/Skill Status Report Input window is displayed.
- f. Enter a valid split number in the `Split/Skill:` field.
- g. Enter `-1` in the `Date:` field.
- h. Select the `Run` action list item, and run the report.
- i. Verify that the report window is displayed and that the information is displayed in the appropriate fields.

**Note:**

If no historical data exists, the fields in the report window are blank.

- j. Return to the **CMS Main Menu** by pressing the **Exit** SLK twice.
4. Test the Dictionary subsystem by doing the following from the CMS Main Menu.
    - a. On the **CMS Main Menu** select `Dictionary`.
    - b. Select `Login Identifications`.
    - c. Enter an asterisk (\*) in the `Login ID:` field.
    - d. Select the `List all` action list item. The system lists all the login IDs.
    - e. Verify that the logins are displayed.

**Note:**

On a new system, the fields are blank.

- f. Return to the **CMS Main Menu** by pressing the **Exit** SLK twice.
5. Test the Exceptions subsystem.
    - a. On the **CMS Main Menu** select `Exceptions`.
    - b. Select `Real-time Exception Log`.
    - c. Verify that the window is displayed.

**Note:**

For a new installation, this window may be blank.

- d. Return to the **CMS Main Menu** by pressing the **Exit** SLK once.
6. Test the Call Center Administration subsystem.
    - a. On the **CMS Main Menu** select `Call Center Administration`.
    - b. Select the `Call Work Codes` option.
    - c. Press **Enter**.
    - d. Select the `List all` action list item, and list all the call work codes currently defined.
    - e. Verify that the displayed information is correct.

**Note:**

On a new system, the fields may be blank.

- f. Return to the **CMS Main Menu** by pressing the **Exit SLK** twice.
7. Test the Custom Reports subsystem.
  - a. On the **CMS Main Menu** select `Custom Reports`.
  - b. Select `Real-time`. The system lists the names of the custom reports.
  - c. Verify that the names of existing custom reports are listed. If there are no reports, you receive a message saying the submenu is empty.
  - d. Return to the **CMS Main Menu** by pressing the **Exit SLK** once.
8. Test the User Permissions subsystem.
  - a. On the **CMS Main Menu** select `User Permissions`.
  - b. Select `User Data`.
  - c. Verify that the **User Data Input** window is displayed.
  - d. Return to the **CMS Main Menu** by pressing the **Exit SLK** once.
9. Test the System Setup subsystem.
  - a. On the **CMS Main Menu** select `System Setup`.
  - b. Select `CMS state`.
  - c. Verify that CMS is operating in the `Multi-user mode`.
  - d. Return to the **CMS Main Menu** by pressing the **Exit SLK** once.
10. Test the Maintenance subsystem.
  - a. On the **CMS Main Menu** select `Maintenance`.
  - b. Select the `Printer Administration option`.
  - c. Enter a valid printer name in the `CMS printer name: field`.
  - d. Select the `List all` action list item. The system lists the printer parameters.
  - e. Verify that the printer has been administered correctly.
  - f. Return to the **CMS Main Menu** by pressing the **Exit SLK** twice.
11. If the Graphics feature package has been enabled, test the Graphics subsystem.
  - a. On the **CMS Main Menu** select `Graphics`.
  - b. Verify that a Real-time Graphics screen can be accessed.
  - c. Return to the **CMS Main Menu** by pressing the **Exit SLK** once.

## Turning the system over to the customer

- d. At each CMS terminal, log in as **cms** and enter the correct terminal type to verify that the terminals are working properly. To log off, select the `Logout` option from the **CMS Main Menu**.

If any of the steps in this test fail, see [Avaya CMS error logs](#) on page 289, [Common error messages](#) on page 325, or [Recognizing new hardware devices](#) on page 287. If you encounter a problem that you cannot solve, escalate the problem through normal procedures.

---

## Finalizing the on-site installation

This section contains the final steps that the on-site technician must perform before turning the system over to the customer.

Before turning the system over to the customer, perform the following steps:

1. Back up the system. Follow the procedures outlined in [The CMSADM backup](#) on page 213.

 **CAUTION:**

Use a new set of backup tapes for this CMSADM file system backup. Do NOT use the original set of factory backup tapes or provisioning backup tapes. Make sure that the customer has enough tapes for the new backup.

2. Back up the customer's historical data by doing a full maintenance backup. You can do these backups within Avaya CMS using the **Maintenance: Back Up Data** window.

For more information about maintenance backups, see *Avaya Call Management System Release 3 Version 11 Administration*, 585-215-515.

3. Copy the [Customer system acceptance worksheet](#) on page 184, and record the indicated printouts.
4. Give the customer all of the Avaya CMS documentation, the software CD-ROMs, and the tape backups (including the original set from the factory, and the set created by provisioning).
5. Have the customer record their logins and passwords. The technician should NOT know these login passwords.
6. Give the passwords, backup tapes, and software to the customer's CMS administrator.

 **CAUTION:**

For system security and recovery, the CMS administrator should store passwords, Informix serial numbers, key license information, and the tape backups in a secure location.

---

## Customer system acceptance worksheet

|                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> <b>df -t results</b> (attach printout that shows <b>df -t</b> command results, or record the results here):<br><br>_____<br><br>_____<br><br>_____<br><br>_____             |
| <input type="checkbox"/> <b>Free space allocation:</b><br>Print out the CMS System Setup > Free Space Allocation window                                                                              |
| <input type="checkbox"/> <b>Data storage allocation parameters:</b><br>Print out the CMS System Setup > Data Storage Allocation window for each ACD                                                  |
| <input type="checkbox"/> <b>Storage intervals parameters:</b><br>Print out the CMS System Setup > Storage Intervals window for each ACD                                                              |
| <input type="checkbox"/> <b>Passwords for system login IDs:</b><br><br>Login ID: <u>    root    </u> Password: _____<br>Login ID: _____ Password: _____<br>Login ID: _____ Password: _____           |
| <input type="checkbox"/> <b>CMS administrator login IDs and passwords:</b><br><br>Login ID: <u>    cms    </u> Password: _____<br>Login ID: _____ Password: _____<br>Login ID: _____ Password: _____ |
| <input type="checkbox"/> <b>RSC login ID and password:</b><br><br>Login ID: _____ Password: _____<br>Login ID: _____ Password: _____                                                                 |

# Customer security recommendations

Avaya recommends that you perform the following procedures to make your Avaya CMS system more secure. These security recommendations will not guarantee complete system security, but they will make your Avaya CMS system less susceptible to unauthorized system access. Contact the Avaya Professional Services Organization for more information about specific security offers.

This section includes the following topics:

- [Controlling who can connect to the CMS system](#) on page 185
- [Enabling password aging](#) on page 187
- [Altering the telnet and ftp network service banners](#) on page 187
- [Displaying a restricted warning for telnet users](#) on page 187
- [Providing physical security](#) on page 188
- [Reviewing log files](#) on page 189
- [Adding a firewall](#) on page 189
- [Transmitting passwords](#) on page 189

---

## Controlling who can connect to the CMS system

The CMS Security Script creates the files **/etc/hosts.allow** and **/etc/hosts.deny**. Use these files to control which IP addresses are permitted to connect to the Avaya CMS system.

To use the **/etc/hosts.allow** and **/etc/hosts.deny** files:

1. Determine which IP addresses and subnets need to connect to the Avaya CMS system.



### Important:

If you do not select the correct IP addresses and subnets, you could lock yourself out of the Avaya CMS system.

For example, you might want to:

## Customer security recommendations

- Deny telnet access to IP addresses outside the company firewall
- Permit SSH connections from IP addresses outside the company firewall
- Only permit SSH connections.

### Note:

Avaya CMS Supervisor supports telnet and SSH connections.

#### 2. Edit **/etc/hosts.deny**

#### 3. Uncomment the line `ALL : ALL`

#### 4. Edit **/etc/hosts.allow**

This file contains the following settings:

- `%A in.telnetd : ALL`
- `sshd : ALL`
- `in.rshd : ALL`
- `in.rexecd : ALL`
- `rpc.rusersd : ALL`
- `in.rlogind : ALL`

### Note:

Network services **rsh**, **rexec**, and **rlogin** are disabled on Avaya CMS systems. The lines in this file do not affect a service if the daemon for that service is not running.

#### 5. Replace `ALL` with the IP addresses permitted to connect to the Avaya CMS system using a particular service.

The following table contains some examples of security setting use:

| Example setting                                          | Explanation of use                                                                          |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <code>%A in.telnetd :<br/>10.8.10.0/255.255.255.0</code> | This setting allows telnet connections from all IP addresses from 10.8.10.1 to 10.8.10.255. |
| <code>sshd : 10.0.0.0/255.0.0.0</code>                   | This setting allows ssh connections from all IP addresses from 10.0.0.1 to 10.255.255.255.  |
| <code>In.rshd : 10.8.31.100 10.8.31.55</code>            | This setting allows connections from IP addresses 10.8.31.100 and 10.8.31.55.               |

---

## Enabling password aging

Password aging forces users to change their passwords on a regular basis. To enable password aging, go to [Using passwd age](#) on page 200.

---

## Altering the telnet and ftp network service banners

Altering the telnet and ftp network service banners hides operating system information from individuals who want to take advantage of known operating system security holes.

To alter the telnet and ftp network service banners:

1. Create or edit the file `/etc/default/telnetd`
2. Add the line:

```
BANNER="CMS OS"
```

**Important:**

Add a blank line before and after the `BANNER="CMS OS"` line. If you do not, the Avaya CMS system will not display the CMS OS message correctly.

When users either telnet or ftp to the CMS, the users will see a message similar to the following example:

```
telnet cms_box
Trying 135.9.135.159...
Connected to cms_box.
Escape character is '^]'.

CMS OS
```

3. Save the file.
4. Change the file permissions to 444.

---

## Displaying a restricted warning for telnet users

Displaying a restricted warning for telnet users performs the following functions:

- Displays your corporate policy for illegal computer activity

## Customer security recommendations

- Scares off some individuals who might want to access a system illegally
- Allows you to prosecute an individual who has illegally accessed the system

To display a restricted warning for telnet users:

1. Create or edit the file **/etc/issue**
2. Add a message similar to the following:

```
WARNING: This system is restricted to Company Name authorized users
for business purposes. Unauthorized access is a violation of the law.
This system may be monitored for administrative and security reasons.
By proceeding, you consent to this monitoring.
```

When users connect to the Avaya CMS system using network services, the system displays the warning message. A user would see the message if they telnet into the Avaya CMS system.

3. Save the file.
4. Change the file permissions to 644.

---

## Providing physical security

The Avaya CMS system should be installed in an area restricted to persons of trust. The keyboard, console, CD-ROM, and tape drive are all sensitive devices and can be physically compromised.

If the Avaya CMS system is an Enterprise 3500 server or Sun Fire V880 server, turn the key switch to the locked position.

Store all backup tapes and all original Avaya CMS software in a secure location on site. Avaya also recommends that a copy of the backup tapes be stored at an off site location so that disaster recovery is possible.

The modem connected to the Avaya CMS system can provide secure remote access and also allow Avaya CMS services personnel to perform remote support. Avaya CMS systems can be ordered with an Access Security Gateway (ASG) to provide secure remote access.

**Note:**

A lock and key modem will also provide secure remote access but it is no longer available for purchase from Avaya.

---

## Reviewing log files

Log files can be used to detect suspicious system activity. Review the following log files on a routine basis:

- **/var/adm/messages**

This log contains system messages.

- **/var/adm/sulog**

This log contains su records.

- **/var/cron/log**

This log contains cron records.

---

## Adding a firewall

Add a firewall on the edge of the network where the Avaya CMS system and Avaya CMS Supervisor clients reside. Avaya recommends that both the Avaya CMS system and Avaya CMS Supervisor clients remain behind a firewall to provide protection from the internet.

Firewalls are commonly used to prevent denial of service attacks on application servers similar to the Avaya CMS system. Firewalls will also prevent snooping of sensitive data, and hijacked sessions from appearing as an authenticated user.

---

## Transmitting passwords

Do not use telnet or ftp to transmit passwords over the network in clear text. If you do so, the password can be snooped in transit.





# Maintaining the Avaya CMS software

This section provides the procedures used to maintain the Avaya Call Management System (CMS) software.

This section includes the following topics:

- [Using the CMSADM menu](#) on page 192
- [Using the CMSSVC menu](#) on page 202
- [The Avaya CMS maintenance backup](#) on page 212
- [The CMSADM backup](#) on page 213
- [Checking the contents of the CMSADM backup tape](#) on page 217
- [Backing up the RSC card configuration](#) on page 218
- [Changing the system date and time](#) on page 219
- [Working with Solaris patches](#) on page 221
- [Working with Avaya CMS patches](#) on page 226
- [Adding and removing users from password aging](#) on page 230
- [Adding the Informix SQL package after IDS and ILS have been installed](#) on page 234
- [Enabling fail over of the alternate boot device](#) on page 237
- [Maintaining the chkDisks crontab](#) on page 238
- [Identifying a faulty disk](#) on page 240
- [Upgrading a non-mirrored system to a mirrored system](#) on page 244

---

## Using the CMSADM menu

This section describes how to use the options in the **Avaya Call Management System Administration Menu (CMSADM menu)**. The CMSADM menu is intended for use by the CMS administrator.

This section includes the following topics:

- [CMSADM menu functions](#) on page 192
- [Accessing the CMSADM menu](#) on page 193
- [Using acd\\_create](#) on page 193
- [Using acd\\_remove](#) on page 195
- [Using backup](#) on page 196
- [Using pkg\\_install](#) on page 197
- [Using pkg\\_remove](#) on page 197
- [Using run\\_pkg](#) on page 198
- [Using run\\_ids](#) on page 198
- [Using run\\_cms](#) on page 199
- [Using port\\_admin](#) on page 199
- [Using passwd\\_age](#) on page 200

---

## CMSADM menu functions

The following table shows the tasks that can be performed by the CMS administrator from the **CMSADM menu**:

| Function                                             |
|------------------------------------------------------|
| Define a new Automatic Call Distribution (ACD) split |
| Remove an ACD                                        |
| Back up the file systems to tape                     |
| Install or remove a feature package                  |
| Turn a feature package on or off                     |
| Turn the IDS software on or off                      |

| Function                                   |
|--------------------------------------------|
| Turn the Avaya CMS software on or off      |
| Administer modems, terminals, and printers |
| Turn password aging on or off              |

---

## Accessing the CMSADM menu

To access the CMSADM menu:

1. Log in as **root**.
2. Enter:

**cmsadm**

The system displays the **CMSADM menu**.

```
Select a command from the list below.
 1) acd_create Define a new ACD
 2) acd_remove Remove all administration and data for an ACD
 3) backup Filesystem backup
 4) pkg_install Install a feature package
 5) pkg_remove Remove a feature package
 6) run_pkg Turn a feature package on or off
 7) run_ids Turn Informix Database on or off
 8) run_cms Turn CMS on or off
 9) port_admin Administer Modems, Terminals, and Printers
10) passwd_age Set password aging options
Enter choice (1-10) or q to quit:
```

### Note:

Different options may be displayed in the **CMSADM Menu** depending on the current version of Avaya CMS on your system.



### Important:

When the `cmssvc setup` command is running, any attempt to run other `cmsadm` or `cmssvc` commands will be rejected, and the system will display the error message "Please try later, setup is active".

---

## Using acd\_create

Use the `acd_create` option to define a new ACD. The information you enter here for each ACD is the same as the `setup` option of the **CMSSVC menu**.

**Note:**

The ACD must be authorized, and therefore purchased, before it can be added to the Avaya CMS system.

To define a new ACD:

1. Before you define a new ACD, you must turn off the Avaya CMS software:

- a. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

- b. Enter **8** to select `run_cms`.
- c. Enter **2** to turn off the Avaya CMS software but leave the IDS software on.

2. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

3. Enter **1** to select `acd_create`.

The next-available ACD is selected for creation. (For example, if there are two ACDs already active, ACD 3 is selected.)

4. At the prompts, enter the following information for the new ACD:

- Switch name
- Switch model (release)
- Is Vectoring enabled on the switch (if authorized)?
- Is Expert Agent Selection (EAS) enabled on the switch (if authorized)?
- Does the Central Office have disconnect supervision?
- Local port assigned to the switch
- Remote port assigned to the switch
- Transport method used to connect to the switch (TCP/IP)
- Enter the hostname or IP address and TCP port
- Number of splits/skills
- Total split/skill members, summed over all splits/skills
- Number of shifts
- Start and stop times of all shifts
- Number of agents logged into all splits/skills during all shifts
- Number of trunk groups
- Number of trunks

- Number of unmeasured (trunk) facilities
- Number of call work codes
- Number of vectors (if Vectoring is enabled on the switch)
- Number of Vector Directory Numbers (VDNs), if Vectoring is enabled on the switch

After you have entered the required information, the program displays the following message

```
Updating database.

Computing space requirements and file system space
availability.

ACD <name> (X) created successfully.
```

5. Turn the Avaya CMS software on:
  - a. Enter:
 

```
cmsadm
```

 The system displays the **CMSADM menu**.
  - b. Enter `8` to select `run_cms`.
  - c. Enter `1` to turn on the Avaya CMS software.

---

## Using `acd_remove`

Use the `acd_remove` option to remove an existing ACD.

### Note:

If you are removing the master ACD, you must first designate some other ACD as the master.

To designate a different ACD as the master:

1. On the main CMS menu, select `System Setup - CMS State`.
2. Use the **Tab** key to move to the `Master ACD` field and enter a new name.
3. Press **Enter** to move to the action list and select `Modify`.
4. Return to the main menu and select `Logout`.

To remove an ACD:

1. Verify that data collection is off for all ACDs.
2. Turn off the Avaya CMS software:

- a. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

- b. Enter **8** to select `run_cms`.
- c. Enter **2** to turn off the Avaya CMS software but leave the IDS software on.

3. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

4. Enter **2** to select `acd_remove`
5. Enter the number (1-8) that corresponds with the ACD that you want to remove.

The system displays the following message:

```
All administration and historical data for this ACD will be
DELETED.
Do you want to continue and delete all data for this ACD? (y/n):
```

6. Enter: **y**

The system displays the following message:

```
Removal of data for this ACD started in the background.
A completion message will be logged in
/cms/install/logdir/admin.log.
```

7. Since the ACD is removed in the background, you can turn the Avaya CMS software on before the removal is complete. To turn the Avaya CMS software on, perform the following procedure:

- a. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

- b. Enter **8** to select `run_cms`.
- c. Enter **1** to turn on the Avaya CMS software.

---

## Using backup

Use the `backup` option to back up your file system. This option does not back up Avaya CMS data.

**Note:**

To back up Avaya CMS data, a full maintenance backup must be performed in addition to the CMSADM backup.

---

## Using pkg\_install

Use the `pkg_install` option to install a feature package.

To use the `pkg_install` option:

1. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

2. Enter **4** to select `pkg_install`.

The system displays the following message:

```
The CMS Features that can be installed are
 1) forecasting
 2) external call history
Enter choice (1-2) or q to quit:
```

**Note:**

The system displays only feature packages that are authorized and not yet installed.

3. Enter the number associated with the feature package that you want to install.

---

## Using pkg\_remove

Use the `pkg_remove` option to remove a feature package. This procedure removes all files and database items associated with the feature package.

**CAUTION:**

Be careful when removing a package. All features and data that are associated with that package will also be removed.

To remove a feature package:

1. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

2. Enter `5` to select `pkg_remove`.

The system displays a list of Avaya CMS features that can be removed.

3. Enter the number associated with the feature package that you want to remove.

The system displays a message indicating the feature is removed.

---

## Using `run_pkg`

Use the `run_pkg` option to turn a feature package on or off.

To use the `run_pkg` option:

1. Enter:

`cmsadm`

The system displays the **CMSADM menu**.

2. Enter `6` to select `run_pkg`.

The system displays a list of Avaya CMS features.

3. Enter the number associated with the feature package that you want to turn on or off.

The system displays a message telling you the status of the feature.

---

## Using `run_ids`

Use the `run_ids` option to turn IDS on or off.

To use the `run_ids` option:

1. Enter:

`cmsadm`

The system displays the **CMSADM menu**.

2. Enter `7` to select `run_ids`.

3. Perform one of the following actions:

- To turn on IDS, enter: `1`
- To turn off IDS, enter: `2`

---

## Using run\_cms

Use the `run_cms` option to turn the Avaya CMS software on or off.

To use the `run_cms` option:

1. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

2. Enter `8` to select `run_cms`.

3. Perform one of the following actions:

- To turn the Avaya CMS software on, enter: `1`
- To turn the Avaya CMS software off, but leave IDS running, enter: `2`
- To turn both the Avaya CMS software and IDS software off, enter: `3`

---

## Using port\_admin

Use the `port_admin` option to administer modems, terminals, and printers. This option automatically configures external ports to accept specific types of peripheral equipment. The option configures the following types of ports:

- Built-in parallel port
- NTS ports
- SAI/P expander box ports

The `port_admin` option does not configure the built-in A and B serial ports.

To administer modems, terminals, or printers:

1. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

2. Enter `9` to select `port_admin`.

For more information about the `port_admin` tool, see *Avaya CMS Terminals, Printers, and Modems*, 585-215-874.

## Using passwd\_age

Use the `passwd_age` option to turn password aging on or off. If password aging is on, users will be prompted to enter a new password after a predetermined time interval has passed. Password aging is off by default.

### CAUTION:

If you have any third party software or Professional Services offers, do not turn on password aging. Contact the National Customer Care Center (1-800-242-2121) or consult with your product distributor or representative to ensure that password aging will not disrupt any additional applications.

The `passwd_age` option will effect the passwords of all Avaya CMS users and regular UNIX users. When password aging is on, the Solaris policy file `/etc/default/passwd` is modified. The passwords of all Avaya CMS users that use the `/usr/bin/cms` shell and all UNIX users will age. If password aging is on when a new user is added, the user's password begins to age as soon as a password is entered for that account.

It is recommended that you exclude specific users before turning password aging on in order to avoid additional password administration. If you need to prevent the aging of a specific user's password, see [Adding and removing users from password aging](#) on page 230 and [Troubleshooting password aging](#) on page 288.

### Important:

Non-CMS users such as **root**, **root2**, or **Informix** will not age.

Password aging will not function on an Avaya CMS system that uses a NIS, NIS+, or LDAP directory service. If you are using NIS, NIS+, or LDAP, contact your network administrator. The passwords will need to be aged from the server running the directory service.

To use the `passwd_age` option:

1. Enter:

```
cmsadm
```

The system displays the **CMSADM** menu.

2. Enter `10` to select `passwd_age`.

The system displays the following message:

```
1) Turn on password aging
2) Turn off password aging
3) Change password aging interval
 or q to quit: (default 1)
```

**Note:**

The system will also display a message that indicates that password aging is off or the current password aging schedule. You may enter **q** at any point to exit the password aging options.

## 3. Perform one of the following actions:

- To turn password aging on:

i. Enter: **1**

The system displays the following message:

```
Enter Maximum number of weeks before passwords expire (9 default):
```

ii. Enter the number of weeks before passwords expire and users are prompted to enter a new password. The range is from 1 to 52 weeks.

- To turn password aging off:

i. Enter: **2**

The system displays the following message:

```
Turn off password aging for all CMS users (yes default):
```

ii. Perform one of the following actions:

- To turn password aging off, enter: **yes**
- To leave password aging on, enter: **no**

- To change the password aging interval:

i. Enter: **3**

The system displays the following message:

```
Passwords are currently expiring every x weeks
Enter Maximum number of weeks before passwords expire (9 default):
```

ii. Enter the number of weeks before passwords expire and users are prompted to enter a new password. The range is from 1 to 52 weeks.

---

## Using the CMSSVC menu

This section describes how to use the options of the **Avaya Call Management System Services Menu (CMSSVC menu)**. The **CMSSVC menu** is for use primarily by Avaya authorized services personnel.

This section includes the following topics:

- [CMSSVC menu functions](#) on page 202
- [Accessing the CMSSVC menu](#) on page 203
- [Using auth\\_display](#) on page 204
- [Using auth\\_set](#) on page 205
- [Using run\\_ids](#) on page 205
- [Using run\\_cms](#) on page 205
- [Using disk\\_space](#) on page 206
- [Using setup](#) on page 206
- [Using swinfo](#) on page 207
- [Using swsetup](#) on page 207
- [Using patch\\_inst](#) on page 209
- [Using patch\\_rmv](#) on page 210
- [Using load\\_all](#) on page 210
- [Using back\\_all](#) on page 211

---

### CMSSVC menu functions

The following table shows the tasks that can be performed by Avaya authorized services personnel from the **CMSSVC menu**:

| Function                                            |
|-----------------------------------------------------|
| Display Avaya CMS authorizations                    |
| Authorize Avaya CMS feature packages and capacities |
| Turn the IDS software on or off                     |
| Turn the Avaya CMS software on and off              |

| Function                                   |
|--------------------------------------------|
| Add disks or set up mirroring              |
| Set up the initial Avaya CMS configuration |
| Display switch information                 |
| Change switch information                  |
| Install an Avaya CMS patch                 |
| Back out an installed Avaya CMS patch      |
| Install all Avaya CMS patches              |
| Back out all installed Avaya CMS patches   |

---

## Accessing the CMSSVC menu

To access the **CMSSVC Menu**:

1. Log in as **root**.
2. Enter:

**cmssvc**

The system displays the **CMSSVC menu**.

```
Select a command from the list below.
 1) auth_display Display feature authorizations
 2) auth_set Authorize capabilities/capacities
 3) run_ids Turn Informix Database on or off
 4) run_cms Turn CMS on or off
 5) disk_space Format/Assign disk space to Database Server
 6) setup Set up the initial configuration
 7) swinfo Display switch information
 8) swsetup Change switch information
 9) patch_inst Install a single CMS patch from CD
10) patch_rmv Backout an installed CMS patch
11) load_all Install all CMS patches found on CD
12) back_all Backout all installed CMS patches from machine
Enter choice (1-12) or q to quit:
```

**Note:**  
When the CMSSVC `setup` command is running, any attempt to run other `cmsadm` or `cmssvc` commands will be rejected, and the system will display the error message:

Please try later, setup is active

**Note:**  
Different options may be displayed in the **CMSSVC Menu** depending on the current version of Avaya CMS on your system.

# Using auth\_display

To use the `auth_display` option to display Avaya CMS authorizations:

- 1. Enter:  
  
`cmssvc`  
  
The system displays the **CMSSVC menu**.

- 2. Enter `1` to select `auth_display`.  
  
The system displays the purchased version of Avaya CMS and the current authorization status for Avaya CMS features and capacities.

|                    |                                          |                |
|--------------------|------------------------------------------|----------------|
| Version purchased: | R12                                      |                |
|                    | Capability/Capacity                      | Authorization  |
|                    | -----                                    | -----          |
|                    | disk mirroring                           | installed      |
|                    | vectoring                                | authorized     |
|                    | forecasting                              | authorized     |
|                    | graphics                                 | authorized     |
|                    | external call history                    | authorized     |
|                    | expert agent selection                   | authorized     |
|                    | external application                     | authorized     |
|                    | global dictionary/ACD groups             | not authorized |
|                    | Avaya CMS Supervisor                     | authorized     |
|                    | Avaya CMS Report Designer                | authorized     |
|                    | Maximum number of split/skill members    | 32000          |
|                    | Maximum number of ACDs                   | 8              |
|                    | Simultaneous Avaya CMS Supervisor logins | 400            |
|                    | Number of authorized agents (RTU)        | 32000          |

**Note:**  
Different authorizations may be displayed, depending on the current version of Avaya CMS on your system and the packages installed.

---

## Using auth\_set

To use the `auth_set` option to authorize Avaya CMS features and capacities:

1. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

2. Enter `2` to select `auth_set`.

The system displays the following message:

Password:

3. Enter the appropriate password and see [Configuring Avaya CMS authorizations](#) on page 93 for more information.

This password is available only to authorized personnel.

---

## Using run\_ids

To use the `run_ids` option to turn IDS on and off:

1. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

2. Enter `3` to select `run_ids`.
3. Perform one of the following actions:
  - To turn on IDS, enter: `1`
  - To turn off IDS, enter: `2`

---

## Using run\_cms

To use the `run_cms` option to turn the Avaya CMS software on and off:

1. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

2. Enter `4` to select `run_cms`.

3. Perform one of the following actions:

- To turn on the Avaya CMS software, enter: 1
- To turn off the Avaya CMS software, but leave the IDS software on, enter: 2
- To turn off both the Avaya CMS software and the IDS software, enter: 3

---

## Using disk\_space

Use the `disk_space` option to set up the initial Avaya CMS disk partitions, add additional disks to the Avaya CMS system, and set up disk mirroring.

To use the `disk_space` option:

1. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

2. Enter 5 to select `disk_space`.

3. Perform one of the following actions:

- To add new disks, enter: 1
- To initiate mirroring, enter: 2
- To sync primary and mirror, enter: 3

### Note:

The system will not display the mirroring options if disk mirroring has not been authorized. The system may display different menu options for non-mirrored systems.

---

## Using setup

Use the `setup` option to set up the initial Avaya CMS configuration. When the `cmssvc setup` command is running, any attempt to run other `cmsadm` or `cmssvc` commands will be rejected, and the system will display the error message "Please try later, setup is active".

Do not confuse this option with the `swsetup` option, which is used to change the switch information.

 **CAUTION:**

Do not run `setup` on a system that is in service to avoid losing all the customer data.

---

## Using swinfo

Use the `swinfo` option to display the switch options that are currently assigned for each ACD.

To use the `swinfo` option:

1. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

2. Enter `7` to select `swinfo`.

The system displays a list of ACDs.

3. Select the ACD for which you want to display the switch options.

The system displays the following information:

- Switch name
- Switch model (release)
- If Vectoring is enabled
- If Expert Agent Selection is enabled
- If the Central Office has disconnect supervision
- Local port
- Remote port
- Link transport method (TCP/IP)

---

## Using swsetup

Use the `swsetup` option to change the switch options for each ACD. Do not confuse this option with the `setup` option, which is for setting up Avaya CMS.

When you change switch parameters, you should also check the parameters in the **CMS System Setup: Data Storage Allocation** window. In particular, if you enable Vectoring, you will need to allocate space for VDNs and vectors. Changing the switch release may change the number of measured entities allowed and may also have an impact on the storage allocation for each entity.

## Maintaining the Avaya CMS software

To use the `swsetup` option:

1. Turn the Avaya CMS software off:

a. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

b. Enter `4` to select `run_cms`.

c. Enter `2` to turn off the Avaya CMS software but leave the IDS software on.

2. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

3. Enter `8` to select `swsetup`.

The system displays a list of ACDs.

4. Select the ACD that you want to change.

5. At the prompts, provide the following information:

- Switch name
- Switch model (release)
- Is Vectoring enabled on the switch (if authorized)?
- Is Expert Agent Selection (EAS) enabled on the switch (if authorized)?
- Does the Central Office have disconnect supervision?
- Local port assigned to the switch (1 is recommended)
- Remote port assigned to the switch (1 is recommended)
- Transport method used to connect to the switch (TCP/IP)
- Enter the hostname or IP address and TCP port

The system displays all the information. The system then asks if the switch administration is correct.

6. If the switch information is correct, enter: `y`

7. Turn on the Avaya CMS software:

a. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

b. Enter `4` to select `run_cms`.

c. Enter `1` to turn on the Avaya CMS software.

---

## Using patch\_inst

Use the `patch_inst` option to install one or more Avaya CMS patches from the CD-ROM. If you want to install all patches, use the `load_all` command.

**Note:**

Some patches require the Avaya CMS software to be off. Look at the **read me** file on the Avaya CMS CD-ROM to determine the state of Avaya CMS before attempting to install a patch.

To use the `patch_inst` option:

1. Insert the CD-ROM, *Avaya CMS R12* into the CD-ROM drive.

2. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

3. Enter **9** to select `patch_inst`.

4. Enter the patch number.

The system installs the patch and displays messages similar to the following:

```
@(#) installpatch 1.0 96/04/01
cmspx-s
Generating list of files to be patched...
Creating patch archive area...
Saving a copy of existing files to be patched...
xxxx blocks
 File compression used
Installing patch packages...

Doing pkgadd of cmspx-s package:
Installation of <cmspx-s> was successful.

Patch packages installed:
 cmspx-s

Patch installation completed.
```

5. After all of the required patches are installed, enter:

```
eject cdrom
```

For more detailed information about Avaya CMS patches, see [Working with Avaya CMS patches](#) on page 226.

## Using patch\_rmv

Use the `patch_rmv` option to remove a single Avaya CMS patch installed on the machine.

To use the `patch_rmv` option:

1. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

2. Enter `10` to select `patch_rmv`.
3. Enter the patch number.

The system removes the patch.

4. Repeat Steps 2 and 3 for each patch that you want to remove.

For more detailed information about Avaya CMS patches, see [Working with Avaya CMS patches](#) on page 226.

---

## Using load\_all

Use the `load_all` option to install all Avaya CMS patches from the CD-ROM.

**Note:**

Some patches require the Avaya CMS software to be off. Look at the **read me** file on the CMS CD-ROM to determine the state of CMS before attempting to install a patch.

To use the `load_all` option:

1. Insert the CD-ROM, Avaya CMS into the CD-ROM drive.
2. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

3. Enter `11` to select `load_all`.

4. Enter: **y**

The system installs the patches and displays messages similar to the following:

```
@(#) installpatch 1.0 <date>
cmspx-s
Generating list of files to be patched...
Creating patch archive area...
Saving a copy of existing files to be patched...
xxxx blocks
 File compression used
Installing patch packages...

Doing pkgadd of cmspx-s package:
Installation of <cmspx-s> was successful.

Patch packages installed:
 cmspx-s

Patch installation completed.
```

## 5. After installing all of the patches, enter:

**eject cdrom**

For more detailed information about Avaya CMS patches, see [Working with Avaya CMS patches](#) on page 226.

---

## Using back\_all

The `back_all` option allows you to remove all Avaya CMS patches installed on the machine.

To use the `back_all` option:

## 1. Enter:

**cmssvc**

The system displays the **CMSSVC menu**.

2. Enter **12** to select `back_all`.

The system removes all of the installed patches and displays a conformation message for each patch that was removed.

For more detailed information about Avaya CMS patches, see [Working with Avaya CMS patches](#) on page 226.

## The Avaya CMS maintenance backup

Avaya CMS maintenance backups save *only* Avaya CMS data (administration and historical). The Avaya CMS data for each Automatic Call Distribution (ACD) should be backed up:

- After the Avaya CMS is provisioned
- After the Avaya CMS software is upgraded
- On a daily basis.

You can perform these backups within the Avaya CMS software. For more information, see *Avaya CMS R3V11 Administration*, 585-215-515.

**Note:**

If you use the Avaya CMS LAN backup feature, back up your Avaya CMS data according to *Avaya CMS R12 LAN Backup User Guide*, 585-215-721. The *Avaya CMS R12 LAN Backup User Guide*, 585-215-721 provides information about using the Avaya CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

---

## The CMSADM backup

The CMSADM file system backup saves all of the file systems on the computer onto a tape, including:

- Solaris system files and programs
- Avaya CMS programs

**Important:**

The CMSADM backup does *not* save Avaya CMS data tables. No new users can log into the Avaya CMS system while the CMSADM backup is running.

This section includes the following topics:

- [When to perform a CMSADM backup](#) on page 213
- [Tape drives and cartridges](#) on page 214
- [Performing a CMSADM backup](#) on page 214

**Note:**

If you use the Avaya CMS LAN backup feature, back up your system data according to *Avaya CMS R12 LAN Backup User Guide*, 585-215-721. The *Avaya CMS R12 LAN Backup User Guide*, 585-215-721 provides information about using the Avaya CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

---

## When to perform a CMSADM backup

Perform the CMSADM file system backup:

- After the system has been set up in the factory.

**Important:**

This backup contains the default factory configuration. These tapes must be saved and never reused in case the system needs to be reinstalled in the field.

- After the Avaya CMS system is provisioned

This backup contains the Solaris system files and programs and Avaya CMS configuration data placed on the computer by TSC provisioning personnel. These tapes should also be saved and not reused.

In addition, field technicians should perform an Avaya CMS full maintenance backup before they turn a new system over to the customer. For more information, see *Avaya CMS Release 3 Version 11 Administration*, 585-215-515.

- Before and after the Avaya CMS software is upgraded (usually performed by a field technician)
- Once a month (performed by the customer).

---

## Tape drives and cartridges

The following table lists the models of tape drives that are supported for CMS R12.

| Tape drive | Tape cartridge                                            | CMS computers                                     |
|------------|-----------------------------------------------------------|---------------------------------------------------|
| DDS-4      | DDS compliant 150 meter<br>20/40-GB DAT cartridge<br>4 mm | Sun Blade<br>Sun Enterprise 3500<br>Sun Fire V880 |
| Mammoth    | 170-meter AME 20/40-GB<br>8 mm                            | Sun Enterprise 3500                               |



### WARNING:

Verify that you are using the correct tape for the tape drive on your system. Many of the tape cartridges look alike, and using the wrong tape can damage the tape drive mechanism and tape heads.

---

## Performing a CMSADM backup

To perform a CMSADM backup:

1. Verify that:

- The computer is in a Solaris multi-user state (2 or 3). To check whether you are in the multi-user state, enter: `who -r`
- You are using the correct tape for the tape drive on your system.



### CAUTION:

Use a new set of backup tapes for this CMSADM file system backup. Do NOT use the original set of factory backup tapes or provisioning backup tapes. Make sure that there are enough tapes for the new backup.

2. Log in as **root**.

3. Enter:

```
cmsadm
```

The system displays the **Avaya Call Management System Administration Menu**.

4. Enter the number associated with the `backup` option.

Depending on the configuration of your system, the system displays one of the following options:

- If only one tape drive is available on the system, go to Step 5.
- If more than one tape drive is available for use by the system, the system displays a list of tape devices. Enter a tape drive selection from the displayed list.

The system displays the following message:

```
Please insert the first cartridge tape into <device name>.
Press ENTER when ready or Del to quit:^?
```

5. Press **Enter**.

The backup process begins. If more than one tape is required, the system displays the following message:

```
End of medium on "output".
Please remove the current tape, number it, insert tape number x,
and press Enter
```

6. If the system displays the message in Step 5, insert the next tape and allow it to rewind. When it is properly positioned, press **Enter**.

7. When the backup is completed, the system displays information according to the number of tapes that are required for the backup:

- If the number of tapes required is one, go to Step 10.

The system displays the following message:

```
xxxxxxx blocks
Tape Verification
xxxxxxx blocks
WARNING: A CMS Full Maintenance Backup in addition to this cmsadm
backup must be done to have a complete backup of the system. . .
. .

Please label the backup tape(s) with the date and the current CMS
version (Rxxxxx.x)
```

- If the number of tapes required is more than one, the system displays the following message:

```
xxxxxxx blocks
Tape Verification
Insert the first tape
Press Return to proceed :
```

## Maintaining the Avaya CMS software

8. Insert the first tape to be used in the backup and press **Enter**. Wait for the LED on the tape drive to stop blinking before you remove the tape.
9. When prompted, repeat Step 8 for any additional tapes generated by the backup process. When the final tape is verified, the program displays the following message:

```
xxxxxxx blocks
Tape Verification
xxxxxxx blocks
WARNING: A CMS Full Maintenance Backup in addition to this cmsadm
backup must be done to have a complete backup of the system. . .
. .

Please label the backup tape(s) with the date and the current CMS
version (Rxxxxx.x)
```

10. Label all tapes with the:
  - Tape number
  - Date of backup
  - Current version of Avaya CMS
11. Set the tape write-protect switch to read-only and put the tapes in a safe location.  
If you have problems performing a CMSADM backup, see [CMSADM backup problems](#) on page 323.

# Checking the contents of the CMSADM backup tape

The system lists the files on the backup tape so you can determine if the backup has saved the correct information or verify that a particular file has been saved.

## Note:

It can take a long time to display the file names on the backup tape.

To check the contents of the CMSADM backup tape:

1. Insert the first backup tape.
2. To list the files on the tape, enter the following command on a single line:

```
nohup cpio -ivct -C 10240 -I /dev/rmt/dev# -M "Insert tape %d
and press Enter" | tee
```

where `dev#` is the device name.

The system displays a list of files.

3. If you are not sure of the device path, enter:

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

where `dev#` is the device name.

The device name is usually `/dev/rmt/0c`. However, the device name used depends on the drive's SCSI ID. Possible device names are:

|                          |                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------|
| <code>/dev/rmt/0</code>  | Indicates the first noncompressing tape drive with the lowest target address          |
| <code>/dev/rmt/1</code>  | Indicates the second noncompressing tape drive with the second lowest target address  |
| <code>/dev/rmt/0c</code> | Indicates the first compressed-mode tape drive with the lowest target address         |
| <code>/dev/rmt/1c</code> | Indicates the second compressed-mode tape drive with the second lowest target address |

The correct device path will show information similar to the following:

```
HP DDS-4 DAT (Sun) tape drive:
sense key(0x0)= No Additional Sense residual= 0 retries= 0
file no= 0 block no= 0
```

4. After you have seen the files you are looking for or have confirmed that data on the tape is accurate, press **Delete** to stop the display.

## Backing up the RSC card configuration

The Sun Fire V880 platform contains a RSC card. If you do not use your RSC card, there is no need to back up your card settings. If you do use your RSC card, you must back up your card settings any time the configuration is changed. You can use this backup to restore your RSC card settings if you ever replace the RSC card or reinstall the RSC software.

To back up the RSC card configuration on a Sun Fire V880 platform:

1. Log into the system as **root**.

2. Enter:

```
cd /usr/platform/*880/rsc
```

3. Enter:

```
./rscadm usershow > rscadm.usershow.settings
```

The system creates a file that contains the settings for the RSC logins.

4. Enter:

```
./rscadm show > rscadm.show.settings
```

The system creates a file that contains the RSC settings.

**Note:**

If you ever need to restore your RSC card configuration, see [Restoring the RSC card configuration](#) on page 247.

---

## Changing the system date and time

This section describes how to change the UNIX system date and time. For example, a change due to daylight savings time.

This section includes the following topics:

- [Checking the Solaris system date and time](#) on page 219
- [Setting the system date and time](#) on page 219
- [Setting the system country and time zones](#) on page 220

---

## Checking the Solaris system date and time

To verify that the system time is correct:

1. Enter:

```
date
```

2. If the system time is correct there is no need to proceed further with this procedure. If the system time is not correct, continue with [Setting the system date and time](#).

---

## Setting the system date and time

Do the following steps to change the Solaris system time:

1. Turn off the Avaya CMS software.
2. Log in as **root**.
3. Enter the root password.
4. Set the time and date by entering:

```
date mmddHHMM[yyyy]
```

Example:

- *mm* (month): Enter the month (numeric). Range: 1-12 (1=January, 2=February, and so on).
- *dd* (day): Enter the day of the month. Range: 1-31
- *HH* (hour): Enter the hour of day, military time. Range: 00-23.
- *MM* (minute): Enter the minute of the hour. Range: 00-59.

- **[yyyy]** (year): Entering the year is optional. Enter the year, with all four digits (for example, 2000).
5. Continue with [Setting the system country and time zones](#).
  6. Turn on the Avaya CMS software.

---

## Setting the system country and time zones

To set the country and time zones:

1. Log in as root and enter the root password.
2. Enter:

```
vi /etc/default/init
```

3. Edit the **/etc/default/init** file and set the TZ variable to equal the appropriate value in the **/usr/share/lib/zoneinfo** directory.

For example:

You would modify the line with TZ=US/Mountain.

```
@(#)init.dfl 1.2 92/11/26
#
This file is /etc/default/init. /etc/TIMEZONE is a symlink to this file.
This file looks like a shell script, but it is not. To maintain
compatibility with old versions of /etc/TIMEZONE, some shell constructs
(i.e., export commands) are allowed in this file, but are ignored.
#
Lines of this file should be of the form VAR=value, where VAR is one of
TZ, LANG, or any of the LC_* environment variables.
#
TZ=US/Mountain
```

4. Save and quit the file by pressing **Esc** and entering:

```
:wq!
```

5. Reboot the machine by entering:

```
/usr/sbin/shutdown -i6 -g0 -y
```

---

# Working with Solaris patches

When you upgrade your Avaya CMS software, or administer a new Avaya CMS installation, you may need to:

- Verify what Solaris patches are currently installed
- Install a Solaris patch
- Remove one or more Solaris patches.

This section includes the following topics:

- [Installing Solaris patches](#) on page 221
- [Checking installed Solaris patches](#) on page 224
- [Removing a Solaris patch](#) on page 224

---

## Installing Solaris patches

To install the Solaris patches:

1. If the system is an Enterprise 3500 system, document the original position of the key switch. You must return the key switch to this original position at the end of this procedure. If the key switch is in the “Locked” or “Diagnostics” position, move the key switch to the vertical “On” position.

2. Insert the CD-ROM, Avaya Call Management System into the CD-ROM drive.

3. Enter:

```
cd /
```

4. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu (CMSSVC Menu)**.

5. Enter the number associated with the `run_cms` option.

6. Enter the number associated with the Turn off CMS but leave IDS running option.

The system returns to the command prompt.

7. Set the IDS environment by entering:

```
. /opt/informix/bin/setenv
```

8. Enter:

```
onmode -yuk
```

Ignore any error messages.



**CAUTION:**

The Avaya CMS software must be off in order to install the Solaris patches.

9. Enter:

```
/cdrom/cdrom0/spatches_conf
```

The system displays a message similar to the following:

```
Warning: you must close all applications before running this script
.....
.....
.....
Solaris patches have been spooled to your machine. The patches will
be installed after rebooting. During the installation of patches
your
server will not be available.

The estimated time to install all patches is: 15 minutes

Ready to install Patches. Please leave the CD in the drive.
You will need to reboot the server for patches to install.

Do you want to reboot now? [y,n,?]
```

**Note:**

The system will display the approximate amount of time needed to install the Solaris patches.

10. Choose one of the following steps:

- To install the Solaris patches:

i. Enter: **y**

The system boots into single user mode and installs the Solaris patches.

**Note:**

If there are no Solaris patches to install the system displays the following message.

```
There are no Solaris patches to install
```

ii. Choose one of the following steps:

- If Solaris patches were installed, go to Step 11.

- If no Solaris patches were installed, log into the system as **root**. Then go to Step 13.
- To cancel installation of the Solaris patches, enter: **n**  
The system displays the following message:

```
Terminating at user's request.
You will need to run spatches_conf again to install Operating System
patches.
```

**CAUTION:**

If you cancel installation of the Solaris patches, you will have to install them before upgrading the Avaya CMS software.

11. Log into the system as **root**.
12. Verify that all of the Solaris patches have been installed by entering:

```
tail -10 /var/cms/spatches/spatches.log
```

The system displays the following message in the log:

```
All patches installed successfully.
```

**Note:**

If the installation procedure fails for any of the patches, the following message is displayed:

```
Installation failed for one or more Solaris patches.

- Customers in the US should call the CMS Technical Services
Organization at 1-800-242-2121

- Customers outside the US should contact your Avaya
representative or distributor.
Patch installation completed: Fri Jan 18 13:28:19 MST 2002
```

If the message shown above is displayed, continue with this procedure and the remaining Avaya CMS base load upgrade procedures. When the upgrade is complete, notify your Avaya CMS support organization as instructed.

13. Enter:  

```
eject cdrom
```
14. If the system is a Sun Fire V880 or Enterprise 3500 system, return the key switch to the position it was in at the start of this procedure.

---

## Checking installed Solaris patches

To check the Solaris patches:

1. Enter:

```
showrev -p
```

The system displays the following message:

```
Patch: 105084-02 Obsoletes: Packages: SUNWx25a.2 9.1, PATCH=02,
SUNWx25b.2 9.1, PATCH=02
Patch: 105256-01 Obsoletes: Packages: SUNWcsu
Patch: 103582-14 Obsoletes: Packages: SUNWcsu, SUNWcsr
Patch: 103594-10 Obsoletes: Packages: SUNWcsu
.
.
.
```

2. Check the list to verify that all the Solaris patches you need are installed.

---

## Removing a Solaris patch

To remove a Solaris patch:



### CAUTION:

Remove a Solaris patch only when instructed by the TSC or by a release letter.

1. Enter:

```
patchrm patch-id
```

The *patch-id* is identified by the TSC or in the release letter.

The system removes the patch, and displays the following message:

```
@(#) backoutpatch 3.5 93/08/11
Doing pkgrm of SUNWcsr.8 package:

Removal of <SUNWcsr.8> was successful.
Restoring previous version of files
.
.
.
XXXX blocks
Making the package database consistent with restored files:
backoutpatch finished.
#
```

2. Enter:

```
/usr/sbin/shutdown -y -g0 -i6
```

The system reboots.

## Working with Avaya CMS patches

This section provides procedures for maintaining patches for Avaya CMS on a Sun platform.

This section includes the following topics:

- [Avaya CMS patch requirements](#) on page 226
- [Listing installed Avaya CMS patches](#) on page 227
- [Listing Avaya CMS patches on the CD-ROM](#) on page 227
- [Installing Avaya CMS patches](#) on page 227
- [Removing Avaya CMS patches](#) on page 229

---

### Avaya CMS patch requirements

The three occasions when you may have to install Avaya CMS patches are:

- During a factory installation
- Immediately after upgrading the Avaya CMS software
- In the field on an existing system to correct a problem with the original software.

#### Loading patches after an upgrade:

If you are loading patches immediately after upgrading your system, it is best to turn off the Avaya CMS software until you have the patches installed. The patches have different prerequisites for installation. Some require that the Avaya CMS software be turned off, others require that data collection be turned off, and still others require the Avaya CMS software to be in single-user mode. To be absolutely safe, and to help the upgrade proceed as quickly as possible, turn off the Avaya CMS software.

#### Loading patches as a bug fix:

If you are loading patches as part of a factory installation or on an existing system in the field without upgrading your base load, you can install the patches without turning the Avaya CMS software off. The system will display a message if you need to do anything special to accomplish the load.

The Avaya CMS patch **readme** file lists the run-level requirements for each patch.

**Note:**

The `auth_set` tool must have been run sometime in the past before you can install patches. Call the National Customer Care Center or your product distributor to have authorizations installed.

Installation of all available patches is recommended. If you believe that you should not be installing a particular patch, call the National Customer Care Center or consult with your product distributor before deciding to omit installation of a patch.

---

## Listing installed Avaya CMS patches

To list Avaya CMS patches currently installed on your system:

1. Log in as **root**.
2. Enter the following command:

```
/cms/toolsbin/listcmspatches
```

The system displays a list of Avaya CMS patches that are installed on the system.

---

## Listing Avaya CMS patches on the CD-ROM

To list Avaya CMS patches that are on the CD-ROM and available to be installed:

1. Log in as **root**.
2. Insert the Avaya CMS CD-ROM into the CD-ROM drive.
3. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

4. Enter the number associated with the `patch_inst` option.  
The system lists the names of the patches on the CD-ROM.
5. Enter: `q`

---

## Installing Avaya CMS patches

To install the Avaya CMS patches:

1. Log in as **root** and insert the Avaya CMS CD-ROM into the CD-ROM drive.

2. Enter:

```
cd /
```

3. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

4. Perform one of the following actions:

- To load all of the patches, enter the number associated with the `load_all` option.
- To load one patch at a time, enter the number associated with the `patch_inst` option.

The system lists the patches on the CD-ROM and asks if you really want to install the patches.

If no patches are found on the CD-ROM continue to next step.

The system displays the following message:

```
No CMS patches found on the CD.
Please check the CD and try again.
```

Perform one of the following actions if patches are found on the CD-ROM:

- If you want to load all of the patches, enter: `y`
- If you want to load only one patch, enter the patch number.

The system installs the patch or patches. As it does so, it displays messages similar to the following for each patch installed:

```
@(#) installpatch 1.0 96/04/01
cmspx-s
Generating list of files to be patched...
Creating patch archive area...
Saving a copy of existing files to be patched...
xxxx blocks
 File compression used
Installing patch packages...

Doing pkgadd of cmspx-s package:
Installation of <cmspx-s> was successful.

Patch packages installed:
 cmspx-s

Patch installation completed.
```

- If no patches are found on the CD-ROM, go to Step 5.

5. Enter:

```
eject cdrom
```

---

## Removing Avaya CMS patches

To remove Avaya CMS patches:

1. Log in as **root**.

2. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

3. Choose one of the following actions:

- If you want to remove all of the Avaya CMS patches, enter the number associated with the `back_all` option.

The system lists the patches installed on the system and asks for verification of the removal.

- If you want to remove a single patch:

i. Enter the number associated with the `patch_rmv` option.

The system lists the patches that are installed on the system and prompts you to select a patch.

ii. Type the name of the patch that you want to remove exactly as it is displayed in the list, and press **Enter**.

The system asks you to verify the removal.

4. Enter: **y**

The system displays messages similar to the following example for each patch that is removed:

```
@(#) backout patch 1.0 96/08/02

Removing patch package for cmspx-s:
. . . .

Making package database consistent with restored files:
Patch x has been backed out.
```

---

## Adding and removing users from password aging

If a password is aged, the user will be forced to change their password after a specified amount of time. All Avaya CMS and UNIX users are effected by the `passwd_age` option in the CMSADM menu unless they are added to the password aging exclude file. For more information about using the `passwd_age` option in the CMSADM menu, see [Using passwd\\_age](#) on page 200.



### CAUTION:

Do *not* manually edit password files. Modify the password files using the procedures in this section. Incorrectly editing password files can result in the system having to be rebuilt back to factory standards.

This section includes the following topics:

- [Determining if a password is aged](#) on page 230
- [Excluding users from password aging](#) on page 231
- [Removing users from the password aging exclude file](#) on page 232
- [Aging specific passwords at different rates](#) on page 232

---

## Determining if a password is aged

To determine if a password is being aged:

1. Enter:

```
passwd -s user_name
```

where `user_name` is the name of the user.

The system will display one of the following messages:

- If a new user has not created their password, the system displays the following message:

```
user1 NP
```

### Note:

The user's password will not age unless it is created.

- If the user's password is not aged, the system displays the following message:

```
user1 PS
```

- If the user's password is being aged, the system displays the following message:

```
user1 PS 05/20/02 0 14 7
```

**Note:**

The message includes the user name, the password status, the date the password was last changed, the minimum numbers of days required between password changes, the maximum number of days the password is valid, and the number of days the user will be warned before the password expires.

- If the user's password is locked, the system displays the following message:

```
user1 LK
```

---

## Excluding users from password aging

It is recommended that you exclude specific users before turning password aging on in order to avoid additional password administration. You may need to exclude specific Avaya CMS or UNIX users from password aging. Some custom applications use Avaya CMS logins.

To exclude a specific password from being aged:

1. Log into the system as **root**.
2. Determine the password status of the user by entering:

```
passwd -s user_name
```

where *user\_name* is the name of the user. For more information, see [Determining if a password is aged](#) on page 230.

3. Enter:

```
cd /cms/db
```

4. Enter:

```
vi age_pw_exclude
```

5. Add the user name you want to exclude from password aging.
6. Save and close the file by pressing **Esc**. Then enter:

```
:wq!
```

7. If password aging was previously in effect for the user, enter:

```
passwd -x -1 user_name
```

where *user\_name* is the name of the user, and

where 1 is the number one.

---

## Removing users from the password aging exclude file

Users that have been added to the exclude file will not age. You can remove a specific user from the password aging exclude file. Users that are removed from the exclude file will age normally.

To remove a specific user from the exclude file:

1. Log into the system as **root**.
2. Determine the password status of the user by entering:

```
passwd -s user_name
```

where *user\_name* is the name of the user. For more information, see [Determining if a password is aged](#) on page 230.

3. Enter:

```
cd /cms/db
```

4. Enter:

```
vi age_pw_exclude
```

5. Remove the user name for the password you want to age.

6. Save and close the file by pressing **Esc**. Then enter:

```
:wq!
```

7. Enter:

```
passwd -x maxdays -w 7 user_name
```

where *maxdays* is the number of days before the password expires, and

where *user\_name* is the name of the user you want to age.

---

## Aging specific passwords at different rates

The password aging option in the **CMSADM menu** globally effects users. Individual users can have their passwords aged at different rates.

To age a specific user:

1. Log into the system as **root**.
2. Determine the password status of the user by entering:

```
passwd -s user_name
```

where *user\_name* is the name of the user. For more information, see [Determining if a password is aged](#) on page 230.

3. Enter:

```
passwd -x maxdays -w warning user_name
```

where *maxdays* is the number of days before the password expires, and

where *warning* is the number of days a password aging warning is displayed before the password expires, and

where *user\_name* is the name of the user you want to age.

**Note:**

A password aging warning will not be displayed for user's who only accesses Avaya CMS through Supervisor. Supervisor users will be prompted to enter a new password when their current password expires. Only users who access Avaya CMS through the command line will receive a warning message before their password expires.

## Adding the Informix SQL package after IDS and ILS have been installed

This procedure installs a new Informix SQL package on a system where Informix IDS (Informix Dynamic Server) and ILS (International Language Supplement) packages are already installed.

To add the new Informix SQL package after the other Informix packages have been installed:

1. Obtain the CD-ROM, *Informix SQL version 7.32*.

2. Log in as **root**.

3. Enter:

```
cd /
```

4. Set the terminal type by entering the following commands:

```
TERM=terminal_type
```

```
export TERM
```

where *terminal\_type* is the type of terminal window opened.

Example:

```
TERM=xterm
```

```
export TERM
```

5. Load the CD-ROM, Informix SQL into the CD-ROM drive.

6. Enter the following commands:

```
. /opt/informix/bin/setenv
```

7. Enter:

```
INFORMIXDIR=/opt/informix
```

```
export INFORMIXDIR
```

```
PATH=$PATH:$INFORMIXDIR/bin
```

```
export PATH
```

```
cd $INFORMIXDIR
```

8. Enter:

```
pwd
```

The system should display:

```
/opt/informix
```

If the correct path is not displayed, repeat Steps 6 through 8.

9. Enter:

```
tar cvpf informix.tar .
```

The system preserves the existing Informix installation and configuration, and displays a message similar to the following:

```
a ./ 0K
a ./profile 1K
a ./local.cshrc 1K
.....
.....
.....
a ./console.msgs 2K
a ./jvp.log 0K
tar: ./informix.tar same as archive file
```

10. Enter:

```
tar xvf /cdrom/cdrom0/sql.tar
```

The system copies the Informix SQL files from the CD-ROM to the current directory.

11. Enter:

```
eject cdrom
```

12. Enter:

```
./installsql
```

The system begins to install the Informix-SQL software:

```
IBM INFORMIX-SQL Version XXXX
.....
.....
.....
Press RETURN to continue,
or the interrupt key (usually CTRL-C or DEL) to abort.
```

13. Press **Enter**.

The system displays a license agreement message:

14. Press **Enter**.

The system displays the following message:

```
Installation of IBM INFORMIX-SQL complete.
```

15. Enter:

```
vi /opt/informix/etc/.snfile
```

The file contents should be similar to the following example:

```
INFORMIX-SQL Serial Number ACN#C325473
Informix Dynamic Server 2000 Serial Number AAC#A865230
INFORMIX-Client SDK Serial Number AAC#A898732
```

If the sequence for the package listings is not the same as that shown in the example provided above, edit the file to arrange the packages in the proper sequence.

16. Press **Esc**. Then enter **:wq!** to save and close the file.

17. Enter:

```
cp /opt/informix/etc/.snfile /tmp/
```

18. Enter:

```
tar xvpf informix.tar
```

The system restores the previous Informix installation and configuration, and displays the following message:

```
x ., 0 bytes, 0 tape blocks
x ./profile, 144 bytes, 1 tape blocks
x ./local.cshrc, 124 bytes, 1 tape blocks
.....
.....
.....
x ./console.msgs, 1098 bytes, 3 tape blocks
x ./jvp.log, 0 bytes, 0 tape blocks
```

19. Enter:

```
rm informix.tar
```

20. Enter:

```
cp /tmp/.snfile /opt/informix/etc/
```

---

## Enabling fail over of the alternate boot device

The alternate boot device is a fail-safe device on a mirrored system. If for some reason you are unable to boot from the primary boot disk, you can set the system to boot from the alternate device until further notice. The alternate boot device can be enabled from either the boot prompt or from root.

**Note:**

The alternate boot device must be created before it can be enabled. See [Creating an alternate boot device](#) on page 44 and [Resetting a device alias](#) on page 46.

To enable the alternate boot device on a mirrored system, perform one of the following actions:

- From the `ok` prompt, enter:

```
setenv boot-device disk bootdevice2
```

- From the `#` prompt, enter:

```
eeeprom boot-device="disk bootdevice2"
```

**Note:**

For more information on how to enable the alternate boot device on an Enterprise 3500 system see [Resetting a device alias](#) on page 46.

---

## Maintaining the chkDisks crontab

The chkDisks crontab runs each night and checks to see whether any potential or actual drive problems have been logged. For example, loss of the primary boot drive. The results of the search are mailed to the root user.

This section includes the following topics:

- [Verifying chkDisks](#) on page 238
- [Changing the chkDisks run time](#) on page 238
- [Canceling chkDisks](#) on page 239

---

### Verifying chkDisks

To verify that `cron` is running:

1. Enter at the `#` prompt:

```
crontab -l
```

2. Check the listing to see that there is an entry for chkDisks.

---

### Changing the chkDisks run time

The line tells the system to run chkDisks every day at 15 minutes past hour zero (12:15 AM). You can change that schedule by changing the first five fields as necessary. The fields, in order of appearance, are: minute, hour, day of the month, month of the year, and day of the week. An asterisk means “all legal values.” The `/olds/chkDisks` line in the `cron` file is generally in the following format:

```
15 0 * * * /olds/chkDisks > /dev/null 2>&1
```

For more information, see the manual (`man`) page for the `crontab` command.

---

## Canceling chkDisks

To stop cron from running:

1. Enter at the # prompt:

```
crontab -e
```

2. With the file loaded in the editor, comment out the entry for chkDisks and write and quit the file.

# Identifying a faulty disk

This section contains several procedures that can be used to identify a faulty disk in a mirrored system.

This section includes the following topics:

- [Identifying down chunks](#) on page 240
- [Identifying the disk from the /var/adm/messages file](#) on page 240
- [Identifying the submirrors](#) on page 242

## Identifying down chunks

To identify any down chunks on a faulty disk in a mirrored system:

1. Set the IDS environment by entering:

```
. /opt/informix/bin/setenv
```

2. Enter:

```
onstat -d | grep D
```

The system displays a list of any down chunks on a faulty disk.

|                                               |     |    |        |        |   |                                |
|-----------------------------------------------|-----|----|--------|--------|---|--------------------------------|
| Informix Dynamic Server 2000 Version 9.XX.UCX |     |    |        |        |   | -- On-Line -- Up 00:52:45 -- s |
| Dbspaces                                      |     |    |        |        |   |                                |
| bc30018                                       | 89  | 9  | 512000 | 128000 | 0 | MD- /dev/rdisk/c1t6d0s1        |
| bc30188                                       | 90  | 9  | 0      | 128000 | 0 | MD- /dev/rdisk/c1t6d0s1        |
| bc302f8                                       | 91  | 9  | 256000 | 128000 | 0 | MD- /dev/rdisk/c1t6d0s0        |
| bc30468                                       | 92  | 9  | 384000 | 128000 | 0 | MD- /dev/rdisk/c1t6d0s1        |
| bc305d8                                       | 93  | 9  | 512000 | 128000 | 0 | MD- /dev/rdisk/c1t5d0s4        |
| .....                                         |     |    |        |        |   |                                |
| .....                                         |     |    |        |        |   |                                |
| .....                                         |     |    |        |        |   |                                |
| bc32188                                       | 112 | 10 | 896000 | 128000 | 0 | MD- /dev/rdisk/c1t6d0s4        |
| bc322f8                                       | 113 | 10 | 128000 | 128000 | 0 | MD- /dev/rdisk/c1t6d0s4        |
| bc32468                                       | 114 | 10 | 256000 | 128000 | 0 | MD- /dev/rdisk/c1t6d0s4        |
| bc325d8                                       | 115 | 10 | 512000 | 128000 | 0 | MD- /dev/rdisk/c1t6d0s4        |

## Identifying the disk from the /var/adm/messages file

If a disk problem is not identified with the `onstat` command, check the `/var/adm/messages` file.

**Note:**

Not all disk failures are identified in the **/var/adm/messages** file. You must perform the procedure for [Identifying down chunks](#) on page 240 in addition to this procedure.

To identify a faulty disk in a mirrored system:

1. Enter:

```
cd /var/adm
```

2. Enter:

```
vi messages
```

The system displays a message similar to the following:

```
Jun 12 16:27:08 leopard unix: WARNING:
Jun 12 16:27:08 leopard unix: Error for command 'read(10)' Error Level: R
Jun 12 16:27:09 leopard unix: retryable
Jun 12 16:27:09 leopard unix: Requested Block 0, Error Block: 0
Jun 12 16:27:09 leopard unix: Sense Key: Media Error
Jun 12 16:27:09 leopard unix: Vendor 'SEAGATE':
Jun 12 16:27:09 leopard unix: ASC = 0x31 (medium format corrupted), ASCQ
= 0x0, FRU = 0x9
Jun 12 16:27:09 leopard unix: WARNING: /sbus@3,0/SUNW,fas@3,8800000/sd@2,0
```

**Note:**

The line shown in bold indicates a disk problem. The **sd@2,0** represents SCSI disk.

3. Enter:

```
:q!
```

The system exits the file without making changes.

4. Determine which disk has the problem by entering:

```
ls -l /dev/dsk/c*
```

The system displays the following message:

```
.
.
.
lrwxrwxrwx 1 root root 50 Apr 24 15:21 /dev/dsk/c0t2d0s0 ->
../devices/sbus@3,0/SUNW,fas @3,8800000/sd@2,0:a
lrwxrwxrwx 1 root root 50 Apr 24 15:21 /dev/dsk/c0t2d0s1 ->
../devices/sbus@3,0/SUNW,fas @3,8800000/sd@2,0:b
.....
.....
.....
#
```

5. Search the output for a device description matching that in the warning message.

If the "`sd@2,0:X`" information matches the same information in the warning message, that disk is the faulty disk.

**Note:**

The `x` at the end of the device is the partition number. The partition information may not be displayed in the `/var/adm/messages` file. The following table shows which letters correspond to which disk partition.

| Letter | Disk partition |
|--------|----------------|
| a      | 0              |
| b      | 1              |
| c      | 2              |
| d      | 3              |
| e      | 4              |
| f      | 5              |
| g      | 6              |
| h      | 7              |

---

## Identifying the submirrors

Perform this procedure only if the failed disk is the primary or secondary boot drive.

To identify the submirrors in a mirrored system:

1. Enter:

**metastat**

The system displays messages similar to the following:

```
d32: Submirror of d3
Size: 14960160 blocks
Stripe 0:
 Device Start Block Dbase State Hot Spare
 c0t2d0s1 0 No Maintenance
Stripe 1:
 Device Start Block Dbase State Hot Spare
 c0t4d0s3 0 No Okay
```

2. Search the output for the name of the faulty disk.

The faulty disk is usually indicated by a state of `Maintenance`.

Example:

The following lines indicate that the faulty `c0t2d0` disk is in `d32`:

```
d32: Submirror of d3
Size: 14960160 blocks
Stripe 0:
 Device Start Block Dbase State Hot Spare
 c0t2d0s1 0 No Okay
Stripe 1:
 Device Start Block Dbase State Hot Spare
 c0t4d0s3 0 No Okay
```

 **Important:**

*Be sure to check all the submirrors.* If the disk is also listed under `d11` or `d12`, it is a boot disk belonging to two different submirrors.

3. Record the metadevices to which the disk belongs.

Example:

`d11` and `d31`

4. After identifying all of the faulty disks and associated submirrors, see [Recovering a mirrored system after disk failure](#) on page 267.

## Upgrading a non-mirrored system to a mirrored system

To upgrade a non-mirrored system to a mirrored system, see [Setting up a mirrored system](#) on page 139. Before upgrading a system for mirroring, verify that all the hardware requirements and prerequisites have been met. Depending on your current Avaya CMS load and system configuration, a hardware or software upgrade may be required.



### **WARNING:**

After disk mirroring is authorized, the Avaya CMS system needs to be immediately configured as a mirrored system. If the system operates as a non-mirrored system with mirroring authorized, the database will need to be rebuilt when the system is mirrored.

# ■ ■ ■ ■ ■ ■ Recovering an Avaya CMS system

This section provides the procedures for recovering data on an Avaya Call Management System (CMS) that has non-functioning hardware or software corruption. Personnel at the Technical Service Center (TSC) will need assistance from an on-site technician or the site's CMS administrator in order to perform most of the procedures in this chapter.

This section includes the following topics:

- [Using the nohup command](#) on page 246
- [Restoring the RSC card configuration](#) on page 247
- [Performing an Avaya CMS maintenance restore](#) on page 248
- [Verifying Free Space Allocation during a maintenance restore](#) on page 253
- [Mirrored system disk pairs](#) on page 257
- [Verifying boot disk integrity](#) on page 258
- [Recovering a non-mirrored system after data disk failure](#) on page 259
- [Recovering a mirrored system after disk failure](#) on page 267
- [Performing a CMSADM restore of a mirrored or non-mirrored system](#) on page 277
- [Restoring a system without a CMSADM or system backup](#) on page 282
- [Restoring specific files from the CMSADM backup tape](#) on page 283

## Using the nohup command

When executing commands that take a long time to complete, (such as `cpio` commands), use the `nohup` command to ensure that the command will complete without interruption if the data line disconnects.

An example of the `nohup` command is:

```
nohup cpio -icmudf -C 10240 -I /dev/rmt/0c "cms" | tee
```

When system reboots are required, verify that your terminal type is set correctly after the reboot.

---

# Restoring the RSC card configuration

You must restore your RSC card settings if you ever replace the RSC card or reinstall the RSC software.

To restore the RSC card configuration on a Sun Fire V880 platform:

1. If applicable, replace any defective hardware or software.

2. Enter:

```
cd /usr/platform/*880/rsc
```

3. Locate and record the information in the following files:

- **rscadm.usershow.settings**
- **rscadm.show.settings**

4. Enter:

```
cd /
```

5. Re-run the RSC card configuration using the information in the backup files. Enter:

```
/usr/platform/*880/rsc/rsc-config
```

For more information, see [Customizing the Sun Remote System Control](#) on page 174.

---

## Performing an Avaya CMS maintenance restore

This section describes how to restore all Avaya CMS data from an Avaya CMS maintenance backup.



### CAUTION:

If this procedure is being performed because of a disk replacement or crash, see [Recovering a mirrored system after disk failure](#) on page 267 before performing this procedure.

This section includes the following topics:

- [Data restore requirements](#) on page 248
- [Restoring data from a full maintenance backup](#) on page 249
- [Restoring data from a full and incremental maintenance backup](#) on page 250

### Note:

If you use the Avaya CMS LAN backup feature, see *Avaya CMS R12 LAN Backup User Guide*, 585-215-721. The *Avaya CMS R12 LAN Backup User Guide*, 585-215-721 provides information about using the Avaya CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

---

## Data restore requirements

Before you perform an Avaya CMS maintenance restore, the following requirements must be met depending on the type of data you wish to restore:

| Data to be restored         | System requirements                                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Historical and non-CMS      | <ul style="list-style-type: none"><li>• The Avaya CMS software can be in a multi-user state</li><li>• Data collection can be on</li></ul>              |
| Local system administration | <ul style="list-style-type: none"><li>• The Avaya CMS software must be in the single-user state</li><li>• Data collection must be turned off</li></ul> |

|                              |                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| ACD -specific administration | <ul style="list-style-type: none"> <li>• The Avaya CMS software must be in the single-user state</li> <li>• Data collection can be on</li> </ul> |
| CMS system administration    | <ul style="list-style-type: none"> <li>• The Avaya CMS software must be in the single-user state</li> <li>• Data collection can be on</li> </ul> |

## Restoring data from a full maintenance backup

To restore data from a full maintenance backup:



### CAUTION:

Perform this procedure when only the full Avaya CMS maintenance backups are available. If an incremental maintenance backup is also available, see [Restoring data from a full and incremental maintenance backup](#) on page 250

1. Load the most recent full maintenance backup tape into the tape drive.
2. From one of the windows at a console, log into the system by using a CMS administrator's login ID (for example **su - cms**). Enter the correct password if prompted.

3. Enter:

```
cms
```

A series of prompts about system status may appear before the system displays the CMS main menu.

4. Enter the correct terminal type.
5. Select the `Maintenance` option.
6. Select the `Restore Data` option.
7. In the `Restore from last backup (y/n) :` field, enter: `n`

The system restores the system administration data, ACD-specific data, historical data, and non-CMS data.

8. Go to the Free Space Allocation window that is located in the CMS System Setup subsystem and verify that no adjustments need to be made.

For more information about Free Space Allocation, see *Avaya CMS R3V11 Administration*, 585-215-515.

---

## Restoring data from a full and incremental maintenance backup

To restore data from a full and incremental maintenance backup:



### CAUTION:

Perform this procedure only if both full and incremental Avaya CMS maintenance backups are available. If only a full maintenance backup is available go to [Restoring data from a full maintenance backup](#) on page 249.

1. Insert the most recent full maintenance backup tape into the tape drive.
2. From one of the windows at a console, log into the system by using an Avaya CMS administrator's login ID (for example **su - cms**). Enter the correct password if prompted.
3. Enter:  
  
`cms`  
  
A series of prompts about system status may appear before the system displays the CMS main menu.
4. Enter the correct terminal type.
5. Depending on the type of data to be restored, it may not be necessary to perform Steps a or b. See the table in [Data restore requirements](#) on page 248 to determine which steps to perform.
  - a. Change the Avaya CMS software to single user mode:
    - i. Select `System Setup - CMS State`.  
The system displays the **CMS State** window.
    - ii. Enter an **x** in the `Single-user mode` field and press **Enter** twice.
    - iii. Press **F5** to return to the main menu.
  - b. Turn off data collection:
    - i. Select `System Setup - Data Collection`.  
The system displays the Data Collection window.
    - ii. Enter the name of the ACD.
    - iii. Use **Tab** to move the `Off` field and enter: **x**
    - iv. Press **Enter**, select `Modify`, and press **Enter** again.
    - v. Repeat Steps i through iv for each ACD.
    - vi. Press **F5**.

The system displays the CMS main menu.

6. Select Maintenance - Restore Data.

7. In the **Restore Data** window, select the following options:

| Item                         | Values specified or selected                                                                                        |
|------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Device name                  | default                                                                                                             |
| Restore from last backup?    | n                                                                                                                   |
| Restore historical data from | (leave blank)                                                                                                       |
| ACDs to restore              | All ACDs                                                                                                            |
| Data to restore              | Local System Administration data<br><br>ACD-specific administration data<br><br>Historical data<br><br>Non-CMS data |

8. Press **Enter**, select Run, and press **Enter** again.

9. When the restore is finished, remove the full backup tape from the drive and insert the most current incremental backup tape.

10. Repeat Steps 7 and 8 as needed.

11. After the incremental restore is finished, press **F5**.

The system displays the CMS main menu.

12. Depending on the type of data to be restored, it may not be necessary to perform Steps a or b. See the table in [Data restore requirements](#) on page 248 to determine which steps to perform.

a. Turn data collection on:

i. Select System Setup - Data Collection.

The system displays the Data Collection window.

ii. Enter the name of the ACD.

iii. Use the **Tab** key to move to the On field and enter: **x**

iv. Press **Enter**, select Modify, and press **Enter** again.

v. Repeat Steps i through iv for each ACD.

vi. Press **F5**.

The system displays the CMS main menu.

## Recovering an Avaya CMS system

b. Take the Avaya CMS software out of single user mode:

i. Select `System Setup - CMS State`.

The **CMS State** window displays.

ii. Enter an **x** in the `Multi-user mode` field and press **Enter** twice.

iii. Press **F5**.

The system displays the Avaya CMS main menu.

13. Select `Logout` and press **Enter**.

14. Go to the **Free Space Allocation** window that is located in the **CMS System Setup** subsystem and verify that no adjustments need to be made.

For more information about Free Space Allocation, see *Avaya CMS R3V11 Administration*, 585-215-515.

---

## Verifying Free Space Allocation during a maintenance restore

To verify Free Space Allocation during a maintenance restore:

1. Insert the maintenance backup tape into the tape drive.

**Note:**

If you use the Avaya CMS LAN backup feature, see *Avaya CMS R12 LAN Backup User Guide*, 585-215-721. The *Avaya CMS R12 LAN Backup User Guide*, 585-215-721 provides information about using the Avaya CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

2. Verify that the IDS software and the Avaya CMS software are on:

- a. Enter:

`cmssvc`

The system displays the **CMSSVC Menu**.

- b. Enter the number associated with the `run_ids` option.

- c. Enter the number associated with the `Turn on IDS` option.

- d. Enter:

`cmssvc`

The system displays the **CMSSVC Menu**.

- e. Enter the number associated with the `run_cms` option.

- f. Enter the number associated with the `Turn on CMS` option.

3. Log into the Avaya CMS software.

4. Verify that the Avaya CMS software is in single user mode and data collection is off for all ACDs.

## Recovering an Avaya CMS system

5. From the main menu, select **Maintenance > Restore Data**.

The system displays the **Restore Data** window.



6. Deselect **Historical data** and **Non-CMS data**.
7. Press **Enter** to access the action list in the upper right corner of the window.
8. Select **Run** and press **Enter**.

The system restores the data from tape.
9. Exit the **Restore Data** window by pressing **F5**.

10. From the main menu, select **System Setup > Free Space Allocation**.

The system displays the **Free Space Allocation** window.

System Setup: Free Space Allocation

Enter Dbspace name:

Data timestamp: 2/20/01 8:48 AM

(NOTE: All sizes are in Kbytes)

Total Free Space: 1279970

| Dbospace Name | Current Size | Allocated Size | Available Space | Space used to Date |
|---------------|--------------|----------------|-----------------|--------------------|
| acd1          | 2560000      | 1025211        | 1534789         | 48604              |
| acd2          | 1792000      | 1126820        | 665180          | 55702              |
| acd3          | 1792000      | 707140         | 1084860         | 16822              |
| acd4          | 2048000      | 1191761        | 856239          | 67944              |
| acd5          | 2560000      | 1088367        | 1471633         | 75680              |
| acd6          | 3584000      | 1494316        | 2089684         | 15596              |
| acd7          | 2304000      | 1000466        | 1303534         | 24372              |
| acd8          | 2560000      | 10080557       | (7520557)       | 21956              |

Successful

Help Window Commands Keep Exit Scroll Current MainMenu

11. In the **Enter Dbspace name:** field, enter the Dbspace name of the ACD.
12. Press **Enter** to access the action list in the upper right corner of the window.
13. Select **Modify**.
14. Press **Enter**.
15. Perform one of the following actions:
  - Answer **y** to any questions that may be displayed.
  - Press **Enter** if a "Nothing to add/drop" message is displayed.
16. Repeat Steps 11 through 15 for every ACD on the system.

**Note:**

These steps are performed for every ACD on the system in order to adjust the available space for each ACD. Additional space will be added to acds with negative space and ACDs with additional space will have the space reallocated. For more information about Free Space Allocation, see *Avaya CMS R3V11 Administration*, 585-215-515.

17. Exit the **Free Space Allocation** window by pressing **F5**.
  18. From the main menu, select **Maintenance > Restore Data**.
- The system displays the **Restore Data** window.
19. Deselect:

## Recovering an Avaya CMS system

- **Local system administration data**
- **CMS system administration data**
- **ACD-specific administration data**
- **Non-CMS data**

20. Verify that **Historical data** is selected.

**Note:**

If the customer has backed up any non-CMS data, it will be necessary to rebuild any custom tables before restoring the data.

21. Press **Enter** to access the action list in the upper right corner of the window.

22. Select **Run** and press **Enter**.

The system restores the data from tape.

23. Exit the **Restore Data** window by pressing **F5**.

24. Put the system in multiuser mode and turn data collection on.

---

## Mirrored system disk pairs

Use the following tables to determine the disk layout for your system.

**Note:**

A mirrored system might occasionally display controllers that are different from those shown in the following tables for the mirrored disk.

### Sun Fire V880 mirrored disk pairs

| Primary disk | Mirrored disk |
|--------------|---------------|
| c1t0d0       | c1t3d0        |
| c1t1d0       | c1t4d0        |
| c1t2d0       | c1t5d0        |

### Enterprise 3500 mirrored disk pairs

| Primary disk | Mirrored disk |
|--------------|---------------|
| c0t0d0       | c1t4d0        |
| c0t1d0       | c1t5d0        |
| c0t2d0       | c1t6d0        |
| c0t3d0       | c1t7d0        |

### Sun Blade mirrored disk pairs

| Primary disk | Mirrored disk |
|--------------|---------------|
| c0t0d0       | c0t2d0        |
| c1t0d0       | c1t2d0        |
| c1t1d0       | c1t3d0        |

## Verifying boot disk integrity

Perform this procedure to verify that a mirrored system is capable of a successful recovery from a primary or secondary boot disk failure. If the failed disk is not a boot disk, skip this procedure.

To verify boot disk integrity:

1. Set the IDS environment by entering:

```
. /opt/informix/bin/setenv
```

2. Enter:

```
onstat -d | egrep functioning_boot_device
```

where *functioning\_boot\_device* is the device name of the functioning boot device.

Example:

```
onstat -d | egrep c0t0d0
```

3. Enter:

```
onstat -d | egrep "PD|N|R"
```

4. Look for any down, resyncing or non-mirrored chunks.

5. Perform one of the following actions:

- If the system does not display any down, resyncing or non-mirrored chunks, go to [Recovering a mirrored system after disk failure](#) on page 267.
- If the system displays any down or non-mirrored chunks on the functioning disk, services can attempt to repair them. If any chunks are resyncing, wait for the sync process to complete. If the chunks cannot be repaired, go to [Performing a CMSADM restore of a mirrored or non-mirrored system](#) on page 277.

---

# Recovering a non-mirrored system after data disk failure

Use this procedure to recover a system with a failed data disk.

**Important:**

If the system loses the primary boot disk, the system will need to be rebuilt to factory standards and any data will need to be restored. See [Performing a CMSADM restore of a mirrored or non-mirrored system](#) on page 277.

**Note:**

If you use the Avaya CMS LAN backup feature, see *Avaya CMS R12 LAN Backup User Guide*, 585-215-721. The *Avaya CMS R12 LAN Backup User Guide*, 585-215-721 provides information about using the Avaya CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

To recover a non-mirrored system:

1. Obtain the most recent successful maintenance backup tapes.
2. Install and format the replacement disk.

**Note:**

For more information about installation of hard drives, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

3. Turn on any external devices. Then turn on the system.

The system boots into multi-user mode.

**Important:**

If the system fails to boot after installing the hard drive according to the appropriate hardware installation, maintenance, and troubleshooting book, reboot the system from the `ok` prompt using `boot disk`. After the system reboots, log into the system as `root`.

4. Log on as **root**.
5. Turn off the Avaya CMS software and the IDS software.

## Recovering an Avaya CMS system

6. Verify the file properties for partitions 1, 2, 3, 4, 5, 6, and 7. The group and owner should be informix, and the permissions should be 660. Enter:

```
ls -ltL /dev/rdisk/cXtXd0sX
```

where **cX** is the device controller number, and

where **tX** is the device target number, and

where **sX** is the slice number.

If the file properties are *not* correct, enter the following commands:

```
. /olds/olds-funcs
```

```
change_perms cXtXd0
```

where **cX** is the device controller number, and

where **tX** is the device target number.

### Note:

For more information about hard drive device names, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform. The system records the permission change in **/cms/install/logdir/admin.log**

7. Set the IDS environment by entering:

```
. /opt/informix/bin/setenv
```

8. Enter:

```
vi /opt/informix/etc/onconfig.cms
```

The system displays the **onconfig.cms** file.

9. Change the **PHYSDBS** setting to:

```
rootdbs
```

10. Change the **LOGFILES** setting to:

```
3
```

11. Press **Esc**. Then enter:

```
:wq!
```

The system saves and exits the file.

12. Verify the file properties for the **onconfig.cms** file. The group and owner should be informix, and the permissions should be 644.

Perform the following steps if the file properties are not correct:

- a. Enter the following command on a single line at the command prompt:

```
chown informix:informix /opt/informix/etc/onconfig.cms
```

b. Enter:

```
chmod 644 /opt/informix/etc/onconfig.cms
```

13. Enter the following commands:

```
cd /opt/informix/etc
```

```
rm onconfig.bak
```

```
rm onconfig.def
```

14. Enter:

```
onmode -yuk
```

Ignore any error messages.

15. Enter:

```
oninit -i
```

The system displays the following message:

```
This action will initialize Informix Dynamic Server 2000;
any existing Informix Dynamic Server 2000 databases will NOT be
accessible -
```

```
Do you wish to continue (y/n)?
```

16. Enter: **y**

17. Enter:

```
. /olds/olds-funcs
```

18. Enter:

```
remove_soft_partitions
```

## Recovering an Avaya CMS system

19. Check the IDS software by entering:

**onstat**

The system displays several sets of data:

```
Informix Dynamic Server 2000 Version X.XX.UCX -- On-Line -- Up 00:00:55 -- 18432
Kbytes

Userthreads
address flags sessid user tty wait tout locks nreads nwrites
a30c018 ---P--D 1 root - 0 0 0 27 37510
a30c608 ---P--F 0 root - 0 0 0 0 1132
.....
.....
.....
ixda-RA idx-RA da-RA RA-pgsused lchwaits
4 0 47 51 0
```

20. Enter:

**cmssvc**

The system displays the **CMSSVC** menu.

21. Enter the number associated with the `disk_space` option.

The system displays the following message:

```
Initializing the boot disk (this may take several minutes!) ...

Disk_space_manager options 5) are:

 1) Add New Disks

Enter choice (1-1) or q to quit:
```

### Note:

If IDS fails to turn on after the configuration of the IDS dbspaces, contact the National Customer Care Center (1-800-242-2121), or consult with your product distributor or representative.

```
oninit: Fatal error in shared memory initialization
```

22. Enter the number associated with the Add New Disks option.

If the system has more than one disk, it displays a list of disks.

```
The choices for primary disks are:
.....
.....
.....
Enter choice (X-X) or q to quit:
```

23. Repeat Steps 20 through 22 for every hard drive installed on the system.

When all disks have been added, the system displays the following message:

```
All disks are currently administered for the system.
Finished Adding New Disks
```

24. Choose one of the following procedures:

 **Important:**

It is preferred that CMS be set up from the flat file. The CMS setup information is found in the UNIX flat file. This information is updated automatically when a CMSADM backup is performed. If updates have been made since the last CMSADM backup, it may be necessary to run CMS setup interactively.

- To set up CMS interactively.  
See [Configuring Avaya CMS interactively](#) on page 115.
- To set up CMS from a UNIX flat file.

- i. Enter:

```
uname -n
```

The system displays the UNIX system name.

- ii. Record the UNIX system name for use later.

- iii. Enter:

```
vi /cms/install/cms_install/cms.install
```

## Recovering an Avaya CMS system

- iv. Verify that the second line has an entry for the UNIX system name. If it does not, add the UNIX system name you recorded in Step ii.

Example:

```
Enter a name for this UNIX system (up to 256 characters):
cms3
Select the type of backup device you are using
.....
.....
.....
Enter number of VDNs (0-Maximum):
```

- v. Press **Esc**, and then enter:

**:wq!**

- vi. Verify that IDS is on.

- vii. Enter:

**cmssvc**

The system displays the **Avaya Call Management System Services Menu**.

- viii. Enter the number associated with the `setup` option.

The system displays the following message:

```
Select the language for this server:

All languages are ISO Latin except Japanese. Selection of the
server language assumes that existing customer data is compatible.
(Upgrade from any ISO Latin language to any ISO Latin language or
from Japanese to Japanese is supported).

1) English
2) Dutch
3) French
4) German
5) Italian
6) Portuguese
7) Spanish
8) Japanese
Enter choice (1-8): (default: 1)
```

- ix. Enter the number for the language used on the system.

The system displays a message similar to the following:

```
The input will be read from
 1) the terminal
 2) a flat file
Enter choice (1-2):
```

**Note:**

An additional option for a converter created setup file may be displayed on some systems

- x. Enter the number associated with the `flat file` option.

The system displays the following message:

```
*** The rest of this command is running in the background ***
```

- xi. Enter:

```
tail -f /cms/install/logdir/admin.log
```

**Note:**

The `-f` option in the `tail` command updates the console as messages are written to the **admin.log** file. All failure messages are logged in this file.

The system displays the following message:

```
01350 Mon Nov 6 12:19:24 2000 SRC_ERR_NUM=-00329
PROCESS=pre_cms_env PID=000482 Sql.c:00071
SEVERITY=INFO ACD=-01 startdb
.....
.....
.....
Setup completed successfully Mon Nov 6 12:24:20 MST 2000
```

- xii. Press **Delete** to break out of the `tail -f` command.

- 25. Enter:

```
/usr/sbin/shutdown -y -i6 -g0
```

The system reboots.

- 26. Log into the system as **root**.

- 27. Set the IDS environment by entering:

```
. /opt/informix/bin/setenv
```

## Recovering an Avaya CMS system

28. Verify that the recovery process is complete by entering:

```
onstat -d | egrep "MD|PD|R|X"
```

**Note:**

If a MX entry appears for the logdbs dbspace, enter:

```
ontape -s
```

The dbspace should be repaired.

29. Restore the Avaya CMS data.

For more information, see [Verifying Free Space Allocation during a maintenance restore](#) on page 253.

---

# Recovering a mirrored system after disk failure

This section contains procedures for the recovery of a mirrored system after disk drive failure.

**Important:**

The system will need to be rebuilt to factory standards and any data will need to be restored if both the primary boot disk and the alternate boot disk fail. If this condition is met, see [Performing a CMSADM restore of a mirrored or non-mirrored system](#) on page 277.

This section includes the following topics:

- [Prerequisites](#) on page 267
- [Recovering a mirrored system after a single disk fails](#) on page 267
- [Recovering a mirrored system after a mirrored pair of data disks fail](#) on page 269

---

## Prerequisites

Before you recover a mirrored system, perform the following tasks:

- Verify that the alternate boot device is set up. See [Enabling fail over of the alternate boot device](#) on page 237 for more information.
- Identify the faulty disk or disks. See [Identifying a faulty disk](#) on page 240 and [Mirrored system disk pairs](#) on page 257 for more information.
- The system must boot off of a functioning boot disk. For more information see [Verifying boot disk integrity](#) on page 258.

---

## Recovering a mirrored system after a single disk fails

Use this procedure to recover a mirrored system after a single disk fails. The failed disk can be either a data disk or a boot disk.

To recover a mirrored system after a single disk fails:

**Important:**

Do not immediately remove and replace the faulty disk. Remove and replace the disk only after being instructed to do so.

## Recovering an Avaya CMS system

1. Enter:

```
cd /
```

2. Run the disk clean up script by entering:

```
/olds/olds -rm_dsk cXtXd0
```

where **cX** is the device controller number, and

where **tX** is the device target number.

The system removes the disk from Informix.

3. Choose one of the following steps:

- If the system is a Sun Blade, remove the faulty disk and replace it with a new disk.

**Note:**

For more information about removing and installing disk drives, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

- If the system is not a Sun Blade, follow the prompts that are displayed by the system.

4. Run the insert disk script by entering:

```
/olds/olds -ins_dsk cXtXd0
```

where **cX** is the device controller number, and

where **tX** is the device target number.

The system adds the disk to Informix.

5. Follow the instructions displayed by the system. If a problem occurs during the replacement process, the system will display prompts indicating a problem.

**Note:**

The following steps are service effecting, but they can be performed when the Avaya CMS system is experiencing low levels of system activity.

6. Perform the following tasks from the **CMSADM** menu:

- a. Turn off the Avaya CMS software and the IDS software.
- b. Turn on the IDS software.
- c. Turn on the Avaya CMS software.

7. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

8. Enter the number associated with the `disk_space` option.

9. Enter the number associated with the `Sync primary and mirror disks` option.  
The system begins to synchronize the mirrors. This might take a couple hours.
10. Set the Informix environment by entering:  

```
. /opt/informix/bin/setenv
```
11. Enter:  

```
onstat -d | egrep "MD|PD|R|X|N" | grep -v freedbs
```

  
The mirroring and resync process is complete when:
  - The system displays the command prompt as output, and
  - a non-mirrored freedbs line might be displayed.
12. Reboot the system when convenient, but not until the system finishes syncing the disks. Avaya recommends you perform this step during low busy hours. The system will not be fully mirrored until you perform the reboot.

---

## Recovering a mirrored system after a mirrored pair of data disks fail

To recover a mirrored system after a mirrored pair of data disks fail:



### Important:

Do not immediately remove and replace the faulty disk. Remove and replace the disk only after being instructed to do so.

1. Enter:

```
cd /
```

2. Turn off the Avaya CMS software and the IDS software.



### WARNING:

Avaya CMS setup will be re-run in this procedure and data restored. Record any current Avaya CMS administration.

3. Replace, format, and partition the replacement pair of disks. See [Avaya CMS disk partition values](#) on page 334 and [Using the luxadm command](#) on page 315 for more information.

### Note:

For more information about disk drives, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

4. Enter:

```
. /olds/olds-funcs
```

## Recovering an Avaya CMS system

5. Enter:

```
remove_soft_partitions
```

6. Enter:

```
metastat | more
```

7. Verify that the root, swap, and /cms metadevices are either in an Okay or resync state.

**Note:**

If the metadevices are in an incorrect state, enter:

```
metareplace -e dX cXtXd0sX
```

where **cX** is the device controller number, and

where **tX** is the device target number, and

where **cX** is the device controller number, and

where **sX** is the slice number, and

where **dX** is for d1 for s0, d2 for s1, and d3 for s3.

8. Verify the file properties for partitions 0, 1, 3, 4, 5, 6, and 7. The group and owner should be informix, and the permissions should be 660. Enter:

```
ls -ltL /dev/rdisk/cXtXd0sX
```

where **cX** is the device controller number, and

where **tX** is the device target number, and

where **sX** is the slice number.

If the file properties are *not* correct, enter the following commands:

```
. /olds/olds-funcs
```

```
change_perms cXtXd0
```

where **cX** is the device controller number, and

where **tX** is the device target number.

**Note:**

For more information about hard drive device names, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform. The system records the permission change in **/cms/install/logdir/admin.log**

9. Enter:

```
mv /cms/db/backupDevice /cms/db/backupDevice.tmp
```

10. Enter:

```
vi /opt/informix/etc/onconfig.cms
```

The system displays the **onconfig.cms** file.

11. Remove the `MIRRORPATH` setting.

For example, you would remove `/dev/rdisk/cxtxd0sx`. Do not delete the entire line.

12. Change the `PHYSDBS` setting to:

```
rootdbs
```

13. Change the `LOGFILES` setting to:

```
3
```

14. Press **Esc**. Then enter:

```
:wq!
```

The system saves and exits the file.

15. Enter the following commands:

```
cd /opt/informix/etc
```

```
rm onconfig.bak
```

```
rm onconfig.def
```

16. Set the IDS environment by entering:

```
. /opt/informix/bin/setenv
```

17. Enter:

```
onmode -yuk
```

Ignore any error messages.

18. Enter:

```
oninit -i
```

The system displays the following message:

```
This action will initialize Informix Dynamic Server 2000;
any existing Informix Dynamic Server 2000 databases will NOT be
accessible -
```

```
Do you wish to continue (y/n)?
```

19. Enter: **y**

20. Verify the file properties for the **onconfig.cms** file. The group and owner should be `informix`, and the permissions should be `644`.

If the file properties are not correct, perform the following:

- a. Enter the following command on a single line at the command prompt:

```
chown informix:informix /opt/informix/etc/onconfig.cms
```

## Recovering an Avaya CMS system

b. Enter:

```
chmod 644 /opt/informix/etc/onconfig.cms
```

21. Check the IDS software by entering:

```
onstat -
```

The system displays the following message:

```
Informix Dynamic Server 2000 Version X.XX.UCX -- On-Line -- Up 00:00:55 -- 18432
Kbytes
```

22. Verify that IDS is on-line.

23. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu (CMSSVC menu)**.

24. Enter the number associated with the `disk_space` option to initialize the boot disk.

25. Enter `q` to quit.

26. Enter:

```
mv /cms/db/backupDevice.tmp /cms/db/backupDevice
```

27. Enter:

```
tail -f /cms/install/logdir/admin.log
```

28. Verify that no error messages are displayed. Then press **Delete** to break out of the `tail -f` command.

29. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

30. Enter the number associated with the `disk_space` option.

The system displays the following message:

```
Disk_space_manager options are:
```

- 1) Add New Disks
- 2) Initiate Mirroring
- 3) Sync Primary and Mirror

```
Enter choice (1-3) or q to quit:
```

**Note:**

If IDS fails to turn on after the configuration of the IDS dbspaces, contact the National Customer Care Center (1-800-242-2121), or consult with your product distributor or representative.

```
oninit: Fatal error in shared memory initialization
```

31. Enter the number associated with the `Add new disks` option.

The system displays a list of disk pairs.

```
The choices for primary/secondary disk pairs are:
.....
.....
.....
Enter choice (X-X) or q to quit:
```

32. Repeat Steps 29 through 32 to sequentially add each disk pair installed on the system.

When all disks have been added, the system displays the following message:

```
All disks are currently administered for the system.
Finished Adding New Disks
```

33. Choose one of the following procedures:



**Important:**

It is preferred that Avaya CMS be set up from the flat file. The Avaya CMS setup information is found in the UNIX flat file. This information is updated automatically when a CMSADM backup is performed. If updates have been made since the last CMSADM backup, it may be necessary to run Avaya CMS setup interactively.

- To set up Avaya CMS interactively.  
See [Configuring Avaya CMS interactively](#) on page 115.
- To set up Avaya CMS from a UNIX flat file.

- i. Enter:

```
uname -n
```

The system displays the UNIX system name.

- ii. Record the UNIX system name for use later.

- iii. Enter:

```
vi /cms/install/cms_install/cms.install
```

## Recovering an Avaya CMS system

- iv. Verify that the second line has an entry for the UNIX system name. If it does not, add the UNIX system name you recorded in Step ii.

Example:

```
Enter a name for this UNIX system (up to 256 characters):
cms3
Select the type of backup device you are using
.....
.....
.....
Enter number of VDNs (0-Maximum):
```

- v. Press **Esc**, and then enter:

**:wq!**

- vi. Verify that IDS is on.

- vii. Enter:

**cmssvc**

The system displays the **Avaya Call Management System Services Menu**.

- viii. Enter the number associated with the `setup` option.

The system displays the following message:

```
Select the language for this server:

All languages are ISO Latin except Japanese. Selection of the
server language assumes that existing customer data is compatible.
(Upgrade from any ISO Latin language to any ISO Latin language or
from Japanese to Japanese is supported).

1) English
2) Dutch
3) French
4) German
5) Italian
6) Portuguese
7) Spanish
8) Japanese
Enter choice (1-8): (default: 1)
```

- ix. Enter the number for the language used on the system.

The system displays a message similar to the following:

```
The input will be read from
 1) the terminal
 2) a flat file
Enter choice (1-2):
```

**Note:**

An additional option for a converter created setup file may be displayed on some systems

- x. Enter the number associated with the `flat file` option.

The system displays the following message:

```
*** The rest of this command is running in the background ***
```

- xi. Enter:

```
tail -f /cms/install/logdir/admin.log
```

**Note:**

The `-f` option in the `tail` command updates the console as messages are written to the **admin.log** file. All failure messages are logged in this file.

The system displays the following message:

```
01350 Mon Nov 6 12:19:24 2000 SRC_ERR_NUM=-00329
PROCESS=pre_cms_env PID=000482 Sql.c:00071
SEVERITY=INFO ACD=-01 startdb
.....
.....
.....
Setup completed successfully Mon Nov 6 12:24:20 MST 2000
```

- xii. Press **Delete** to break out of the `tail -f` command.

34. Enter:

```
. /olds/olds-funcs
```

35. Enter:

```
/cms/install/bin/ins_proc -l /cms/install/logdir/admin.log -m
```

36. Set the IDS environment by entering:

```
. /opt/informix/bin/setenv
```

37. Enter:

```
onstat -d | egrep "MD"
```

38. Verify that the soft partitions were added to the database.

39. Enter:

```
onstat -d | egrep "MD|PD|R|X"
```

When the system displays only the command prompt as output, the mirroring and resync process is complete. A non-mirrored freedbs line might be displayed on some systems.

## Recovering an Avaya CMS system

**Note:**

If a `MX` entry appears for the `logdbs` dbspace, enter:

```
ontape -s
```

The dbspace should be repaired.

40. Restore the Avaya CMS data and verify the Free Space Allocation. See [Verifying Free Space Allocation during a maintenance restore](#) on page 253 for more information.

---

# Performing a CMSADM restore of a mirrored or non-mirrored system

This section describes how to restore an entire system. You must re-enable the system to boot. Then restore the system software from the CMSADM backup tape. A system restore will be required if:

- The boot disk fails or becomes corrupt on a non-mirrored system
- The boot disk pair fails or becomes corrupt on a mirrored system

This section includes the following topics:

- [Prerequisites](#) on page 277
- [Restoring a system with a restore script](#) on page 277

---

## Prerequisites

Before you begin restoring the system, perform the following tasks:

- If the system is mirrored, verify that the system cannot boot from either the primary or secondary boot device.
- Obtain the CMSADM file system backup tapes.
- Obtain the most recent maintenance backup tapes.
- Replace any defective hardware.

---

## Restoring a system with a restore script

To restore a system with a restore script:

1. Perform one of the following actions:

- If the system is non-mirrored, replace the defective boot disk and any other defective disks.
- If the system is mirrored, replace the defective boot disk pair and any other defective disks.

**Note:**

For more information about installing hard drives, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

## Recovering an Avaya CMS system

2. As the console shows that the system is booting up, press **Stop+A**

The system displays the `ok` prompt.

**Note:**

**Stop+A** will not work on a Sun Fire V880 if the key switch is in the locked position. If the key switch is in the locked position, turn the key to the unlocked position. Press **Stop+A** again and continue with the remainder of this procedure.

3. Insert the CD-ROM, *Solaris 9 Software 4/03 1 of 2* into the CD-ROM drive.

4. Enter:

```
boot cdrom -sw
```

The system boots from the CD-ROM.

5. Enter the following commands:

```
stty erase Backspace
```

```
ksh -o vi
```

The system will display **Backspace** as `^H`. On some systems **Backspace** will not work. If this is the case, substitute `^H` for **Backspace**.

6. Enter:

```
format
```

The system displays a list of disks.

7. Verify that the system detects all of the disk drives in the system.

**Note:**

If the system does not detect a disk, re-seat the disk drives. If the system still does not detect the disk drives, repeat this procedure from Step 4.

8. Enter the number associated with one of the disks.

The system displays the format command menu.

9. Enter:

```
quit
```

10. Enter:

```
pwd
```

The system displays the following message:

```
/tmp/root
```

**Note:**

If the system does not display `/tmp/root`, enter:

```
cd /tmp/root
```

11. Insert the CMSADM backup tape into the tape drive.
12. Enter the following command on a single line at the command prompt:

```
cpio -icmudv -C 10240 -I /dev/rmt/dev#
"cms/install/bin/restore"
```

where `dev#` is replaced with the tape device name.

The system retrieves the file and displays the following message within a couple of minutes:

```
cms/install/bin/restore
```



**Important:**

The restore script should be one of the first files on the tape backup. If the system does not display **cms/install/bin/restore** within a couple of minutes, the restore script is not on the tape. Press **Ctrl+C**

Contact the National Customer Care Center, or consult with your product distributor or representative about obtaining the script.

**Note:**

The "cms/install/bin/restore" message might be displayed a second time.

13. Press **Ctrl+C**

The system stops searching the CMSADM backup tape.

**Note:**

If you do not press **Ctrl+C**, the system will continue to search the entire backup tape. This search could take several hours to complete.

14. Verify that the restore script has the correct permissions by entering:

```
chmod +x cms/install/bin/restore
```

The system sets the correct permissions to execute the script. If the permissions for the script are not correct, the restore will fail.

15. Restore the system by entering:

```
cms/install/bin/restore /dev/rmt/dev#
```

where **dev#** is replaced with the tape device name.

The system displays the following message:

```
Attempting to set System timezone from tape. This can take up to
60 seconds. Please wait...
.....
.....
.....
Starting to restore from tape. This process can take a long time.
Please wait...
```

The system restores the files on the tape backup. The system will automatically reboot after all the files on the tape have been transferred.

**Note:**

If a problem occurs during the restore process, the system will display prompts indicating a problem. Follow the instructions displayed by the system.

16. Log in to the system as **root**.



**Important:**

The system may reboot several times during the restore process. The reboots can occur at random intervals throughout the restore process. You may have to repeat this step several times.

17. After the system reboots, you can monitor the progress of the restore by entering:

```
tail -f /cms/install/logdir/restore/restorecms.log
```

**Note:**

In order to monitor the restore progress. You must enter this command each time the system reboots.

When the restore process is complete, the system displays the following message at the end of **restorecms.log**:

```
CMS Restore Completed Successfully
```

18. Enter:

```
ps -ef | egrep S99
```

19. Choose one of the following steps:

- If a **S99restorecms** process is *not* running, go to Step 20.

- If a `S99restorecms` process is running, enter the following commands:

```
pkill -9 tee
```

```
pkill -9 S99restorecms
```

20. Verify that the IDS software is on.

21. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

22. Enter the number associated with the `run_cms` option.

23. Enter the number associated with The `turn on CMS` option.

24. Verify the Free Space Allocation and restore the Avaya CMS data. See [Verifying Free Space Allocation during a maintenance restore](#) on page 253 for more information.

25. If the system has the AOM or Visual Vectors Server software installed, verify that the software is on.

---

## Restoring a system without a CMSADM or system backup

If a CMSADM backup or system backup is not available, the system must be reinstalled with all software back to factory standards.

To restore a system without a CMSADM backup or system backup:

1. Re-install the entire operating system according to [Installing the Solaris operating system](#) on page 23.
2. Configure the entire operating system according to [Configuring the Solaris operating system](#) on page 39.
3. Re-install Avaya CMS and supporting software according to [Installing Avaya CMS and supporting software](#) on page 65.
4. Restore any available Avaya CMS data from the most recent Avaya CMS maintenance backup. See [Verifying Free Space Allocation during a maintenance restore](#) on page 253 for more information.
5. Re-administer terminals, printers, modems, and other peripheral devices as needed. For more information, see *Avaya CMS Terminals, Printers, and Modems*, 585-215-874.
6. Contact Professional Services for any previously installed customization.

---

# Restoring specific files from the CMSADM backup tape

Sometimes only specific files on a system become corrupted. Use this procedure if only specific files need to be restored from a CMSADM backup tape.

**Note:**

If you use the Avaya CMS LAN backup feature, see *Avaya CMS R12 LAN Backup User Guide*, 585-215-721. The *Avaya CMS R12 LAN Backup User Guide*, 585-215-721 provides information about using the Avaya CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

To restore specific files from a CMSADM backup:

1. Enter:

```
cd /
```

2. Enter the following command on a single line at the command prompt:

```
cpio -icmudv -C 10240 -I /dev/rmt/dev# -M "Please remove the
current tape, insert tape number %d, and press ENTER"
"full_path_name"
```

where *dev#* is replaced with the device name and *full\_path\_name* is replaced with the path of the files to be restored.

Example:

```
cpio -icmudv -C 10240 -I /dev/rmt/0 -M "Please remove the
current tape, insert tape number %d, and press ENTER" "dev/dsk"
```



# Troubleshooting

This section provides solutions for common software or hardware problems. Use these procedures to troubleshoot the Avaya Call Management System (CMS) software.

This section includes the following topics:

- [Determining your Avaya CMS version](#) on page 287
- [Recognizing new hardware devices](#) on page 287
- [Troubleshooting password aging](#) on page 288
- [Avaya CMS error logs](#) on page 289
- [Checking installed software packages](#) on page 290
- [Listing pkgchk errors](#) on page 291
- [Troubleshooting a system that fails to auto-boot](#) on page 292
- [Diagnosing a machine panic](#) on page 293
- [Using the Sun Explorer tool](#) on page 295
- [Using the remote console](#) on page 296
- [Using Sun Remote System Control](#) on page 304
- [Diagnosing dial-In access problems](#) on page 306
- [Booting Solaris into single-user mode](#) on page 312
- [Common problems using the CD-ROM drive](#) on page 313
- [Using the luxadm command](#) on page 315
- [Removing the Avaya CMS package fails](#) on page 321
- [Avaya CMS installation fails](#) on page 322
- [CMSADM backup problems](#) on page 323
- [System messages](#) on page 324
- [Common error messages](#) on page 325
- [Avaya CMS disk partition values](#) on page 334
- [Avaya CMS EEPROM settings](#) on page 342
- [Troubleshooting soft partitioning](#) on page 343

## Troubleshooting

- [About mirrored systems](#) on page 349
- [Troubleshooting problems with disk drives](#) on page 353
- [Cleaning up a replacement boot disk](#) on page 357
- [Checking for disk recognition errors](#) on page 359
- [Common error messages with mirrored systems](#) on page 364

### Note:

When executing commands that take a long time to complete (such as `cpio` commands), use the `nohup` command to ensure that the command will complete without interruption if the data line disconnects. An example of the `nohup` command is shown below:

```
nohup cpio -icmudf -C 10240 -I /dev/rmt/0c "cms" | tee
```

When system reboots are required, verify that your terminal type is set correctly after the reboot.

---

## Determining your Avaya CMS version

To determine the version of Avaya CMS installed on your system:

1. Enter:

```
pkginfo -x cms
```

The system displays the Avaya CMS version.

---

## Recognizing new hardware devices

Use this procedure if externally powered devices, such as disk drives and tape drives, are not recognized during a Solaris installation. This problem might occur if:

- The devices are not connected to power
- The devices are not turned on
- If you add a new port board to the computer as part of an upgrade or addition

If you discover that a hardware device is not being recognized, you must either reboot from the CD-ROM and reinstall Solaris, or do the following:

1. Reboot the system by entering:

```
init 0
```

2. Force the system to recognize the new components by entering:

```
boot -r
```

The system reboots.

3. Log in as **root**.

---

## Troubleshooting password aging

This section provides options to help solve password aging problems.

This section includes the following topics:

- [Tracking changes to password aging](#) on page 288
- [Passwords of excluded users age](#) on page 288

---

### Tracking changes to password aging

The admin log keeps a record of any administrative changes made to password aging. The system updates the admin log when the aging interval is changed or if password aging is turned on or off. The admin log can be found at **/cms/install/logdir/admin.log**

---

### Passwords of excluded users age

If a user was added to the password aging exclude list and their password is continuing to age or has begun to age:

1. Log into the system as **root**.
2. Enter:

```
passwd -x -1 user_name
```

where **user\_name** is the name of the user, and

where **1** is the number one.

---

# Avaya CMS error logs

The administrative data for each error log file contains specific information about itself, including defaults, administration information, a description of the contents, and general information about how to interpret the contents of the logs. The log provides:

- **Default location**

The file name of the primary file where log information can be found if no administrative changes have been made.
- **Default maximum file size**

The approximate size of each of the log files (primary and historical) that will be saved if no administrative changes have been made.
- **Default number of older files retained**

The number of historical files that are kept, in addition to the primary file, if no administrative changes have been made.
- **Administration file**

If the log is controlled by the general purpose file wrapping technique, the location of the file where administrative changes can be made affecting the location of the log file, the size of the logs, and/or the number of historical log files.
- **Starting/stopping**

Describes the conditions necessary for the log to be running, including any appropriate commands.
- **Writing process**

Indicates all processes that write to the log.
- **Intended audience**

Customer (for log information that is useful to the customer, easy to read, and documented) or services (for log information that is intended to aid troubleshooting). Almost all error logs are used exclusively by services personnel.
- **First implemented in load**

Indicates the first load when the log is available. The system uses an internal load numbering (such as 3.1z).

---

## Checking installed software packages

Use this procedure to check for previously installed software packages. The rules for specifying package names are as follows:

- You can omit the *pkgname* variable from the command. The command then lists the name, description, and version number of every software package installed on the system.
- If you list only one package name, the command lists the name, description, and version number of only that software package.
- You can list several package names separated by spaces. The command then lists the name, description, and version number of every software package you name.

To check what software packages are installed on your system:

1. From the root prompt, enter:

```
pkginfo -x pkgname
```

where *pkgname* is the name of the software package you are checking for.

## Listing pkgchk errors

The `pkgchk -n cms` command lists some common error messages that do not indicate an actual problem. The error messages in the following table can be ignored.

| Location                                   | Error message                              | Occurs                                                     |
|--------------------------------------------|--------------------------------------------|------------------------------------------------------------|
| <code>/cms/install/logdir/admin.log</code> | group name <root><br>expected <cms> actual | After the installation and before setup.                   |
| <code>/usr/lib/cms/pbxtrcflags</code>      | pathname does not exist                    | After the installation and before setup.                   |
| <code>/cms/env/cms_mon/State_tbl</code>    | group name <bin><br>expected <other>actual | After the setup and before running the Avaya CMS software. |
| <code>/cms/install/logdir/admin.log</code> | group name <root><br>expected <cms>actual  | After the setup and before running the Avaya CMS software. |
| <code>/usr/lib/cms/pbxtrcflags</code>      | pathname does not exist                    | After the setup and before running the Avaya CMS software. |
| <code>/cms/env/cms_mon/State_tbl</code>    | group name <bin><br>expected <cms> actual  | After running the Avaya CMS software.                      |
| <code>/cms/install/logdir/admin.log</code> | group name <root><br>expected <cms> actual | After running the Avaya CMS software.                      |
| <code>/usr/lib/cms/pbxtrcflags</code>      | group name <bin><br>expected <cms> actual  | After running the Avaya CMS software.                      |

---

## Troubleshooting a system that fails to auto-boot

Use this procedure if the system fails to automatically pass the boot prompt (stops at the `ok` prompt). When the system reboots, a boot environment variable may be set incorrectly.

This section includes the following topics:

- [Checking the boot environment variables](#) on page 292
- [Changing the boot environment variables](#) on page 292

---

### Checking the boot environment variables

To check the boot environment variables:

1. Enter:

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

2. At the `ok` prompt enter:

```
printenv
```

3. Scroll down the list and check the settings on the following variables:

- The `auto-boot?` variable should be set to `true`.
- The `boot device` should be set to `disk` or for the alternate boot device on a mirrored system `bootdevice2`.

---

### Changing the boot environment variables

To change the boot environment variables:

1. Enter:

```
setenv variable_name variable_setting
```

Example:

To change the `auto-boot?` variable to `true`, enter:

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

2. Enter:

```
boot
```

---

## Diagnosing a machine panic

If a machine panic is detected on your system, you must call the TSC (domestic) or remote (international) support personnel. The TSC may request that you deliver the following information on a tape:

- Crash dump from **/var/crash/hostname/vmcore.n**
- Namelist from **/var/crash/hostname/unix.n**
- Output of the **showrev -p** command. For details, see the hardware installation document for your platform.
- Output of the **prtconf -pv** command.
- Possibly output from the **/var/adm/messages** file.

To put all of the files on one tape, do the following procedures:

1. Log in as **root**.

2. Enter:

```
cd /var/crash/hostname
```

The system changes to the **dump** directory.

3. Verify that **unix.n** and **vmcore.n** are present and match the date for the crash in question.

4. Enter:

```
showrev -p > showrev.out
```

The system retrieves the output from the **showrev -p** buffer.

5. Enter:

```
dmesg > dmesg.out
```

The system creates a **dmesg.out** file.

6. Enter:

```
prtconf -pv>prtconf.out
```

The system retrieves the output from the **prtconf -pv** buffer.

7. Enter:

```
cp /var/adm/messages messages
```

The system copies the output from the **/var/adm/messages** file.

8. Insert a tape into the default backup tape drive.

## Troubleshooting

9. Enter the following command on a single line at the command prompt:

```
tar cvf /dev/rmt/0 unix.X vmcore.X dmesg.out showrev.out
prtconf.out messages
```

where the letter *x* represents the number of the crashdump.

The system displays a list of all of the files.

10. Enter the following command on a single line at the command prompt:

```
rm unix.X vmcore.X dmesg.out showrev.out prtconf.out messages
```

where the letter *x* represents the number of the crashdump.

The system removes the temporary files.

11. Log out of the system.
12. Remove the tape from the disk drive and send the tape to the TSC.

---

# Using the Sun Explorer tool

The Sun Explorer tool runs a series of tests on the system and saves the information in a tar file. This file can be sent to Sun for analysis.

**Important:**

Only TSC PERSONNEL should use the Sun Explorer tool. You may be directed to use this tool per request by support personnel.

To run Sun Explorer:

1. Log in as **root**.
2. Enter the following commands:

```
cd /opt/SUNWexplo
./explorer
```

The tool runs the tests and collates the information. The tar file is located in the `/opt/SUNWexplo/output` directory.

3. Support personnel will provide you with instructions on how to send the file to Sun support for analysis. This file is usually sent to Sun support by FTP. In order for Sun to analyze the file, Avaya support personnel must create a trouble ticket that includes the file name.

## Using the remote console

If your system will not boot, the TSC personnel could ask you to redirect the console to the remote console so that they can identify a problem. Redirecting the console allows the TSC to dial in and do remote maintenance. You can redirect the console using *either*:

- The Solaris operating system
- OpenBoot diagnostics.

This section includes the following topics:

- [Remote console ports](#) on page 296
- [Redirecting the console using Solaris](#) on page 296
- [Redirecting the console from OpenBoot mode](#) on page 299

## Remote console ports

The port used for remote console access differs, depending on the hardware platform:

| Hardware platform   | Port A                      | Port B   |
|---------------------|-----------------------------|----------|
| Sun Fire V880       | Remote console              | Not used |
| Sun Enterprise 3500 | Remote console              | Not used |
| Sun Blade           | Remote console <sup>1</sup> | N/A      |

1. The Sun Blade 100 and Sun Blade 150 platforms have only one serial port.

## Redirecting the console using Solaris

This section describes how to use the Solaris operating system to redirect the console to serial port ttya or ttyb on an Avaya CMS system. This procedure is usually done from a remote console that has dialed in to the system.

**⚠ 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.

This section includes the following topics:

- [Redirecting the local console to the remote console](#) on page 297
- [Redirecting the remote console back to the local console](#) on page 298

## Redirecting the local console to the remote console

To redirect the local console to the remote console:

1. Dial in from the remote console to the remote console modem.
2. Log in as **root**.
3. Remove the port monitor by entering the following command at the remote console:

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

where **X** is **a** or **b**.

The system displays the following message:

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

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

The system displays the following message:

```
ttyX administration removed
```

5. Check the speed of the modem by entering:

```
/cms/install/bin/abcmadm -k
```

**Note:**

All remote access ports have a default speed of 9600 bps.

6. At the remote console, enter:

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

where **X** is **a** or **b**.

The system displays the following message:

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

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

The system displays the following message at the remote console:

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

The system will automatically reboot, and the remote console port will come up as the console.

The following occurs:

- The system begins to shut down.
- Shut down, reset, and reboot messages appear 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.

8. Log into the remote console as **root**.

The local console is blank.



### CAUTION:

Do not press **Control+D** or **Exit** from the remote console to exit the system without first redirecting control back to the local console. You may lock yourself from using the console locally or remotely.

## Redirecting the remote console back to the local console

To redirect the console back to the local console:

1. At the remote console, enter:

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

The system displays the following message:

```
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 appear on the remote 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 into the local console as **root**.
  4. Log into the remote console as **root**.

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

---

## Redirecting the console from OpenBoot mode

This section describes how to use the OpenBoot mode to redirect the local console to a serial port. 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.

This section includes the following topics:

- [Redirecting the local console to the remote console](#) on page 299
- [Redirecting the remote console back to the local console](#) on page 301

### 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
```

The system shuts down and displays the `ok` prompt.

**Note:**

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

## Troubleshooting

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

```
setenv input-device ttyX
setenv output-device ttyX
setenv ttyX-rts-dtr-off true
setenv ttyX-ignore-cd true
setenv ttyX-mode 9600,8,n,1,-
where X is a or b.
```

3. Verify the parameter changes by entering:

```
printenv
```

The system displays the following message:

| Parameter Name | Value | Default Value |
|----------------|-------|---------------|
| output-device  | ttya  | screen        |
| input-device   | ttya  | keyboard      |
| .              | .     | .             |
| .              | .     | .             |
| .              | .     | .             |

4. If you are not already dialed in, dial in to the system from the remote console.
5. Log into 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 appear 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 into the remote console as **root**.

**CAUTION:**

Do not press **Ctrl + D** or **exit** 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.

## Redirecting the remote console back to the local console

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

- From the remote console (recommended)
- From the local site (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:

- At the remote console, if the system is in UNIX, enter the following commands:

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

where *X* is *a* or *b*.

- At the remote console, if the system is in OpenBoot mode, enter the following commands:

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

where *X* is *a* or *b*.

The following occurs:

- The system begins to shut down.
- Shutdown, reset, and reboot messages appear 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 into the system as **root** at the local console.
- 4. To see what is on the ttyX port, enter:

```
/cms/install/bin/abcaadm -k
```

- 5. Start a port monitor on ttyX by entering:

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

where *x* is *a* or *b*.

### 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 only be done 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. Cycle power on the Avaya CMS system.
2. As the computer begins to boot up, choose one of the following steps:
  - For a Sun Blade system, press the power button twice. A prompt appears on the local console.
  - For any platform that is not a Sun Blade system, press the **Stop + N** keys simultaneously. Continue to press the **Stop + N** keys until a prompt appears on the local console.
3. At the `ok` prompt, enter: `boot`
4. When the system boots up, log into the system as **root** at the local console.
5. To see what is on the ttya port, enter:

```
/cms/install/bin/abcaadm -k
```

6. Start a port monitor on ttyX by entering:

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

where *x* is *a* or *b*.

The system displays the following message:

```
ttyX set to incoming port 9600 baud
```

7. See the appropriate hardware installation, maintenance, and troubleshooting book for information on how to reset the NVRAM to the correct factory defaults.

# Using Sun Remote System Control

The Sun Remote System Control (RSC) software works in conjunction with the RSC card to allow remote administration of a Sun Fire V880 system. You will be able to access the Solaris and OpenBoot console functions and control the power-on self-test (POST) and OpenBoot diagnostics. For more information about the RSC card and software, see *Sun Remote System Control (RSC) User's Guide*.

This section includes the following topics:

- [Redirecting the local console to the RSC](#) on page 304
- [Redirecting the RSC to the local console](#) on page 305

## Redirecting the local console to the RSC

To redirect the local console to the RSC on a Sun Fire V880 system:



### Important:

Do not redirect the console to the RSC unless the RSC card has as been configured for a second ethernet interface or phone line. If you redirect the console to an incorrectly configured RSC card, you will not be able to access the system through the local console or the RSC card.

1. Enter from the local console:

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

The system displays the `ok` prompt.



### CAUTION:

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

2. Enter the following commands to set the RSC environment:

```
setenv diag-console rsc
setenv input-device rsc-console
setenv output-device rsc-console
```

3. Enter:

```
reset-all
```

The system reboots and the local console is directed to the RSC.

---

## Redirecting the RSC to the local console

To redirect the RSC to the local console on a Sun Fire V880 system:

1. Enter from the RSC:

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

The system displays the `ok` prompt.

 **CAUTION:**

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

2. Enter the following commands to set the local console environment:

```
setenv diag-console ttya
```

```
setenv input-device keyboard
```

```
setenv output-device screen
```

3. Enter:

```
reset-all
```

The system reboots and the RSC is directed to the local console.

---

## Diagnosing dial-In access problems

This section describes the scenarios where the console is local and you are attempting to dial-in. It often takes a person on-site to look at the dial-in access problems.

This section includes the following topics:

- [No ringing and answered responses](#) on page 306
- [Answered and connected responses do not display](#) on page 306
- [Login prompt does not display](#) on page 308
- [Login prompt is scrambled](#) on page 309
- [Remote console port will not initialize](#) on page 310

---

### No ringing and answered responses

#### Problem:

You do not get the `RINGING` and `ANSWERED` responses displayed on the screen.

#### Solution:

Check the following:

- Port connectivity – Refer to the hardware installation document for your platform for more details.
- Modem setup – Refer to the hardware installation document for your platform for more details.
- Serial port administration – Refer to the hardware installation document for your platform for more details.

---

### Answered and connected responses do not display

#### Problem 1:

The remote dial-in does not get the `Answered` and `Connected` responses displayed on the screen.

### Solution:

At the on-site location, make sure the modem is on, and check the following cabling connections:

- Phone line to the modem
- Modem to a serial port

#### Note:

Port A to the Sun Fire V880, Sun Blade 100, Sun Blade 150, and Enterprise 3500.

### Problem 2:

The remote user gets `Answered` and `Connected` responses displayed on the screen, but no login.

### Solution:

1. Enter *one* of the following commands to make sure that a monitor is running:

- `pmadm -l; sacadm -l`
- `/cms/install/bin/abcadm -k`

2. If no port monitor is running, start a port monitor by entering:

```
/cms/install/bin/abcadm -i -b baud ttyX
```

where *X* is *a* or *b*.

3. If a port monitor is running, make sure that the port monitor is set up at the correct baud rate relative to the local modem.

- If the baud rate is not correct, remove the current port monitor and start a new port monitor at the correct baud rate. Enter the following commands:

```
/cms/install/bin/abcadm -r ttyX
```

```
/cms/install/bin/abcadm -i -b baud ttyX
```

where *X* is *a* or *b*.

- If the port monitor is running and is at the correct baud rate, try to fix the problem by disabling and enabling the port monitor. Enter the following commands:

```
pmadm -d -p ttymona -s ttyX
```

```
pmadm -e -p ttymona -s ttyX
```

where *X* is *a* or *b*.

## Login prompt does not display

### Problem:

The remote user gets `Answered` and `Connected` responses displayed on the screen, but no login.

### Solution:

1. Enter the following command:

```
sacadm -l
```

The system displays a message similar to the following example:

| PMTAG                                           | PMTYPE | FLGS | RCNT | STATUS | COMMAND |
|-------------------------------------------------|--------|------|------|--------|---------|
| ttymona                                         | ttymon | -    | 0    | NO_SAC |         |
| /usr/lib/saf/ttymon #Port monitor for ttya port |        |      |      |        |         |
| #                                               |        |      |      |        |         |

2. If `NO_SAC` displays in the `STATUS` column, do the following:

- a. Enter:

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

The system displays a message similar to the following example:

|      |      |      |   |          |       |                         |
|------|------|------|---|----------|-------|-------------------------|
| root | 278  | 1    | 0 | Jan 23 ? | 0:00  | /usr/lib/saf/sac -t 300 |
| root | 2440 | 2359 | 0 | 15:27:01 | pts/2 | 0:00 grep sac           |

The first number listed in the first line of the display (278 in the example above) is the process ID (PID) of the `sac` process.

- b. Kill the `sac` process by entering:

```
kill -9 pid
```

where `pid` is the process ID of `sac`.

Example:

To kill the `sac` process shown in *a.*, above, you would enter:

```
kill -9 278
```

3. Verify that a port monitor is running by entering:

```
pmadm -l
```

The system displays the following message:

```
cms2# pmadm -l
PMTAG PMTYPE SVCTAG FLGS ID
<PMSPECIFIC>
ttymona ttymon ttya u root
/dev/term/a b - /usr/bin/login - n9600 ldterm,ttcompat login:
Port monitor disabled - n #CMS ttya port device
#
```

4. Check the baud rate of the port monitor (n9600 in the example above) to make sure it is the same rate as the local modem.
5. If the baud rate is correct, go to Step 6. If the baud rate is incorrect, start a new port monitor at the correct baud rate by entering:

```
/cms/install/bin/abcadm -i -b baud ttyX
```

where *X* is a or b.

6. If the port monitor is running and is at the correct baud rate, try to fix the problem by disabling and then reenabling the port monitor. Enter the following commands:

```
pmadm -d -p ttymona -s ttyX /* disables */
```

```
pmadm -e -p ttymona -s ttyX /* reenables */
```

where *X* is a or b.

---

## Login prompt is scrambled

### Problem:

The dial-in gives you scrambled characters instead of a login prompt.

### Solution 1:

Try pressing a few keys to see if the problem corrects itself.

### Solution 2:

If the dial-in continues to display scrambled characters instead of a login prompt, check the baud rate of the remote console by doing the following:

1. Have an on-site person run the following command:

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

2. Make sure the baud rate is consistent with the modem connected on-site and the modem and console at the remote site.
3. If there is a baud rate inconsistency on-site, reconfigure the machine with the appropriate baud rate for the modem with the following command:

```
/cms/install/bin/abcmadm -c -b baud ttyX
```

where *X* is *a* or *b*.

The system reboots.

4. If there is a baud rate inconsistency with the remote site, reconfigure the remote site and redial.

### Solution 3:

If the dial-in continues to display garbage characters instead of a login prompt, set the console back to local by switching to the local console via the OpenBoot method. See [Using the remote console](#) on page 296 for details.

---

## Remote console port will not initialize

### Problem:

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

### Solution:

1. Enter:

```
sacadm -l
```

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

2. Enter:

```
/cms/install/bin/abcmadm -i -b 9600 ttyX
```

where *X* is *a* or *b*.

This should initialize the port. If the port does not initialize, continue with Step 3.

3. Enter:

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

where *X* is *a* or *b*.

This removes the port administration.

4. Enter:

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

This finds any SAC processes that are running. If any processes are found, continue with Step 5. Otherwise, continue with Step 6.

5. Enter:

```
kill -9 pid
```

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

6. Enter:

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

SAC restarts.

7. Enter:

```
sacadm -l
```

Confirm that SAC is running. The system should show `ENABLED`.

8. Enter:

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

where *X* is *a* or *b*.

This should initialize the port.

---

## Booting Solaris into single-user mode

This section describes how to place Solaris into single-user mode.

To boot Solaris into single user mode:

1. Log into the system through the remote console interface.
2. At the remote console, enter:

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

**Note:**

The system will not successfully enter single-user mode if you execute the `shutdown` command from the local console while the console is redirected. When this occurs, the local console will not respond if you try to enter data. The remote console will also be unresponsive.

To recover from the situation, put the system into single-user mode by performing the following procedure:

- a. Select a new window on the local console.
- b. In the new window, enter:

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

- c. On the remote console, enter:

```
boot -s
```

---

## Common problems using the CD-ROM drive

Use the following procedures if you experience problems with the CD-ROM drive.

This section includes the following topics:

- [Verifying that the system can read a CD-ROM](#) on page 313
- [CD-ROM drive cannot be mounted](#) on page 313
- [CD-ROM drive fails to open](#) on page 314

---

### Verifying that the system can read a CD-ROM

To verify that the system can read a CD-ROM disc:

- Enter:

**mount**

The system displays a list of devices and file systems currently mounted. The last line displayed must show the CD-ROM drive and the CD-ROM disc name.

An example of a `/cdrom/CD_ROMname` message is:

```
/cdrom/CD_ROMname on /vol/dev/dsk/c0t2d0/CD_ROMname read
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0001 on current date and
time
```

---

### CD-ROM drive cannot be mounted

If the CD-ROM drive does not respond to the mount command, the driver pointers may have been altered by the preceding `cpio` command.

To repair the driver pointers:

1. Restart the initial operating system installation.
2. When you reach the “Restore the CMSADM Backup” step, add the following to the `cpio` command:

```
"/dev*" "/dev*/**"
```

3. Continue with the installation as you normally would.

## CD-ROM drive fails to open

If the CD-ROM drive fails to open when you press the eject button:

- Enter:

```
eject cdrom
```

**Note:**

If the CD-ROM drive still will not open, use the `pwd` command to verify that you are not currently in **/cdrom**. If you are, `cd` to `/` and repeat the `eject cdrom` command.

---

# Using the luxadm command

The `luxadm` command can be used to manage the FC-AL disk drives in Enterprise 3500 or Sun Fire V880 systems. The `luxadm` command allows you to:

- Query the system for the world wide number (WWN) of a disk drive
- Remove and add disks without turning off the system

This section includes the following topics:

- [Displaying disk WWN numbers on an Enterprise 3500](#) on page 315
- [Displaying disk WWN numbers on a Sun Fire V880](#) on page 316
- [Removing a disk with the luxadm command](#) on page 318
- [Adding a disk with the luxadm command](#) on page 320

---

## Displaying disk WWN numbers on an Enterprise 3500

To display the WWN number of a disk drive on an Enterprise 3500:

1. Enter:

```
cd /
```

2. Enter:

```
luxadm probe
```

The system displays the WWN number of every disk drive in the system.

Example:

```
Found Fibre Channel device(s):
Node WWN:2000002037f88f26 Device Type:Disk device
Logical Path:/dev/rdisk/c0t0d0s2
Node WWN:20000004cf441548 Device Type:Disk device
Logical Path:/dev/rdisk/c2t4d0s2
```

3. Record the WWN number.

**Note:**

If a problem is detected with the disk drives, the `luxadm` command generates the message, “No Network Array enclosures found in /dev/es” and provides disk drive information. To determine which disk drive is faulty, use the procedures in [Identifying a faulty disk](#) on page 240.

---

## Displaying disk WWN numbers on a Sun Fire V880

To display the WWN number of a disk drive on a Sun Fire V880:

1. Enter:

```
cd /
```

2. Enter:

```
luxadm probe
```

The system displays the name of the fiber channel loop.

Example:

```
Found Enclosure:
SUNWGS INT FCBPL Name:FCloop Node WWN:508002000017d2b0 Logical
Path:/dev/es/ses1
```

3. Record the name of the fiber channel loop.

## 4. Enter:

```
luxadm display loop_name
```

where *loop\_name* is the name of the fiber channel loop.

Example:

```
luxadm display FCloop
```

The system displays the slot and WWN number for every disk in the system.

Example:

```
SUNWGS INT FCBPL
 DISK STATUS
SLOT DISKS (Node WWN)
0 On (O.K.) 20000004cf4cf5c1
1 On (O.K.) 20000004cf4cf448
2 On (O.K.) 20000004cf4cf2d8
3 On (O.K.) 20000004cf4cf51d
4 On (O.K.) 20000004cf4cf541
5 On (O.K.) 20000004cf4cbef1
6 On (Login failed)
7 On (Login failed)
8 On (Login failed)
9 On (Login failed)
10 On (Login failed)
11 On (Login failed)
 SUBSYSTEM STATUS
FW Revision:9222 Box ID:0
Node WWN:508002000017d2b0 Enclosure Name:FCloop
SSC100's - 0=Base Bkpln, 1=Base LoopB, 2=Exp Bkpln, 3=Exp LoopB
SSC100 #0: O.K.(9222/ 120A)
SSC100 #1: O.K.(9222/ 120A)
SSC100 #2: Not Installed
SSC100 #3: Not Installed
 Temperature Sensors - 0 Base, 1 Expansion
 0:27°C
 1Not Installed
Default Language is USA English, ASCII
```

**Note:**

The system displays a warning if a problem is detected with any of the disk drives.

## 5. Record the faulty disk number.

## Removing a disk with the luxadm command

To remove a disk from an Enterprise 3500 or Sun Fire V880 system:

1. Determine which disk device is faulty. For more information, see [Identifying a faulty disk](#) on page 240.
2. Determine the WWN number and location of the faulty disk. For more information about displaying WWN numbers with the `luxadm` command, see [Displaying disk WWN numbers on an Enterprise 3500](#) on page 315 or [Displaying disk WWN numbers on a Sun Fire V880](#) on page 316.
3. Choose one of the following commands to remove the WWN number of the faulty disk:
  - If the system is an Enterprise 3500, enter:

```
luxadm remove number
```

where *number* is the WWN number of the faulty disk.

Example:

```
luxadm remove 2000002037f8a684
```

- If the system is a Sun Fire V880, enter:

```
luxadm remove loop_name,snumber
```

where *loop\_name* is the name of the fiber channel loop, and

where *number* is the slot number for the disk drive.

Example:

```
luxadm remove FCloop,s0
```

The system displays a message similar to the following:

```
WARNING!!! Please ensure that no filesystems are mounted on these device(s).
All data on these devices should have been backed up.

The list of devices which will be removed is:
 1: Device name: 2000002037f8a684
 Node WWN: 2000002037f8a684
 Device Type:Disk device
 Device Paths:
 /dev/rdisk/c2t6d0s2

Please verify the above list of devices and
then enter 'c' or <CR> to Continue or 'q' to Quit. [Default: c]:
```

4. Verify that the disk you want to remove is displayed.

**Note:**

The system may display a device is busy message. If the system displays this message, verify that the correct device is being removed. Repeat the **luxadm remove** command with a **-F** option. For example, enter:

```
luxadm remove -F FCloop,s0
```

## 5. Choose one of the following steps:

- If the correct device is displayed, enter: **c**
- If the correct device is *not* displayed, enter: **q**

If you removed the device, the system displays a message similar to the following:

```
stopping: /dev/rdisk/c2t6d0s2....Done
offlining: /dev/rdisk/c2t6d0s2....Done

Hit <Return> after removing the device(s).
```

**Note:**

If the system is a Sun Fire V880, an amber LED will light when the disk can be safely removed.

**Important:**

Do not insert the replacement disk. (You will be instructed when to insert the replacement disk in [Adding a disk with the luxadm command](#) on page 320.)

## 6. Physically remove the faulty disk from the system.

**Note:**

For more information about removing a disk drive, see the appropriate hardware installation, maintenance and troubleshooting book for your platform.

7. Press **Enter**.

The system displays a message similar to the following:

```
Device: /dev/rdisk/c2t6d0s2

Logical Nodes being removed under /dev/dsk/ and /dev/rdisk:
c2t6d0s0
c2t6d0s1
c2t6d0s2
c2t6d0s3
c2t6d0s4
c2t6d0s5
c2t6d0s6
c2t6d0s7
```

---

## Adding a disk with the luxadm command

To add a disk to an Enterprise 3500 or Sun Fire V880 system:

1. Enter:

```
luxadm insert
```

The system displays the following message:

```
Please hit <RETURN> when you have finished adding Fibre Channel
Enclosure(s) /Device(s) :
```

2. Insert the new disk.

3. Press **Enter**.

The system displays a message similar to the following:

```
Waiting for Loop Initialization to complete...
New Logical Nodes under /dev/dsk and /dev/rdisk :
 c2t6d0s0
 c2t6d0s1
 c2t6d0s2
 c2t6d0s3
 c2t6d0s4
 c2t6d0s5
 c2t6d0s6
 c2t6d0s7
No new enclosure(s) were added!!
```

**Note:**

Ignore the message, "No new enclosure(s) were added!!".

4. Verify that there are no problems with the replacement disk. If any files that may interfere with the system booting are present on a replacement boot disk, go to [Cleaning up a replacement boot disk](#) on page 357.

---

## Removing the Avaya CMS package fails

### Problem:

If you exited the system when removing an Avaya CMS package (cms or /cms.2), you might have:

- Logged in as **cmssvc**
- Switched users — `su' d` to **root** or **root2**
- Run `cmssvc`

### Solution:

1. Log in directly as **root** or **root2**
2. Remove package(s) as instructed by the system.

---

## Avaya CMS installation fails

If the Avaya CMS installation fails and the system displays the `cannot add another instance of CMS` message, either the Avaya CMS package was not removed or the removal was not completely successful.

To continue with the installation:

1. Enter:

```
pkgrm cms
```

2. Enter:

```
cd /
```

3. Restart the Avaya CMS installation.

---

## CMSADM backup problems

If you receive an error message during a backup or recovery, refer to [Common error messages](#) on page 325.

As the backup progresses, the program displays a series of dots, one dot per file, to indicate it is writing files to tape. You may have a problem if you notice one of the following:

- Dots are not displaying (wait 10 minutes or longer to make certain the software is not just copying a very large table).
- The tape is not spinning.
- The system has not displayed messages prompting you to change tapes or informing you that the backup has completed.

Perform the following

- Clean the tape drive with the appropriate tape cleaning kit. It may be necessary to repeat this process several times.
- If the tape drive is new, clean the drive several times with the appropriate tape cleaning kit before use.

If you still encounter problems, call the National Customer Care Center or your product representative.

## 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**.

To display system messages:

1. Enter:

```
dmesg
```

The system displays the most recent messages as shown in the following example:

```
Wed Feb 14 11:01:59 MST 2001
Feb 14 08:19:20 tern pseudo: [ID 129642 kern.info] pseudo-device: tod0
Feb 14 08:19:20 tern genunix: [ID 936769 kern.info] tod0 is /pseudo/tod@0
Feb 14 08:19:22 tern syslogd: going down on signal 15
.....
.....
.....
Feb 16 14:24:08 tern scsi: [ID 365881 kern.info] /pci@1f,0/pci@1/scsi@1,1/st@5,:
Feb 16 14:24:08 tern <HP DDS-4 DAT (Sun)>
Feb 16 14:24:08 tern scsi: [ID 193665 kern.info] st12 at glm1: target 5 lun 0
Feb 16 14:24:08 tern genunix: [ID 936769 kern.info] st12 is /pci@1f,0/pci@1/scs0
Feb 19 10:17:59 tern automountd[198]: [ID 784820 daemon.error] server cortex nog
Feb 19 10:18:27 tern last message repeated 6 times
```

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 messages.3 file is deleted, messages.2 is renamed messages.3, messages.1 is renamed messages.2, and messages.0 is renamed messages.1.

The message files may contain not only system messages, but also crash 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 crash 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*.

---

## Common error messages

This section lists and explains messages you may encounter during an upgrade.

|                    |                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | ERROR: Password aging cannot be implemented on systems using NIS, NIS+ or LDAP.                                       |
| <b>Cause:</b>      | The system is using either NIS, NIS+ or LDAP.                                                                         |
| <b>Resolution:</b> | Contact your network administrator. The passwords will have to be aged from the server running the directory service. |

---

|                    |                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | <pre>** WARNING: ** Only one user may run age_pw at one time.</pre>                                                               |
| <b>Cause:</b>      | More than one person is attempting to use the <code>passwd_age</code> option in the <b>CMSADM</b> menu.                           |
| <b>Resolution:</b> | Attempt to run the command after a few minutes have passed. If you still receive the warning message, contact Avaya CMS services. |

---

|                    |                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | <code>synonym name</code> begins with non-alpha character. Change name after migration. Look for synonym in synonym group                                                |
| <b>Cause:</b>      | Synonym names must begin with a letter in Avaya CMS R3V8 or later. The synonym <code>synonym name</code> does not begin with a letter and was migrated to Avaya CMS R12. |
| <b>Resolution:</b> | List the synonym in the R12 Dictionary subsystem, and modify <code>synonym name</code> to begin with a letter.                                                           |

---

|                    |                                                                                          |
|--------------------|------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Cannot find database item in dictionary: <code>name</code>                               |
| <b>Cause:</b>      | The database item <code>item name</code> was not found in the R12 Dictionary.            |
| <b>Resolution:</b> | If you need the database item in a custom report, manually add it to the R12 Dictionary. |

---

|                 |                                                                                                                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b> | Collision in user login: <code>username</code> . All ownerships are transferred to user 'cms'.                                                                                                                                                                             |
| <b>Cause:</b>   | There is already a login ID established for this user name. The user name being migrated is causing the conflict. The Avaya CMS administrator (cms) becomes the owner of custom reports, timetables, shortcuts, etc. that were previously owned by the migrated user name. |

## Troubleshooting

**Resolution:** If the migrating user is different from the user already established, the system administrator should create a different user name for the migrating user and transfer the ownerships after the migration. If the migrating user and the existing user are the same, the administrator should consult with the user about the disposition of ownerships.

---

**Message:** Constant *name*, *value*: already exists as an R3 constant.

**Cause:** The constant `constant name` already existed in the R12 dictionary database when this migration was done. The R2 constant, therefore, was not migrated.

**Resolution:** Verify that the R3 constant is appropriate for your reports, and modify it if necessary. If you modify the constant, be careful that this constant is not being used in any new R12 custom reports, because the new value will affect those reports as well. If you migrate the administration data more than once, this message will appear for all the constants that were migrated the first time.

---

**Message:** *calculation name* contains items not found in R3 database.

**Cause:** The calculation `calculation name` has items in its formula that cannot be found in the R12 Dictionary database. These items can be database items or other calculations.

**Resolution:** Verify the calculation's formula in the Dictionary subsystem, and either modify the formula or add back any calculations used in the formula.

---

**Message:** Date field being deleted because it goes beyond the width of report: `row=row col=col width=width`

**Cause:** The length of the date field in the migrated real-time report exceeds 132 columns and cannot be migrated.

**Resolution:** Use the editor to add the field to the migrated report.

---

**Message:** device: *devicename* cannot be setup, or does not exist...

**Cause:** The disk you are trying to attach is turned off, does not exist, or was removed from the system.

**Resolution:** Power-up the disk drive, or verify the correct name for the disk (**Stop+A**, **probe-scsi**), or attach the disk to the system and reboot with a `boot -r` command from the open boot prompt.

---

**Message:** Dictionary collision: name=*'name'* item\_type=*'cust\_def'*

**Cause:** There is already the same custom table with the same item name already defined in the dictionary subsystem.

**Resolution:** Verify that the migrating table is the same as the existing one. If they are different, you must rename one table and reenter its database items.

---

---

|                    |                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Dictionary collision: name=' <i>name</i> ' item_type=' <i>const</i> '<br>formula=' <i>value</i> ' |
| <b>Cause:</b>      | There is already a constant with the name but a different value.                                  |
| <b>Resolution:</b> | You need to enter the constant again and rename it.                                               |

---

|                    |                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Dictionary collision: name=' <i>name</i> ' item_type=' <i>calc</i> '<br>formula=' <i>calculation</i> ' |
| <b>Cause:</b>      | There is already a calculation with 'name' as the name but with different contents.                    |
| <b>Resolution:</b> | You need to enter the formula again and rename it.                                                     |

---

|                    |                                                                                                                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Dictionary collision: name=' <i>column name</i> ' table= ' <i>table name</i> '                                                                                                  |
| <b>Cause:</b>      | There is already a dictionary item for this column in the same table.                                                                                                           |
| <b>Resolution:</b> | Verify that the migrating table is the same as the existing one. If they are different, one table has to be renamed and database items must be reentered for the renamed table. |

---

|                    |                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Disk devicename already attached, exiting...                                                                                                                                         |
| <b>Cause:</b>      | You are trying to attach a disk that is already attached.                                                                                                                            |
| <b>Resolution:</b> | Verify the name of the disk by doing a <b>Stop+A, probe-scsi-all</b> . If it's an external disk, check the target number on the back of the drive. Consult the device documentation. |

---

|                    |                                                                                                                                                                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Due to name collision, item type ' <i>name</i> ' ( <i>username</i> ) has been changed to <i>tempname</i>                                                                                                                                |
| <b>Cause:</b>      | The name of the migrated historical report, real-time report, timetable, or shortcut belonging to user <i>username</i> has been renamed <i>tempname</i> because of a collision with an already existing, identically named item in R12. |
| <b>Resolution:</b> | Rename the report to something more meaningful than <i>tempname</i> .                                                                                                                                                                   |

---

|                    |                                                                            |
|--------------------|----------------------------------------------------------------------------|
| <b>Message:</b>    | Error in adding directory.                                                 |
| <b>Cause:</b>      | The migration program could not add the home directory to the UNIX system. |
| <b>Resolution:</b> | Use the FACE program to add the login to the UNIX system.                  |

---

|                    |                                                                           |
|--------------------|---------------------------------------------------------------------------|
| <b>Message:</b>    | Error in adding <i>login ID</i> to UNIX.                                  |
| <b>Cause:</b>      | The migration program could not add <i>login ID</i> to the password file. |
| <b>Resolution:</b> | Use the FACE program to add the login to the UNIX system.                 |

---

## Troubleshooting

---

|                    |                                                                                                                                                                                                                                                                               |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Error in adding <i>synonym name</i> to table.                                                                                                                                                                                                                                 |
| <b>Cause:</b>      | The migration program could not add the synonym <i>synonym name</i> to the R12 Dictionary database.                                                                                                                                                                           |
| <b>Resolution:</b> | List the names (synonyms) in the R12 Dictionary subsystem, and add this name if necessary. The name type is whatever type that was being migrated at the time of the message; that is split/skill, vector, VDN, or trunk group. See the previous log entry for the name type. |

---

|                    |                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Error in adding member <i>mbrnum</i> to group <i>grpname</i> .                                      |
| <b>Cause:</b>      | The migration program could not add group member <i>mbrnum</i> to group <i>grpname</i> .            |
| <b>Resolution:</b> | Display the contents of the group in the R12 Dictionary subsystem, and add the member if necessary. |

---

|                    |                                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Error in creating UNIX login for user ' <i>username</i> '. The user may have already had UNIX log...                                                               |
| <b>Cause:</b>      | The user already has a UNIX system login in Avaya CMS R12.                                                                                                         |
| <b>Resolution:</b> | If the user <i>username</i> already has a UNIX system login, ignore this message. Otherwise, verify that this user can log on and report any problems to Services. |

---

|                    |                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Expression field being deleted because it goes beyond the width of report: row= <i>row</i> col= <i>col</i> width= <i>width</i> R3 expression: <i>expression</i> |
| <b>Cause:</b>      | This field in the migrated real-time custom report exceeded the allowable length of 132 columns and was not migrated.                                           |
| <b>Resolution:</b> | You need to add the field to the real-time custom report in R12 using the editor.                                                                               |

---

|                    |                                                                                                                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Expression (row= <i>row number</i> , col= <i>column number</i> ) exceeds maximum length and has been truncated: <i>expression</i>                                                                                                                                                                            |
| <b>Cause:</b>      | During migration, the expression <i>expression</i> changed and is too long for the <b>Select</b> field of the <b>Field</b> window.                                                                                                                                                                           |
| <b>Resolution:</b> | Delete spaces from the expression. If this does not decrease the length of the expression enough, then create a custom calculation in the dictionary for <i>expression</i> . Edit the report and substitute the custom calculation for the expression in the <b>Select</b> field of the <b>Field</b> window. |

---

|                    |                                                                  |
|--------------------|------------------------------------------------------------------|
| <b>Message:</b>    | Getting user input...                                            |
| <b>Cause:</b>      | This is an informational Avaya CMS migration processing message. |
| <b>Resolution:</b> | No action required.                                              |

---

---

|                    |                                                                                      |
|--------------------|--------------------------------------------------------------------------------------|
| <b>Message:</b>    | <i>login ID</i> has no default printer. Assign default printer via User Data.        |
| <b>Cause:</b>      | No default printer was assigned to <i>login ID</i> in the <b>User Data</b> window.   |
| <b>Resolution:</b> | Use the <b>User Data</b> window and assign a default printer to < <i>login ID</i> >. |

---

|                    |                                                                  |
|--------------------|------------------------------------------------------------------|
| <b>Message:</b>    | Initializing temporary database tables...                        |
| <b>Cause:</b>      | This is an informational Avaya CMS migration processing message. |
| <b>Resolution:</b> | No action required.                                              |

---

|                    |                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Insufficient number of free blocks ( <i>#-of-blocks</i> ) in <i>system name</i> for temporary database tables.                 |
| <b>Cause:</b>      | The file system does not contain enough free blocks for Avaya CMS R12 to create the temporary tables needed for the migration. |
| <b>Resolution:</b> | Call services to resolve this situation.                                                                                       |

---

|                    |                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | *** INTERNAL ERROR: contact services ( <i>error#</i> , <i>timestamp</i> ) ***                                                                               |
| <b>Cause:</b>      | An internal error occurred during processing of the table listed above this message.                                                                        |
| <b>Resolution:</b> | Contact services immediately. Do not remove the migration log file. Services needs the errornum and time stamp to find more information in their error log. |

---

|                    |                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Invalid user <i>logname</i> . Permissions not migrated.                                                                              |
| <b>Cause:</b>      | This is informational. The Avaya CMS R12 system found permission information for a deleted user, so did not migrate the permissions. |
| <b>Resolution:</b> | No action required.                                                                                                                  |

---

|                    |                                                                                        |
|--------------------|----------------------------------------------------------------------------------------|
| <b>Message:</b>    | metadb: <i>system: device</i> : has a metadevice database replica                      |
| <b>Cause:</b>      | There are already state database replicas existing on the indicated system and device. |
| <b>Resolution:</b> | No action required.                                                                    |

---

|                    |                                                                                                                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Multiple repeat statements on different rows in this report.<br>Can't swap.                                                                                                                                                  |
| <b>Cause:</b>      | Avaya CMS R12 does not allow a vertically-repeated field to appear above another repeated field.                                                                                                                             |
| <b>Resolution:</b> | Use the R12 Custom Reports: Screen Painter to redesign the report so that all vertically-repeated fields are on the same row. Or, create multiple reports, where each report has a single row of vertically-repeated fields. |

---

---

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | <i>calculation name</i> not found in the R3 database.                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Cause:</b>      | One of the following conditions may cause this message to occur: <ol style="list-style-type: none"><li>1. The formula for <i>calculation name</i> has items that cannot be found in the R12 Dictionary. Usually this occurs when a calculation contains a nested calculation, and the original calculation is migrated before the nested one.</li><li>2. The calculation or database item is misspelled, in which case the calculation fails.</li></ol> |
| <b>Resolution:</b> | Perform the following: <ol style="list-style-type: none"><li>1. Migrating an original calculation before the nested one is not a problem. No action needs to be taken. Verify that they are both in the dictionary.</li><li>2. If the calculation or database item is misspelled, use the R12 dictionary subsystem to correct the spelling. If you correct the spelling, the calculation or database item may work in R12.</li></ol>                    |

---

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | – Request failed. See /cms/install/logdir/backup.log for more information.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Cause:</b>      | The tape is improperly seated in the drive, or was removed from the drive during the backup, or is write protected, or the medium is corrupted.                                                                                                                                                                                                                                                                                                                                                    |
| <b>Resolution:</b> | Check the console terminal. If you see a message like WARNING: ST01: HA 0 TC 3 LU 0: Err 60503005 CMD 0000000A Sense Key 00000004 Ext Sense 00000000, the tape is corrupted. Discard it and replace it with a new tape. Otherwise, remove the tape from the drive and make sure it is not write protected (the black arrow in the upper left corner should be pointing away from “safe”). Finally, reinsert the tape into the drive, making certain it is properly seated, and restart the backup. |

---

|                    |                                                                                                                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Row Search <i>rownumber</i> : where clause contains too many characters, <i>length</i> , maximum is 468.                                                                                                                  |
| <b>Cause:</b>      | When the criteria for row search ID <i>rownumber</i> was migrated to R12, it was too long for the “select rows where” field.                                                                                              |
| <b>Resolution:</b> | Edit the row search ID. Remove any unnecessary information in the select rows where field, such as table name, or change the variable to allow a range and decrease the number of “and” clauses or “or” clauses, or both. |

---

---

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Terminated by user request?<br>User not administered on UNIX: user login                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Cause:</b>      | The login user login was migrated to Avaya CMS R12 but does not exist as a login on the UNIX system.                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Resolution:</b> | Users will be unable to log into Avaya CMS R12 until they are added to the UNIX system. To add the user login, access User Permissions: User Data window. Press <b>Ctrl+Z</b> simultaneously to clear all fields. Type user login in the first field, select <b>"Find one,"</b> and then select <b>"Add."</b> This procedure adds user login to the UNIX system and allows the user to log into Avaya CMS R12. Follow the same steps for every user login that was not administered on the UNIX system. |

---

|                    |                                                                                                                                                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Text truncated after column 132: row=row col=col                                                                                                                                                                               |
| <b>Cause:</b>      | A text field for a migrated real-time report either straddled or exceeded the allowable R12 line length of 132 columns. If the field exceeded 132 columns, it was not migrated. If it straddled 132 columns, it was truncated. |
| <b>Resolution:</b> | Use the editor to add or modify the report text field in R12.                                                                                                                                                                  |

---

|                    |                                                                                                                                                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | The expression <i>expression</i> could not be resolved in the dictionary. You must fix the expression <i>expression</i> for the report to work.                                                                                                                                                       |
| <b>Cause:</b>      | There is a calculation in the custom report that contains an invalid database item, and the calculation cannot be resolved in R12. The most likely causes for this message are that a referenced database item or another calculation cannot be found in the dictionary subsystem or did not migrate. |
| <b>Resolution:</b> | Review previous comments in the migration log for references to the same expression. If there are other comments, this will help you define exactly what the problem is.                                                                                                                              |

---

|                    |                                                                                        |
|--------------------|----------------------------------------------------------------------------------------|
| <b>Message:</b>    | This report goes beyond the maximum number of rows (25).                               |
| <b>Cause:</b>      | This is a quad report, which R12 does not allow. Only the first quadrant is migrated.  |
| <b>Resolution:</b> | To regain the other quadrants, you must create an R12 custom report for each quadrant. |

---

|                    |                                                                                                                                                                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>    | Too many date display fields, now adding: date prompt.                                                                                                                                                                                                                                                      |
| <b>Cause:</b>      | Migrated custom reports can have only one hard-coded date selection. For example, if the report is for yesterday's data, the R2 custom report should designate the date as "-1." This error indicates that the custom report referenced different days among its select statements. For example, -1 and -3. |
| <b>Resolution:</b> | Use the Screen Painter to edit the report and correct the date.                                                                                                                                                                                                                                             |

---

|                 |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| <b>Message:</b> | Unable to move scroll region to bottom of report. You must do this manually. |
|-----------------|------------------------------------------------------------------------------|

---

## Troubleshooting

**Cause:** Not enough rows were available to move the repeated portion of the R2 report to the bottom of the R12 report.

**Resolution:** Edit the custom report via the R12 Custom Reports: Screen Painter and move the repeated row to the bottom of the report.

---

**Message:** UNRECOVERABLE ERROR READING TAPE, errno= Failed to open tape: no entry in the device directory. Make sure the Maintenance: Backup/Restore Devices screen has the correct Path.

**Cause:** The migration program could not open the tape drive to read the Avaya CMS data.

**Resolution:** Check that the specified tape drive is set up with the correct path in the Maintenance: Backup/Restore Devices window. If you cannot resolve this problem, contact services for additional help. You may have a tape drive hardware problem or need a corrected tape device path.

---

**Message:** UNRECOVERABLE ERROR READING TAPE, errno= Tape drive not ready: there is no tape in the drive.

**Cause:** The migration program could not open the tape drive to read the Avaya CMS data.

**Resolution:** Verify that the tape is positioned in the drive correctly, and restart the migration. Contact services if problems persist.

---

**Message:** User *user name*: access permissions already existed for table name.

**Cause:** A specific Avaya CMS user login *user name* already had access permissions for a certain table name (splits/skills, VDNs, vectors, or trunk groups).

**Resolution:** Check that the access permissions for *user login* are correct. If not, manually change them using the R12 User Data windows.

---

**Message:** VDN Synonym *VDN synonym name*, *VDN number* already exists as *R3 synonym*.

**Cause:** A VDN synonym *VDN synonym name* already existed in the R12 Dictionary database when this migration was done.

**Resolution:** Modify the *R2* VDN synonym name, and manually add it to the R12 Dictionary subsystem if necessary.

---

**Message:** WARNING: custom report 'report name' (*username*) contains obsolete column 'column name'

**Cause:** One of the columns used directly in this custom report (owned by *username*) is no longer valid in R12.

**Resolution:** You must delete/change the obsolete column from the report in order to use it. Note that the only obsolete column likely to be used by the customer is I\_AUXTIME for 'agent' tables because it was one of the columns made available to the customer. Its R12 equivalent is TI\_AUXTIME.

**CAUTION:**

Migration program will not be able to detect the use of I\_AUXTIME indirectly through table-independent formulas because I\_AUXTIME is no longer valid with 'agent' tables but still valid with other historical tables.

---

**Message:** WARNING: Dictionary: calculation 'calculation name' contains obsolete column: COLUMN NAME

**Cause:** The COLUMN NAME is no longer valid with Avaya CMS R12.

**Resolution:** You need to modify the formula to use a different column or stop using the formula altogether. The following columns are no longer valid:

ABNRINGTIMEO\_ABNRINGCALLS  
 ADJROUTETIMEO\_ABNVECCALLS  
 BH\_OBUSYCALLSO\_BACKUPCALLS  
 BH\_ODISCCALLSO\_BUSYCALLS  
 HOLDABNTIMEO\_CONNECTCALLS  
 INTERFLOWTIMEO\_DISCCALLS  
 LOOKFLOWTIMEO\_TRANSFERRED  
 O\_ABNQUECALLS

---

**Message:** Warnings during this compile. Make sure the report works correctly. Warnings at bottom of file: *source file*

**Cause:** During compilation of the custom report, the compiler detected problems. The report was migrated, but may not run in R12.

**Resolution:** Before trying to run the custom report, review and edit it to ensure accuracy.

---

**Message:** You must be root in order to run this command

**Cause:** Superuser privileges are necessary to run this script because most of the commands are related to system administration.

**Resolution:** Log in as the root user and rerun the command.

---

---

## Avaya CMS disk partition values

The following partition information is provided for troubleshooting purposes. In most cases, the `disk_space` option will automatically partition the disks. See [Supported disk drives table](#) on page 35 for more information on currently supported disk drives. For the disk partition values of older CMS disks, see the appropriate hardware installation maintenance and troubleshooting guide.

This section includes the following topics:

- [Boot disk partition values](#) on page 334
- [Data disk partition values](#) on page 336
- [Soft partitions](#) on page 338

---

### Boot disk partition values

The following [Boot disk partition table](#) on page 335 is for Avaya CMS R12 systems only.

**Boot disk partition table**

| Disk slice                                                                   | 0                                                                              | 1                                                                                    | 2                        | 3                                               | 4                       | 5                       | 6                       | 7                         |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------|-------------------------|-------------------------|-------------------------|---------------------------|
| Slice name                                                                   | / <b>or</b><br>( <i>leave blank</i> )<br>if alternate boot on mirrored systems | swap<br><b>or</b><br>( <i>leave blank</i> )<br>if alternate boot on mirrored systems | overlap <sup>1</sup>     | /cms<br><br>if using format leave as unassigned | ( <i>Leave blank</i> )  | ( <i>Leave blank</i> )  | ( <i>Leave blank</i> )  | ( <i>Leave blank</i> )    |
| Flag                                                                         | wm                                                                             | wu                                                                                   | wm                       | wm                                              | wm                      | wm                      | wm                      | wm                        |
|                                                                              | <b>Partition size</b>                                                          |                                                                                      |                          |                                                 |                         |                         |                         |                           |
| 18-GB                                                                        | 4096 MB<br>or<br>4.0 GB                                                        | 1024 MB<br>or<br>1.0 GB                                                              | ( <i>Do not change</i> ) | 3072 MB<br>or<br>3.0 GB                         | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | (Remainder <sup>2</sup> ) |
| 18-GB FC-AL or SCSI starting cylinders                                       | 0                                                                              | 1781                                                                                 | ( <i>Do not change</i> ) | 2227                                            | 3563                    | 4454                    | 5345                    |                           |
| 20-GB                                                                        | 4096 MB<br>or<br>4.0 GB                                                        | 1024 MB<br>or<br>1.0 GB                                                              | ( <i>Do not change</i> ) | 3072 MB<br>or<br>3.0 GB                         | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | (Remainder)               |
| 20-GB EIDE starting cylinders<br>(Models ST320420A, ST320414A, or ST320011A) | 0                                                                              | 8323                                                                                 | ( <i>Do not change</i> ) | 10404                                           | 16646                   | 20808                   | 24970                   |                           |
| 36-GB                                                                        | 4096 MB<br>or<br>4.0 GB                                                        | 1024 MB<br>or<br>1.0 GB                                                              | ( <i>Do not change</i> ) | 3072 MB<br>or<br>3.0 GB                         | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | (Remainder)               |
| 36-GB FC-AL starting cylinders                                               | 0                                                                              | 2904                                                                                 | ( <i>Do not change</i> ) | 3630                                            | 5808                    | 7260                    | 8712                    |                           |

## Troubleshooting

| Disk slice                     | 0                                                              | 1                                                                 | 2                    | 3                                               | 4                       | 5                       | 6                       | 7             |
|--------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------|----------------------|-------------------------------------------------|-------------------------|-------------------------|-------------------------|---------------|
| Slice name                     | / or<br>(leave blank)<br>if alternate boot on mirrored systems | swap or<br>(leave blank)<br>if alternate boot on mirrored systems | overlap <sup>1</sup> | /cms<br><br>if using format leave as unassigned | (Leave blank)           | (Leave blank)           | (Leave blank)           | (Leave blank) |
| Flag                           | wm                                                             | wu                                                                | wm                   | wm                                              | wm                      | wm                      | wm                      | wm            |
|                                | Partition size                                                 |                                                                   |                      |                                                 |                         |                         |                         |               |
| 40-GB                          | 4096 MB<br>or<br>4.0 GB                                        | 1024 MB<br>or<br>1.0 GB                                           | (Do not change)      | 3072 MB<br>or<br>3.0 GB                         | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | (Remainder)   |
| 40-GB EIDE starting cylinders  | 0                                                              | 2057                                                              | (Do not change)      | 2572                                            | 4115                    | 5144                    | 6173                    |               |
| 73-GB                          | 4096 MB<br>or<br>4.0 GB                                        | 1024 MB<br>or<br>1.0 GB                                           | (Do not change)      | 3072 MB<br>or<br>3.0 GB                         | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | (Remainder)   |
| 73-GB FC-AL starting cylinders | 0                                                              | 825                                                               | (Do not change)      | 1032                                            | 1651                    | 2064                    | 2477                    |               |

1. Occasionally the system displays the name of the *overlap* partition as *backup*. Do not change the slice 2 partition size or slice name. If the disk drive you are partitioning does not match one of these values, you have a non-standard disk. Report the issue to technical support personnel.
2. To calculate the remaining cylinders, take the total number of cylinders on the disk and subtract the starting cylinders for the last partition. This last partition is usually automatically configured by Avaya CMS.

## Data disk partition values

The following [Data disk partition table](#) on page 337 is for Avaya CMS R12 systems only.

Data disk partition table

| Disk Slice                                                                   | 0                       | 1                       | 2                      | 3                       | 4                       | 5                       | 6                       | 7                              |
|------------------------------------------------------------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------------|
| Slice name                                                                   | <i>(Leave blank)</i>    | <i>(Leave blank)</i>    | overlap <sup>1</sup>   | <i>(Leave blank)</i>    | <i>(Leave blank)</i>    | <i>(Leave blank)</i>    | <i>(Leave blank)</i>    | <i>(Leave blank)</i>           |
| Flag                                                                         | wm                      | wm                      | wm                     | wm                      | wm                      | wm                      | wm                      | wm                             |
|                                                                              | Partition size          |                         |                        |                         |                         |                         |                         |                                |
| 18-GB                                                                        | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Do not change)</i> | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Remainder<sup>2</sup>)</i> |
| 18-GB FC-AL or SCSI starting cylinders                                       | 0                       | 891                     | <i>(Do not change)</i> | 1782                    | 2673                    | 3564                    | 4455                    |                                |
| 20-GB                                                                        | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Do not change)</i> | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Remainder)</i>             |
| 20-GB EIDE starting cylinders<br>(Models ST320420A, ST320414A, or ST320011A) | 0                       | 4162                    | <i>(Do not change)</i> | 8324                    | 12486                   | 16648                   | 20810                   |                                |
| 36-GB                                                                        | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Do not change)</i> | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Remainder)</i>             |
| 36-GB FC-AL starting cylinders                                               | 0                       | 1452                    | <i>(Do not change)</i> | 2904                    | 4356                    | 5808                    | 7260                    |                                |
| 36-GB                                                                        | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Do not change)</i> | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Remainder)</i>             |
| 36-GB SCSI starting cylinders                                                | 0                       | 1452                    | <i>(Do not change)</i> | 2904                    | 4356                    | 5808                    | 7260                    |                                |

## Troubleshooting

| Disk Slice                     | 0                     | 1                    | 2                      | 3                    | 4                    | 5                    | 6                    | 7                    |
|--------------------------------|-----------------------|----------------------|------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Slice name                     | <i>(Leave blank)</i>  | <i>(Leave blank)</i> | overlap <sup>1</sup>   | <i>(Leave blank)</i> | <i>(Leave blank)</i> | <i>(Leave blank)</i> | <i>(Leave blank)</i> | <i>(Leave blank)</i> |
| Flag                           | wm                    | wm                   | wm                     | wm                   | wm                   | wm                   | wm                   | wm                   |
|                                | <b>Partition size</b> |                      |                        |                      |                      |                      |                      |                      |
| 80-GB                          | 2048 MB               | 2048 MB              | <i>(Do not change)</i> | 2048 MB              | 2048 MB              | 2048 MB or 2.0 GB    | 2048 MB or 2.0 GB    | <i>(Remainder)</i>   |
| 80-GB EIDE starting cylinders  | or 2.0 GB             | or 2.0 GB            |                        | or 2.0 GB            | or 2.0 GB            |                      |                      |                      |
|                                | 0                     | 2057                 | <i>(Do not change)</i> | 2572                 | 4115                 | 5144                 | 6173                 |                      |
| 73-GB                          | 2048 MB               | 2048 MB              | <i>(Do not change)</i> | 2048 MB              | 2048 MB              | 2048 MB or 2.0 GB    | 2048 MB or 2.0 GB    | <i>(Remainder)</i>   |
| 73-GB FC-AL starting cylinders | or 2.0 GB             | or 2.0 GB            |                        | or 2.0 GB            | or 2.0 GB            |                      |                      |                      |
|                                | 0                     | 413                  | <i>(Do not change)</i> | 826                  | 1239                 | 1652                 | 2065                 |                      |

1. Occasionally the system displays the name of the overlap partition as backup. Do not change the slice 2 partition size or slice name. If the disk drive you are partitioning does not match one of these values, you have a non-standard disk. Report the issue to technical support personnel.
2. To calculate the remaining cylinders, take the total number of cylinders on the disk and subtract the starting cylinders for the last partition. This last partition is usually automatically configured by Avaya CMS.

## Soft partitions

Soft partitioning is managed through Solaris Volume Manager as metadevices on partition 7. The soft partitions are automatically created through the `disk_space` option in the CMSSVC menu. Disk sizes smaller than 12 GB do not require soft partitions so only 18 GB and larger disks will contain any soft partitions.

This section includes the following topics:

- [Numbering scheme for metadevices](#) on page 339
- [Soft partition setup](#) on page 340

## Numbering scheme for metadevices

The metadevice numbering scheme is represented as  $d m n k$ .

- Where  $d$  designates a meta device.
- Where  $m$  is the numeric designation for the meta device.
  - $m = 1, 2, 3, 4, 5, \text{ or } 6$ .
- Where  $n k$  is the number of the soft partition on the disk.
  - $n$  indicates the type of disk
    - On a primary disk  $n = 0, 1, 2, 3, \text{ or } 4$
    - On a mirror disk  $n = 5, 6, 7, 8, \text{ or } 9$
  - $k = 0, 1, 2, 3, 4, 5, 6, 7, 8, \text{ or } 9$ .

**Note:**

Disk sizes smaller than 18 GB do not require soft partitions.

Examples:

### Non-mirrored with 18-GB disks

| Disk          | Slices 0 - 6 do not contain soft partitions | Slice 7 meta devices |      |
|---------------|---------------------------------------------|----------------------|------|
| 1<br>(c0t0d0) |                                             | d100                 | d101 |
| 2<br>(c0t1d0) |                                             | d200                 | d201 |
| 3<br>(c0t2d0) |                                             | d300                 | d301 |

### Mirrored with 18-GB disks

| Disk                  | Slices 0 - 6 do not contain soft partitions | Slice 7 meta devices |      |
|-----------------------|---------------------------------------------|----------------------|------|
| Primary 1<br>(c0t0d0) |                                             | d100                 | d101 |
| Mirror 1<br>(c0t11d0) |                                             | d150                 | d151 |
| Primary 2<br>(c0t1d0) |                                             | d200                 | d201 |
| Mirror 2<br>(c0t12d0) |                                             | d250                 | d251 |
| Primary 3<br>(c0t2d0) |                                             | d300                 | d301 |
| Mirror 3<br>(c0t13d0) |                                             | d350                 | d351 |

## Soft partition setup

Soft partitions are placed only on slice 7, the following tables show how slice 7 is partitioned on a boot and data disk. The disk space on slice 7 is added in 2 GB soft

partitions. Any disk space that is less than 2.0 GB is added as 256 MB soft partitions. Any remaining space that is less than 256 MB is not added.

#### Examples of soft partitions on a boot disk

| Metadevice<br>( <i>dmnk</i> ) | <i>dmn0</i> | <i>dmn1</i> | <i>dmn2</i> | <i>dmn3</i> | <i>dmn4</i> |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|
| 18-GB                         | 2.0 GB      | 256 MB      | 256 MB      | 256 MB      |             |
| 20-GB                         | 2.0 GB      | 2.0 GB      | 256 MB      | 256 MB      | 256 MB      |

#### Examples of soft partitions on a data disk

| Meta device<br>( <i>dmnk</i> ) | <i>dmn0</i> | <i>dmn1</i> | <i>dmn2</i> | <i>dmn3</i> | <i>dmn4</i> | <i>dmn5</i> |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 18-GB                          | 2.0 GB      | 2.0 GB      | 256 MB      | 256 MB      | 256 MB      |             |
| 20-GB                          | 2.0 GB      | 2.0 GB      | 2.0 GB      | 256 MB      | 256 MB      | 256 MB      |

---

## Avaya CMS EEPROM settings

The following table contains the Avaya CMS EEPROM settings:

**Note:**

Not all options are displayed for all Avaya CMS systems. In addition, some options will show "data not available" messages. Ignore those options.

| Option name        | Required setting                                                 |
|--------------------|------------------------------------------------------------------|
| ansi-terminal?     | true                                                             |
| auto-boot?         | true                                                             |
| boot-command       | boot                                                             |
| boot-device        | disk<br><br>If the system is mirrored:<br><br>"disk bootdevice2" |
| diag-device        | disk<br><br>If the system is mirrored:<br><br>"disk bootdevice2" |
| diag-level         | min                                                              |
| diag-switch?       | false                                                            |
| input-device       | keyboard                                                         |
| local-mac-address? | true                                                             |
| output-device      | screen                                                           |
| scsi-initiator-id  | 7                                                                |
| ttya-ignore-cd     | false                                                            |
| ttya-rts-dtr-off   | true                                                             |
| ttyb-ignore-cd     | false                                                            |
| ttyb-rts-dtr-off   | true                                                             |
| watchdog-reboot?   | false                                                            |

---

# Troubleshooting soft partitioning

Use the procedures in *Troubleshooting soft partitioning* to help determine any problems during the creation of soft partitions.

**Note:**

The screens in this section are representative of the typical output you would see on your system. The screens will vary depending on the type of platform and system configuration.

1. Determine if any soft partitions were set up by entering:

```
cat /cms/install/disk_mgr/mirror/softpartition
```

The system displays one of the following messages:

- For a non-mirrored system:

```
d100 2097152
d101 2097152
d102 262144
d103 262144
d104 262144
d105 262144
d200 2097152
d201 2097152
d202 2097152
d203 262144
d204 262144
d205 262144
```

- For a mirrored system:

```
d100 d150 2097152
d101 d151 2097152
d102 d152 262144
d103 d153 262144
d104 d154 262144
d200 d250 2097152
d201 d251 2097152
d202 d252 262144
d203 d253 262144
d204 d254 262144
```

2. Verify that erroneous soft partitions were not created, and that all soft partitions on a mirrored system are correctly matched up.

Example of an erroneous file:

```
d100 d150 2097152
d101 d151 2097152
d102 d152 262144
d103 d153 262144
d104 d154 262144
d200 d250 2097152
d201 d251 2097152
d202 d252 262144
d203 d253 262144
d204 d254 262144
d205 2097152
d206 2097152
d207 2097152
d203 262144
d300 262144
d301 262144
```

If errors are found, check the appropriate platform file for any inconsistencies (for example, extra lines or characters). The platform files are found at **/cms/install/disk\_mgr/mirror/platform**

Where **platform** is the model of your Avaya CMS system.

3. Determine what metadevices exist by entering:

```
metastat -p
```

The system displays one of the following messages:

- For a non-mirrored system:

```
d2 -m d21 2
d21 1 1 c0t0d0s1
d100 -p c0t0d0s7 -o 1 -b 4194304
d101 -p c0t0d0s7 -o 4194306 -b 4194304
d102 -p c0t0d0s7 -o 8388611 -b 524288
d103 -p c0t0d0s7 -o 8912900 -b 524288
d104 -p c0t0d0s7 -o 9437189 -b 524288
d105 -p c0t0d0s7 -o 9961478 -b 524288
d200 -p c0t1d0s7 -o 1 -b 4194304
d201 -p c0t1d0s7 -o 4194306 -b 4194304
d202 -p c0t1d0s7 -o 8388611 -b 4194304
d203 -p c0t1d0s7 -o 12582916 -b 524288
d204 -p c0t1d0s7 -o 13107205 -b 524288
d205 -p c0t1d0s7 -o 13631494 -b 524288
```

- For a mirrored system:

```
d1 -m d11 d12 1
d11 1 1 c0t0d0s0
d12 1 1 c0t2d0s0
d2 -m d21 d22 2
d21 1 1 c0t0d0s1
d22 1 1 c0t2d0s1
d3 -m d31 d32 1
d31 1 1 c0t0d0s3
d32 1 1 c0t2d0s3
d100 -p c0t0d0s7 -o 1 -b 4194304
d101 -p c0t0d0s7 -o 4194306 -b 4194304
d102 -p c0t0d0s7 -o 8388611 -b 524288
d103 -p c0t0d0s7 -o 8912900 -b 524288
d104 -p c0t0d0s7 -o 9437189 -b 524288
d150 -p c0t2d0s7 -o 1 -b 4194304
d151 -p c0t2d0s7 -o 4194306 -b 4194304
d152 -p c0t2d0s7 -o 8388611 -b 524288
d153 -p c0t2d0s7 -o 8912900 -b 524288
d154 -p c0t2d0s7 -o 9437189 -b 524288
d200 -p c1t0d0s7 -o 1 -b 4194304
d201 -p c1t0d0s7 -o 4194306 -b 4194304
d202 -p c1t0d0s7 -o 8388611 -b 524288
d203 -p c1t0d0s7 -o 8912900 -b 524288
d204 -p c1t0d0s7 -o 9437189 -b 524288
d250 -p c1t2d0s7 -o 1 -b 4194304
d251 -p c1t2d0s7 -o 4194306 -b 4194304
d252 -p c1t2d0s7 -o 8388611 -b 524288
d253 -p c1t2d0s7 -o 8912900 -b 524288
d254 -p c1t2d0s7 -o 9437189 -b 524288
```

4. Verify that the system recognizes all the soft partitions as metadevices.
5. Determine what metadevices are in use by entering the following commands:

```
. /opt/informix/bin/setenv
onstat -d | egrep "MD" | more
```

The system displays one of the following messages:

**Note:**

The 2 GB partitions are configured as eight 256 MB chunks.

## Troubleshooting

- For a non-mirrored system:

|         |     |    |        |         |        |     |                    |
|---------|-----|----|--------|---------|--------|-----|--------------------|
| cc18a28 | 166 | 4  | 0      | 1000000 | 999997 | PO- | /dev/md/rdisk/d100 |
| cc18b98 | 167 | 7  | 128000 | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc18d08 | 168 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc18e78 | 169 | 33 | 256000 | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc19018 | 170 | 33 | 384000 | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc19188 | 171 | 7  | 512000 | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc192f8 | 172 | 7  | 640000 | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc19468 | 173 | 7  | 768000 | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc195d8 | 174 | 7  | 896000 | 128000  | 127997 | PO- | /dev/md/rdisk/d101 |
| cc19748 | 175 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d102 |
| cc198b8 | 176 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d103 |
| cc19a28 | 177 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d104 |
| cc19b98 | 178 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d105 |
| cc19d08 | 179 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc19e78 | 180 | 7  | 128000 | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1a018 | 181 | 7  | 256000 | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1a188 | 182 | 7  | 384000 | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1a2f8 | 183 | 7  | 512000 | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1a468 | 184 | 7  | 640000 | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1a5d8 | 185 | 7  | 768000 | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1a748 | 186 | 7  | 896000 | 128000  | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1a8b8 | 187 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1aa28 | 188 | 7  | 128000 | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1ab98 | 189 | 7  | 256000 | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1ad08 | 190 | 7  | 384000 | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1ae78 | 191 | 7  | 512000 | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1b018 | 192 | 7  | 640000 | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1b188 | 193 | 7  | 768000 | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1b2f8 | 194 | 7  | 896000 | 128000  | 127997 | PO- | /dev/md/rdisk/d201 |
| cc1b468 | 195 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1b5d8 | 196 | 7  | 128000 | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1b748 | 197 | 7  | 256000 | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1b8b8 | 198 | 7  | 384000 | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1ba28 | 199 | 7  | 512000 | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1bb98 | 200 | 7  | 640000 | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1bd08 | 201 | 7  | 768000 | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1be78 | 202 | 7  | 896000 | 128000  | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1f018 | 203 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d203 |
| cc1f188 | 204 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d204 |
| cc1f2f8 | 205 | 7  | 0      | 128000  | 127997 | PO- | /dev/md/rdisk/d205 |

- For a mirrored system:

|         |     |    |        |        |        |     |                    |
|---------|-----|----|--------|--------|--------|-----|--------------------|
| cc02a28 | 34  | 10 | 384000 | 128000 | 127997 | PO- | /dev/md/rdisk/d200 |
| cc142f8 | 34  | 10 | 384000 | 128000 | 0      | MO- | /dev/md/rdisk/d250 |
| cc02b98 | 35  | 10 | 256000 | 128000 | 127997 | PO- | /dev/md/rdisk/d201 |
| cc14468 | 35  | 10 | 256000 | 128000 | 0      | MO- | /dev/md/rdisk/d251 |
| cc02d08 | 36  | 10 | 512000 | 128000 | 127997 | PO- | /dev/md/rdisk/d201 |
| cc145d8 | 36  | 10 | 512000 | 128000 | 0      | MO- | /dev/md/rdisk/d251 |
| cc02e78 | 37  | 10 | 128000 | 128000 | 127997 | PO- | /dev/md/rdisk/d200 |
| cc14748 | 37  | 10 | 128000 | 128000 | 0      | MO- | /dev/md/rdisk/d250 |
| cc03018 | 38  | 10 | 768000 | 128000 | 127997 | PO- | /dev/md/rdisk/d200 |
| cc148b8 | 38  | 10 | 768000 | 128000 | 0      | MO- | /dev/md/rdisk/d250 |
| cc03188 | 39  | 10 | 512000 | 128000 | 127997 | PO- | /dev/md/rdisk/d200 |
| cc14a28 | 39  | 10 | 512000 | 128000 | 0      | MO- | /dev/md/rdisk/d250 |
| cc032f8 | 40  | 10 | 640000 | 128000 | 127997 | PO- | /dev/md/rdisk/d201 |
| cc14b98 | 40  | 10 | 640000 | 128000 | 0      | MO- | /dev/md/rdisk/d251 |
| cc03468 | 41  | 10 | 768000 | 128000 | 127997 | PO- | /dev/md/rdisk/d201 |
| cc14d08 | 41  | 10 | 768000 | 128000 | 0      | MO- | /dev/md/rdisk/d251 |
| .....   |     |    |        |        |        |     |                    |
| .....   |     |    |        |        |        |     |                    |
| .....   |     |    |        |        |        |     |                    |
| cc15e78 | 53  | 9  | 640000 | 128000 | 0      | MO- | /dev/md/rdisk/d151 |
| cc04748 | 54  | 8  | 0      | 128000 | 119977 | PO- | /dev/md/rdisk/d101 |
| cc16018 | 54  | 8  | 0      | 128000 | 0      | MO- | /dev/md/rdisk/d151 |
| cc048b8 | 55  | 8  | 512000 | 128000 | 127997 | PO- | /dev/md/rdisk/d101 |
| cc16188 | 55  | 8  | 512000 | 128000 | 0      | MO- | /dev/md/rdisk/d151 |
| cc04a28 | 56  | 9  | 768000 | 128000 | 127997 | PO- | /dev/md/rdisk/d101 |
| cc162f8 | 56  | 9  | 768000 | 128000 | 0      | MO- | /dev/md/rdisk/d151 |
| cc04b98 | 57  | 9  | 896000 | 128000 | 127997 | PO- | /dev/md/rdisk/d101 |
| cc16468 | 57  | 9  | 896000 | 128000 | 0      | MO- | /dev/md/rdisk/d151 |
| cc04d08 | 58  | 9  | 0      | 128000 | 127997 | PO- | /dev/md/rdisk/d102 |
| cc165d8 | 58  | 9  | 0      | 128000 | 0      | MO- | /dev/md/rdisk/d152 |
| cc04e78 | 59  | 8  | 128000 | 128000 | 127997 | PO- | /dev/md/rdisk/d101 |
| cc16748 | 59  | 8  | 128000 | 128000 | 0      | MO- | /dev/md/rdisk/d151 |
| cc05018 | 60  | 9  | 0      | 128000 | 127997 | PO- | /dev/md/rdisk/d104 |
| cc168b8 | 60  | 9  | 0      | 128000 | 0      | MO- | /dev/md/rdisk/d154 |
| cc05188 | 61  | 9  | 0      | 128000 | 127997 | PO- | /dev/md/rdisk/d103 |
| cc16a28 | 61  | 9  | 0      | 128000 | 0      | MO- | /dev/md/rdisk/d153 |
| cc05b98 | 68  | 10 | 0      | 128000 | 127997 | PO- | /dev/md/rdisk/d202 |
| cc1a468 | 68  | 10 | 0      | 128000 | 0      | MO- | /dev/md/rdisk/d252 |
| cc05d08 | 69  | 10 | 0      | 128000 | 127997 | PO- | /dev/md/rdisk/d203 |
| cc1a5d8 | 69  | 10 | 0      | 128000 | 0      | MO- | /dev/md/rdisk/d253 |
| cc0c8b8 | 110 | 10 | 0      | 128000 | 127997 | PO- | /dev/md/rdisk/d200 |
| cc1e188 | 110 | 10 | 0      | 128000 | 0      | MO- | /dev/md/rdisk/d250 |

**Note:**

On a non-mirrored system, d100 is assigned to dbtemp. On a mirrored system d100 and d150 are assigned to dbtemp.

6. Verify that IDS recognizes all the soft partitions.

## Troubleshooting

7. The `metastat` command will not always detect a problem with soft partition metadevices.

Enter:

```
dd if=/dev/md/dsk/dXXX of=/dev/null count=10
```

where `dXXX` is the soft partition metadevice name.

If there are problems with the soft partition, the system displays a message similar to the following:

```
dd: /dev/md/dsk/d204: open: I/O error
```

If there are no problems with the soft partition, the system displays a message similar to the following:

```
10+0 records in
10+0 records out
```

---

## About mirrored systems

The Avaya CMS system allows you to build a hard disk system containing two complete sets of data. Having such data redundancy greatly reduces the risk of data loss should a disk drive fail or your system crash.

While mirrors greatly reduce the risk of losing data, they are not meant to be a substitute for regular backups. Data can still become corrupt, and the corruption is then duplicated on the mirror. *Mirrored systems must be backed up just as often as unmirrored systems.*

*About mirrored systems* contains the following topics:

- [How Avaya CMS implements mirroring](#) on page 349
- [Mirroring through Informix](#) on page 349
- [Mirroring through Solaris Volume Manager](#) on page 350

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## How Avaya CMS implements mirroring

Avaya CMS disk mirroring is done by using a combination of the Solaris Volume Manager software and Informix software. The Solaris Volume Manager software is used to mirror the root, /cms, and swap partitions. The remaining data is mirrored through Informix.

---

## Mirroring through Informix

### Chunks

A chunk is a unit of physical disk space used to store database data that is managed by IDS.

### Dbspace

A dbspace is a logical unit that overlays the chunks. A dbspace can consist of one or more chunks.

An Avaya CMS system contains the following dbspaces:

- rootdbs
- physdbs
- logdbs
- dbtemp
- aasdb

- cmsdbs
- freedbs
- acd1 through acd26

### **Cooked disk space**

Cooked disk space contains regular operating system files. These files are organized and managed by the Solaris operating system. On an Avaya CMS system, the root, /cms, and swap partitions are cooked partitions. All other partitions are raw.

### **Raw disk space**

Raw disk space contains data that is organized and managed by Informix, not the Solaris operating system.

### **Mirroring**

When mirroring is initiated on an Avaya CMS system, Informix creates duplicate sets of data on the primary and mirror disks. All of the dbspaces and associated chunks are duplicated in their exact relative position on the mirror disk.

---

## **Mirroring through Solaris Volume Manager**

### **State databases**

The Solaris Volume Manager software tracks which disk partitions belong to which metadevices in a state database. A state database stores information on disk about the state of your Solaris Volume Manager configuration.

The state database consists of multiple copies of the basic database. The copies, referred to as state database replicas, ensure that the data in the database is always valid. Multiple copies of the state database will protect against data loss from single points-of-failure. The state database tracks the location and status of all state database replicas.

The Solaris Volume Manager software cannot operate until you have created the state database and its replicas. The software must have an operating state database.

### **Metadevices**

A metadevice is a logical device that consists of a set of physical disk partitions. A system controlled by the Solaris Volume Manager software can contain any number of metadevices. The state database contains a record of which disk partitions belong to which metadevices. Once a metadevice has been set up, the underlying slices can be accessed only through the metadevice.

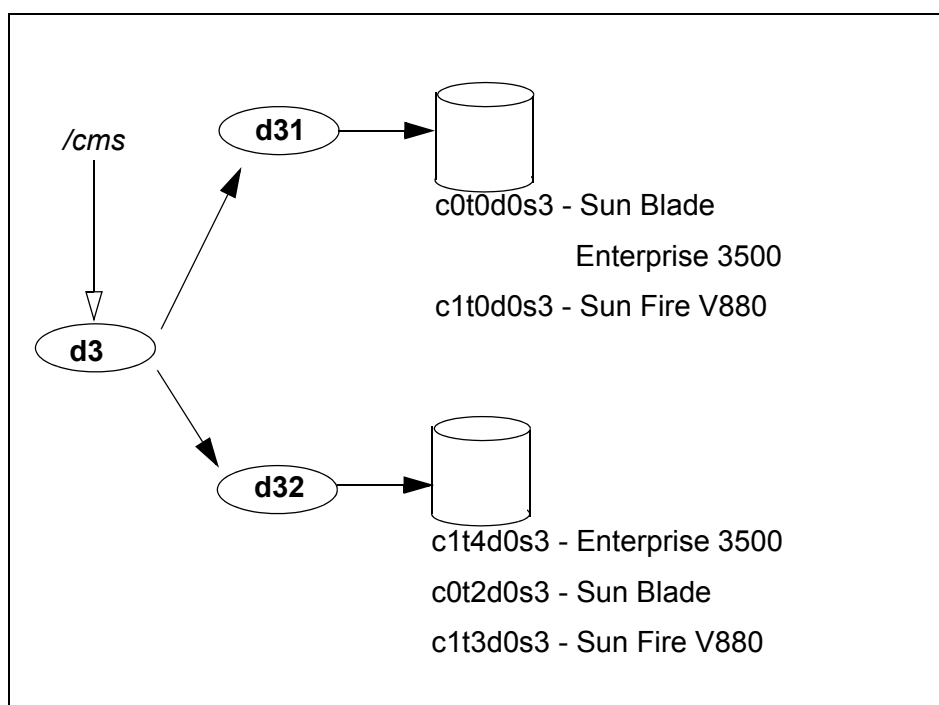
## Mirrors

A mirror is a metadvice that can copy data from one metadvice to another. The metadvice containing the data are called submirrors. The process of copying the data between submirrors is called mirroring.

## Slices

Solaris Volume Manager metadvice are built from slices (disk partitions). A system controlled by Solaris Volume Manager might contain any number of metadvice, each of which may comprise any combination of slices.

To implement disk mirroring, the system creates a metadvice d32 as a duplicate of d31. The system then configures the two metadvice as submirrors of d3, as shown in the following example:



In an Avaya CMS system with */cms* mirrored, *root* is also mirrored. The root mirror is d1; its submirrors are d11 and d12. If your Avaya CMS system is running Avaya CMS R12, your swap partition is also mirrored. The swap mirror is d2; its submirrors are d21 and d22.

Avaya CMS supports only two-way mirrors. Disk concatenation is not supported.

## Mirror layouts

Mirror layouts differ depending upon the hardware platform.

### Note:

A hard drive device name can be represented as cXtXdXsX.

## Troubleshooting

- Where cX is the device controller number
- Where tX is the device target number
- Where dX is the device disk list number
- Where sX is the device partition slice number for the hard drive

### Mirror layout on a Sun Fire V880

| mirror d1<br>(/ (root) filesystem) |                  | mirror d2<br>(swap partition) |                  | mirror d3<br>(/cms filesystem) |                  |
|------------------------------------|------------------|-------------------------------|------------------|--------------------------------|------------------|
| submirror<br>d11                   | submirror<br>d12 | submirror<br>d21              | submirror<br>d22 | submirror<br>d31               | submirror<br>d32 |
| c1t0d0s0                           | c1t3d0s0         | c1t0d0s1                      | c1t3d0s1         | c1t0d0s3                       | c1t3d0s3         |

### Mirror layout on a Sun Blade

| mirror d1<br>(/ (root) filesystem) |                  | mirror d2<br>(swap partition) |                  | mirror d3<br>(/cms filesystem) |                  |
|------------------------------------|------------------|-------------------------------|------------------|--------------------------------|------------------|
| submirror<br>d11                   | submirror<br>d12 | submirror<br>d21              | submirror<br>d22 | submirror<br>d31               | submirror<br>d32 |
| c0t0d0s0                           | c0t2d0s0         | c0t0d0s1                      | c0t2d0s1         | c0t0d0s3                       | c0t2d0s3         |

### Mirror layout on a Sun Enterprise 3500

| mirror d1<br>(/ (root) filesystem) |                  | mirror d2<br>swap partition |                  | mirror d3<br>/cms filesystem |                  |
|------------------------------------|------------------|-----------------------------|------------------|------------------------------|------------------|
| submirror<br>d11                   | submirror<br>d12 | submirror<br>d21            | submirror<br>d22 | submirror<br>d31             | submirror<br>d32 |
| c0t0d0s0                           | c1t4d0s0         | c0t0d0s1                    | c1t4d0s1         | c0t0d0s3                     | c1t4d0s3         |

---

# Troubleshooting problems with disk drives

Use the procedures and tips in this section to help you identify and resolve problems with:

- Physical disks
- Metadevices
- **/cms** file system

This section includes the following topics:

- [Excessively long resync](#) on page 353
- [Disk I/O problems](#) on page 353
- [Checking metadevices](#) on page 354
- [Checking the /cms file system](#) on page 355

---

## Excessively long resync

When using metadetach and metattach to detach and then reattach a submirror, it may take a long time—sometimes hours—for resync to complete. You cannot do any maintenance (adding or replacing disks and so on) while the resync is in progress. That behavior is normal. Try again later.

---

## Disk I/O problems

Check the system console and the **/var/adm/messages** log for messages that indicate problems with a specific hard disk.

If a disk is generating errors, it may need to be replaced. For procedures related to recovering from disk crashes and replacing hard disk drives, see the following documents:

- *Avaya CMS Sun Fire V880 Computer Hardware Installation, Maintenance, and Troubleshooting*, 585-215-116
- *Avaya CMS Sun Blade 100/150 Workstation Hardware Installation, Maintenance, and Troubleshooting*, 585-310-783
- *Avaya CMS Sun Enterprise 3500 Computer Hardware Installation, Maintenance and Troubleshooting*, 585-215-873

## Checking metadevices

To verify that a metadvice is set up properly, perform the following procedure:

1. Enter:

```
metastat
```

The system displays the following message:

```
d3: Concat/Stripe
 Size: 1819440 blocks
 Stripe 0:
 Device Start Block Dbase
 c0t3d0s3 0 No
```

2. Verify the metadvice setup by examining the response to the **metastat** command. You are looking for two things:

- *All your disk drives must be accounted for.* You can verify that by checking the *Size* figure (it should roughly equal the total capacity of all your disks). Counting the number of devices listed, there should be a *Stripe* section for every drive.

If some drives seem to be missing, check to make sure all the drives are plugged in and turned on, and that each external drive has a unique target number.

- *The device names must reflect the appropriate slice numbers.* The slice numbers are represented by the final two characters of the device name. A properly set-up */cms* file system uses slice 3 of the first internal disk, and slice 1 of all the remaining disk drives. Consequently, the device name of the first internal disk drive must end in s3; all other device names must end in s1.

3. The **metastat** command will not always detect a problem with soft partition metadevices.

Enter:

```
dd if=/dev/md/dsk/dXXX of=/dev/null count=10
```

where **dxxx** is the soft partition metadvice name.

If there are problems with the soft partition, the system displays a message similar to the following:

```
dd: /dev/md/dsk/d204: open: I/O error
```

If there are no problems with the soft partition, the system displays a message similar to the following:

```
10+0 records in
10+0 records out
```

## Checking the /cms file system

To check the **/cms** file system for errors:

1. Log in as **root**.
2. Enter the following:

```
vi /etc/vfstab
```

The system displays a message, that is similar to the following example:

| #device           | device              | mount      | FS   | fsck | mount   | mount   |
|-------------------|---------------------|------------|------|------|---------|---------|
| #to mount         | to fsck             | point      | type | pass | at boot | options |
| #                 |                     |            |      |      |         |         |
| #/dev/dsk/c1d0s2  | /dev/rdisk/c1d0s2   | /usr       | ufs  | 1    | yes     | -       |
| fd                | -                   | /dev/fd fd | -    | no   | -       | -       |
| /proc             | -                   | /proc proc | -    | no   | -       | -       |
| /dev/dsk/c0t3d0s4 | -                   | -          | swap | -    | no      | -       |
| /dev/dsk/c0t3d0s0 | /dev/rdisk/c0t3d0s0 | /          | ufs  | 1    | no      | -       |
| /dev/md/dsk/d3    | /dev/md/rdisk/d3    | /cms       | ufs  | 2    | yes     | -       |

3. Add a pound sign (#) at the beginning of the **/dev/md/dsk/d3** line. This “comments out” that line.

4. Press **Esc** and enter:

```
:wq!
```

5. Enter:

```
init 6
```

The system reboots.

6. When the system is back up, log in as **root**.

7. Check the **/cms** file system by entering:

```
fsck -y /dev/md/rdisk/d3
```

The system displays a message, that is similar to the following example:

```
** /dev/md/rdisk/d3
** Last Mounted on /cms
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
1952 files, 156146 used, 698956 free (516 frags, 87305 blocks,
0.0% fragmentation)
```

8. Enter:

```
vi /etc/vfstab
```

The system displays a message, that is similar to the following example:

| #device           | device              | mount      | FS   | fsck | mount   | mount   |
|-------------------|---------------------|------------|------|------|---------|---------|
| #to mount         | to fsck             | point      | type | pass | at boot | options |
| #                 |                     |            |      |      |         |         |
| #/dev/dsk/c1d0s2  | /dev/rdisk/c1d0s2   | /usr       | ufs  | 1    | yes     | -       |
| fd                | -                   | /dev/fd fd | -    | no   | -       | -       |
| /proc             | -                   | /proc proc | -    | no   | -       | -       |
| /dev/dsk/c0t3d0s4 | -                   | -          | swap | -    | no      | -       |
| /dev/dsk/c0t3d0s0 | /dev/rdisk/c0t3d0s0 | /          | ufs  | 1    | no      | -       |
| #/dev/md/dsk/d3   | /dev/md/rdisk/d3    | /cms       | ufs  | 2    | yes     | -       |

9. Delete the pound sign (#) at the beginning of the `/dev/md/dsk/d3` line. This “uncomments” that line.

10. Press **Esc**, and enter:

```
:wq!
```

11. Enter:

```
mount /cms
```

The system mounts the Avaya CMS file system.

12. If you have trouble mounting `/cms`:

a. Verify that the `/cms` directory exists by entering:

```
ls -ld /cms
```

b. If `/cms` does not exist, enter the following command to create it:

```
mkdir /cms
```

c. Use the `metastat` command to determine the metadvice being used. Then verify that the entry for `/cms` in the `/etc/vfstab` file is correct. If you find any errors, correct them.

## Cleaning up a replacement boot disk

If the failed disk is a boot disk, and there are any pre-installed files on the replacement disk that might interfere with the system booting, perform the following procedure to clean up the replacement disk:

### Important:

If the system is booting off of a functioning boot disk, skip this procedure.

1. Insert the Solaris disk 1 of 2 CD-ROM into the CD-ROM drive.
2. Enter the following command from the `ok` prompt:

```
boot cdrom -sw
```

3. Enable the Korn shell by entering:

```
stty erase Backspace
```

```
ksh -o vi
```

### Note:

The system will display **Backspace** as `^H`. On some systems **Backspace** will not work. If this is the case, substitute `^H` for **Backspace**.

4. Enter:

```
dd if=/dev/zero of=/dev/rdisk/cXtXd0s2 bs=128k
```

where `cX` is the device controller number, and

where `tX` is the device target number.

### Important:

It could take up to an hour for this command to complete. Do not continue with this procedure until the `dd` command completes.

5. Enter:

```
format
```

The system displays a list of disks.

6. Enter the option number for the appropriate disk.

The system prompts you to label the disk.

7. Enter: `y`

8. Enter:

```
partition
```

## Troubleshooting

9. Enter:

```
print
```

10. Verify that the disk is partitioned correctly. See [Avaya CMS disk partition values](#) on page 334 for more information.

11. Enter:

```
quit
```

12. Install a file system on the disk by entering:

```
newfs /dev/rdisk/cXtXd0s0
```

where **cX** is the device controller number, and

where **tX** is the device target number.

```
newfs: Construct a new file system /dev/rdisk/cXtXd0s0: (y/n)?
```

13. Enter: **y**

14. Verify that there are no problems with the replacement disk.

---

## Checking for disk recognition errors

Use these procedures to help you diagnose problems with unrecognized disk drives. This procedure differs for the different hardware platforms.

**CAUTION:**

Use this procedure only if the Solaris Volume Manager software indicates there is a disk recognition error.

This section includes the following topics:

- [Checking disk recognition errors on a Sun Blade](#) on page 359
- [Disk recognition errors on an Enterprise 3500](#) on page 361
- [Disk recognition errors on a Sun Fire V880](#) on page 362

---

## Checking disk recognition errors on a Sun Blade

To check for disk recognition errors:

1. Reboot the system with an `init 0` command.

The system reboots and displays the `ok` prompt.

2. Turn off the system.

3. Turn on the system.

When you power on the system unit, the system begins to boot.

4. Interrupt the boot by pressing **Stop + A**.

The system displays the `ok` prompt.

5. Enter:

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

This keeps the system from rebooting when you do a reset.

6. Enter:

```
reset-all
```

The system resets and responds with the `ok` prompt.

7. Verify that the system sees all IDE devices by entering:

```
probe-ide
```

The system displays a message that is similar to the following:

```
Device 0 (Primary Master)
 ATA Model: ST34342A

Device 1 (Primary Slave)
 Removeable ATAPI Model: CRD-8240B

Device 2 (Secondary Master)
 Not present

Device 3 (Secondary Slave)
 Not present
```

8. Verify that the system sees all SCSI devices by entering:

```
probe-scsi-all
```

The system displays a message that is similar to the following:

```
/pci@1f,0/pci@1/pci@5/scsi@2,1

/pci@1f,0/pci@1/pci@5/scsi@2,1
Target 0
 Unit 0 Disk QUANTUM VK4550J SUN18G8610
Target 4
 Unit 0 Removeable Tape HP C56P3A C005
```

9. Verify that all of the disk drives are recognized.

If the devices are still not recognized, see the appropriate hardware installation, maintenance and troubleshooting book for more information.

10. When you have verified that the system is recognizing all of its disk drives, enter:

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

### **CAUTION:**

If you fail to enter this command, future reboots will stop at the boot prompt instead of proceeding through the normal boot-up.

11. Enter:

```
boot -r
```

The system reboots.

12. Log in as **root**.

## Disk recognition errors on an Enterprise 3500

To check for disk recognition errors:

1. Enter:

```
init 0
```

The system reboots and displays the `ok` prompt.

2. Turn off the system.

3. Turn on the system.

The system begins to boot.

4. Interrupt the boot by pressing **Stop + A**.

The system responds with the `ok` prompt.

5. Enter:

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

This prevents the system from rebooting when you do a reset.

6. Enter:

```
reset-all
```

The system resets and responds with the `ok` prompt.

7. Enter:

```
probe-scsi-all
```

The system verifies all available SCSI devices, and displays a message, that is similar to the following example:

```
/sbus@3,0/SUNW,fas@3,8800000
Target 5
 Unit 0 Removeable Tape EXABYTE EXB-89008E030203V37f
 0060055614
Target 6
 Unit 0 Removeable Read Only device TOSHIBA
 XM6201TASUN32XCD110312/12/97
```

8. Verify that all of the SCSI devices are recognized.

If the devices are still not recognized, see the appropriate hardware installation, maintenance and troubleshooting book for more information.

9. Enter:

```
probe-fcal-all
```

The system verifies all available fiber channel disk drives, and displays a message that is similar to the following example:

```
/sbus@2,0/SUNW,socal@d,10000/sf@1,0

/sbus@2,0/SUNW,socal@d,10000/sf@0,0

WWN 20050800209a80fe Loopid 1
WWN 21000020370e7255 Loopid ef
Disk SEAGATE ST19171FCSUN9.06117E9822U939
```

10. Verify that all of the fiber channel disk drives are recognized.

If the disk drives are still not recognized, see the appropriate computer hardware installation, maintenance and troubleshooting book for more information.

11. Enter:

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

### CAUTION:

If you fail to enter this command, future reboots will stop at the boot prompt instead of proceeding through the normal boot-up.

12. Enter:

```
boot -r
```

The system reboots.

13. Log in as **root**.

---

## Disk recognition errors on a Sun Fire V880

To check for disk recognition errors:

1. Enter:

```
init 0
```

The system reboots and displays the `ok` prompt.

2. Turn off the system.

3. Turn on the system.

The system begins to boot.

4. Interrupt the boot by pressing **Stop + A**.

The system responds with the `ok` prompt.

5. Enter:

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

This keeps the system from rebooting when you do a reset.

6. Enter:

```
reset-all
```

The system resets and responds with the `ok` prompt.

7. Verify that the system sees all SCSI devices by entering:

```
probe-scsi-all
```

The system verifies all available SCSI devices, and displays a message, that is similar to the following example:

```
/iommu@f,e0000000/sbus@f.e0001000/esp@3,200000
Target 1
 Unit 0 Disk SEAGATE ST14801 SUN04246266 Copyright (C) 1991
Target 3
 Unit 0 Disk SEAGATE ST14801 SUN04246266 Copyright (C) 1991
.
.
Target 6
 Unit 0 Disk Removable Read Only Device SONY CD-ROM CDU-8012
```

8. Verify that all of the disk drives are recognized.

If the devices are still not recognized, see the appropriate hardware installation, maintenance and troubleshooting book for more information.

9. When you have verified that the system recognizes all of its disk drives, enter:

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

### CAUTION:

If you fail to enter this command, future reboots will stop at the boot prompt instead of proceeding through the normal boot-up.

10. Enter:

```
boot -r
```

The system reboots.

11. Log in as **root**.

## Common error messages with mirrored systems

This section presents, in alphabetical order, the messages commonly associated with disk mirroring on an Avaya CMS system. Each message is accompanied by its probable cause and the likely solution.

|                     |                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | <code>/etc/system</code> has been updated since the last reboot. CMS cannot run without an up-to-date <code>/etc/system</code> file.                                            |
| <b>Explanation:</b> | <b>/etc/system</b> can change when a particular Solaris patch is applied to the system or when state database replicas are removed and re-added during a boot disk replacement. |
| <b>Response:</b>    | Reboot the system.                                                                                                                                                              |

|                     |                                                                                                              |
|---------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | <code>metadetach: systemname: d21: resync in progress</code>                                                 |
| <b>Explanation:</b> | You cannot detach a metadvice while a resync is in progress.                                                 |
| <b>Response:</b>    | Try again later. To find out how far along the resync has progressed, enter a <code>metastat</code> command. |

|                     |                                                                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | <code>filename restored from filebackup</code>                                                                                                                 |
| <b>Explanation:</b> | The action failed, and the <b>md.tab</b> file was restored from the previous version. Consequently, the configuration files reflect the previous system setup. |
| <b>Response:</b>    | Determine the cause of the problem and try again.                                                                                                              |

|                     |                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | <code>resync in progress</code>                                                                            |
| <b>Explanation:</b> | The command entered cannot be executed because the mirrors are currently being resynced.                   |
| <b>Response:</b>    | Try again later. You can tell whether a resync is in progress by entering a <code>metastat</code> command. |

|                 |                              |
|-----------------|------------------------------|
| <b>Message:</b> | <code>stale databases</code> |
|-----------------|------------------------------|

|                     |                                              |
|---------------------|----------------------------------------------|
| <b>Explanation:</b> | The state database contains old information. |
| <b>Response:</b>    | Recreate the database.                       |

|                     |                                                              |
|---------------------|--------------------------------------------------------------|
| <b>Message:</b>     | <code>syntax error</code>                                    |
| <b>Explanation:</b> | The syntax and usage of the command may be incorrect.        |
| <b>Response:</b>    | Reenter the command, correcting syntax errors you have made. |

|                     |                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | The file <i>filename</i> could not be restored.                                                                                                                                     |
| <b>Explanation:</b> | The previous action failed, and the <code>md.tab</code> or <code>vfstab</code> file could not be copied back. The existing files may not accurately reflect the system environment. |
| <b>Response:</b>    | Check the file and repair it if necessary.                                                                                                                                          |

|                     |                                                                   |
|---------------------|-------------------------------------------------------------------|
| <b>Message:</b>     | The <code>/cms</code> filesystem needs to be mounted              |
| <b>Explanation:</b> | <code>/cms</code> must be mounted for the command to work.        |
| <b>Response:</b>    | Mount <code>/cms</code> with the command: <code>mount /cms</code> |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>  | 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?                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Response:</b> | <p>Perform the following:</p> <ol style="list-style-type: none"> <li>1. Enter: <code>N</code> (to prevent the probe from continuing).</li> <li>2. Enter: <code>setenv auto-boot? false</code> (to keep the system from rebooting)</li> <li>3. Enter: <code>reset-all</code><br/>The reset may take a minute to complete. Once it does, you may do the <i>probe-scsi</i> or <i>probe-scsi-all</i> and perform any other boot prom level diagnostics.</li> <li>4. Before you reboot again, enter:<br/><code>setenv auto-boot? true</code><br/>Failure to do so will cause the reboot to stop at the boot prompt.</li> </ol> |

|                     |                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | touch: /cms/db/unix_start cannot create                                                                                                        |
| <b>Explanation:</b> | A CMSADM backup was done when Avaya CMS was still running. An attempt is made to restart Avaya CMS, but Avaya CMS files are not yet available. |
| <b>Response:</b>    | No response required. The message will disappear after you have restored and migrated Avaya CMS.                                               |

|                     |                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | Unbalanced configurations not supported.                                                                                                                  |
| <b>Explanation:</b> | You tried to set up a system with an odd number of disk drives, or you tried to add disks without having rebooted via a " <code>boot -r</code> " command. |
| <b>Response:</b>    | If necessary, add another disk drive to make the drive count even. Then reboot the system with " <code>boot -r</code> ".                                  |

|                     |                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | Warning: inode blocks/cyl group (230 >= data blocks (135) in lost cylinder group. This implies 2160 sector(s) cannot be allocated. |
| <b>Explanation:</b> | Some sectors will not be used by the filesystem. This is just a warning; the filesystem should be fine.                            |

|                     |                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------|
| <b>Message:</b>     | You must be root in order to run this command.                                              |
| <b>Explanation:</b> | You are not logged in as the <i>root</i> user, but you must be in order to run the command. |
| <b>Response:</b>    | Log in as <i>root</i> and retry the command.                                                |



# Glossary

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Access permissions</b>                 | Permissions assigned to a Call Management System (CMS) user so that the user can access different subsystems in CMS or administer specific elements (splits/skills, trunks, vectors, and so on) of Automatic Call Distribution (ACD). Access permissions are specified as read or write permission. Read permission allows the CMS user to access and view data (for example, run reports or view the Dictionary subsystem). Write permission allows the CMS user to add, modify, or delete data and execute processes. |
| <b>ACD</b>                                | See <a href="#">Automatic call distribution (ACD)</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Add package</b>                        | A Solaris operating system command ( <code>pkgadd</code> ) that allows you to add an additional software package.                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Agent</b>                              | A person who answers calls to an extension in an ACD split. This person is known to CMS by a login identification keyed into a voice terminal.                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Agent skill</b>                        | The different types of calls a particular agent can handle. An agent can be assigned up to four skills. These skills are assigned as either primary or secondary skills. For more information, see <a href="#">Primary skill</a> or <a href="#">Secondary skill</a> .                                                                                                                                                                                                                                                   |
| <b>Agent state</b>                        | A feature of agent call handling that allows agents to change their availability to the system (for example, ACW, AVAIL, ACD).                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Automatic call distribution (ACD)</b>  | <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 the agent either talking to the caller or the call waiting on hold).</p>                                                                                                                                                                                                                                        |
| <b>Avaya Call Management System (CMS)</b> | A software product used by business customers that have a Lucent Technologies telecommunications switch and receive a large volume of telephone calls that are processed through the ACD feature of the switch.                                                                                                                                                                                                                                                                                                         |
| <b>Boot</b>                               | To load the system software into memory and start it running.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## **Cables**

|                                   |                                                                                                                                                                                                                                                        |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cables</b>                     | Wires or bundles of wires configured with adapters or connectors at each end and used to connect two or more hardware devices.                                                                                                                         |
| <b>Call Vectoring</b>             | A highly flexible method for processing ACD calls using Vector Directory Numbers (VDNs) and vectors as processing points between trunk groups and splits or skills. Call vectoring permits treatment of calls that is independent of splits or skills. |
| <b>CMS</b>                        | Call Management System. See <a href="#">Avaya Call Management System (CMS)</a> on page 369.                                                                                                                                                            |
| <b>CMSADM menu</b>                | The Call Management System Administration (CMSADM) menu allows a user to administer features of CMS.                                                                                                                                                   |
| <b>CMSADM file system backup</b>  | A backup that saves all the file systems on the machine which includes the Solaris operating system and programs, CMS programs and data, and non-CMS data you place on the computer in addition to the CMS data.                                       |
| <b>CMSSVC menu</b>                | The Call Management System Services (CMSSVC) menu allows support personnel to manage CMS system services.                                                                                                                                              |
| <b>Command</b>                    | A command is an instruction used to tell the computer to perform a function or to carry out an activity.                                                                                                                                               |
| <b>Common Desktop Environment</b> | A desktop user interface for Solaris. This replaces OpenWindows.                                                                                                                                                                                       |
| <b>Configuration</b>              | Configuration is the way that the computer is set up to allow for particular uses or situations.                                                                                                                                                       |
| <b>Custom reports</b>             | Real-time or historical reports that have been customized from standard reports or created from original design.                                                                                                                                       |
| <b>Data collection off</b>        | CMS is not collecting ACD data. If you turn off data collection, CMS will not collect data on current call activity.                                                                                                                                   |
| <b>Data backup</b>                | The backup that uses ON-Bar to backup the CMS Informix data. This is used with the CMS LAN backup feature.                                                                                                                                             |
| <b>Database</b>                   | A group of files that store ACD data according to a specific time frame: current and previous intrahour real-time data and intrahour, daily, weekly, and monthly historical data.                                                                      |

|                                        |                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Database item</b>                   | A name for a specific type of data stored in one of the CMS databases. A database item may store ACD identifiers (split numbers or names, login IDs, VDNs, and so on) or statistical data on ACD performance (number of ACD calls, wait time for calls in queue, current states of individual agents, and so on). |
| <b>Database tables</b>                 | Tables that CMS uses to collect, store, and retrieve ACD data. Standard CMS items (database items) are names of columns in the CMS database tables.                                                                                                                                                               |
| <b>Device</b>                          | The term used to refer to the peripheral itself; for example, a hard disk or a tape drive. A peripheral is sometimes referred to as a subdevice or an Logical Unit (LU).                                                                                                                                          |
| <b>EAD</b>                             | See <a href="#">Expert Agent Distribution (EAD)</a> .                                                                                                                                                                                                                                                             |
| <b>EAS</b>                             | See <a href="#">Expert Agent Selection (EAS)</a> .                                                                                                                                                                                                                                                                |
| <b>Error message</b>                   | An error message is a response from a program indicating that a problem has arisen or something unexpected has happened, requiring your attention.                                                                                                                                                                |
| <b>Ethernet</b>                        | A type of network hardware that allows communication between systems connected directly together by transceiver taps, transceiver cables, and a coaxial cable. Also implemented using twisted-pair telecommunications wire and cable.                                                                             |
| <b>Ethernet address</b>                | A unique number assigned to each system when it is manufactured. The Ethernet address of your system is displayed on the banner screen that appears when you power on your system.                                                                                                                                |
| <b>Exception</b>                       | A type of activity on the ACD which falls outside of the limits the customer has defined. An exceptional condition is defined in the CMS Exceptions subsystem, and usually indicates abnormal or unacceptable performance on the ACD (by agents, splits or skills, VDNs, vectors, trunks, or trunk groups).       |
| <b>Expert Agent Distribution (EAD)</b> | A call queued for a skill will go to the most idle agent (primary skill agent). Agents who are idle and have secondary agent skills will receive the call queued for a skill if there are no primary agents available.                                                                                            |
| <b>Expert Agent Selection (EAS)</b>    | An optional feature that bases call distribution on agent skill (such as language capability). EAS matches the skills required to handle a call to an agent who has at least one of the skills required.                                                                                                          |

## Forecast reports

|                                      |                                                                                                                                                                                                                                           |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Forecast reports</b>              | These reports display expected call traffic and agent or trunk group requirements for the customer's call center for a particular day or period in the future.                                                                            |
| <b>Gigabyte (GB)</b>                 | One gigabyte equals $2^{30}$ bytes (1073741824 bytes).                                                                                                                                                                                    |
| <b>Historical database</b>           | Contains intrahour records for up to 62 days in the past, daily records for up to 5 years in the past, and weekly or monthly records for up to 10 years for each CMS-measured agent, split or skill, trunk, trunk group, vector, and VDN. |
| <b>Historical reports</b>            | Reports that display past ACD data for various agent, split or skill, trunk, trunk group, vector, or VDN activities.                                                                                                                      |
| <b>Host computer</b>                 | A computer that is attached to a network and provides services other than simply acting as a store-and-forward processor or communication switch.                                                                                         |
| <b>Host name</b>                     | A name that you (or your system administrator) assign to your system unit to uniquely identify it to the <i>Solaris 9</i> operating system (and also to the network).                                                                     |
| <b>IDS</b>                           | See <a href="#">Informix Dynamic Server (IDS)</a> .                                                                                                                                                                                       |
| <b>Informix Dynamic Server (IDS)</b> | A relational database management system used to organize CMS data. An add-on software package needed by CMS.                                                                                                                              |
| <b>Interface</b>                     | A common boundary between two systems or pieces of equipment.                                                                                                                                                                             |
| <b>Link</b>                          | A transmitter-receiver channel or system that connects two locations.                                                                                                                                                                     |
| <b>Log in</b>                        | The process of gaining access to a system by entering a user name and, optionally, a password.                                                                                                                                            |
| <b>Log out</b>                       | The process of exiting from a system.                                                                                                                                                                                                     |
| <b>Logical unit</b>                  | The term used to refer to a peripheral device such as a disk drive.                                                                                                                                                                       |
| <b>Measured</b>                      | A term that means an ACD element (agent, split or skill, trunk, trunk group, vector, VDN) has been identified to CMS for collection of data.                                                                                              |
| <b>Megabyte (MB)</b>                 | One megabyte equals $2^{20}$ bytes (1048576 bytes).                                                                                                                                                                                       |
| <b>Multi-user mode</b>               | A mode of CMS in which any administered CMS user can log into CMS. Data continues to be collected if data collection is "on."                                                                                                             |

|                                                  |                                                                                                                                                                                                                                  |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Network address</b>                           | A unique number assigned to each system on a network, consisting of the network number and the system number. Also known as Internet Address or Internet Protocol (IP) address.                                                  |
| <b>Network hub</b>                               | Hardware that connects a computer to a Network terminal server (NTS).                                                                                                                                                            |
| <b>Network terminal server (NTS)</b>             | A hardware terminal that connects to the Network Hub via cabling. The NTS provides 50-pin switch champ connectors used to attach 64 serial devices using the patch panel cables and patch panels.                                |
| <b>Network terminal server patch panel</b>       | Hardware that has ports for connecting serial peripheral devices (for example, printers, terminals and modems). The NTS patch panel connects to the NTS via PBX-Champ cabling.                                                   |
| <b>Non-volatile random access memory (NVRAM)</b> | A random access memory (RAM) system that holds its contents when external power is lost.                                                                                                                                         |
| <b>NTS</b>                                       | See <a href="#">Network terminal server (NTS)</a> .                                                                                                                                                                              |
| <b>NVRAM</b>                                     | See <a href="#">Non-volatile random access memory (NVRAM)</a> .                                                                                                                                                                  |
| <b>Operating system (OS)</b>                     | The software that controls and allocates the resources, such as memory, disk storage, and the screen display for the computer.                                                                                                   |
| <b>Partitions</b>                                | Sections of the hard disk that are used to store an operating system and data files or programs. By dividing the disk into partitions, you can use the space allocated in a more efficient and organized manner.                 |
| <b>Password</b>                                  | A character string that is associated with a user name. Provides security for a user account. Desktop computers require you to type a password when you log into the system, so that no unauthorized person can use your system. |
| <b>Port (I/O port)</b>                           | A designation of the location of a circuit that provides an interface between the system and lines and/or trunks.                                                                                                                |
| <b>Primary skill</b>                             | An agent will handle calls to many skills before calls to secondary skills.                                                                                                                                                      |
| <b>RSC</b>                                       | See <a href="#">Sun Remote System Control (RSC)</a> .                                                                                                                                                                            |
| <b>Screen labeled key (SLK)</b>                  | The first eight function keys at the top of the keyboard that correspond to the screen labels at the bottom of the terminal screen. The screen labels indicate the function each key performs.                                   |

**SCSI**

**SCSI** See [Small computer system interface \(SCSI\)](#).

**Secondary skill** An agent will handle secondary skill calls after primary skill calls.

**Serial asynchronous interface/PCI** A card that provides access to eight serial ports by connecting to an eight-port patch panel.

**Single-user mode** A CMS mode in which only one person can log into CMS. Data collection continues if data collection is “on.” This mode is required to change some CMS administration.

**Skill** In relationship to the call center, think of skill as a specific customer need or requirement, or perhaps a business need of the call center.

**SQL** See [Structured Query Language \(SQL\)](#).

**Slot** An electronic connection designed to receive a module or a printed circuit board (such as a Single In-line Memory Module [SIMM] or a frame buffer board).

**Small computer system interface (SCSI)** A hardware interface that allows the connection of peripheral devices (such as hard disks, tape drives and CD-ROM drives) to a computer system.

**Soft partitions** Solaris Volume Manager metadevices on partition 7 that allow disk sizes larger than 14 GB to be fully utilized by CMS.

**Split** A group of extensions that receive special-purpose calls in an efficient, cost-effective manner. Normally, calls to a split arrive over one or a few trunk groups.

**Storage device** A hardware device that can receive data and retain it for subsequent retrieval. Such devices cover a wide range of capacities and speeds of access.

**Structured Query Language (SQL)** A language used to interrogate and process data in a relational database. SQL commands can be used to interactively work with a database or can be embedded within a programming language to interface to a database.

**Sun Remote System Control (RSC)** A server management tool that provides remote system administration.

**Super-user** A user with full access privileges on a system, unlike a regular user whose access to files and accounts is limited.

|                                                                 |                                                                                                                                                                                                 |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Switch</b>                                                   | A private switch system providing voice-only or voice and data communications services (including access to public and private networks) for a group of terminals within a customer's premises. |
| <b>Syntax</b>                                                   | The format of a command line.                                                                                                                                                                   |
| <b>System</b>                                                   | A general term for a computer and its software and data.                                                                                                                                        |
| <b>System backup</b>                                            | The backup that uses a storage manager to backup the UNIX files. This is used with the CMS LAN backup feature.                                                                                  |
| <b>Tape cartridge</b>                                           | A magnetic piece of hardware that is used as a storage unit for data.                                                                                                                           |
| <b>TCP/IP</b>                                                   | See <a href="#">Transmission control protocol/internet protocol (TCP/IP)</a> .                                                                                                                  |
| <b>Technical Service Center (TSC)</b>                           | The Avaya organization that provides technical support for Avaya products.                                                                                                                      |
| <b>TSC</b>                                                      | See <a href="#">Technical Service Center (TSC)</a> .                                                                                                                                            |
| <b>Transmission control protocol/internet protocol (TCP/IP)</b> | A communications protocol that provides interworking between dissimilar systems.                                                                                                                |
| <b>Trunk</b>                                                    | A telephone line that carries calls between two switches, between a Central Office (CO) and a switch, or between a CO and a phone.                                                              |
| <b>Trunk group</b>                                              | A group of trunks that are assigned the same dialing digits — either a phone number or a Direct Inward Dialing (DID) prefix.                                                                    |
| <b>UNIX system</b>                                              | The operating system on the computer on which CMS runs. Sun Microsystems uses Solaris as its UNIX operating system.                                                                             |
| <b>User ID</b>                                                  | The login ID for a CMS user.                                                                                                                                                                    |
| <b>User name</b>                                                | A combination of letters, and possibly numbers, that identifies a user to the system.                                                                                                           |

**VDN**

**VDN**

See [Vector directory number \(VDN\)](#) on page 376.

**Vector**

A list of steps that process calls in a user-defined manner. The steps in a vector can send calls to splits, play announcements and/or music, disconnect calls, give calls a busy signal, or route calls to other destinations. Calls enter vector processing by way of VDNs, which may have received calls from assigned trunk groups, from other vectors, or from extensions connected to the switch.

**Vector directory  
number (VDN)**

An extension number that is used in ACD software to permit calls to connect to a vector for processing. A VDN is not assigned an equipment location; it is assigned to a vector. A VDN can connect calls to a vector when the calls arrive over an assigned automatic-in trunk group or when calls arrive over a dial-repeating (DID) trunk group, and the final digits match the VDN. The VDN by itself may be dialed to access the vector from any extension connected to the switch.

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**W**

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