



Avaya™ CMS

R3V11

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, a person who is not a corporate employee, agent, subcontractor, or 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.

Avaya Fraud Intervention

If you *suspect that you are being victimized* by toll fraud and you need technical assistance or support, call Technical Service Center Toll Fraud Intervention Hotline at +1 800 643 2353 for the United States and Canada. For additional support telephone numbers, see the Avaya Web site:

<http://www.avaya.com>

Select **Support**, then select **Escalation Lists US and International**. 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/or 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 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:

- Utilization (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/data privacy, intellectual property, material assets, financial resources, labor costs, and/or 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
- any other equipment networked to your Avaya products.

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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 US and International**.

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

Acknowledgment

This document was written by the CRM Information Development group.

Avaya™ CMS R3V11

Software Installation, Maintenance, and Troubleshooting Guide

Contents

Preface

Organization	11
Reasons for re-issue	12
Conventions	13
Related documents	14
CMS software documents	14
Upgrade documents	14
Hardware documents	16
Switch documents	17
Administration documents	17
Other documents	17
Documentation Web sites	19

Introduction

Supported hardware platforms for Release 3 Version 11	21
Software shipped with CMS Release 3 Version 11	22
Intended audience	23
Avaya CMS helplines	24
Frequently asked questions (FAQs)	24
Customer support for the United States	24
Technician support for the United States	24
Customer and technician support outside the United States	24

Installing the Solaris operating system

Prerequisites	26
Booting from the Solaris software CD-ROM	27
Identifying the system	29
Setting the date and time	34
Selecting the Solaris system files	36
Partitioning the disk drives	40
Assigning a root password	49
Finalizing the Solaris installation	50
Opening a terminal window	51
Enabling the Korn shell	51
Configuring power management	52

Contents

Displaying and setting the EEPROM parameters	54
Required EEPROM parameter table	54
Creating an alternate boot device	56
Resetting a device alias	58
Turning on the system activity recorder	61
Turning off SNMP	63

Installing Avaya CMS and supporting software

Prerequisites	66
Remote terminal access tips	66
Installation rules	67
Installing the Sun Online Validation Test Suite	68
Setting up the RSC software	71
Installing the RSC software	71
Default setup of the RSC software	73
Installing the SunLink HSI/S software	77
Installing the HSI/P software	79
Installing the SAI/P adapter drivers	81
Setting up the Bay Networks Annex NTS	84
Installing the NTS drivers	84
Setting up the NTS start-up files	88
Installing the Solstice for Server Connect X.25 package	90
Prerequisites	90
Retrieving system information	90
Installing the Solstice for Server Connect X.25 drivers	91
Setting up the X.25 license	96
X.25 golden key license setup	97
X.25 manual license setup	97
Installing DiskSuite	103
Installing the Solaris patches	106
Installing the Informix software packages	109
Prerequisites	109
Setting up the Informix environment	109
Installing the Informix SQL 7.20 package	110
Installing the IDS 9.21 package	112
Installing the Informix ESQL 9.40 package	116
Installing Informix ILS	119
Initializing IDS	129
Installing the CMS packages	132
Prerequisites	132
Installing the CMS Supplemental Services software	132
Installing the CMS software	138
Setting up CMS authorizations	141
Installing the CMS patches	147
Configuring the IDS dbspaces	150

Installing the Open Database Connectivity server software	153
Prerequisites	153
Installing ODBC version 4.2	153
Installing ODBC version 3.2	157
Setting up CMS data storage parameters	161
Default CMS data storage parameters table	161
Setting up LAN connections.	164
Prerequisites	164
Editing the /etc/hosts file.	164
Setting up a second network interface	165
Editing the /etc/defaultrouter file	167
Setting up the CMS application	169
Prerequisites	169
Setup methods	169
Setting up CMS interactively from a terminal	170
Setting up CMS using a UNIX flat file.	181
Running setup with a flat file	186
Installing feature packages	189
Prerequisites	189
Installing the Forecasting package	189
Installing the External Call History package	191
Installing the Avaya Visual Vectors Server software	195
Activating chkDisks.	198
Setting up a mirrored system	199
Prerequisites	199
Required hardware	199
Enterprise 3500 rear view diagram	200
Enterprise 3000 disk configuration.	201
Enterprise 3500 disk configuration.	202
Sun Blade disk configuration	203
Sun Fire V880 disk configuration	204
Initiating mirroring.	205
Setting up the remote console	208
The remote console access port	208
Administering the remote console port	209
Using the remote console port	209
Setting up the Alarm Origination Manager	212
Prerequisites	212
Setting up the AOM config files	212
Creating an AOM test alarm	214
Starting the Avaya Visual Vectors Server software	215
Setting the Informix configuration parameters for CMS	216
Obtaining system information	217
Setting the physical log configuration parameters	217
Setting the system configuration parameters	218
Setting the shared memory parameters	219
Setting miscellaneous Informix parameters	221

Contents

NTS setup	222
Factory system backup	222
Turning the system over to the customer	
Prerequisites	224
Verifying the system date and time	224
Checking free space allocation	225
Testing the remote access port	226
Redirecting the console to the remote console	226
Redirecting the console back to the local console	228
Key position for Enterprise and Sun Fire systems	229
Testing the ACD link	230
Testing the alternate boot device	231
Assigning customer passwords	232
Customizing the Sun Remote System Control	233
Customizing the RSC server software	233
Setting up additional RSC logins	234
Testing the Sun Remote System Control card	236
Testing the CMS software	238
Finalizing the on-site installation	242
Customer system acceptance worksheet	243
Maintaining the Avaya CMS software	
Using the CMSADM menu	247
CMSADM menu functions	247
Accessing the CMSADM menu	248
Using acd_create	248
Using acd_remove	250
Using backup	251
Using pkg_install	252
Using pkg_remove	252
Using run_pkg	253
Using run_ids	253
Using run_cms	253
Using port_admin	254
Using passwd_age	254
Using the CMSSVC menu	257
CMSSVC menu functions	257
Accessing the CMSSVC menu	258
Using auth_display	259
Using auth_set	260
Using run_ids	260
Using run_cms	261
Using disk_space	261
Using setup	261
Using swinfo	262

Using swsetup	262
Using patch_inst	264
Using patch_rmv	265
Using load_all.	265
Using back_all	266
The CMS maintenance backup	267
The CMSADM backup	268
When to perform a CMSADM backup	268
Tape drives and cartridges.	269
Performing a CMSADM backup	269
Checking the contents of the CMSADM backup tape	272
Backing up and restoring the RSC card configuration.	274
Backing up the RSC card configuration.	274
Restoring the RSC card configuration	274
Performing a CMS maintenance restore	276
Data restore requirements	277
Restoring data from a full maintenance backup	277
Restoring data from a full and incremental maintenance backup	278
Verifying Free Space Allocation during a maintenance restore	281
Changing the system date and time	285
Checking the Solaris system date and time	285
Setting the system date and time	285
Setting the system country and time zones	286
Working with Solaris patches	287
Installing Solaris patches	287
Checking installed Solaris patches	290
Removing a Solaris patch	290
Working with CMS patches	292
CMS patch requirements	292
Loading patches after an upgrade	292
Loading patches as a bug fix	292
Listing installed CMS patches	293
Listing CMS patches on the CD-ROM	293
Installing CMS patches	293
Removing CMS patches	295
Adding the Informix SQL package after IDS and ILS have been installed	296
Enabling fail over of the alternate boot device	300
Maintaining the chkDisks crontab	301
Verifying chkDisks.	301
Changing the chkDisks run time	301
Canceling chkDisks	301
Identifying a faulty disk	302
Identifying down chunks	302
Identifying the disk from the /var/adm/messages file.	303
Identifying the submirrors	305
Recovering a non-mirrored system after data disk failure	306

Contents

Recovering a mirrored system after disk failure	314
Prerequisites	314
Mirrored system disk pairs	314
Verifying boot disk integrity	316
Installing a replacement disk on an Enterprise 3500 or Sun Fire V880	317
Installing a replacement disk on an Enterprise 3000 or Sun Blade system	317
Recovering a mirrored system after the primary boot disk fails	318
Recovering a mirrored system after the secondary boot disk fails	324
Recovering a mirrored system after a single data disk fails	329
Recovering a mirrored system after a mirrored pair of data disks fail	335
Using the luxadm command	346
Displaying disk WWN numbers on an Enterprise 3500	346
Displaying disk WWN numbers on a Sun Fire V880	347
Removing a disk with the luxadm command	349
Adding a disk with the luxadm command	351
Performing a CMSADM restore of a mirrored or non-mirrored system	352
Prerequisites	352
Mirrored system disk pairs	352
Choosing your CMSADM restore procedure	354
Restoring a system with a restore script	354
Restoring a system without a restore script	358
Restoring a system without a CMSADM or system backup	377
Restoring specific files from the CMSADM backup tape	378
Upgrading a non-mirrored system to a mirrored system	379

Troubleshooting

Determining your CMS version	382
Solving X.25 installation problems	383
Finding a misplaced X.25 password	383
Solutions for X.25 error messages	384
Recognizing new hardware devices	385
Adding and removing users from password aging	386
Determining if a password is aged	386
Excluding users from password aging	387
Removing users from the password aging exclude file	388
Aging specific passwords at different rates	388
Troubleshooting password aging	390
Tracking changes to password aging	390
Passwords of excluded users age	390
Turning on SNMP	391
CMS error logs	392
Checking installed software packages	393
Listing pkgchk errors	394
Troubleshooting a system that fails to auto-boot	395
Checking the boot environment variables	395
Changing the boot environment variables	395

Diagnosing a machine panic	396
Using the Sun Explorer tool	398
Using the remote console	399
Remote console ports	399
Redirecting the local console to the remote console	400
Redirecting the remote console back to the local console	401
Redirecting the console from OpenBoot mode	402
Redirecting the local console to the remote console	402
Redirecting the remote console back to the local console	404
Using Sun Remote System Control	406
Redirecting the local console to the RSC	406
Redirecting the RSC to the local console	407
Diagnosing dial-In access problems	408
No ringing and answered responses	408
Answered and connected responses do not display	408
Login prompt does not display	409
Login prompt is scrambled	411
Remote console port will not initialize	412
Booting Solaris into single-user mode	414
Common problems using the CD-ROM drive	415
CD-ROM drive fails to open	415
CD-ROM drive cannot be mounted	415
Removing CMS package fails	416
CMS installation fails	416
CMSADM backup problems	417
Disabling power management	418
Disabling power management from the desktop	418
Disabling power management from the command line	418
System messages	419
Common error messages	420
Error message table	420
CMS disk partition values	430
Boot disk partition values	430
Data disk partition values	432
Soft partitions	433
Numbering scheme for metadevices	434
Soft partition setup	435
Troubleshooting soft partitioning	437
About mirrored systems	443
How CMS implements mirroring	443
Mirroring through Informix	443
Chunks	443
Dbospace	443
Cooked disk space	444
Raw disk space	444
Mirroring	444

Contents

Mirroring through DiskSuite	444
State databases	444
Metadevices	444
Mirrors	445
Slices	445
Mirror layouts	446
Troubleshooting an installation of the DiskSuite software	448
Excessively long resync	448
Problems with CMS administration scripts	449
Disk I/O problems	449
Checking metadevices	450
Checking the /cms file system	451
Problems with disk administration	453
Cleaning up a replacement boot disk	454
Checking for disk recognition errors	456
Checking disk recognition errors on a Sun Blade or Ultra 5	456
Disk recognition errors on an Enterprise 3500	458
Disk recognition errors on an Enterprise 3000 or Sun Fire V880	459
Common error messages with mirrored systems	461
Glossary	465
Index	475

Preface

Avaya™ CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide is written for technicians and call center customers who install, provision, and maintain Release 3 Version 11 (R3V11) of the Avaya™ Call Management System (CMS) using the Solaris 8 operating system.

Organization

This document includes the following chapters:

- [Introduction](#)
Provides an overview of the supported CMS software, supported hardware platforms and required software.
- [Installing the Solaris operating system](#)
Outlines the Solaris operating system installation procedures. These procedures are used by technicians at customer sites and personnel at the factory.
- [Installing Avaya CMS and supporting software](#)
Outlines the 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](#)
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.
- [Maintaining the Avaya CMS software](#)
Discusses file system backups and other maintenance procedures.
- [Troubleshooting](#)
Discusses how to fix various software - related problems.

Reasons for re-issue

This book contains the following updates:

- Added information about the new Sun Blade™ 150 platform.
- Added the procedure [Default setup of the RSC software](#) on page 73 to the CMS installation procedures.
- Simplified the procedure, [Customizing the RSC server software](#) on page 233.
- Added additional steps for testing E-mail alerts to [Testing the Sun Remote System Control card](#) on page 236.
- Added the procedure, [Determining your CMS version](#) on page 382.
- Added additional information for troubleshooting the password aging feature. For more information, see [Troubleshooting password aging](#) on page 390.

Conventions

The following conventions are used in this document:

- Unless specified otherwise, all information and procedures in this document apply to the Sun[®] Ultra[™] 5 computer, Sun Enterprise[™] 3000 computer, Sun Blade[™] 100 computer, Sun Blade[™] 150 computer, Sun Fire[™] V880 computer, and the Sun Enterprise[™] 3500 computer.
- Commands you enter from the console are shown in **bold courier** font.
- Commands that require a line break are broken at a character space and indented on the next line.
- Keyboard commands are shown in **bold** text.
- Screens are shown to represent responses from the system. Because of display constraints in this document, some screen representations are not identical to the screens on your system.
- *Italic* text represents variable information.
- Automatic Call Distribution (ACD) is a feature of the Avaya switch. The ACD feature is used to route incoming calls to groups of agents. When this document refers to “connecting to an ACD,” it means connecting to a switch that has ACD capabilities.
- Unless specified otherwise, all information and procedures in this document that apply to the Sun Enterprise 3500 computer also apply to the Enterprise 3501 and Enterprise 3503 computers.
- Unless specified otherwise, all information and procedures in this document that apply to the Sun Blade 100 computer also apply to the Sun Blade 150 computer.
- Unless specified otherwise, Sun Blade refers to either the Sun Blade 100 computer or the Sun Blade 150 computer.
- Unless specified otherwise, CMS always implies Avaya Call Management System.

Related documents

Related documents lists sources for information related to contact center products and features. Not all documents are supported for all CMS releases or equipment.

To order Avaya documentation, call the Avaya Publications Center at 1-800-457-1235 (United States and Canada) or +1-410-568-3680 (outside the United States and Canada).

CMS software documents

Document title	Document number
Installing software on a CMS computer	
<i>Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide</i>	585-215-115
<i>CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting</i>	585-215-956
Setting up a disk-mirrored system	
<i>Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide</i>	585-215-115
<i>CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting</i>	585-215-956

Upgrade documents

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

- 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).

Document title
<i>Avaya CMS R3V11 Base Load Upgrades</i>
<i>CentreVu Call Management System Release 3 Version 9 Base Load Upgrade Procedures</i>

- Platform upgrades and data migration

Use a platform upgrade when upgrading to a new hardware platform (for example, upgrading from a SPARCserver 5 to an Enterprise 3500). 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 R3V11 or the latest load of the same CMS version). For R3V11, a specific set of instructions is written for the upgrade and is shipped to the customer site with the new hardware.

Document title
<i>Avaya Call Management System Release 3 Version 11 Platform Upgrade and Data Migration</i>
<i>CentreVu Call Management System Release 3 Version 9 Platform Upgrade and Data Migration Instructions</i>

- Avaya Call Management System Upgrade Express (CUE)

Use CUE in the following conditions:

- CMS is being upgraded from an earlier version (for example, R3V5u or R3V6) to the latest version (for example, R3V9 or R3V11).
- 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.

Document title
<i>Avaya Call Management System Release 3 Version 11 Sun Blade 100 Workstation CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Blade 100 Workstation Mirrored System CMS Upgrade Express</i>

Preface

Document title
<i>Avaya Call Management System Release 3 Version 11 Sun Ultra 5 Computer CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer Mirrored System CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer Mirrored System CMS Upgrade Express</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Ultra 5 Computer CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer Mirrored System CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer Mirrored System CVUE Instructions</i>

Hardware documents

Document title	Document number
<i>Avaya Call Management System Sun Fire V880 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-116
<i>Avaya Call Management System Sun Fire V880 Computer Connectivity Diagram</i>	585-215-612
<i>Avaya Call Management System Sun Blade 100/150 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-310-783
<i>Call Management System Sun Blade 100/150 Computer Connectivity Diagram</i>	585-310-782
<i>Avaya Call Management System Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-873

Document title	Document number
<i>Call Management System Sun Enterprise 3500 Computer Connectivity Diagram</i>	585-215-877
<i>Avaya Call Management System Sun Ultra 5 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-871
<i>Call Management System Sun Ultra 5 Computer Connectivity Diagram</i>	585-215-872
<i>Avaya Call Management System Sun Enterprise 3000 and SPARCserver Computers Hardware Maintenance and Troubleshooting</i>	585-214-016
<i>Avaya Call Management System Terminals, Printers, and Modems</i>	585-215-874

Switch documents

Document title	Document number
<i>Avaya Call Management System Switch Connections, Administration, and Troubleshooting</i>	585-215-876

Administration documents

Document title	Document number
<i>Avaya Call Management System Release 3 Version 11 Administration</i>	585-215-515
<i>CentreVu Call Management System Release 3 Version 9 Administration</i>	585-214-015

Other documents

Preface

Document title	Document number
<i>Avaya CMS Open Database Connectivity</i>	585-780-701
<i>Avaya CMS R3V11 LAN Backup User Guide</i>	585-215-715
<i>Avaya CMS R3V11 External Call History Interface</i>	585-780-700
<i>CentreVu CMS Release 3 Version 9 External Call History Interface</i>	585-215-952
<i>Avaya CMS Custom Reports</i>	585-215-822
<i>Avaya CMS Forecast</i>	585-215-825
<i>Avaya Visual Vectors Version 11 Installation and Getting Started</i>	585-210-706
<i>Avaya Visual Vectors Version 11 User Guide</i>	585-210-709
<i>Avaya Visual Vectors Version 9 Installation and Getting Started</i>	585-210-947
<i>Avaya Visual Vectors Version 9 User Guide</i>	585-210-944

Documentation Web sites

For product documentation for all Avaya products and related documentation, go to <http://www.avayadocs.com>.

 **Important:**

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://tivoli.com>



Introduction

Avaya Call Management System (CMS) is a software application that is offered in association with the Automatic Call Distribution (ACD) feature of Avaya MultiVantage™ switches. The CMS application 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.

Supported hardware platforms for Release 3 Version 11

CMS is supported on the following platforms:

- Sun Ultra™ 5 computer
- Sun Enterprise™ 3000 computer
- Sun Enterprise™ 3500 computer
- Sun Blade™ 100 computer
- Sun Blade™ 150 computer
- Sun Fire™ V880 computer

Software shipped with CMS Release 3 Version 11

CMS requires the following software packages (optional packages are noted):

- Solaris[®] 8 Software 2/02; CD-ROM disks 1 and 2
 - Also contains DiskSuite[™]
- Software Supplement for the Solaris 8 Operating Environment CD-ROM, contains:
 - Sun Online Validation Test Suite (VTS)
- CMS Hardware Drivers CD-ROM, contains:
 - High-Speed Serial Interface/Sbus (HSI/S) (required only for systems that have an HSI/S card)
 - High-Speed Serial Interface/PCI (HSI/P) (required only for systems that have an HSI/P card)
 - Serial Asynchronous Interface/PCI (SAI/P) drivers (required only for systems that have an SAI/P card)
- Annex Communication Server R10.0(B) Annex Host Tools CD-ROM (required only for systems using Network Terminal Server[™] [NTS])
- Solstice[™] for Server Connect CD-ROM (required only on systems using an X.25 link to a switch)
- Informix[®] SQL CD-ROM (optional)
- Informix IDS CD-ROM
- Informix ESQL SDK CD-ROM
- Informix ILS CD-ROM
- Call Management System Supplemental Services CD-ROM
- R3V11 Avaya Call Management System (CMS) CD-ROM, also contains:
 - Sun Solaris patches
 - CMS patches
- Avaya CMS OPENLINK Open Database Connectivity (ODBC) Driver CD-ROM (optional)
- Avaya Visual Vectors Server Software CD-ROM (optional)

Intended audience

This document is written for:

- On-site technicians
- Technical Service Center (TSC) personnel
- Factory personnel
- CMS customer administrators.

Avaya CMS helplines

If a problem arises that requires assistance, use the support information and help lines presented below.

Frequently asked questions (FAQs)

For solutions to common problems, CMS customers and Avaya technicians can access the CMS technical support FAQ at:

<http://www.avaya.com>

Select **Support**, then **Call Center/CRM**, then **Call Management System (CMS) (formerly CentreVu)**, then **General Info**, and then **FAQ**.

Please check this information before you call in a trouble ticket. It could save you time and money.

Customer support for the United States

Customers can report problems and generate trouble tickets by calling:

1-800-242-2121

The customer is prompted to identify the type of problem (that is, Automatic Call Distribution, hardware, or Avaya CMS) and is then connected to the appropriate service organization.

Technician support for the United States

Avaya technicians can receive help by calling:

1-800-248-1234

Customer and technician support outside the United States

For customer and technician support outside the United States, see the Avaya Web site:

<http://www.avaya.com>

Select **Support**, then **Escalation Lists US and International**. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Installing the Solaris operating system

The Solaris installation program is a menu-driven, interactive program that guides you step by step through installing the Solaris software. The installation program also has on line help to answer your questions.

 **Important:**

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

To bring the Avaya CMS computer up to factory standards after a system re-configuration or repair, use the procedures in *Installing the Solaris operating system* and *Installing Avaya CMS and supporting software*.

Installing the Solaris operating system includes the following topics:

- [Prerequisites](#) on page 26
- [Booting from the Solaris software CD-ROM](#) on page 27
- [Identifying the system](#) on page 29
- [Setting the date and time](#) on page 34
- [Selecting the Solaris system files](#) on page 36
- [Partitioning the disk drives](#) on page 40
- [Assigning a root password](#) on page 49
- [Finalizing the Solaris installation](#) on page 50
- [Opening a terminal window](#) on page 51
- [Enabling the Korn shell](#) on page 51
- [Configuring power management](#) on page 52
- [Displaying and setting the EEPROM parameters](#) on page 54
- [Creating an alternate boot device](#) on page 56
- [Resetting a device alias](#) on page 58
- [Turning on the system activity recorder](#) on page 61
- [Turning off SNMP](#) on page 63

Prerequisites

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

- Obtain the *Solaris 8 Software 2/02* disk 1 of 2 and disk 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 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 8 Software CD-ROM using the local console:

Note:

The screens in this section are representative of a typical installation. Not all screens will match your installation.

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 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 the following message:

```
ok
```

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 8 Software* disk 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.

```
0. English
1. French
2. German
3. Italian
4. Japanese
5. Korean
6. Simplified Chinese
7. Spanish
8. Swedish
9. Traditional Chinese
Please make a choice (0 - 9), or press h or ? for help:
```

Installing the Solaris operating system

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

The program displays a list of locales.

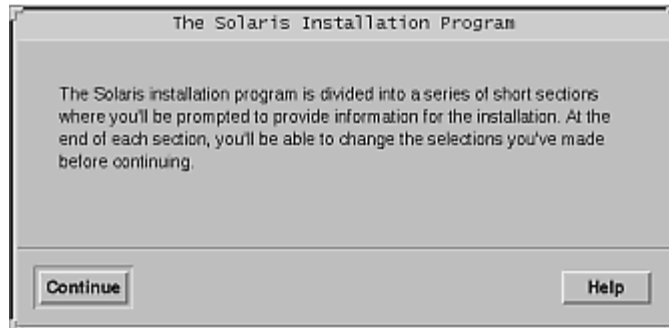
```
Select a Locale
.....
.....
.....
Press Return to show more choices.
Please make a choice (0 - 47), or press h or ? for help:
```

8. Select:

0. English (C- 7-bit ASCII)

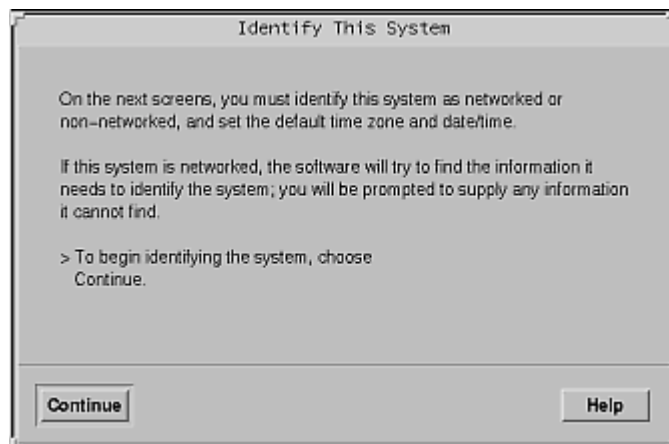
9. Press **Enter**.

The system displays the **Solaris Installation Program** window.



10. Select **Continue**.

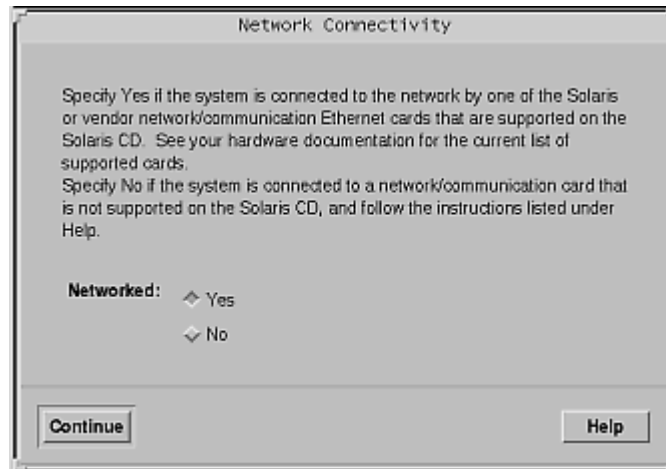
The system displays the **Identify This System** window.



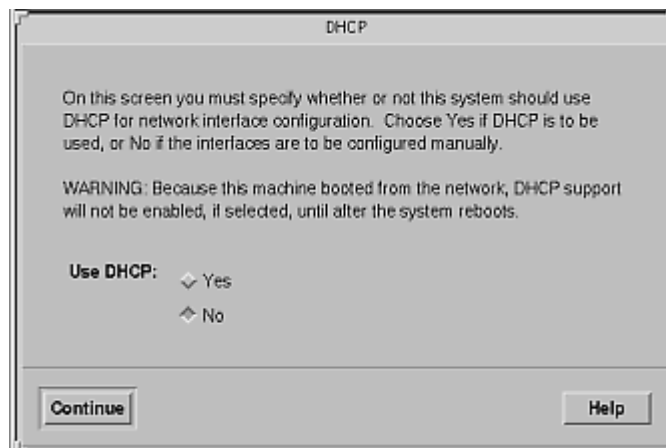
Identifying the system

To identify the system:

1. On the **Identify This System** window, select **Continue**.
The system displays the **Network Connectivity** window.



2. Select **Yes**. Then select **Continue**.
The system displays the **DHCP** window.



3. Select **No**. Then select **Continue**.

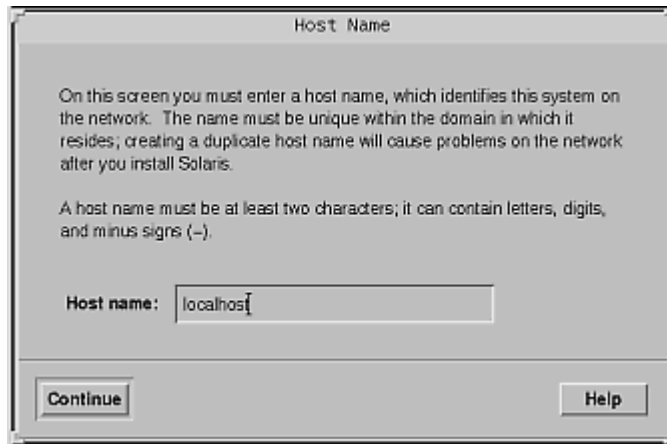
Note:

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

Installing the Solaris operating system

- If the system is an Ultra 5, Enterprise 3000, or Enterprise 3500, select **hme0**
- If the system is a Sun Blade or a Sun Fire V880, select **eri0**

The system displays the **Host Name** window.

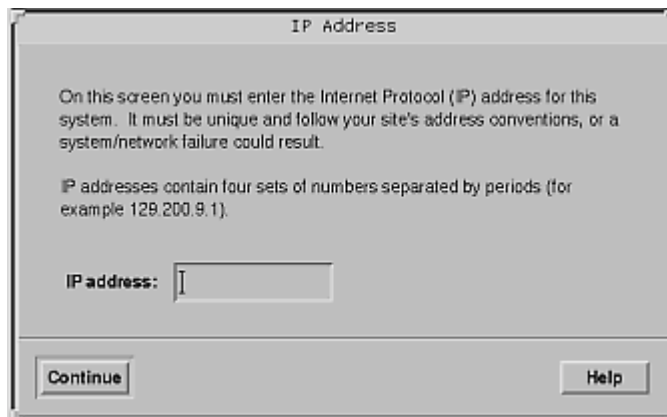


⚠ Important:

The host name for a specific system is designated by TSC provisioning personnel. Host names are case sensitive and cannot start with a number.

4. In the **Host name:** field, enter the host name for the system.
5. Select **Continue**.

The system displays the **IP Address** window.

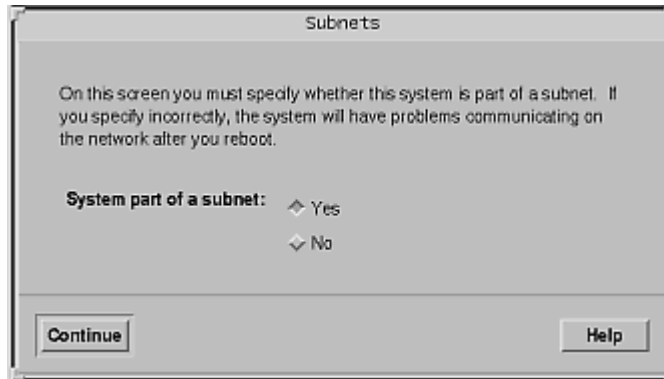


6. In the **IP address:** field, enter the IP address for the system.

The IP address 192.168.2.1 is the factory default. Enter the factory default address unless there is an actual network address for this site.

7. Select **Continue**.

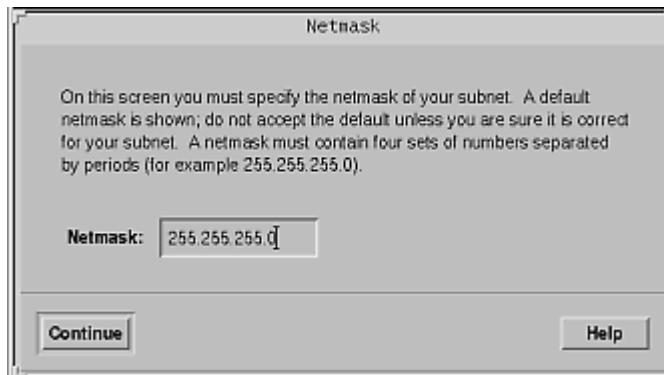
The system displays the **Subnets** window.



8. If the CMS computer is on a subnet, you will need to select Yes to administer a subnet mask.

- If you select **Yes**, continue with Step 9.
- If you select **No**, continue with Step 10.

If you select **Yes**, the system displays the **Netmask** window.

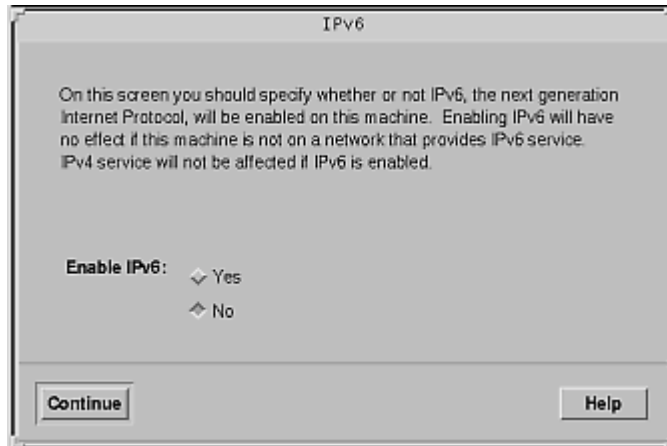


9. In the **Netmask:** field, enter the desired subnet mask. The default subnet mask is 255.255.255.0.

Installing the Solaris operating system

10. Select **Continue**.

The system displays the **IPv6** window.

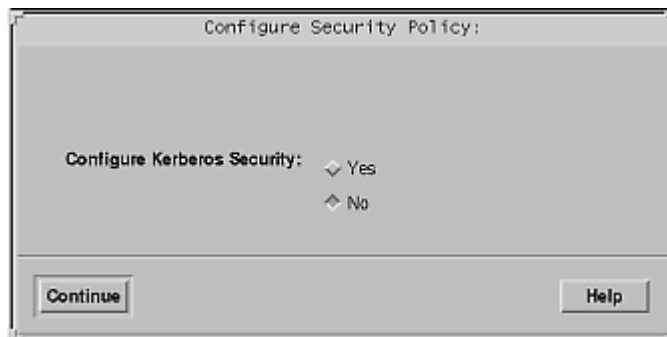


11. Select **No**. Then select **Continue**.

The **Confirm Information** window appears.

12. If the displayed information is correct, select **Continue**.

The system displays the **Configure Security Policy** window.

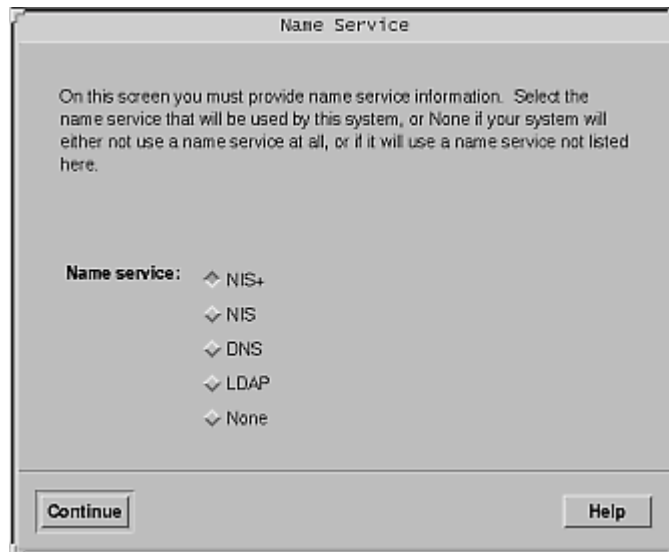


13. Select **No**. Then select **Continue**.

The system displays the **Confirm Information** window.

14. If the displayed information is correct, select **Continue**.

The system displays the **Name Service** window.



15. Select **None**. Then select **Continue**.

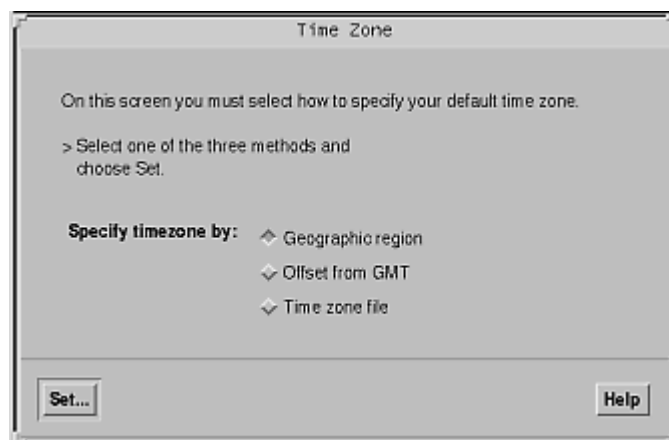
The system displays the **Confirm Information** window.

Note:

The system may redisplay the **Subnets** window if you selected **No** for Step 8. Verify that **No** is selected and press **Continue**.

16. If the displayed information is correct, select **Continue**.

The system displays the **Time Zone** window.



Setting the date and time

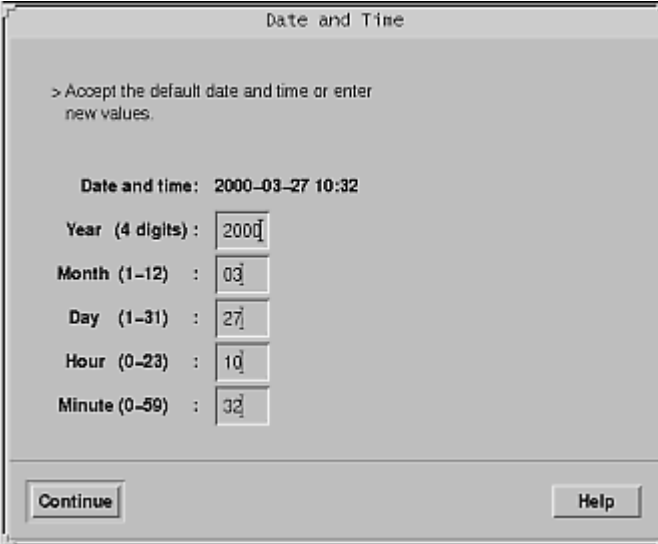
To set the Solaris date and time:

1. From the **Time Zone** window select **Geographic region**. Then select **Set**.

The system displays the **Geographic Region** window.



2. Select the region and time zone where this system is located. Then select **Continue**.
The system displays the **Date and Time** window.



The screenshot shows a window titled "Date and Time". Inside the window, there is a prompt: "> Accept the default date and time or enter new values." Below this, the current date and time are displayed as "Date and time: 2000-03-27 10:32". There are five input fields, each with a label and a value: "Year (4 digits) : 2000", "Month (1-12) : 03", "Day (1-31) : 27", "Hour (0-23) : 10", and "Minute (0-59) : 32". At the bottom of the window, there are two buttons: "Continue" on the left and "Help" on the right.

3. If necessary, enter the correct date and time. When all the information is correct, select **Continue**.
The system displays the **Confirm Information** window.
4. If the displayed information is correct, select **Continue**.
The system date and time are now set, and the system displays the **Solaris Interactive Installation** window.

Note:

The **Solaris Interactive Installation** window may not be displayed on some systems.

Selecting the Solaris system files

To select the Solaris system files:

Note:

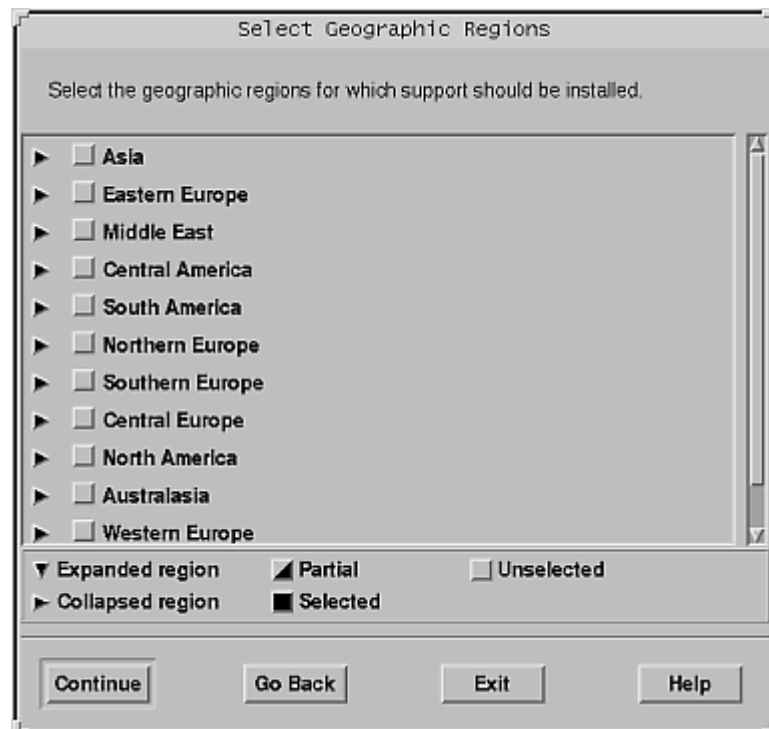
The **Solaris Interactive Installation** window may not be displayed on some systems. If the window is not displayed, continue with Step 3.

1. On the **Solaris Interactive Installation** window, select **Initial**.

The system displays the second **Solaris Interactive Installation** window.

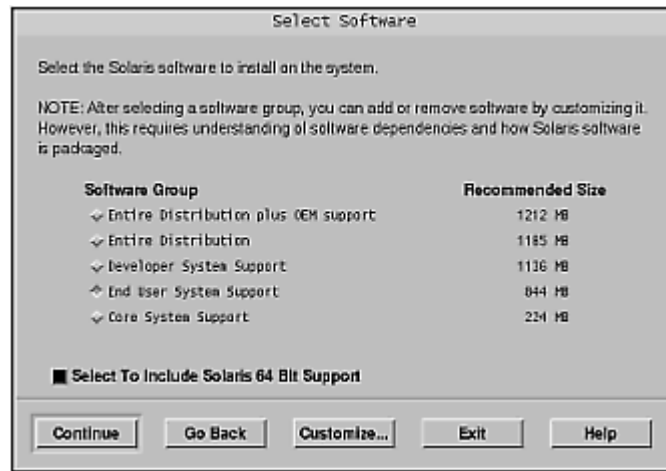
2. Select **Continue**.

The system displays the **Select Geographic Regions** window.



3. Select **North America**. Then select **Continue**.

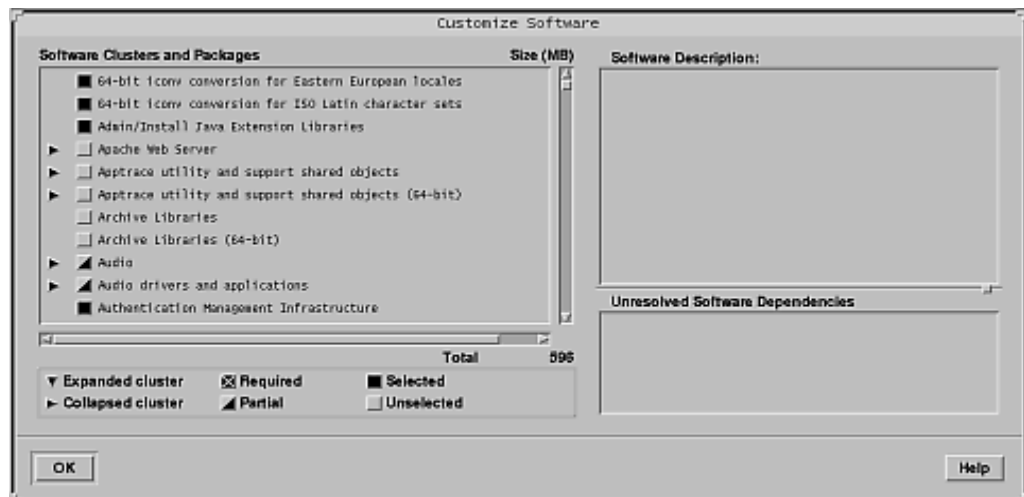
The system displays the **Select Software** window.



4. Verify that the Solaris 64 Bit Support box *is* selected. Some systems may not display the Solaris 64 Bit Support box. It is selected by default.

5. Select **End User System Support**. Then select **Customize**.

The system displays the **Customize Software** window.



Note:

If you select **Continue** instead of **Customize**, the system displays the Disks window (shown in [Partitioning the disk drives](#) on page 40), which is incorrect. If this happens, select **Go Back** from the Disks window.

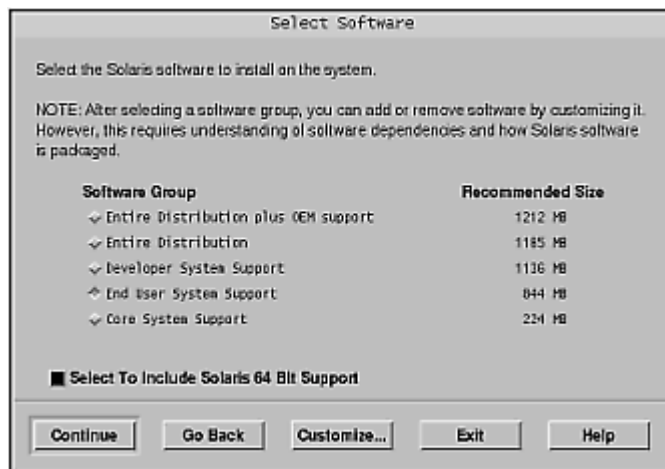
Installing the Solaris operating system

6. Additional software clusters and packages need to be added. Start at the top of the list in the **Customize Software** window and select the packages shown below. When necessary, select the triangular icons to expand and collapse package clusters. Do not exclude any packages that are already selected.

- Basic Networking
- On-Line Manual Pages
- open the cluster for Open Windows Version 3 (*not* Open Windows Version 3 64-bit) and select:
 - X Window system online user man pages
- Point-to-Point Protocol
- Point-to-Point Protocol (64-bit)
- open the cluster for Programming tools and libraries and select:
 - CCS tools bundled with SunOS
 - Solaris Bundled tools
- System Accounting
- Terminal Information

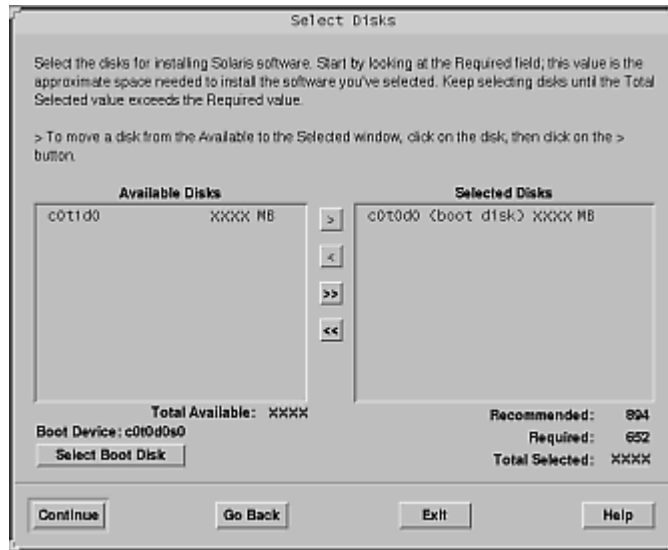
7. When you have finished making the package selections, select **OK**.

The system returns to the **Select Software** window.



8. Select **Continue**.

The Solaris 8 software packages are now selected and will be installed after the disks are partitioned. The system displays the **Select Disks** window.



Partitioning the disk drives

To partition the disk drives:

Note:

The windows shown in this section may differ from those displayed on your system because of the disk configuration of your system.

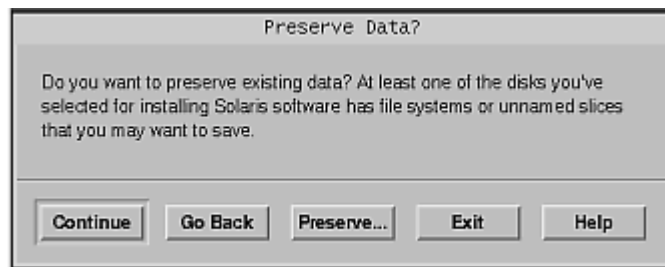
1. On the **Select Disks** window, move all of the available disks into the **Selected Disks** column.

Note:

In the **Select Disks** window, all the disks in the system should be listed as available. If they are not, you may have a connectivity or power problem. Check all cables and verify that the power is turned on for the disk drives.

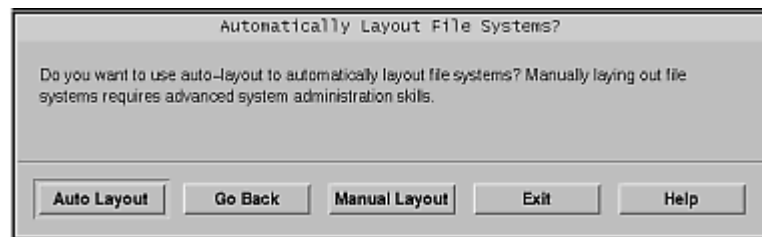
2. After all of the disks have been moved, select **Continue**.

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



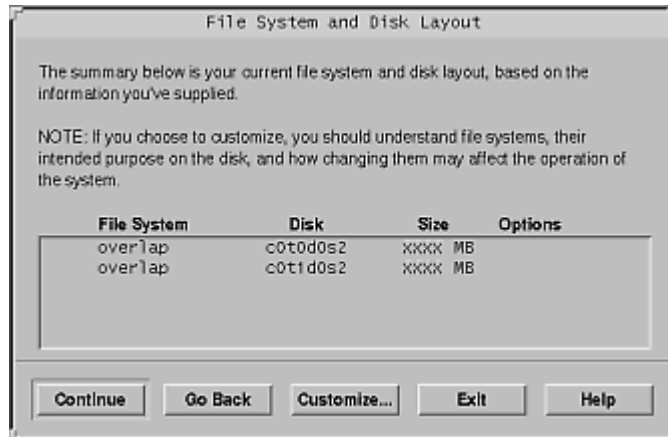
3. Select **Continue**.

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



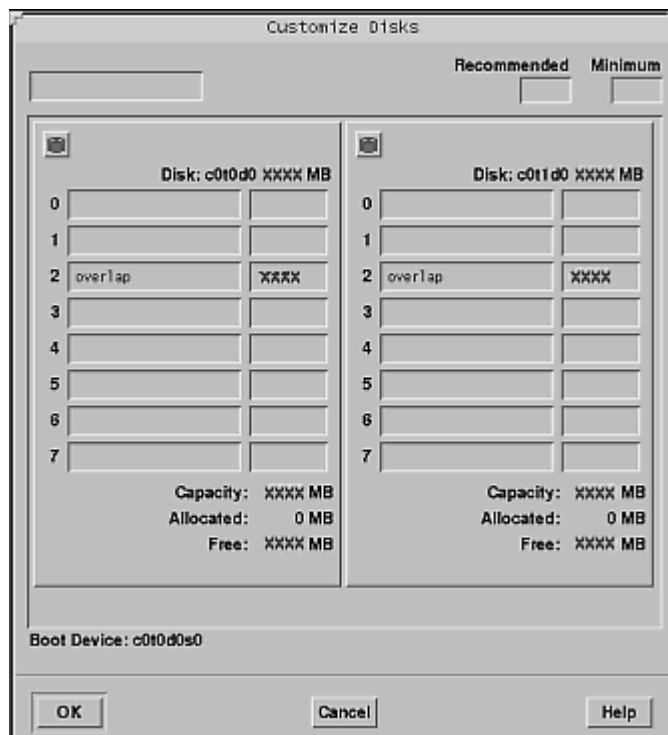
4. Select **Manual Layout**.

The system displays the **File System and Disk Layout** window.



5. Select **Customize**. Do **NOT** select Continue.

The system displays the **Customize Disks** window.



Installing the Solaris operating system

Note:

If all the disks on your system are not visible in the **Customize Disks** window, use the sidebar at the bottom of the window to bring the partition columns for other system disks into view.

Important:

Disks are formatted in *megabytes*. Do not select the cylinders icon.

6. Use the information in the [Boot disk partition table](#) on page 43 to partition the boot disk by entering the slice name, and size of each partition.

Note:

Ignore any rounding error messages.

Important:

No values are entered for the data disk partitions. If the disk was previously partitioned, you must unpartition that disk. The data disks and remaining space on the boot disks will be configured automatically during the CMS installation.

When setting up disk partitions for mirrored Sun Blade 100, Sun Blade 150, Sun Fire V880, Enterprise 3000, or Enterprise 3500, 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 3000:
 - Boot - c0t0d0
 - Mirrored boot - c0t11d0
- Enterprise 3500:
 - Boot - c0t0d0
 - Mirrored boot - c1t4d0

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

⚠ 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	<i>/</i> <i>or</i> (Leave blank if alternate boot on mirrored systems)	4096
1	swap <i>or</i> (Leave blank if alternate boot on mirrored systems)	1024
2	overlap ¹	(Do not change)
3	/cms <i>or</i> (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. 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.

Note:

See [Supported disk drives](#) on page 45 for more information on currently supported disk drives.

 **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.

Data disk partition table

Slice	Slice name	Partition size
0	(Leave blank)	(Leave blank)
1	(Leave blank)	(Leave blank)
2	<i>overlap</i> ¹	<i>(Do not change)</i>
3	(Leave blank)	(Leave blank)
4	(Leave blank)	(Leave blank)
5	(Leave blank)	(Leave blank)
6	(Leave blank)	(Leave blank)
7	(Leave blank)	(Leave blank)

1. 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

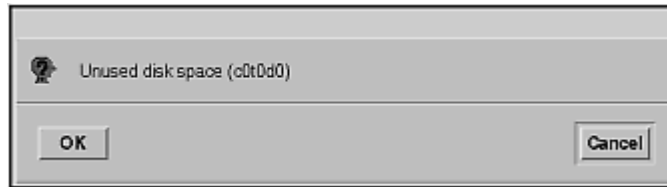
	Disk description	Platforms
Boot disks	18 GB SCSI	Enterprise 3000
	18 GB FCAL	Enterprise 3500
	20 GB EIDE	Ultra 5 Sun Blade 100
	36 GB FCAL	Enterprise 3500
	40 GB EIDE	Sun Blade 100 Sun Blade150
	73 GB FCAL	Sun Fire V880
Data disks	4.2 GB SCSI	Enterprise 3000
	8.4 GB EIDE	Ultra 5
	9.1 GB EIDE	Ultra 5
	9.1 GB SCSI	Ultra 5 Enterprise 3000
	9.1 GB FCAL	Enterprise 3500
	18 GB SCSI	Enterprise 3000 Sun Blade 100 Sun Blade 150
	18 GB FCAL	Enterprise 3500
	20 GB EIDE	Ultra 5
	36 GB FCAL	Enterprise 3500
	73 GB FCAL	Sun Fire V880

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

Installing the Solaris operating system

8. Select **OK** on the **Customize Disks** window.

The system displays the **Unused disk space** window.

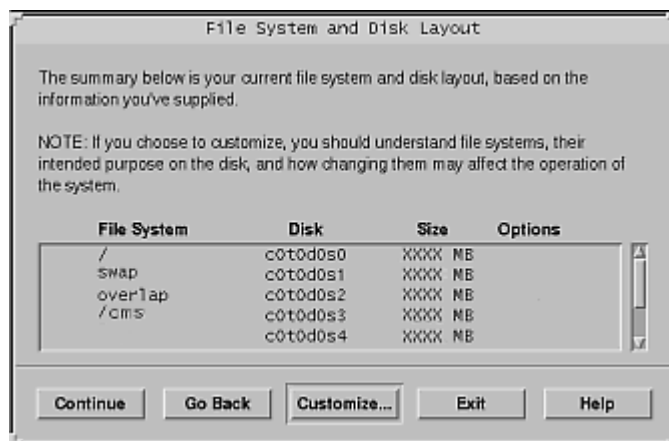


9. Select **OK**.

Note:

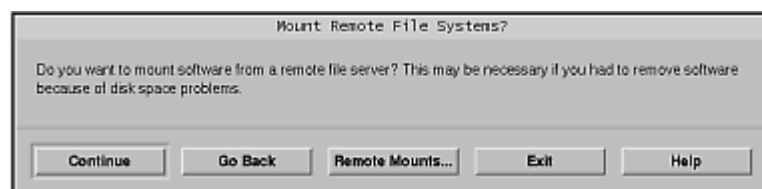
An Unused disk space window is displayed for every hard drive in the system. Depending on the number of hard drives installed, it may be necessary to repeat Step 9 several times.

The system displays the **File System and Disk Layout** window.



10. Select **Continue**.

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



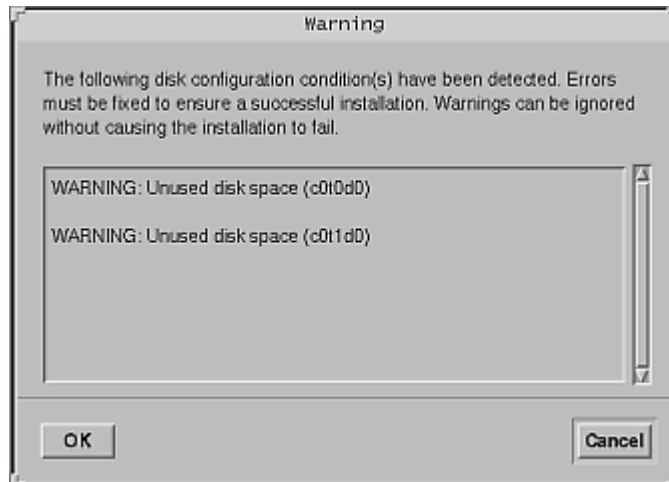
11. Select **Continue**.

The system displays the **Profile** window.



12. Select **Begin Installation**.

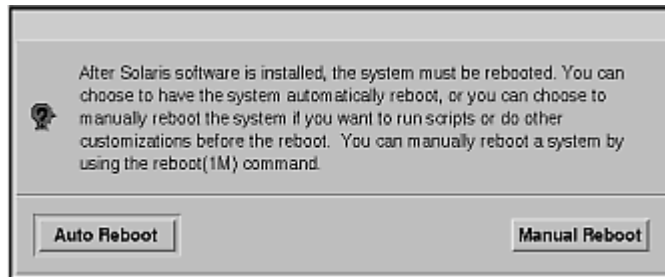
The system displays a warning about unused disk space.



Installing the Solaris operating system

13. Select **OK**.

The system displays the following window:



14. Select **Auto Reboot**.

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

This process may take approximately one hour, depending on the number of disks being partitioned, the hardware platform, and the speed of your CD-ROM drive.

The progress window may disappear during the process. However, the **Solaris Install Console** window should remain in the upper left corner of your monitor, keeping you posted on the progress of the installation.

When the installation is finished, the system reboots and displays the following message:

```
On this screen you can create a root password.

A root password can contain any number of characters, but only the
first eight characters in the password are significant. (For
example, if you create 'alb2c3d4e5f6' as your root password, you
can use 'alb2c3d4' to gain root access.)

You will be prompted to type the root password twice; for
security, the password will not be displayed on the screen as you
type it.

> If you do not want a root password, press RETURN twice.

Root password:

Press Return to continue.
```


Assigning a root password

To assign the root password:

1. Enter the root password. Until it is time to turn the system over to the customer, it is recommended that you press **Enter** to assign a blank password.

The program displays the following message:

```
> If you do not want a root password, press RETURN twice.
Re-enter your root password.

Press Return to continue.
```

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

The program displays a series of messages, which concern power-saving options.

 **Important:**

The power-saving options may not be displayed on some systems. If the options are not displayed, continue with [Finalizing the Solaris installation](#) on page 50.

```
System identification completed.
.....
.....
.....
After 30 minutes of idle time on the system, your system state
will automatically be saved to disk, and the system will power
off. Later, when you want to use the system again, and you turn the
power back on, your system will be restored to its previous state,
including all the programs you were running. Do you want this
automatic power-saving shutdown? (If this system is used as a
server, answer n) [y,n,?]
```

3. Enter: **n**

The program displays the following message:

```
Do you want the system to ask about this again, when you next
reboot? (This gives you the chance to try it before deciding
whether to keep it.) [y,n,?]
```

4. Enter: **n**

The system displays the **Specify Media** window for the installation of the Solaris 8 Software 2 of 2.

Finalizing the Solaris installation

To finalize the Solaris installation:

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

The system ejects the *Solaris 8 Software* disk 1 of 2 CD-ROM. The system then displays the **Insert Disc** window.

2. Load the *Solaris 8 Software* disk 2 of 2 into the CD-ROM drive, and select **OK**.

The system installs the software. The system then displays the **Installation Summary** window.

3. Select **Next >**.

The system then displays the **Specify Media** window for the installation of the Solaris 8 Languages.

4. Select **Skip**.

The system displays a prompt to verify that you want to skip installation of the Solaris 8 Languages.

5. Select **Skip installation**.

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

6. Select **Reboot Now**.

The system reboots, and the console login appears.

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

The system displays the **Solaris Welcome** window.

8. Select **Common Desktop Environment**. Then select **OK**.

The system displays the Common Desktop Environment (CDE).

Opening a terminal window

Opening a terminal window 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
```

Note:

If you log off and log back on to the system, the Korn shell will not work unless you re-enter the command. After you install the DiskSuite software and reboot the system, the Korn shell will work automatically every time you log in.

Configuring power management

Only root should alter power management settings. Power management can accidentally become enabled on a CMS system. This results in the CMS system turning off after a set amount of time has passed with no input from the mouse or keyboard.

To configure power management:

1. Enter:

```
cd /
```

2. Enter:

```
touch /noautoshtdown
```

3. Enter:

```
vi /etc/default/power
```

The system displays a message similar to the following:

```
# Copyright (c) 1999 by Sun Microsystems, Inc.
# All rights reserved.
#
.....
.....
.....
PMCHANGEPERM=console-owner
CPRCHANGEPERM=console-owner
```

4. Change the `PMCHANGEPERM=console-owner` setting to:

```
PMCHANGEPERM=-
```

5. Change the `CPRCHANGEPERM=console-owner` setting to:

```
CPRCHANGEPERM=-
```

Example:

```
# Copyright (c) 1999 by Sun Microsystems, Inc.
# All rights reserved.
#
.....
.....
.....
PMCHANGEPERM=-
CPRCHANGEPERM=-
```

6. Press **Esc**. Then enter:

```
:wq!
```

The system saves and closes the file.

7. Reboot the system by entering:

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

The system reboots and disables power management.

Note:

The `/noautosshutdown` file will be removed when the system reboots.

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

9. Re-enable the Korn shell. See [Enabling the Korn shell](#) on page 51.

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.

To set the firmware EEPROM values for a CMS computer:

1. Enter:

```
eeprom | sort | more
```

The system displays the current eeprom settings.

Note:

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

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

Required EEPROM parameter table

The following table contains only the required EEPROM settings.

Option name	Required setting
ansi-terminal?	true
auto-boot?	true
boot-command	boot
boot-device ¹	disk If the system is mirrored: "disk bootdevice2"

Option name	Required setting
diag-device	disk If the system is mirrored: "disk bootdevice2"
diag-level	min
diag-switch?	false
input-device	keyboard
local-mac-address?	true
output-device	screen
scsi-initiator-id	7
tpe-link-test?	true
ttya-ignore-cd	false
ttya-rts-dtr-off	true
ttyb-ignore-cd	false
ttyb-rts-dtr-off	true
watchdog-reboot?	false

1. If you have a Enterprise 3500 system, see [Resetting a device alias](#) on page 58.

3. If you must change the setting for an eeprom option, enter:

```
eeprom 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:

```
eeprom output-device=screen
```

Creating an alternate boot device

Creating an alternate boot device creates 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 3000	c0t11d0s0
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,qlc@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 CMS software.

Resetting a device alias

Resetting a device alias 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 3000	c0t11d0s0
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
```

Installing the Solaris operating system

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.

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
```

Installing the Solaris operating system

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
```

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.

Turning off SNMP

To turn off SNMP:

1. Enter:

```
cd /etc/rc3.d
```

2. Enter:

```
sh s76snmpdx stop
```

3. Enter:

```
mv s76snmpdx xS76snmpdx
```

Installing the Solaris operating system

Installing Avaya CMS and supporting software

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

Installing Avaya CMS and supporting software includes the following topics:

- [Prerequisites](#) on page 66
- [Installation rules](#) on page 67
- [Installing the Sun Online Validation Test Suite](#) on page 68
- [Setting up the RSC software](#) on page 71
- [Installing the SunLink HSI/S software](#) on page 77
- [Installing the HSI/P software](#) on page 79
- [Installing the SAI/P adapter drivers](#) on page 81
- [Setting up the Bay Networks Annex NTS](#) on page 84
- [Installing the Solstice for Server Connect X.25 package](#) on page 90
- [Installing DiskSuite](#) on page 103
- [Installing the Solaris patches](#) on page 106
- [Installing the Informix software packages](#) on page 109
- [Installing the CMS packages](#) on page 132
- [Configuring the IDS dbspaces](#) on page 150
- [Installing the Open Database Connectivity server software](#) on page 153
- [Setting up CMS data storage parameters](#) on page 161
- [Setting up LAN connections](#) on page 164
- [Setting up the CMS application](#) on page 169
- [Installing feature packages](#) on page 189
- [Installing the Avaya Visual Vectors Server software](#) on page 195
- [Activating chkDisks](#) on page 198
- [Setting up a mirrored system](#) on page 199
- [Setting up the remote console](#) on page 208

Installing Avaya CMS and supporting software

- [Setting up the Alarm Origination Manager](#) on page 212
- [Starting the Avaya Visual Vectors Server software](#) on page 215
- [Setting the Informix configuration parameters for CMS](#) on page 216
- [NTS setup](#) on page 222
- [Factory system backup](#) on page 222

Prerequisites

Before you begin any of the installation procedures:

- Verify that the Solaris 8 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 tips

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.

Installation rules

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

- [Setting up CMS authorizations](#) on page 141
- [Installing feature packages](#) on page 189
- [Factory system backup](#) on page 222

If the CMS software was not installed at the factory, use the procedures in [Installing the Solaris operating system](#) on page 25, and this chapter to bring the CMS computer up to factory standards after a system re-configuration or repair.

Installing the Sun Online Validation Test Suite

Installing the Sun Online Validation Test Suite 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:

Note:

The screens in this section are representative of a typical installation. Not all screens will match your installation.

1. Load the CD-ROM, *Software Supplement for the Solaris 8 Operating Environment* into the CD-ROM drive.
2. Log into the system as **root**.
3. Enter:

```
cd /
```

4. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/solaris8_202_suppcd on /vol/dev/dsk/c0t2d0/solaris8_202_suppcd read
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0001 on current date and
time
```

5. Enter:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0/SunVTS_4.6/Product
```

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

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

Example:

```
Enter: 1 2 3 4
```

The system displays the following message:

```
Processing package instance <SUNWvts> from
</cdrom/solaris8_202_suppcd/SunVTS_4.6/Product>
.....
.....
.....
Do you want to enable the Kerberos V5 based security?
```

7. Enter: **n**

The system displays a list of files that are already installed.

8. Press **Enter**.

Note:

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

The system displays the following message:

```

/opt/SUNWvts/lib/locale/C/LC_MESSAGES/vtstty.help
/opt/SUNWvts/lib/locale/C/LC_MESSAGES/vtstty.msg
/opt/SUNWvts/lib/locale/C/LC_MESSAGES/vtsui.msg

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

9. Enter: **y**

The system displays the following message:

```

## Checking for setuid/setgid programs.
.....
.....
.....
Do you want to continue with the installation of <SUNWvts> [y,n,?]
```

10. Enter: **y**

The system displays the following message:

```

Installing SunVTS as <SUNWvts>

## Installing part 1 of 1.
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

11. Enter: **y**

```

## Checking for setuid/setgid programs.
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

Installing Avaya CMS and supporting software

12. Enter: **y**

```
## Checking for setuid/setgid programs.  
.....  
.....  
.....  
Do you want to install these conflicting files [y,n,?,q]
```

13. Enter: **y**

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

14. Enter: **q**

Setting up the RSC software

Setting up the RSC software 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.

Setting up the RSC software contains the following procedures:

- [Installing the RSC software](#) on page 71
- [Default setup of the RSC software](#) on page 73

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 8 Operating Environment* is in the CD-ROM drive.
2. Log into the system as **root**.
3. Enter:

```
cd /
```

4. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/solaris8_202_suppcd on /vol/dev/dsk/c0t2d0/solaris8_202_suppcd read  
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0001 on current date and  
time
```

5. Enter:

```
cd /cdrom/solaris8_202_suppcd/RSC_2.2/Product
```

Note:

If the CD-ROM, *Software Supplement for the Solaris 8 Operating Environment* is the *multilingual* version, you will need to enter the following command:

```
cd /cdrom/multi_solaris8_202_suppcd/RSC_2.2/Product
```

6. Enter:

```
ls
```

The system displays a list of the RSC packages.

Installing Avaya CMS and supporting software

7. Enter:

```
pkgadd -d .
```

The system displays a list of the RSC packages.

8. 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]
```

9. 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]:
```

10. Enter: **q**

11. 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]:
```

Installing Avaya CMS and supporting software

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]:
```

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.

Installing Avaya CMS and supporting software

- 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 CMS services RSC login is used only by services. Do not give out the CMS RSC password. This login is for accessing only the RSC, not the 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 SunLink HSI/S software

The SunLink HSI/S card provides X.25 interface ports to the CMS computer.

⚠ Important:

If your system does not have an HSI/S card, skip this procedure and continue with [Installing the HSI/P software](#) on page 79.

To install the SunLink HSI/S software on a Enterprise 3000 or Enterprise 3500 system:

1. Verify that the HSI/S cards have been installed.
2. Log into the system as **root**.
3. Load the CD-ROM, *CMS Hardware Drivers* into the CD-ROM drive.
4. Enter:

```
cd /
```

5. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/cms_hardware_drivers on  
/vol/dev/dsk/c0t2d0/cms_hardware_drivers read  
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0003 on (current  
date and time)
```

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

```
/usr/sbin/pkgadd -d /cdrom/cdrom0/V9/hsi.sbus.3.0
```

The system displays the following message:

```
The following packages are available:  
  
1 SUNWhsis SunHSI/S Driver for SBUS  
  (sparc) 3.0,REV=1998.11.09  
  
2 SUNWhsism SunHSI/S Man Pages for SBUS  
  (sparc) 3.0,REV=1998.11.09  
  
3 SUNWhsisu SunHSI/S Utilities for SBUS  
  (sparc) 3.0,REV=1998.11.09  
  
Select package(s) you wish to process (or 'all' to process all  
packages. (default:all [?,??,q]:
```

Installing Avaya CMS and supporting software

7. Press **Enter**.

The system displays the following message:

```
Processing package instance <SUNWhsis> from
</cdrom/cdrom0/V9/hsi.sbus.3.0>
SunHSI/S Driver for SBus
.....
.....
.....
This package contains scripts which will be executed with super-
userpermission during the process of installing this package.

Do you want to continue with the installation of <SUNWhsis>
[y,n,?]
```

8. Enter: **y**

The program installs the `SUNWhsis`, `SUNWhsism` and `SUNWhsisu` packages, and displays the following message:

```
Installing SunHSI/S Driver for SBus as <SUNWhsis>
## Installing part 1 of 1
.....
.....
.....
Select package(s) you wish to process (or 'all' to process all
packages). (default: all) [?,??,q]:
```

9. Enter: **q**

10. Enter:

eject cdrom

Installing the HSI/P software

The HSI/P card provides interface ports to the CMS computer.

⚠ Important:

If your system does not have an HSI/P card, skip this procedure. Continue with [Installing the SAI/P adapter drivers](#) on page 81.

To install the HSI/P software on a Ultra 5, Sun Blade, or Sun Fire V880 system:

1. Verify that the HSI/P cards have been installed.
2. Log into the system as **root**.
3. Load the CD-ROM, *CMS Hardware Drivers* into the CD-ROM drive.

4. Enter:

```
cd /
```

5. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/cms_hardware_drivers on
/vol/dev/dsk/c0t2d0/cms_hardware_drivers
read only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0003
(current date and time)
```

6. Enter:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0/V9/hsi.pci.3.0
```

The system displays the following message:

```
The following packages are available:

 1  SUNWhsip      SunHSI/P Driver for PCI
      (sparc) 3.0,REV=1999.09.24

 2  SUNWhsipm     SunHSI/P Man Pages for PCI
      (sparc) 3.0,REV=1999.09.24

 3  SUNWhsipu     SunHSI/P Utilities for PCI
      (sparc) 3.0,REV=1999.09.24

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

Installing Avaya CMS and supporting software

7. Press **Enter**.

The system displays the following message:

```
Processing package instance <SUNWhsip> from
</cdrom/cdrom0/V9/hsi.pci.3.0>

SunHSI/P Driver for PCI
(sparc) 3.0,REV=1999.09.24
.....
.....
.....
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 <SUNWhsip>
[y,n,?]
```

8. Enter: **y**

The program installs the SUNWhsip, SUNWhsipm and SUNWhsipu packages and returns to the command prompt.

```
Installing SunHSI/P Driver for PCI as <SUNWhsip>
## Installing part 1 of 1.
487 blocks
## Executing postinstall script.
.....
.....
.....
Installation of <SUNWhsipu> was successful.
```

9. Enter:

eject cdrom

Installing the SAI/P adapter drivers

The SAI/P cards provide serial asynchronous interface ports to the CMS computer.

⚠ Important:

If your system does not have an SAI/P card, skip this procedure. Continue with [Setting up the Bay Networks Annex NTS](#) on page 84.

To install the SAI/P software on a Ultra 5 or Sun Blade system:

1. Verify that the SAI/P cards are installed.
2. Log into the system as **root**.
3. Load the CD-ROM, *CMS Hardware Drivers* into the CD-ROM drive.
4. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The program responds with a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/cms_hardware_drivers on
/vol/dev/dsk/c0t2d0/cms_hardware_drivers read
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0003 on (current
date and time)
```

5. Enter:

```
/usr/sbin/pkgadd -d /cdrom/cdrom0/v9/sai.pci.3.0
```

The system displays the following message:

```
The following packages are available:

 1  SUNWsaip      Serial Asynchronous Interface Driver (PCI)
      (sparc) 3.0,REV=2000.01.31

 2  SUNWsaipu     Serial Asynchronous Interface Utilities (PCI)
      (sparc) 3.0,REV=2000.01.31

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

Installing Avaya CMS and supporting software

6. Press **Enter**.

The system displays the following message:

```
Processing package instance <SUNWsaip> from
</cdrom/cdrom0/V9/sai.pci.3.0>
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

7. 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
<SUNWsaip> [y,n,?]
```

8. Enter: **y**

The system displays the following message:

```
Installing Serial Asynchronous Interface Driver (PCI) as <SUNWsaip>
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

9. Enter: **y**

The program installs the SAI/P driver packages and returns to the installation menu.

```
Installation of <SUNWsaipu> was successful.

The following packages are available:
.....
.....
.....
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

10. Enter: **q**

11. Enter:

```
eject cdrom
```

Setting up the Bay Networks Annex NTS

Setting up the Bay Networks Annex NTS describes how to install the NTS drivers and create symbolic links.

⚠ Important:

If your system is not using an NTS, skip this procedure. Continue with [Installing the Solstice for Server Connect X.25 package](#) on page 90.

Setting up the Bay Networks Annex NTS includes the following procedures:

- [Installing the NTS drivers](#) on page 84
- [Setting up the NTS start-up files](#) on page 88

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. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk. The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/baynet_annex_system on /vol/dev/dsk/c0t2d0/baynet_annex_
system read only on (current date and time)
```

5. Enter:

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

The system displays the following message:

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

6. 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]:
```

7. 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]:
```

8. 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-->
```

9. Press **Enter**.

The system displays the following message:

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

10. Press **Enter**.

The system displays the following message:

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

Installing Avaya CMS and supporting software

11. Press **Enter**.

The system displays the following message:

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

12. 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]:
```

13. 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]:
```

14. Press **Enter**.

The system displays the following message:

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

15. 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:
```

16. 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]:
```

17. 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]:
```

18. 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]:
```

19. Press **Enter**.

The system displays the following message:

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

20. 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]
```

Installing Avaya CMS and supporting software

21. Press **Enter**.

The system displays the following message:

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

22. Press **Enter**.

The system displays the following message:

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

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

23. 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]:
```

24. 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]:
```

25. 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.

Setting up the NTS start-up files

To set up 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:

```
lrwxr--r--
```

5. Enter:

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

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

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

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 Solstice for Server Connect X.25 package

Installing the Solstice for Server Connect X.25 package describes how to install and set up the X.25 drivers and software license. The X.25 protocol is sometimes used for creating network connections to the switch.

 **Important:**

If the CMS computer is using TCP/IP for LAN connectivity instead of X.25, skip this section. Continue with [Installing DiskSuite](#) on page 103.

Installing the Solstice for Server Connect X.25 package includes the following topics:

- [Prerequisites](#) on page 90
- [Retrieving system information](#) on page 90
- [Installing the Solstice for Server Connect X.25 drivers](#) on page 91
- [Setting up the X.25 license](#) on page 96

Prerequisites

Before you begin the installation procedures, you must obtain the password for your X.25 license.

 **Important:**

If you do not have the password for the X.25 license installed on the system and do not have access to the Golden Key password, you must contact Sun directly to obtain a new license. See the Proof of License Certificate that is included with the CD-ROM disk for procedures you must follow to obtain your password. Note that the only way Sun will deliver this password is by FAX or electronic mail.

Retrieving system information

If you do not have access to the X.25 Golden Key password, you must obtain information about your CMS system. CMS Provisioning (U.S.A.) or the Center of Excellence (customers outside the U.S.A.) may use the X.25 Golden Key password if the X.25 license is not already set up.

If you have the Golden Key password, which is available only to authorized CMS provisioning personnel, or you already know the hostname, hostid, and X.25 license password installed on the system, go to [Installing the Solstice for Server Connect X.25 drivers](#) on page 91.

To retrieve the system information for X.25:

1. Enter:

showrev

The program displays information similar to the following example:

```

Hostname: XXXXXXXX
Hostid: XXXXXXXX
Release: 5.8
Kernel architecture: sun4u
Application architecture: sparc
Hardware provider: Sun_Microsystems
Domain:
Kernel version: SunOS 5.8 Generic <number & date>
    
```

2. Record the Hostname and Hostid in the following table, along with your X.25 password.

Hostname	
Hostid	
X.25 Password	

Installing the Solstice for Server Connect X.25 drivers

To install the X.25 drivers:

1. Log into the system as **root**.
2. Load the CD-ROM, *Solstice for Server Connect, Version - 9.2* into the CD-ROM drive.
3. Enter:

cd /

4. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```

/cdrom/x25_9_2 on /vol/dev/dsk/c0t6d0/x25_9_2 read only
/setuid/maplcase/noglobal/rr/traildot/dev=16c0001 on current date
and time)
    
```

Installing Avaya CMS and supporting software

5. Enter:

```
/usr/sbin/pkgadd -d /cdrom/x25_9_2/sparc
```

The system displays the following message:

```
The following packages are available:
 1  SUNWlicsw      FLEX License Manager Software and Utilites
                        (sparc) 5.0
 2  SUNWlit        STE License Installation Tool
                        (sparc) 5.0
 3  SUNWllc        LLC2 driver and its initialization programs
                        (sparc) 11.7.0,REV=1999.08.10.11.14
 4  SUNWllcr       LLC2 driver configuration and startup files
                        (sparc) 11.7.0,REV=1999.08.10.11.14
 5  SUNWllcx       LLC2 64bit driver
                        (sparc) 11.7.0,REV=1999.08.10.11.14
 6  SUNWx25a       X.25 kernel modules and include files for Solaris/SPARC
                        (sparc) 9.2
 7  SUNWx25ax      64 bit X.25 kernel modules for Solaris/SPARC
                        (sparc) 9.2
 8  SUNWx25b       X.25 user programs and libraries for Solaris/SPARC
                        (sparc) 9.2
 9  SUNWx25bx      64-bit X.25 libraries for Solaris/SPARC
                        (sparc) 9.2
10  SUNWx25lt      Solstice X.25 License Configuration Data
                        (sparc) 9.2

Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

6. Enter the numbers associated with the SUNWlicsw, SUNWlit, SUNWx25a, SUNWx25ax, SUNWx25b, SUNWx25bx, and SUNWx25lt software packages.

Example:

Enter: 1 2 6 7 8 9 10

The system displays the following message:

```
Processing package instance <SUNWlicsw> from </cdrom/x25_9_2/sparc>

FLEX License Manager Software and Utilites
(sparc) 5.0
Copyright 1999 Sun Microsystems, Inc. All rights reserved.
Copyright 1999 Sun Microsystems, Inc., Tous droits réservés.
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
   1 package pathname is already properly installed.
## 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:
   /etc/opt <attribute change only>
   /etc/rc2.d <attribute change only>

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



Important:

Solaris 8 installs packages 3 through 5 during the Solaris installation. If the X.25 software needs to be uninstalled, do not remove SUNWllc, SUNWllcr, and SUNWllcx.

7. 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 <SUNWlicsw> [y,n,?]
```

Note:

Additional conflicting file messages may be displayed on some systems. Enter **y** to continue.

Installing Avaya CMS and supporting software

8. Enter: **y**

The system displays the following message:

```
Installing FLEX License Manager Software and Utilites as <SUNWlicsw>
.....
.....
.....
Do you want to continue with the installation of <SUNWx25a> [y,n,?]
```

9. Enter: **y**

The system displays the following message:

```
Installing X.25 kernel modules and include files for Solaris/SPARC
as <SUNWx25a>
.....
.....
.....
Do you want to continue with the installation of <SUNWx25ax> [y,n,?]
```

10. Enter: **y**

The system displays the following message:

```
Installing 64 bit X.25 kernel modules for Solaris/SPARC as <SUNWx25ax>
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

11. Enter: **y**

The system displays the following message:

```
## Checking for setuid/setgid programs.
.....
.....
.....
Do you want to continue with the installation of <SUNWx25ax> [y,n,?]
```

12. Enter: **y**

The system displays the following message:

```
Installing 64 bit X.25 kernel modules for Solaris/SPARC as <SUNWx25ax>
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

13. Enter: **y**

The system displays the following message:

```
## Checking for setuid/setgid programs.
.....
.....
.....
Do you want to continue with the installation of <SUNWx25b> [y,n,?]
```

14. Enter: **y**

The system displays the following message:

```
Installing X.25 user programs and libraries for Solaris/SPARC as <SUNWx25b>
.....
.....
.....
Do you want to install these conflicting files [y,n,?,q]
```

15. Enter: **y**

The system displays the following message:

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

Installing 64-bit X.25 libraries for Solaris/SPARC as <SUNWx25bx>
.....
.....
.....
Do you want to continue with the installation of <SUNWx25lt> [y,n,?]
```

Installing Avaya CMS and supporting software

16. Enter: **y**

The system displays the following message:

```
Installing Solstice X.25 License Configuration Data as
<SUNWx25lt>

## Installing part 1 of 1.
/opt/SUNWste/license_tools/LIC_CONFIG_FILE.x25.i386
/opt/SUNWste/license_tools/LIC_CONFIG_FILE.x25.sparc
[ verifying class <none> ]
## Executing postinstall script.

Installation of <SUNWx25lt> was successful.

The following packages are available:
.....
.....
.....
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

17. Enter: **q**

18. Enter:

```
cd /
```

19. Enter:

```
eject cdrom
```

20. Continue with [Setting up the X.25 license](#) on page 96.

Setting up the X.25 license

There are two different ways the X.25 license may be set up.

- [X.25 golden key license setup](#) on page 97, which is to be performed only if:
 - The system does not currently have the X.25 license set up
- [X.25 manual license setup](#) on page 97, which requires the following information:
 - The server Hostid, Hostname and X.25 license number, as described in [Retrieving system information](#) on page 90.

X.25 golden key license setup

X.25 golden key license setup uses the golden key password to set up the X.25 software license.

Note:

If this is an upgrade from a version earlier than 9.2 and the X.25 license is already set up, perform the [X.25 manual license setup](#) on page 97.

To set up the license:

1. Lookup the X.25 golden key password. This password is case sensitive and needs to be duplicated exactly.

2. Go to the file by entering:

```
cd /opt/SUNWconn/x25
```

3. Create and edit the x25_9.1.lic,0 license file by entering:

```
vi x25_9.1.lic,0
```

4. Enter the X.25 golden key password (which is input on a single line at the command prompt), similar to the following example:

```
INCREMENT solstice_x.25 lic.SUNW 9.100 01-jan-0 0
XXXXXXXXXXXXXXXXXXXXXXXXX "AVAYA" ANY
```

where `XXXXXXXXXXXXXXXXXXXXXXXXX` represents the license identification number.

5. Save and exit the file by pressing **Esc**. Then enter:

```
:wq!
```

6. Confirm the changes you made by entering:

```
cat x25_9.1.lic,0
```

The displayed text should match the password on the CD-ROM, *Solstice for Server Connect*.

The X.25 license setup is complete.

 **CAUTION:**

Do not change the host name of your computer after installing the X.25 license. Changing the system's host name disables the X.25 software license.

7. Continue with [Installing DiskSuite](#) on page 103.

X.25 manual license setup

Perform this procedure only if you were unable to set up the X.25 license using the golden key.

Installing Avaya CMS and supporting software

To set up the license:

1. Enter:

```
/etc/opt/licenses/lit_tty
```

The system displays the following message:

```
Select Product to License

[ ] x25.i386
[ ] x25.sparc

[ ] Exit -No License Installation
**x=select product and goto product screen **
```

2. Press **Enter** until the cursor moves to the brackets in front of `x25.sparc`

3. Enter an **x** in the brackets. Then press **Enter**.

The system displays the following message:

```
Select product to license
Solstice X.25 9.2
9.2 forsparc

Servers: [x] 1 [ ] 3          **x=select. Tab=next count. Return=server name**

SERVER NAME                HOSTID

1: xxxx                    xxxxxxxx

Phone Number List [ ] See the License Certificate for License Center info
Nodelocked to Host ID:
Expiration Date:
Rights to Use (RTU):          Data Checksum(DC): 94
Password:                    Password Checksum (PC): 6b
Vendor String (VS):

Done Setting Up This License [ ]      Cancel This License [ ]
Exit - Save Licenses [ ]             Exit - Don't Save Licenses [ ]

** x=select/deselect Return=next field **
```

4. Verify that **Servers: [x] 1** is selected, and that the **SERVER NAME** and **HOSTID** match the information that you recorded in [Retrieving system information](#) on page 90.
5. Press **Enter** until the cursor is at the **Nodelocked to Host ID:** field, and enter:
none
6. Press **Enter** until the cursor is in the **Rights to Use:** field and, enter: **1**
7. Press **Enter** until the cursor is in the **Password:** field and, enter the X.25 password.
8. Press **Enter** until the cursor is in the **Vendor String (VS):** field, and enter the Vendor String variable.
9. Verify that the **Data Checksum** and **Password Checksum** values shown on the screen match the checksum values that are printed in your license information.

Note:

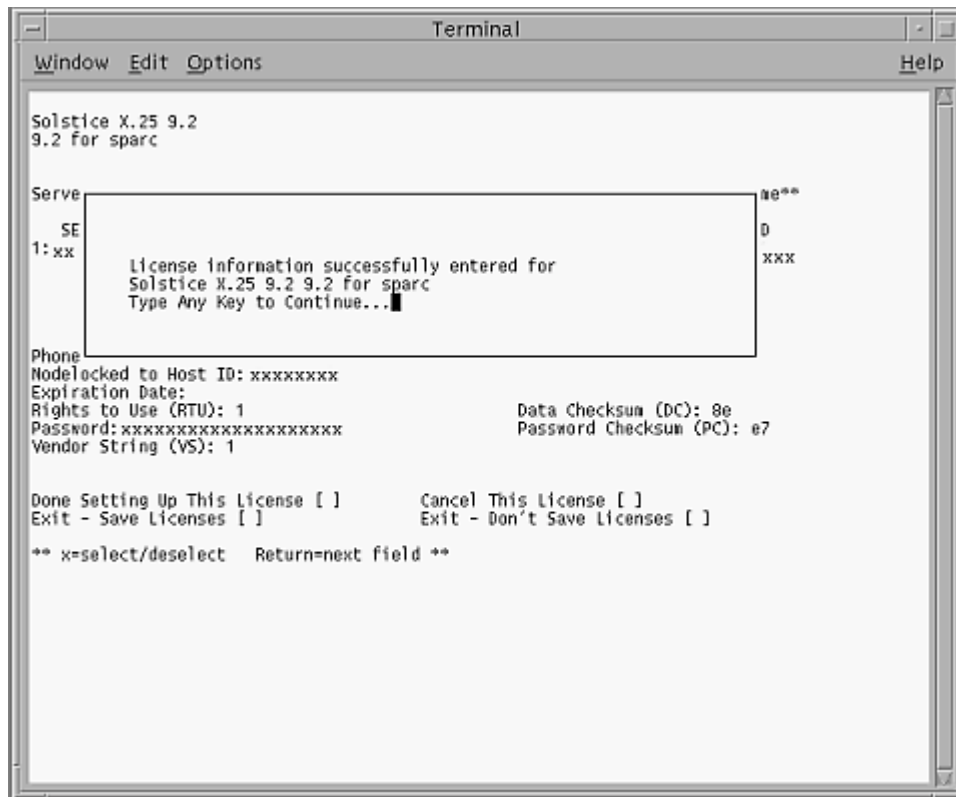
These checksum values are identified in your license as the PC and DC values. If the *Rights to Use*, *Vendor String*, or the X.25 password were entered incorrectly, these checksum values will not match.

10. Press **Enter**.

Installing Avaya CMS and supporting software

11. If the information is correct, enter an **x** in the brackets of the **Done Setting Up This License:** field, and press **Enter**.

The system displays a pop-up window similar to the following:



A terminal window titled "Terminal" with a menu bar containing "Window", "Edit", "Options", and "Help". The terminal output shows the following text:

```
Solstice X.25 9.2
9.2 for sparc

Serve
SE
1:xx

License information successfully entered for
Solstice X.25 9.2 9.2 for sparc
Type Any Key to Continue...

Phone
Node locked to Host ID: xxxxxxxx
Expiration Date:
Rights to Use (RTU): 1           Data Checksum (DC): 8e
Password: xxxxxxxxxxxxxxxxxxxx Password Checksum (PC): e7
Vendor String (VS): 1

Done Setting Up This License [ ]   Cancel This License [ ]
Exit - Save Licenses [ ]         Exit - Don't Save Licenses [ ]

** x=select/deselect  Return=next field **
```

12. Press any key to continue.

13. Enter an **x** in the brackets of the **Exit - Save Licenses** field, and press **Enter**.

The system displays the following message:

```

Terminal
Window Edit Options Help
Serve
SE
f: xx
Licenses are being installed.
Please wait...
Phone
Nodelocked to Host ID:
Expiration Date:
Rights to Use (RTU):
Password:
Vendor String (VS): 1
Data Checksum (DC): 94
Password Checksum (PC): 66
Done Setting Up This License [ ]
Exit - Save Licenses [ x ]
Cancel This License [ ]
Exit - Don't Save Licenses [ ]
** x=select/deselect Return=next field **

License Successfully Installed for:
Solstice X.25 9.2 9.2 for sparc
The license daemon log file is located in /usr/tmp/license_log
Now Execute the Script
/etc/opt/licenses/LIC_CONFIG_SCRIPT
On Any Other Servers Containing the Product Software
    
```

Note:

Ignore the `Now Execute the Script` statement on this window. This task has already been done. The licensing of the X.25 software is complete.

14. Verify that the license was installed correctly by entering:

```
cd /usr/tmp
```

Installing Avaya CMS and supporting software

15. Enter:

```
cat license_log
```

The system displays the following message:

```
12:09:27 (lmgrd) -----
12:09:27 (lmgrd)   Please Note:
12:09:27 (lmgrd)
12:09:27 (lmgrd)   This log is intended for debug purposes only.
12:09:27 (lmgrd)   There are many details in licensing policies
12:09:27 (lmgrd)   that are not reported in the information logged
12:09:27 (lmgrd)   here, so if you use this log file for any kind
12:09:27 (lmgrd)   of usage reporting you will generally produce
12:09:27 (lmgrd)   incorrect results.
12:09:27 (lmgrd)
12:09:27 (lmgrd) -----
.....
.....
.....
12:09:27 (lmgrd) Starting vendor daemons...
12:09:27 (lmgrd) Started lic.SUNW (internet tcp_port 32778 pid 243
12:09:27 (lic.SUNW) FLEXlm version 6.16
12:09:27 (lic.SUNW) Server started on xxxx
12:09:27 (lic.SUNW) OUT: "Solstice_x.25" root@xxxx
```

CAUTION:

Do not change the host name of your system after installing the X.25 license. Changing the system's host name disables the X.25 software license.

16. Continue with [Installing DiskSuite](#) on page 103.

If you have problems with the X.25 installation see, [Solving X.25 installation problems](#) on page 383.

Installing DiskSuite

The DiskSuite software package is used to mirror the disks on a CMS system and to create any soft partitions.

 **Important:**

Install the DiskSuite software only from the current version of the *Solaris 8 Software disk 2 of 2* CD-ROM. Loading the DiskSuite software from a different Solaris 8 version can cause serious problems with your CMS system.

To install the DiskSuite software:

1. Verify that you have partitioned the hard disks for the DiskSuite system as specified in [Partitioning the disk drives](#) on page 40.
2. Verify that all link and port packages (HSI/S, HSI/P, SAI/P, X.25) are installed as required by your particular system configuration.
3. Log into the system as **root**.
4. Load the CD-ROM, *Solaris 8 Software disk 2 of 2* into the CD-ROM drive.
5. Enter:

```
cd /
```

6. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The program responds with a list of devices and file systems currently mounted. The last line displays the installed CD-ROM as shown below:

```
/cdrom/sol_8_202_sparc_2 on /vol/dev/dsk/c0t2d0/sol_8_202_sparc_2
read only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0002 on
current date and time
```

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

```
/usr/sbin/pkgadd -d
/cdrom/cdrom0/Solaris_8/EA/products/DiskSuite_4.2.1/sparc/Packages
```

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

Installing Avaya CMS and supporting software

8. Enter the numbers associated with the SUNWmdr, SUNWmdu, and SUNWmdx packages.

Example:

Enter: 8 9 10

The system displays the following message:

```
Processing package instance <SUNWmdr> from
</cdrom/sol_8_202_sparc_2/Solaris_8/EA/products/DiskSuite_4.2.1/s
parc/Packages>
.....
.....
.....
Do you want to continue with the installation of <SUNWmdr> [y,n,?]
```

9. Enter: **y**

```
Installing Solstice DiskSuite Drivers as <SUNWmdr>
.....
.....
.....
Do you want to continue with the installation of <SUNWmdu> [y,n,?]
```

10. Enter: **y**

```
Installing Solstice DiskSuite Commands as <SUNWmdu>
.....
.....
.....
Do you want to continue with the installation of <SUNWmdx> [y,n,?]
```

11. Enter: **y**

```
Installing Solstice DiskSuite Drivers(64-bit) as <SUNWmdx>
.....
.....
.....
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```


12. Enter: `q`

The system displays the following message:

```
*** IMPORTANT NOTICE ***
```

```
    This machine must now be rebooted in order to ensure  
    sane operation.  Execute
```

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

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

13. Enter:

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

The system reboots.

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

15. Enter:

```
eject cdrom
```

Installing the Solaris patches

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

To install the Solaris patches:

1. Verify that the DiskSuite software package has been installed.
2. If the system is a Sun Fire V880, Enterprise 3000 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.
3. Log into the system as **root**.
4. Load the Avaya Call Management System CD-ROM into the CD-ROM drive.

5. Enter:

```
cd /
```

6. 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.

7. 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 8.

- If no Solaris patches were installed, log into the system as **root**. Then go to Step 10.

- 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 CMS.

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

9. 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.
```

Installing Avaya CMS and supporting software

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 CMS base load upgrade procedures. When the upgrade is complete, notify your CMS support organization as instructed.

10. Enter:

```
eject cdrom
```

11. If the system is a Sun Fire V880, Enterprise 3000 or Enterprise 3500 system, return the key switch to the position it was in at the start of this procedure.

For additional information on Solaris patches, see [Working with Solaris patches](#) on page 287.

Installing the Informix software packages

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

Installing the Informix software packages includes the following topics:

- [Prerequisites](#) on page 109
- [Setting up the Informix environment](#) on page 109
- [Installing the Informix SQL 7.20 package](#) on page 110
- [Installing the IDS 9.21 package](#) on page 112
- [Installing the Informix ESQL 9.40 package](#) on page 116
- [Installing Informix ILS](#) on page 119
- [Initializing IDS](#) on page 129

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 ISQL custom reports, obtain the CD-ROM, *Informix SQL Version 7.20*, license serial number (S/N), and the serial number key (required only if using custom reports).
- Obtain the CD-ROM, *Informix IDS 9.21.UC4-1*, License S/N, and Serial Number Key.
- Obtain the CD-ROM, *Informix ESQL 9.40/2.50.UC2-1 SDK*, License S/N, and Serial Number Key.
- Obtain the CD-ROM, *Informix Int'l Language Supplement Version 3.0*.
- Obtain the CD-ROM, *Avaya Call Management System R3V11*.

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
```

Installing Avaya CMS and supporting software

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:

6 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 the Informix SQL 7.20 package

To install the Informix SQL package:

Important:

This software package is required only if you are using ISQL custom reports. If you do not need this package, skip this section. Continue with [Installing the IDS 9.21 package](#) on page 112.

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. 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 SQL 7.20* into the CD-ROM drive.

3. After about 15 seconds, enter `mount` to verify the name of the CD-ROM disk.

The program displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/informix on /vol/dev/dsk/c0t2d0/informix read
only/setuid/maplcase/noglobal/rr/traildot/dev=16c0001 on
(current date and time)
```

4. Change to the Informix directory by entering:

```
cd $INFORMIXDIR
```

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

```
pwd
```

The system displays the following message:

```
/opt/informix
```

6. Enter:

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

The system copies the Informix SQL files from the CD-ROM to the current directory, and displays:

```
x installsql, XXX bytes, XX tape blocks
x bin/cace, XXX bytes, XX tape blocks
. . . . .
. . . . .
. . . . .
x gls/lc11/os/sv.lc, XXX bytes, XX tape blocks
```

7. Start the installation of the Informix SQL package by entering:

```
./installsql
```

The system displays the following message:

```
INFORMIX-SQL Version 7.XX.XXX
Copyright (C) 1984-1996 Informix Software, Inc.

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

Installing Avaya CMS and supporting software

8. Press **Enter**.

The system displays the following message:

```
Enter your serial number (e.g.,INF#R999999) >
```

9. 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) >
```

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

The system displays the following message:

```
WARNING!  
      This software, and its authorized use and number of . . .  
. . . .  
. . . . .  
. . . . .  
Press RETURN to continue,  
or the interrupt key (usually CTRL-C or DEL) to abort.
```

11. Press **Enter**.

The system displays the following message:

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

12. Enter:

```
eject cdrom
```

Installing the IDS 9.21 package

To install the IDS package:

1. Use the following table to record the serial number and serial number key for this Informix Dynamic Server (IDS) package.

Serial number	
Serial number key	

2. Load the CD-ROM, *Informix IDS 9.21.UC4-1* into the CD-ROM drive.

3. After about 15 seconds, enter `mount` to verify the name of the CD-ROM disk.

The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/informix on /vol/dev/dsk/c0t6d0/informix read only
/setuid/maplcase/noglobal/rr/traildot/dev=16c0004 on (current
date and time)
```

4. Enter:

```
su informix
```

The prompt changes to `$`.

5. Change to the Informix directory by entering:

```
cd $INFORMIXDIR
```

6. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

7. Enter:

```
tar xvf /cdrom/cdrom0/ids2000.tar
```

The system copies the IDS files from the CD-ROM to the current directory and displays the following message:

```
x installserver, 19696 bytes, 39 tape blocks
x aadir/adtcfg.std, 708 bytes, 2 tape blocks
x aadir/adtcfg, 945 bytes, 2 tape blocks
. . . . .
. . . . .
. . . . .
x etc/XKeysymDB, 3184 bytes, 7 tape blocks
x msg/en_us/0333/cockpit.iem, 8073 bytes, 16 tape blocks
x msg/en_us/0333/i18n_str.uid, 57344 bytes, 112 tape blocks
```

Installing Avaya CMS and supporting software

8. Start the installation of the IDS software package by entering:

```
./installserver
```

The system displays the following message:

```
Informix Dynamic Server 2000 Version X.XX.UCX
Copyright (C) 1986-2000 Informix Software, Inc.
Installation Script
. . . . .
. . . . .
. . . . .
Press RETURN to continue, or the interrupt key (usually CTRL-C or
DEL) to abort.
```

9. Press **Enter**.

The system displays the following message:

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

10. 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) >
```

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

The system displays the following message:

```
WARNING!
      This software, and its authorized use and number of . . .
. . . . .
. . . . .
. . . . .
Press RETURN to continue, or the interrupt key (usually CTRL-C or
DEL) to abort.
```

12. Press **Enter**.

The system displays the following message:

```
Installing directory .
Installing directory aadir
Installing directory bin
. . . . .
. . . . .
. . . . .
Informix user portion of installation of Informix Dynamic Server
2000 complete.
```

13. 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.

14. Enter:

cd /opt/informix

15. Enter:

pwd

The system displays the following message:

```
/opt/informix
```

16. Enter:

./RUN_AS_ROOT.server

The system displays the following message:

```
Informix Product:      Informix Dynamic Server 2000
Installation Directory: /opt/informix
. . . . .
. . . . .
. . . . .
Installation of Informix Dynamic Server 2000 complete.
```

17. Enter:

```
eject cdrom
```

Installing the Informix ESQL 9.40 package

To install the Informix ESQL package:

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 ESQL 9.40/2.50.UC2-1 SDK* into the CD-ROM drive.
3. After about 15 seconds, enter `mount` to verify the name of the CD-ROM disk.

The program responds with a list of devices and file systems currently mounted. The last line should display the installed CD-ROM disk, as shown below:

```
/cdrom/informix#1 on /vol/dev/dsk/c0t2d0/informix#1 read
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0008 on (current
date and time)
```

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

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

5. Enter:

```
su informix
```

The prompt changes to \$.

6. Change to the Informix directory by entering:

```
cd $INFORMIXDIR
```

7. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

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

```
cp /cdrom/cdrom0/CLISDK/* /opt/informix
```

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

```
./installclientsdk
```

The system displays the following message:

```
x installesql, 12075 bytes, 24 tape blocks
x bin/esql, 14859 bytes, 30 tape blocks
x bin/esqldemo, 1067 bytes, 3 tape blocks
.....
.....
.....
Is ClientSDK being installed along with Informix database server
version 9.x (required to be run as user "informix")?
(yes or no)
```

10. Enter: **y**

The system displays the following message:

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

11. Press **Enter**.

The system displays the following message:

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

12. 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) >
```

Installing Avaya CMS and supporting software

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

The system displays the following message:

```
WARNING!  
      This software, and its authorized use and number of . . .  
      . . . . .  
      . . . . .  
      . . . . .  
Press RETURN to continue,  
or the interrupt key (usually CTRL-C or DEL) to abort.
```

14. Press **Enter**.

The system displays the following message:

```
Installing directory .  
Installing directory bin  
Installing directory lib  
Installing directory lib/client  
      . . . . .  
      . . . . .  
      . . . . .  
Informix user portion of installation of INFORMIX-Client SDK  
complete.
```

15. 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.

16. Enter:

```
cd /opt/informix
```

17. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

18. Enter:

```
./RUN_AS_ROOT.clientsdk
```

The system displays the following message:

```
Informix Product:      INFORMIX-Client SDK
Installation Directory: /opt/informix

Performing root portion of installation of INFORMIX-Client SDK...

Installation of INFORMIX-Client SDK complete.
```

19. Enter:

```
eject cdrom
```

Installing Informix ILS

To install Informix ILS:

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 3.0* into the CD-ROM drive.
2. After about 15 seconds, enter `mount` to verify the name of the CD-ROM disk.

The program responds with a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/volume_1 on /vol/dev/dsk/c0t2d0/volume_1 read only
on (current date and time)
```

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

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

4. Enter:

```
cd $INFORMIXDIR
```

Installing Avaya CMS and supporting software

5. Enter:

```
pwd
```

The system displays the following message:

```
/opt/informix
```

6. Enter:

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

The system displays the following message:

```
INTERNATIONAL LANGUAGE SUPPLEMENT USER INTERFACE LANGUAGE

(1) English           (5) Russian
(2) German            (6) Polish
(3) French            (7) Czech
(4) Spanish           (8) Slovak

(9) Help
(10) Exit

Select installer language?
```

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

Example:

Enter **1** to select English.

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:
```

Installing Avaya CMS and supporting software

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

The system displays a message similar to the following:

```
Custom Install
-----

(1) User interface
    Installs a localised user interface for Servers and Tools.

(2) Locale
    Installs locales by language, territory and code page.

(3) Operating System locales
    Installs operating system equivalent locales.

(4) Code set conversion
    Installs code set conversion files between code pages.

(5) Help                                (6) GLS source install [Enabled]
(7) Previous Screen                    (8) Exit

(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

Select the components to install:
```

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

Example:

Enter: 2 4

The system displays the following message:

```
LOCALES - LANGUAGES

Install locales and associated character maps for what languages?

(1) Arabic           (12) Hebrew          (23) Romanian
(2) Bulgarian        (13) Hungarian       (24) Russian
(3) Czech            (14) Icelandic       (25) Serbo-Croatian
(4) Danish           (15) Italian          (26) Simp Chinese
(5) Dutch            (16) Japanese        (27) Slovak
(6) English          (17) Korean           (28) Spanish
(7) Estonian         (18) Latvian          (29) Swedish
(8) Finnish          (19) Lithuanian       (30) Thai
(9) French           (20) Norwegian       (31) Trad Chinese
(10) German          (21) Polish           (32) Turkish
(11) Greek           (22) Portuguese      (33) Ukrainian

(34) Help            (35) All Of The Above
(36) Custom Screen  (37) Exit

(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 or more choices, separated with spaces, and hit ENTER:
```

Installing Avaya CMS and supporting software

10. Enter the number associated with the English and Japanese options.

Example:

Enter: 6 16

The system displays the following message:

```
LOCALES - TERRITORIES

Install English language locales for what territories?

(1) Australia
(2) United Kingdom
(3) United States
(4) Help          (5) All Of The Above
(6) Custom Screen (7) Exit

(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 or more choices, separated with spaces, and hit ENTER:
```

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

Example:

Enter: 3

The system displays the following message:

```
LOCALE - CODESETS

Install English language locales for what codesets?

(1) ISO 8859-1
(2) DOS Code Page 850
(3) Windows CP 1252
(4) UNICODE
(5) UTF8

(6) Help          (7) All Of The Above
(8) Custom Screen (9) Exit

(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 or more choices, separated with spaces, and hit ENTER:
```

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

The system displays the following message:

```

LOCALE - CODESETS

Install Japanese language locales for what codesets?

(1) Standard-Shift-JIS
(2) Shift-JIS+JISX0212
(3) UJIS/EUC
(4) UTF8

(5) Help                (6) All Of The Above
(7) Custom Screen      (8) Exit

(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 or more choices, separated with spaces, and hit ENTER:
    
```

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

The system displays the following message:

```

CODESET CONVERSION REGIONS

Choose the regions for which you require codeset conversion tables.

(1) Arabic                (7) Japanese
(2) Baltic                (8) Korean
(3) Cyrillic              (9) Simplified Chinese
(4) Eastern European     (10) Trad. Chinese
(5) Greek                 (11) Turkish
(6) Hebrew                (12) Western European

(13) Help                 (14) All Of The Above
(15) Custom Screen       (16) Exit

(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 or more choices, separated with spaces, and hit ENTER:
    
```

Installing Avaya CMS and supporting software

14. Enter the numbers associated with the Japanese and Western European options.

Example:

Enter: 7 12

The system displays the following message:

```
CODESET CONVERSION TABLES - CODESETS
  Install Japanese codeset conversion tables for what codesets?

(1) Shift-JIS+JISX0212
(2) Standard-Shift-JIS
(3) UJIS/EUC
(4) UNICODE
(5) UTF8

      (6) Help                (7) All Of The Above
      (8) Custom Screen      (9) Exit

(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

Select two or more options. All available combinations of the
selected options will be installed.
```

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

Example:

Enter: 1 2 5

The system displays the following message:

```
CODESET CONVERSION TABLES - CODESETS

Install Western European codeset conversion tables for what codesets?

(1) ASCII 7-bit          (9) IBM CCSID 00273    (17) IBM CCSID 871
(2) DOS Code Page 437   (10) IBM CCSID 00277   (18) ISO-7-Danish
(3) DOS Code Page 850   (11) IBM CCSID 00278   (19) ISO-7-German
(4) DOS Code Page 860   (12) IBM CCSID 00280   (20) ISO 8859-1
(5) DOS Code Page 863   (13) IBM CCSID 00284   (21) ISO 8859-15
(6) DOS Code Page 865   (14) IBM CCSID 00285   (22) UNICODE
(7) EBCDIC              (15) IBM CCSID 00297   (23) UTF8
(8) HP-Roman8           (16) IBM CCSID 00500   (24) Windows CP 1252

(25) Help                (26) All Of The Above
(27) Custom Screen       (28) Exit

(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

Select two or more options. All available combinations of the
selected options will be installed.
```

Installing Avaya CMS and supporting software

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

Example:

Enter: 20 23

The system displays the following message:

```
SUMMARY: You have chosen to install the following
-----
Installing locales:

English          United States    UTF8

Japanese        Japan           UTF8

Installing codeset conversion tables:

Japanese        Shift-JIS+JISX0212
                Standard-Shift-JIS
                UTF8

Western European ISO 8859-1
                UTF8

Hit ENTER to confirm or 'q' to return to main menu.
```

17. Press **Enter**.

The system displays the following message:

```
Installing international software Please wait...
Installing gls...
Installation complete.
See $INFORMIXDIR/ils.log for a list of installed files.
See $INFORMIXDIR/release/README and
    $INFORMIXDIR/release/ILS_COMPAT for further information.

Hit ENTER to return to main menu...
```


18. Press **Enter**.

The system displays the following message:

```

                                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:

```

19. Enter the number associated with the **Exit** option.

The system displays the following message:

```

                                Exiting the International Language Supplement installer.

```

20. Enter:

```
eject cdrom
```

Initializing IDS

To initialize Informix Dynamic Server (IDS) for CMS:

1. Load the CD-ROM, *Avaya Call Management System R3V11* into the CD-ROM drive.
2. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The program displays a list of devices, and file systems that are currently mounted. The last line should display the installed CD-ROM disk as shown below:

```

/cdrom/cms on /vol/dev/dsk/c0t2d0/cms read
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0001 on
(current date and time)

```

Installing Avaya CMS and supporting software

3. Enter:

```
cd /cdrom/cdrom0/postids
```

Note:

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

4. Enter:

```
./postids_config
```

The system displays the following message:

```
x ., 0 bytes, 0 tape blocks
x ./opt, 0 bytes, 0 tape blocks
x ./opt/informix, 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 may not display on some systems. If it does not display, continue with Step 7.

5. Enter:

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

6. Log in as **root**.

7. 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.

8. Enter:

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

9. Enter:

```
oninit -iy
```

Note:

This process may take several minutes.

10. 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
```

11. Enter:

```
eject cdrom
```

Installing the CMS packages

Installing the CMS packages contains procedures for the installation and configuration of the CMS software.

Installing the CMS packages includes the following topics:

- [Prerequisites](#) on page 132
- [Installing the CMS Supplemental Services software](#) on page 132
- [Installing the CMS software](#) on page 138
- [Setting up CMS authorizations](#) on page 141
- [Installing the CMS patches](#) on page 147

Prerequisites

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

- Verify that you are logged in as **root** at the console.
- Obtain the CD-ROM, *Call Management System Supplemental Services*.
- Obtain the CD-ROM, *Avaya Call Management System R3V11*.
- 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 CMS Supplemental Services software

To install the Supplemental Services software:

1. Record the CMS Supplemental Services version number printed on the CD-ROM disk, *Call Management System Supplemental Services*. You will need this number during the procedure.

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

2. Load the CD-ROM, *Call Management System Supplemental Services* into the CD-ROM drive.
3. Re-initialize the IDS software by entering:
 - `/opt/informix/bin/setenv`

4. 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
```

5. Enter:

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

The system loads the Installation Manager package, and displays the following message:

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

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

6. 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]:
```

Installing Avaya CMS and supporting software

7. Perform one of the following actions:

- If the system does not display an installation prompt for the SUNWexplo package, go to Step 22.
- If the system does display an installation prompt for the SUNWexplo package, go to Step 8.

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, seperate 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]
```

Installing Avaya CMS and supporting software

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.

22. Enter:

/opt/cc/install/ahl.xxxxxxx.x**/bin/setup**

where **xxxxxxx.x** is the CMS Supplemental Services version number you recorded earlier in Step 1 of [Installing the CMS Supplemental Services software](#) on page 132.

The system displays the following message:

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

Installing Avaya CMS and supporting software

23. Enter:

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

where **XXXXXX.X** is the CMS Supplemental Services version number you recorded earlier in Step 1 of [Installing the CMS Supplemental Services software](#) on page 132.

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 CMS software

To install the CMS software:

1. Load the CD-ROM, *Avaya Call Management System R3V11* into the CD-ROM drive.

2. Enter:

```
cd /
```

3. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The program displays a list of devices and file systems that are currently mounted. The last line should be similar to the following example:

```
/cms on /dev/dsk/c0t0d0s3
read/write/setuid/intr/largefiles/onerror=panic/dev=2200003 on
(current date and time)
```

4. Add the CMS package by entering:

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

The system displays the following message:

```
Processing package instance <cms> from </cdrom/cms>
.....
.....
.....
/usr/openwin/lib/Xdefaults
/usr/openwin/lib/openwin-init
[Hit <RETURN> to continue display]
```

5. Press **Enter**.

The system displays the following message:

```
/usr/openwin/lib/openwin-menu-programs
/usr/openwin/lib/openwin-menu-utilities
.....
.....
.....
/var/spool/cron/crontabs/root
* - conflict with a file which does not belong to any package.

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

6. Enter: **y**

The system displays the following message:

```
## Checking for setuid/setgid programs.
.....
.....
.....
Do you want to install these as setuid/setgid files [y,n,?,q]
```

7. Enter: **y**

The system displays the following message:

```
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 <cms> [y,n,?]
```

Installing Avaya CMS and supporting software

8. Enter: **y**

The system displays the following message:

```
Installing Avaya Call Management System as <cms>

## Executing preinstall script.
Creating cms group id
Creating cms user id
6 blocks
Assigning a new password for cms
New password:
```

9. Enter the password for the CMS login.

The system displays the following message:

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

10. Re-enter the password for the 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:
```

Important:

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

11. Enter the password for the CMSSVC login.

The system displays the following message:

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

12. Re-enter the password for CMSSVC.

The system displays the following message:

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

## Installing part 1 of 1.
/usr/elog <symbolic link>
/cms/db/LogAdmin/ag_log_1
.....
.....
.....
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.
```

13. Press **Enter**.

14. Enter:

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

15. When the system reboots, log in as **root**.**Note:**

If you have problems installing the CMS software, see [CMS installation fails](#) on page 416.

Setting up CMS authorizations

Setting up CMS authorizations describes how TSC personnel set authorizations for 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 CMS
- Authorize packages and features
- Change the number of agents, ACDs, or Supervisor logins

To set authorizations for CMS features:

1. TSC personnel should verify that the on-site technicians have completed the following tasks:
 - Connected the console to the CMS computer
 - Connected the CMS computer to the TSC's Remote Maintenance Center (remote console)
 - Connected additional terminals and printers to the NTS ports

Installing Avaya CMS and supporting software

- Connected the link between the CMS computer and the switch

Note:

If the hardware link or the Automatic Call Distribution (ACD) feature and CMS is not properly administered, the 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 CMS computer 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 CMSSVC password is available only to authorized personnel. Do not give out the CMSSVC password.

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 R3V11. 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)
```

Note:

The mirroring authorization may not appear if the system is an Ultra 5 because mirroring is not supported on the Ultra 5 platform.

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)
```

Installing Avaya CMS and supporting software

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): (default: 500)
```

For R3V11, “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

Installing Avaya CMS and supporting software

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

Switch agent size range purchased	Number of split or skill members	
	Non-EAS	EAS
0-12	100	500
0-25	100	500
0-50	200	1000
0-75	300	1500
0-100	400	2000
0-200	800	4000
0-300	1200	6000
0-400	1600	8000
0-500	2000	10,000
0-600	2400	12,000
0-1000	4000	20,000
0-5200	20,800	60,000

Note:

The minimum size configuration for CMS is 0-25. 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.

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):(default: 25)
```

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 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 CMS patches

To install CMS patches:

 **Important:**

The features must be authorized on your system before patches can be installed. To have authorizations installed, call the Avaya helpline. See [Avaya CMS helplines](#) on page 24 for more information. We recommend that you always install all available patches. For more information about patch requirements, see [CMS patch requirements](#) on page 292.

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.

Installing Avaya CMS and supporting software

1. Verify that the CD-ROM, *Avaya Call Management System R3V11* is in the CD-ROM drive.
2. Enter:

```
cmsstv
```

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.
```

— 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 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 CMS has been installed.
3. Log 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:

```
cmsvc
```

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.
```

## Installing Avaya CMS and supporting software

**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 CMS database for use in other software applications such as spreadsheet programs. With ODBC, you can access the 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.

*Installing the Open Database Connectivity server software* contains the following topics:

- [Prerequisites](#) on page 153
- [Installing ODBC version 4.2](#) on page 153
- [Installing ODBC version 3.2](#) on page 157

## 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:

 **Important:**

ODBC version 4.2 can only be installed on CMS systems that are running CMS version R3V11af or higher.

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

## Installing Avaya CMS and supporting software

2. Wait about 15 seconds. Then enter the following command:

```
mount
```

The system displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/openlink on /vol/dev/dsk/c0t2d0/openlink read only on (current
date and time)
```

3. Enter:

```
cd /usr
```

The system displays the command prompt.

4. Choose one of the following procedures:

- If this is *not* an upgrade of the ODBC software, go to Step 5.
- 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
```

5. Enter:

```
mkdir /usr/openlink
```

The system creates the OpenLink directory.

6. Enter:

```
cd /usr/openlink
```

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

```
pwd
```

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

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

9. 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
```

10. 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] :
```

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

The system displays the following message:

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

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

The system displays the following message:

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

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

The system displays the following message:

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

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

The system displays the following message:

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

15. 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] :
```

## Installing Avaya CMS and supporting software

16. Enter:

```
root
```

The system displays the following message:

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

17. Enter:

```
root
```

The system displays the following message:

```
Changing ownership ...

End of installation.
```

18. 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
```

19. 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 19, repeat the installation as if it were an upgrade.

20. Enter:

```
eject cdrom
```

## Installing ODBC version 3.2

To install the ODBC version 3.2 software:

### Important:

If ODBC version 4.2 is already installed on the system, skip this procedure.

1. Load the CD-ROM, *Avaya CMS OPENLINK ODBC Driver* into the CD-ROM drive.
2. After about 15 seconds, enter `mount` to verify the name of the CD-ROM.

The program responds with a list of devices and file systems currently mounted. The last line should display the installed CD-ROM disk as shown below:

```
/cdrom/openlink on /vol/dev/dsk/c0t2d0/openlink read only on
(current date and time)
```

3. Enter:

```
cd /usr
```

The system displays the command prompt.

4. Choose one of the following actions:

- If this is a new installation, go to Step 5.
- If this is an upgrade or a reinstallation perform the following steps:

- i. Enter:

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

The system shuts down the request broker.

- ii. Enter:

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

The system removes the old **/openlink** directory.

5. Enter:

```
mkdir /usr/openlink
```

The system creates the OpenLink directory.

6. Change directories to **/usr/openlink** by entering:

```
cd /usr/openlink
```

The system changes directories to **/usr/openlink**.

7. Enter:

```
cp /cdrom/cdrom0/server/cmsv6v8/* /usr/openlink
```

The system copies the server components from the CD-ROM.

## Installing Avaya CMS and supporting software

8. Enter:

```
./install.sh
```

The system installs the server components, and displays the following message:

```
Extracting (smadi5zz.taz) ...
Extracting (smadi72z.taz) ...
Extracting (smaozzzz.taz) ...
Extracting (smbzrzzzz.taz) ...
.....
.....
.....
TCP/IP Port to use? [8000]:
```

**Note:**

On some systems, the following message may be displayed:

```
Saving existing CMS odbc settings - This file will be
replaced with a new cmsrqb_init file for use with
Openlink 3.2
```

9. Press **Enter**.

The system displays the following message:

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

10. Press **Enter**.

The system displays the following message:

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

11. Press **Enter**.

The system displays the following message:

```
Administrator account? [admin]
```

12. Press **Enter**.

The system displays the following message:

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

13. Press **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]
```

14. Enter:

**root**

The system displays the following message:

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

15. Enter:

**root**

The system displays the following message:

```
Changing ownership ...
Press return to proceed to the next phase of the
install process
```

16. Press **Enter**.

The system displays the **OpenLink Session Rules Book Configuration Utility** menu

```
OpenLink Session Rules Book Configuration Utility
=====
1. Request Broker 11. PostgreSQL
2. Informix 5 12. Progress 6
3. Informix 6 13. Progress 7
4. Informix 7 14. Progress 8
5. Ingres 6 15. Solid
6. Virtuoso 16. Sybase 4
7. OpenIngres 17. Sybase 10
8. Oracle 6 18. Sybase 11
9. Oracle 7 19. Unify 2000
10. Oracle 8 20. Velocis

U. Undo last change V. View the current Rules Book
C. Clear log file L. View log file
B. Backup Rules Book R. Restore Rules Book
I. Verify Rules Book N. Reinitialize running Broker
S. Startup Request Broker D. Shutdown Request Broker

Choose an item or type q to quit :
```

## Installing Avaya CMS and supporting software

17. Enter: `q`

The system displays the following message:

```
End of installation.
```

18. Perform one of the following actions:

- If this is a new installation, 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
```

19. Enter:

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

The system verifies that the ODBC Request Broker is active on the server. One of the displayed items should show the oplrqb process running from the **/usr/openlink/bin** directory, as shown in the following example:

```
root 1462 1459 0 14:41:38 ?
0:00 /usr/openlink/bin/oplrqb -f +configfile
/cms/dc/odbc/cmsrqb_init +loglevel 5 +l
 root 1475 1467 1 14:44:48 pts/4
 0:00 grep oplrqb
```

20. Enter:

```
eject cdrom
```

### Note:

At this point, the software is registered, installed, and running. If you do not see an oplrqb process running after you complete Step 19, repeat the installation.

For more information about the ODBC feature, see *Avaya CMS Open Database Connectivity*, 585-780-701.



## Setting up CMS data storage parameters

*Setting up CMS data storage parameters* describes how TSC personnel modify specific data storage parameters on the CMS computer. These storage parameters affect the operation of the CMS application.

### 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 CMS data storage parameters:

1. Change to the 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 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 CMS data storage parameters table](#) on page 161 in the order in which they appear in the **storage.def** file.

### Default 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 |

## Installing Avaya CMS and supporting software

| 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      |
| # Days of daily vectors (1-1825):                               | 387     |

| Parameter                            | Default |
|--------------------------------------|---------|
| # 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 CMS application 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 CMS data storage parameters, see *Avaya Call Management System Release 3 Version 11 Administration*, 585-215-515.

## Setting up LAN connections

*Setting up LAN connections* describes how to set up a network connection to a LAN-enabled switch and other CMS computer peripherals. This procedure is for Release 7 or later Avaya switches. For more information about LAN switch configurations, see *CMS Switch Connections, Administration, and Troubleshooting*, 585-215-876.

*Setting up LAN connections* includes the following topics:

- [Prerequisites](#) on page 164
- [Editing the /etc/hosts file](#) on page 164
- [Setting up a second network interface](#) on page 165
- [Editing the /etc/defaultrouter file](#) on page 167

### 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 CMS is turned off and IDS is on.
- Verify that all file systems are mounted.
- Verify that Release 7 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 CMS system:

- IP address
- Host name
- 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 CMS computer has two network interfaces (that is, the native ethernet card and a SunSwift, FSBE, or SunFast Ethernet network card), you must set up the second network interface. The primary network interface was set up during the Solaris installation.

## Installing Avaya CMS and supporting software

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 CMS computer 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 CMS computer hostname with “\_1” as a suffix.

Example:

```
#
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 CMS computer 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
```

## Installing Avaya CMS and supporting software

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 164.



---

# Setting up the CMS application

The CMS application 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.

*Setting up the CMS application* contains the following topics:

- [Prerequisites](#) on page 169
- [Setup methods](#) on page 169
- [Setting up CMS interactively from a terminal](#) on page 170
- [Setting up CMS using a UNIX flat file](#) on page 181

## Prerequisites

Before you set up the CMS application, 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.

## Setup methods

You can choose either one of two ways to set up the CMS feature package:

- If you use the interactive option, the program prompts you for the necessary information to set up the CMS application. For example, system type, number of agents, trunks, vectors, VDNs, and so on. For more information, see [Setting up CMS interactively from a terminal](#) on page 170.
- If you use the flat file option, you edit a UNIX<sup>®</sup> system flat file that contains the necessary information to set up the CMS application, for example, system type, number of agents, trunks, vectors, VDNs, and so on. When you execute the program, it runs in the background and uses the UNIX system flat file data to set up the CMS application. For more information, see [Setting up CMS using a UNIX flat file](#) on page 181.

## Setting up CMS interactively from a terminal

To set up CMS interactively from a terminal:

1. If you are not sure of the device path for the tape drive:
  - 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 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 message similar to the following:

```
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):
```

## Installing Avaya CMS and supporting software

The following table lists the models of tape drives that are supported for CMS Release 3 Version 11.

| Tape drive      | Tape cartridge                                            | CMS computers                                                                           |
|-----------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------|
| DDS-4           | DDS compliant 150 meter<br>20/40-GB DAT cartridge<br>4 mm | Sun Ultra 5<br>Sun Blade<br>Sun Enterprise 3000<br>Sun Enterprise 3500<br>Sun Fire V880 |
| Mammoth         | 170-meter AME 20/40-GB<br>8 mm                            | Sun Enterprise 3500                                                                     |
| SLR5 4/8-GB QIC | SLR 4/8                                                   | Sun Ultra 5                                                                             |
| 14-GB 8mm       | 160-meter 8mm                                             | Sun Enterprise 3000<br>Sun Ultra 5                                                      |

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)
```

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 the following message:

```
Select the model of switch for this ACD
 1) Definity-R6/R7
 2) Definity-R8
 3) Definity-R9/R10
 4) MultiVantage-R11
Enter choice (1-4):
```

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 6<br>Release 7    | Definity - R6/R7                     |
| Release 8                 | Definity-R8                          |
| Release 9<br>Release 10   | Definity-R9/R10                      |
| Release 11                | MultiVantage-R11                     |

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):
```

## Installing Avaya CMS and supporting software

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:

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

**Note:**

The standard 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.

14. 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):
```

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

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

The system displays the following message:

```
Select the transport to the switch
1) X.25
2) TCP/IP
Enter choice (1-2):
```

16. Perform one of the following actions:

- To select X.25, enter **1**  
Then continue with Step 19.
- To select TCP/IP, which is available with R7 through and later switch models, enter **2**  
Then continue with Step 17.  
The system displays the following message:

```
Enter DEFINITY or MULTIVANTAGE host name or IP Address:
```

17. 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 164 for more information about setting up the hosts file.

The system displays the following message:

```
Enter DEFINITY or MULTIVANTAGE TCP port number (minimum-
maximum):(default: 5001)
```

18. Press **Enter** to use the default TCP port number; the procedure continues with Step 22.

**Note:**

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

## Installing Avaya CMS and supporting software

19. If you selected X.25 transport to the switch at Step 16, continue here.

The system displays the following message:

```
Select the device used for x.25 connectivity to the switch
1) Serial Port A
2) Serial Port B
3) HSI link 0
4) HSI link 1
5) HSI link 2
6) HSI link 3
7) HSI link 4
8) HSI link 5
9) HSI link 6
10) HSI link 7
11) Software loopback link 0
12) Software loopback link 1
Enter choice (1-12):
```

20. Enter the number that corresponds to the device that is used for X.25 connectivity.

### Note:

Except for the loopback links, which are for testing only, the choices on the menu correspond to the hardware connections that can be made between the CMS and the switch.

If you choose a serial port, but you have a High-Speed Serial Interface (HSI) card, the system displays an error message:

```
Choose one of the HSI links for your x.25
connectivity.
Re-enter your selection.
```

If you choose an HSI link but do not have an HSI card, the system displays an error message:

```
Without an HSI card you must use serial port X for
your x.25 connectivity.
Re-enter your selection.
```

If you choose a loopback link, the system displays:

```
This choice is used for testing only. If you make this selection,
you will not be able to collect data from your ACD. Is this what
you want to do (y/n)?
```



21. Perform one of the following actions:

- Enter **n** to return to the menu.
- Enter **y** if you want the selection to take effect.

After you have selected an appropriate link transport device, the system displays the following message:

```
Number of splits/skills (0-maximum):(default 500)
```

22. 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)
```

23. 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)
```

24. Enter the number of shifts.

The system displays the following message:

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

## Installing Avaya CMS and supporting software

25. 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)
```

26. 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)
```

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

**Note:**

Repeat Steps 25 through 27 for the number of shifts entered in Step 24.

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

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

28. 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)
```

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

The system displays the following message:

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

30. 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)
```

31. 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)
```

32. Enter the number of vectors.

The system displays the following message:

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

33. Enter the number of VDNs.

The program repeats Steps 9 through 32 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.
```

## Installing Avaya CMS and supporting software

### 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.
```

34. To verify that the installation completed successfully, enter:

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

All failure messages are logged in this file. The CMS software is successfully set up when the system displays 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
Number of calls to fill_fs():12
Setup completed successfully <data/time>
```

You may edit this file and add comments about the packages that were installed or authorized.

35. 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 189.
- 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.

## Setting up CMS using a UNIX flat file

To set up the CMS feature package using a UNIX flat file, you must edit a copy of the **cms.inst.sk1** file and start the install program.

 **Important:**

This procedure is not necessary if you already performed the CMS setup interactively.

To set up CMS with a flat file:

1. Change to the CMS installation directory by entering:

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

2. Make a copy of the CMS installation file by entering:

```
cp cms.inst.sk1 cms.install
```

3. Change permissions on the copied CMS installation file by entering:

```
chmod 644 cms.install
```

4. Edit the copied CMS installation file by entering:

```
vi cms.install
```

The file contains a series of questions and value ranges for the ACD configuration. The following pages show a sample file with example values in italics.

**Note:**

When selecting a switch model in the file, refer to the [Switch model table](#) on page 173.

## Installing Avaya CMS and supporting software

Example:

```
Enter a name for this UNIX system (up to 256 characters):
cms3

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):
3

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):
1

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-R6/R7
2) Definity-R8
3) Definity-R9/R10
4) MultiVantage-R11
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 transport is only available with DEFINITY R7 through R10 and MULTIVANTAGE
GE R11 and later switch models
Select the transport to the switch
1) X.25
2) TCP/IP
Enter choice (1-2):
2

Skip the next question if you did not enter choice 1. These are used
for X.25 connections only.

Select the device used for x.25 connectivity to the switch
1) Serial port A
2) Serial port B
3) HSI link 0
4) HSI link 1
5) HSI link 2
6) HSI link 3
7) HSI link 4
8) HSI link 5
9) HSI link 6
10) HSI link 7
11) Software loopback link 0
12) Software loopback link 1
Enter choice (1-12):

Skip the next question if you did not enter choices 11 - 12. These are
used for testing only. If you select one of these, you will not be able
to collect data from your ACD.
Are you sure you want to do this? (y/n):

Skip the next two questions if you did not enter choice 2 (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.

Enter DEFINITY or MULTIVANTAGE host name or IP Address:
192.168.2.2

Enter DEFINITY or MULTIVANTAGE TCP port number (5001-5999):
5001

Maximum number of splits/skills based on switch type:
Release(s) Value
Definity-R6/R7 600
Definity-R8/Definity-R9/R10/MultiVantage-R11 999
```

## Installing Avaya CMS and supporting software

```
Number of splits/skills (0-Maximum):
1
Maximum number of split/skill members based on switch type:
Release(s) Value
Definity-R6/R7/Definity-R8/Definity-R9/R10 10000
MultiVantage-R11 60000
Total split/skill members, summed over all splits/skills (0-Maximum):
1000

Number of shifts (1-4):
1

Enter the start time for shift 1 (hh:mmXM):
08:00AM

Enter the stop time for shift 1 (hh:mmXM):
05:00PM

Number of agents logged into all splits/skills during shift 1 (1-Maximum):
100

Enter the start time for shift 2 (hh:mmXM):

Enter the stop time for shift 2 (hh:mmXM):

Number of agents logged into all splits/skills during shift 2 (1-Maximum):

Enter the start time for shift 3 (hh:mmXM):

Enter the stop time for shift 3 (hh:mmXM):

Number of agents logged into all splits/skills during shift 3 (1-Maximum):

Enter the start time for shift 4 (hh:mmXM):

Enter the stop time for shift 4 (hh:mmXM):

Number of agents logged into all splits/skills during shift 4 (1-Maximum):

Maximum number of trunk groups based on switch type:
Release(s) Value
Definity-R6/R7/Definity-R8/Definity-R9/R10 666
MultiVantage-R11 2000
Number of trunk groups (0-Maximum):
20
```



```

Maximum number of trunks based on switch type:
Release(s) Value
Definity-R6/R7/Definity-R8/Definity-R9/R10 4000
MultiVantage-R11 8000
Number of trunks (0-Maximum):
100

Number of unmeasured facilities (0 to (Maximum trunks - Number of trunks)):
10

Minimum number of call work codes based on switch type:
Release(s) Value
Definity-R6/R7/Definity-R8/Definity-R9/R10 1
MultiVantage-R11 1

Maximum number of call work codes based on switch type:
Release(s) Value
Definity-R6/R7/Definity-R8/Definity-R9/R10 1999
MultiVantage-R11 1999
Number of call work codes (Minimum-Maximum):
100

Maximum number of vectors based on switch type:
Release(s) Value
Definity-R6/R7 512
Definity-R8/Definity-R9/R10/MultiVantage-R11 999
Enter number of vectors (0-Maximum):
20

Maximum number of VDNs based on switch type:
Release(s) Value
Definity-R6/R7 8000
Definity-R8/Definity-R9/R10/MultiVantage-R11 20000
Enter number of VDNs (0-Maximum):
10

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.

5. Enter the appropriate values for your configuration. The entries must be added on the blank lines after each question.

**⚠ CAUTION:**

Use the computer's host name for the UNIX system name. The computer's host name was assigned during the factory installation.

## Installing Avaya CMS and supporting software

6. Press **Esc**. Then enter:

```
:wq!
```

The system saves and closes the file.

## Running setup with a flat file

---

To run setup with a flat file:

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)
```

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 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.

## Installing Avaya CMS and supporting software

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 189.
- If you are not installing any other feature packages, do the following to turn on CMS:

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 CMS software is needed, see [Setting the Informix configuration parameters for CMS](#) on page 216.

---

# Installing feature packages

Customers can install CMS feature packages if the packages have been authorized during 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 [Setting up CMS authorizations](#) on page 141 for additional information.

*Installing feature packages* contains the following procedures:

- [Prerequisites](#) on page 189
- [Installing the Forecasting package](#) on page 189
- [Installing the External Call History package](#) on page 191

## 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 [Setting up CMS authorizations](#) on page 141.

4. Enter:

```
cmsadm
```

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

## Installing Avaya CMS and supporting software

### Note:

Different options may be displayed in the **Avaya Call Management System Administration Menu** depending on the current version of 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 CMS to be off during the installation. If Forecasting is added at a later date, CMS 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 CMS:

- 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.

- Go to the **Free Space Allocation** window that is located in the 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.

- 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 from CMS. For more information about administering the UUCP link port on an NTS, see *Avaya CMS R3V11 External Call History Interface*, 585-780-700.

- Verify that:
  - A separate computer is available for the storage and reporting of call records.
  - The storage computer and the 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.
  - CMS is off and IDS is on.

- Enter:

```
cmssvc
```

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

- 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 CMS on your system.

## Installing Avaya CMS and supporting software

4. Verify that the system is authorized for the ECHI package. If ECHI is not authorized but should be, see [Setting up CMS authorizations](#) on page 141.
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)
```



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 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 CMS and Call History Reporting machine will be using.

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.

```
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

## Installing Avaya CMS and supporting software

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 CMS:

- 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 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 Software* into the CD-ROM drive.

3. Enter:

```
cd /
```

4. After about 15 seconds, enter **mount** to verify the name of the CD-ROM disk.

The program displays a list of devices and file systems currently mounted. The last line should display the installed CD-ROM similar to the following example:

```
/cdrom/untitled on /vol/dev/dsk/c0t2d0/untitled read
only/nosuid/maplcase/noglobal/rr/traildot/dev=16c0001 on (current
date and time)
```

5. 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

Copyright (c) 1998 Avaya Inc.
All Rights Reserved

The selected base directory </cms/aas> must exist before
installation is attempted.

Do you want this directory created now [y,n,?,q]
```

## Installing Avaya CMS and supporting software

### 6. 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]
```

### 7. 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 `aaadmin`. If the system displays this message, enter: **y**

### 8. Enter: **y**

The system displays the following message:

```
Installing Visual Vectors Server Software as <LUfaas>

Installing part 1 of 1.
/cms/aas/.odbc.ini
/cms/aas/AAS_README
/cms/aas/Translation/AcdRelease/de_DE
.....
.....
.....
Installation of <LUfaas> was successful.
```

9. 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:
```

10. 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):
```

11. Enter the number of allowable concurrent logins. The maximum login number must not exceed the number of licenses that were purchased.

12. Enter:

**eject cdrom**

## Activating chkDisks

To activate chkDisks:

1. At the # prompt, enter:

```
crontab -e
```

The **cron** file is displayed.

**Note:**

If the command was entered from the local console, the system will display the file in the **Text Editor** window.

2. Add the following line to the end of the **cron** file:

```
15 0 * * * /olds/chkDisks>/dev/null 2>&1
```

3. Save and close the file.

4. Enter:

```
chmod +x /olds/chkDisks
```

---

# Setting up a mirrored system

*Setting up a mirrored system* 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 443.

*Setting up a mirrored system* contains the following topics:

- [Initiating mirroring](#) on page 205
- [Required hardware](#) on page 199
- [Initiating mirroring](#) on page 205

## 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 199 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 58 for more information.
- Verify that the EEPROM settings are correct for a mirrored system. See [Displaying and setting the EEPROM parameters](#) on page 54 for more information.
- Verify that the alternate boot device is set up. See [Creating an alternate boot device](#) on page 56 for more information.

## Required hardware

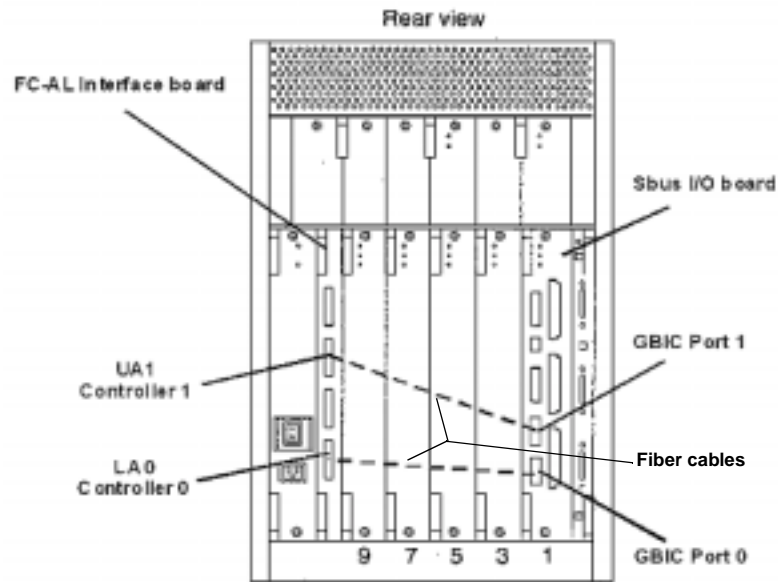
A CMS system must have additional hardware installed in order to function as a mirrored system:

- 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](#) on page 45.
- 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.

## Installing Avaya CMS and supporting software

- 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 200.
- 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

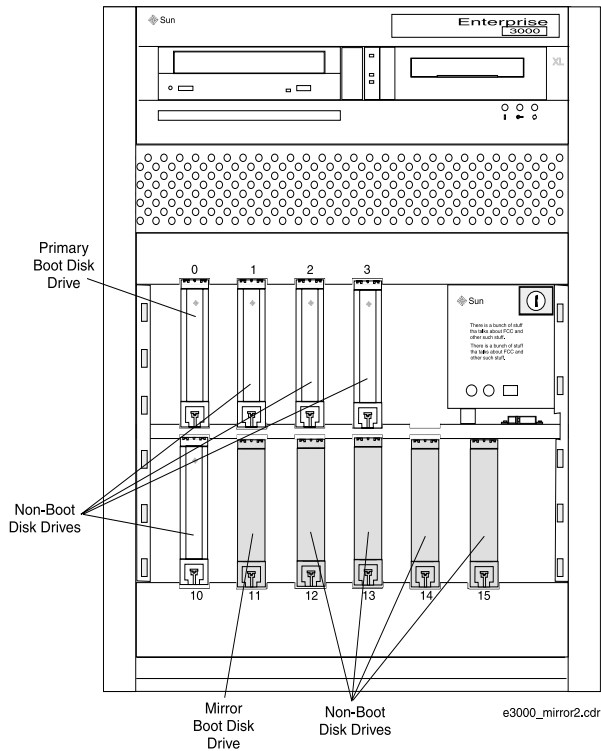




## Enterprise 3000 disk configuration

In an Enterprise 3000 computer, there are 10 slots, allowing up to five disks for each mirror. Each slot is labeled with a number 0 through 3 and 10 through 15; there are no slots numbered 4 through 9. All the drive slots are on controller 0.

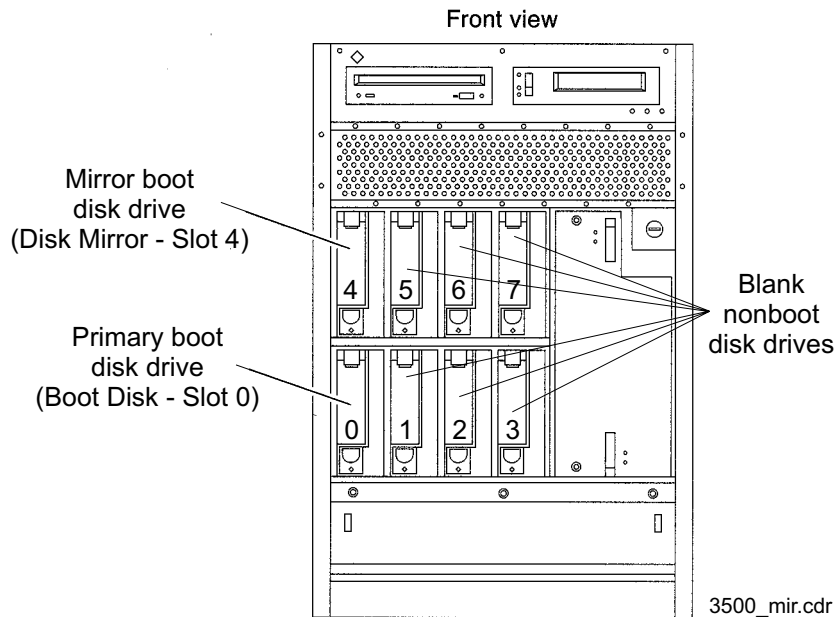
In a mirrored system, slots 0 through 10 are reserved for the primary disks, and slots 11 through 15 are reserved for the mirror disks.



## 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.

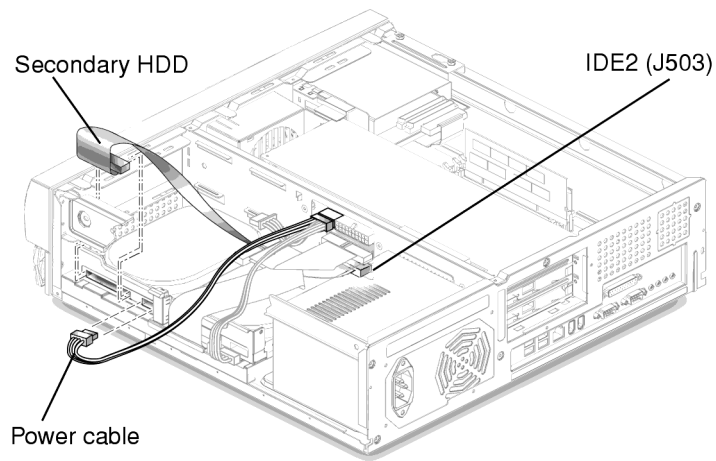
In a mirrored system, slots 0 through 3 are reserved for the primary disks, and slots 4 through 7 are reserved for the mirror disks.



## 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. 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.

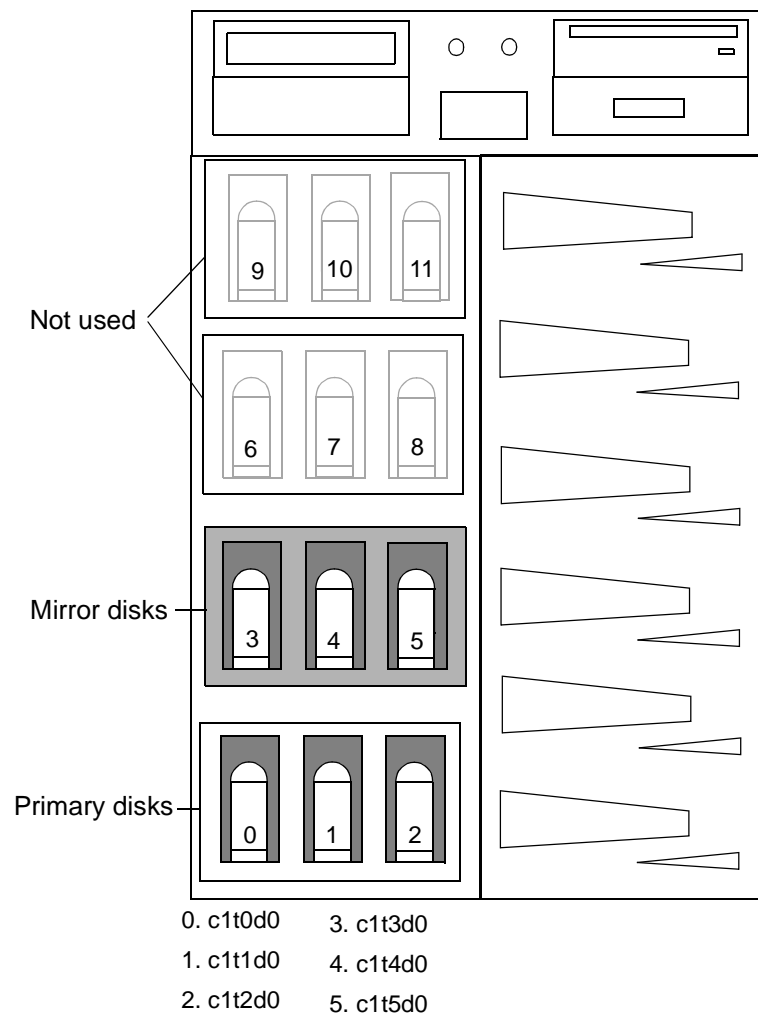
|             | Primary | Mirror |
|-------------|---------|--------|
| Boot disks: | c0t0d0  | c0t2d0 |
| Data disks: | c1t0d0  | c1t2d0 |
|             | c1t1d0  | c1t3d0 |



## 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 a 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 CMS off, and leave IDS 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 CMS on your system.

4. Verify that the system is authorized for disk mirroring. If disk mirroring is not authorized but should be, see [Setting up CMS authorizations](#) on page 141.

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.

## Installing Avaya CMS and supporting software

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:

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

11. Enter the following command:

```
metastat |pg
```

The system displays the status of the DiskSuite 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 461.

14. Turn on CMS.

---

## Setting up the remote console

*Setting up the remote console* 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.

*Setting up the remote console* includes the following topics:

- [The remote console access port](#) on page 208
- [Administering the remote console port](#) on page 209
- [Using the remote console port](#) on page 209

### 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 3000<br>Sun Enterprise 3500 | Remote console              | Not used       |
| Sun Blade                                  | Remote console <sup>1</sup> | N/A            |
| Sun Ultra 5                                | Switch link (optional)      | Remote console |

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 CMS computer:

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 a CMS computer:

1. Dial in from the remote console to the remote console modem on the CMS computer and log in as **root**.

## Installing Avaya CMS and supporting software

2. Remove the port monitor by entering:

```
/cms/install/bin/abccadm -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/abccadm -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/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,?]
```

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 408 for additional information.

---

## Setting up the Alarm Origination Manager

Use *Setting up the Alarm Origination Manager* to set up the Alarm Origination Manager (AOM) on the CMS server. The AOM feature is available only for CMS systems in the US and Canada with a current maintenance warranty agreement in effect.

*Setting up the Alarm Origination Manager* consists of the following topics:

- [Prerequisites](#) on page 212
- [Setting up the AOM config files](#) on page 212
- [Creating an AOM test alarm](#) on page 214

### Prerequisites

Before you set up AOM, perform the following tasks:

- The CMS Supplemental Services packages must be installed and set up.
- A “Product ID” number must be obtained from the CMS database administration group. (CMS technical support personnel must contact the database group at 800-248-1111, ext. 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 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 CMS that is installed.

5. Record the 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               | r1v0           | 1       |
| CMS     | 1               | r3vxxx.x       | 1       |

where `r3vxxx.x` is the 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 212.
- **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 CMS

The IDS configuration parameters for 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.

*Setting the Informix configuration parameters for CMS* contains the following procedures:

- [Obtaining system information](#) on page 217
- [Setting the physical log configuration parameters](#) on page 217
- [Setting the system configuration parameters](#) on page 218
- [Setting the shared memory parameters](#) on page 219
- [Setting miscellaneous Informix parameters](#) on page 221



## 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 =====
 Run Ecache CPU CPU
Brd CPU Module MHz MB Impl. Mask
---- --- -
 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 217.

## Setting the physical log configuration parameters

To set the physical log configuration parameters:

1. Scroll through the **onconfig.cms** file and locate the # Physical Log Configuration options.
2. Change the value of the `PHYSFILE` setting according to the [Physical log configuration settings table](#) on page 218.

## 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.

3. Go to [Setting the system configuration parameters](#) on page 218.

## Setting the system configuration parameters

To set the system configuration parameters:

1. Turn off CMS and IDS.
2. Enter:

```
cd /opt/informix/etc
```

3. Enter:

```
vi onconfig.cms
```

The system displays the IDS configuration parameters for 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 # System Configuration settings.
5. Change the value of `NETTYPE` according to the [Informix NETTYPE settings table](#) on page 219.

### 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 |

6. Change the values of `MULTIPROCESSOR`, and `NUMCPUVPS` according to the [Informix processor settings table](#) on page 219.

### 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 |

7. Go to [Setting the shared memory parameters](#) on page 219.

## 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 220.

### Informix BUFFERS settings table

| Platform                           | BUFFERS setting |
|------------------------------------|-----------------|
| Ultra 5 or Sun Blade system        | 10000           |
| Enterprise or Sun Fire V880 system | 20000           |

3. Change the value of `CLEANERS` according to the [Informix CLEANERS settings table](#) on page 220.

### Informix CLEANERS settings table

| Platform                           | CLEANERS setting |
|------------------------------------|------------------|
| Ultra 5 or Sun Blade system        | 8                |
| Enterprise or Sun Fire V880 system | 16               |

4. Change the value of `LRUS` according to the [Informix LRUS settings table](#) on page 220.

### Informix LRUS settings table

| Platform                           | LRUS setting |
|------------------------------------|--------------|
| Ultra 5 or Sun Blade system        | 8            |
| Enterprise or Sun Fire V880 system | 16           |

5. Go to [Setting miscellaneous Informix parameters](#) on page 221.

## 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 221.

### 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 221.

### DS\_TOTAL\_MEMORY settings table

| Platform                                   | DS_TOTAL_MEMORY setting |
|--------------------------------------------|-------------------------|
| Enterprise 3500 or Sun<br>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 CMS and IDS.

**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*   | 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     |

\* 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 268.

 **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

*Turning the system over to the customer* 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 CMS setup
- Completing a CMS software package upgrade

*Turning the system over to the customer* includes the following topics:

- [Prerequisites](#) on page 224
- [Verifying the system date and time](#) on page 224
- [Checking free space allocation](#) on page 225
- [Testing the remote access port](#) on page 226
- [Key position for Enterprise and Sun Fire systems](#) on page 229
- [Testing the ACD link](#) on page 230
- [Testing the alternate boot device](#) on page 231
- [Assigning customer passwords](#) on page 232
- [Customizing the Sun Remote System Control](#) on page 233
- [Testing the Sun Remote System Control card](#) on page 236
- [Testing the CMS software](#) on page 238
- [Finalizing the on-site installation](#) on page 242
- [Customer system acceptance worksheet](#) on page 243

## 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 CMS computer to the switch
- Translate the switch with the 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 285. Then continue with [Checking free space allocation](#) on page 225.



## 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.

| <u>Dspace Name</u> | <u>Current Size</u> | <u>Allocated Size</u> | <u>Available Space</u> | <u>Space used to Date</u> |
|--------------------|---------------------|-----------------------|------------------------|---------------------------|
| 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                     |

System Setup: Free Space Allocation All ACDs  
 Enter Dspace name:   
 Data timestamp: 2/20/01 8:48 AM  
 (NOTE: All sizes are in Kbytes)  
 Total Free Space: 1279970

Successful

Help Window Commands Keep Exit Scroll Current MainMenu

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 CMS computer. 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 3000<br>Sun Enterprise 3500 | Remote console              | Not used       |
| Sun Blade                                  | Remote console <sup>1</sup> | N/A            |
| Sun Ultra 5                                | Switch link (optional)      | Remote console |

1. The Sun Blade 100 and Sun Blade 150 platforms have only one serial port.

The process of testing the remote access port consists of the following procedures:

- [Redirecting the console to the remote console](#) on page 226
- [Redirecting the console back to the local console](#) on page 228

## 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/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. 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.

## Turning the system over to the customer

- 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 408.

---

## Key position for Enterprise and Sun Fire systems

The Enterprise 3000, 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 or modify the EEPROMs, 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 CMS software has been installed or upgraded, the on-site technician must test the link from the CMS computer 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
  - 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 p luo   | 3118      | 1034        | /dev/dsk/c0t0d0s1 |
| a m p luo | 16        | 1034        | /dev/dsk/c1t4d0s1 |
| a p luo   | 1050      | 1034        | /dev/dsk/c1t4d0s1 |
| a p luo   | 2084      | 1034        | /dev/dsk/c1t4d0s1 |

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

*Assigning customer passwords* describes how the customer assigns passwords to each of its logins on the CMS computer. 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 243. The technician should *not* know these passwords.

5. Repeat this procedure for each customer login.



---

# Customizing the Sun Remote System Control

*Customizing the Sun Remote System Control* 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

*Customizing the Sun Remote System Control* contains the following procedures:

- [Customizing the RSC server software](#) on page 233
- [Setting up additional RSC logins](#) on page 234

 **Important:**

If a second ethernet interface or phone line will not be connected to the RSC, go to [Testing the CMS software](#) on page 238.

## Customizing the RSC server software

To customize the RSC server software on the Sun Fire V880 platform:

1. 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*.

## Turning the system over to the customer

2. Start the RSC installation by entering:

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

The system displays a series of prompts for configuration information.

3. 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

```

## 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 236.

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
```

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 243. 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 406 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

*Testing the Sun Remote System Control card* 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 CMS software](#) on page 238.

To test the RSC card on a Sun Fire V880 platform:

1. Enter:

```
telnet hostname-rsc
```

where *hostname* is the host name of the 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:

- 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 and restoring the RSC card configuration](#) on page 274.

## Testing the CMS software

After the CMS software has been installed or upgraded, the on-site technician must test the CMS software to verify its sanity.

To test the CMS software:

1. Verify that:
  - The Common Desktop Environment (CDE) is active
  - 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`.

- 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.

## Turning the system over to the customer

### 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.



- 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 [CMS error logs](#) on page 392, [Common error messages](#) on page 420, or [Recognizing new hardware devices](#) on page 385. If you encounter a problem that you cannot solve, escalate the problem through normal procedures.

## Finalizing the on-site installation

*Finalizing the on-site installation* 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 268.

 **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 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 243, and record the indicated printouts.
4. Give the customer all of the CMS documentation, the software CD-ROMs, the tape backups (including the original set from the factory, and the set created by provisioning) and the X.25 license information.
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, X.25 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 <code>df -t</code> command results, or record the results here):<br><br>_____<br><br>_____<br><br>_____                    |
| <input type="checkbox"/> <b>Printer administration:</b><br>Print out the CMS Maintenance > Printer Administration > List all window                                                                  |
| <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>X.25 password:</b><br>Enter the X.25 password: _____                                                                                                                     |
| <input type="checkbox"/> <b>RSC login ID and password:</b><br><br>Login ID: _____ Password: _____<br>Login ID: _____ Password: _____                                                                 |

**Turning the system over to the customer**

# Maintaining the Avaya CMS software

*Maintaining the Avaya CMS software* provides the procedures used to maintain the Avaya Call Management System (CMS) software. Personnel at the Technical Service Center (TSC) will need assistance from an on-site technician or the customer's CMS administrator in order to perform most of the procedures in this chapter. For additional information, see the appropriate computer hardware installation, maintenance, and troubleshooting book for your platform.

**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:

```
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.

*Maintaining the Avaya CMS software* includes the following procedures:

- [Using the CMSADM menu](#) on page 247
- [Using the CMSSVC menu](#) on page 257
- [The CMS maintenance backup](#) on page 267
- [The CMSADM backup](#) on page 268
- [Checking the contents of the CMSADM backup tape](#) on page 272
- [Backing up and restoring the RSC card configuration](#) on page 274
- [Performing a CMS maintenance restore](#) on page 276
- [Verifying Free Space Allocation during a maintenance restore](#) on page 281
- [Changing the system date and time](#) on page 285
- [Working with Solaris patches](#) on page 287
- [Working with CMS patches](#) on page 292
- [Adding the Informix SQL package after IDS and ILS have been installed](#) on page 296
- [Enabling fail over of the alternate boot device](#) on page 300
- [Maintaining the chkDisks crontab](#) on page 301

## Maintaining the Avaya CMS software

- [Identifying a faulty disk](#) on page 302
- [Recovering a non-mirrored system after data disk failure](#) on page 306
- [Recovering a mirrored system after disk failure](#) on page 314
- [Using the luxadm command](#) on page 346
- [Performing a CMSADM restore of a mirrored or non-mirrored system](#) on page 352
- [Restoring a system without a CMSADM or system backup](#) on page 377
- [Restoring specific files from the CMSADM backup tape](#) on page 378
- [Upgrading a non-mirrored system to a mirrored system](#) on page 379

## Using the CMSADM menu

*Using the CMSADM menu* describes how to use the options of the **Avaya Call Management System Administration Menu (CMSADM menu)**. The CMSADM menu is intended for use primarily by the CMS administrator.

*Using the CMSADM menu* includes the following topics:

- [CMSADM menu functions](#) on page 247
- [Accessing the CMSADM menu](#) on page 248
- [Using acd\\_create](#) on page 248
- [Using acd\\_remove](#) on page 250
- [Using backup](#) on page 251
- [Using pkg\\_install](#) on page 252
- [Using pkg\\_remove](#) on page 252
- [Using run\\_pkg](#) on page 253
- [Using run\\_ids](#) on page 253
- [Using run\\_cms](#) on page 253
- [Using port\\_admin](#) on page 254
- [Using passwd\\_age](#) on page 254

## 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 IDS on or off                                   |

| Function                                   |
|--------------------------------------------|
| Turn CMS 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 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 CMS.

To define a new ACD:

1. Before you define a new ACD, you must turn off CMS:

- a. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

- b. Enter **8** to select `run_cms`.
    - c. Enter **2** to turn off CMS but leave IDS running.  
CMS turns off and displays the system prompt.

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 (X.25 or TCP/IP)
  - If X.25, enter the device used for X.25 connectivity (serial port or HSI port).
  - If 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

## Maintaining the Avaya CMS software

- 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 CMS back on:

#### a. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

#### b. Enter **8** to select `run_cms`.

#### c. Enter **1** to turn on CMS.

## 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 CMS:

## a. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

b. Enter **8** to select `run_cms`.c. Enter **2** to turn off CMS but leave IDS 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 CMS back on before the removal is complete. To turn CMS back on:

## a. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

b. Enter **8** to select `run_cms`.c. Enter **1** to turn on CMS.

## Using backup

Use the `backup` option to back up your file system. This option does not back up CMS data.

**Note:**

To back up 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 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 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 CMS on or off.

To use the `run_cms` option:

1. Enter:

```
cmsadm
```

The system displays the **CMSADM menu**.

## Maintaining the Avaya CMS software

2. Enter `8` to select `run_cms`.
3. Perform one of the following actions:
  - To turn CMS on, enter: `1`
  - To turn CMS off, but leave IDS running, enter: `2`
  - To turn both CMS and IDS 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`

The `passwd_age` option is not available for use with some CMS loads. 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 CMS users and regular UNIX users. When password aging is on, the Solaris policy file `/etc/default/passwd` is modified. The passwords of all 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 386 and [Troubleshooting password aging](#) on page 390.

 **Important:**

Non-CMS users such as **root**, **root2**, or **Informix** will not age.

Password aging will not function on a 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:

## Maintaining the Avaya CMS software

- 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

*Using the CMSSVC menu* 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.

*Using the CMSSVC menu* includes the following procedures:

- [CMSSVC menu functions](#) on page 257
- [Accessing the CMSSVC menu](#) on page 258
- [Using auth\\_display](#) on page 259
- [Using auth\\_set](#) on page 260
- [Using run\\_ids](#) on page 260
- [Using run\\_cms](#) on page 261
- [Using disk\\_space](#) on page 261
- [Using setup](#) on page 261
- [Using swinfo](#) on page 262
- [Using swsetup](#) on page 262
- [Using patch\\_inst](#) on page 264
- [Using patch\\_rmv](#) on page 265
- [Using load\\_all](#) on page 265
- [Using back\\_all](#) on page 266

## CMSSVC menu functions

The following table shows the tasks that can be performed by Avaya authorized services personnel from the **CMSSVC menu**:

| Function                                      |
|-----------------------------------------------|
| Display CMS authorizations                    |
| Authorize CMS feature packages and capacities |
| Turn IDS on or off                            |
| Turn CMS on and off                           |

| Function                             |
|--------------------------------------|
| Add disks or set up mirroring        |
| Set up the initial CMS configuration |
| Display switch information           |
| Change switch information            |
| Install a CMS patch                  |
| Back out an installed CMS patch      |
| Install all CMS patches              |
| Back out all installed 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 CMS on your system.

## Using auth\_display

To use the `auth_display` option to display 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 CMS and the current authorization status for CMS features and capacities.

```
Version purchased: R3V11
 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 CMS on your system.

The possibilities for authorization status are as follows:

## Maintaining the Avaya CMS software

- Authorized — The feature is purchased, and authorization is turned on.
- Not authorized — The feature is not purchased, or authorization is not been turned on.
- Installed — The feature is authorized, and the software to support the feature is installed. This authorization will indicate a status of on or off with some features.

### Note:

The mirroring authorization may not appear if the system is an Ultra 5 because mirroring is not supported on the Ultra 5 platform.

## Using `auth_set`

To use the `auth_set` option to authorize 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 [Setting up CMS authorizations](#) on page 141 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 CMS 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 CMS, enter: `1`
  - To turn off CMS, but leave IDS running, enter: `2`
  - To turn off both CMS and IDS, enter: `3`

## Using disk\_space

Use the `disk_space` option to set up the initial CMS disk partitions, add additional disks to the 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 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".

## Maintaining the Avaya CMS software

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 (X.25 or 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 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.

To use the `swsetup` option:

1. Turn CMS off:

a. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

b. Enter **4** to select `run_cms`.

c. Enter **2** to turn off CMS but leave IDS running.

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 (X.25 or TCP/IP)
  - If X.25, enter the device used for X.25 connectivity (serial port or HSI port).
  - If 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 CMS:

a. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

b. Enter **4** to select `run_cms`.

- c. Enter **1** to turn on CMS.

## Using patch\_inst

Use the `patch_inst` option to install one or more CMS patches from the CD-ROM. If you want to install all patches, use the `load_all` command.

### Note:

Some patches require CMS 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 `patch_inst` option:

1. Insert the CD-ROM, Avaya CMS Release 3 Version 11 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 CMS patches, see [Working with CMS patches](#) on page 292.



## Using patch\_rmv

Use the `patch_rmv` option to remove a single 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 CMS patches, see [Working with CMS patches](#) on page 292.

## Using load\_all

Use the `load_all` option to install all CMS patches from the CD-ROM.

**Note:**

Some patches require CMS 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`.

## Maintaining the Avaya CMS software

### 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 CMS patches, see [Working with CMS patches](#) on page 292.

## Using back\_all

The `back_all` option allows you to remove all 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 CMS patches, see [Working with CMS patches](#) on page 292.

---

## The CMS maintenance backup

CMS maintenance backups save *only* CMS data (administration and historical). The CMS data for each Automatic Call Distribution (ACD) should be backed up:

- After the CMS is provisioned
- After the CMS software is upgraded
- On a daily basis.

You can perform these backups within CMS. For more information, see *Avaya CMS R3V11 Administration*, 585-215-515.

**Note:**

If you use the CMS LAN backup feature, back up your CMS data according to *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715. The *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715 provides information about using the 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
- CMS programs

 **Important:**

The CMSADM backup does *not* save CMS data tables. No new users can log into the CMS system while the CMSADM backup is running.

The CMSADM backup contains the following topics:

- [When to perform a CMSADM backup](#) on page 268
- [Tape drives and cartridges](#) on page 269
- [Performing a CMSADM backup](#) on page 269

**Note:**

If you use the CMS LAN backup feature, back up your system data according to *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715. The *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715 provides information about using the 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 CMS is provisioned

This backup contains the Solaris system files and programs and 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 a 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 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 Release 3 Version 11.

| Tape drive      | Tape cartridge                                            | CMS computers                                                                           |
|-----------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------|
| DDS-4           | DDS compliant 150 meter<br>20/40-GB DAT cartridge<br>4 mm | Sun Ultra 5<br>Sun Blade<br>Sun Enterprise 3000<br>Sun Enterprise 3500<br>Sun Fire V880 |
| Mammoth         | 170-meter AME 20/40-GB<br>8 mm                            | Sun Enterprise 3500                                                                     |
| SLR5 4/8-GB QIC | SLR 4/8                                                   | Sun Ultra 5                                                                             |
| 14-GB 8mm       | 160-meter 8mm                                             | Sun Enterprise 3000<br>Sun Ultra 5                                                      |

### 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.

## Maintaining the Avaya CMS software

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, the system displays the following message:

```
Please insert the first cartridge tape into <device name>.
Press ENTER when ready or Del to quit:^?
```

Continue with Step 6.

- If more than one tape drive is available for use by the system, the system displays a message similar to the following example:

```
Select the tape drive:
 1) Exabyte EXB-8900 8mm Helical Scan tape drive: /dev/rmt/0
 2) Exabyte EXB-8500 8mm Helical Scan tape drive: /dev/rmt/1
Enter choice (1-2):
```

5. 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:^?
```

6. 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
```

7. If the system displays the message in Step 6, insert the next tape and allow it to rewind. When it is properly positioned, press **Enter**.

8. 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, 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 (R3Vxxx.x)

```

Continue with Step 11.

- 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 :

```

9. 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.
10. When prompted, repeat Step 9 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 (R3Vxxx.x)

```

11. Label all tapes with the:
  - Tape number
  - Date of backup
  - Current version of CMS
12. 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 417.

---

## Checking the contents of the CMSADM backup tape

*Checking the contents of the CMSADM backup tape* is used to check the content on the 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
```



## Checking the contents of the CMSADM backup tape

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 and restoring 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 should 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.

*Backing up and restoring the RSC card configuration* contains the following procedures:

- [Backing up the RSC card configuration](#) on page 274
- [Restoring the RSC card configuration](#) on page 274

### Backing up the RSC card configuration

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.

### Restoring the RSC card configuration

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 233.

## Performing a CMS maintenance restore

*Performing a CMS maintenance restore* describes how to restore all CMS data from a CMS maintenance backup.

 **CAUTION:**

If this procedure is being performed because of a disk replacement or crash, see [Recovering a non-mirrored system after data disk failure](#) on page 306 before performing this procedure.

*Performing a CMS maintenance restore* contains the following topics:

- [Data restore requirements](#) on page 277
- [Restoring data from a full maintenance backup](#) on page 277
- [Restoring data from a full and incremental maintenance backup](#) on page 278

**Note:**

If you use the CMS LAN backup feature, see *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715. The *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715 provides information about using the CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

## Data restore requirements

Before you perform a 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>● CMS 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>● CMS 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>● CMS 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>● CMS 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 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 278

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 CMS maintenance backups are available. If only a full maintenance backup is available go to [Restoring data from a full maintenance backup](#) on page 277.

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 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. 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 277 to determine which steps to perform.
  - a. Change CMS 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>ACD-specific administration data<br>Historical data<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.

## Maintaining the Avaya CMS software

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 277 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.

b. Take CMS 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 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 CMS LAN backup feature, see *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715. The *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715 provides information about using the CMS LAN backup feature, hardware requirements, software requirements, and support guidelines.

2. Verify that IDS and CMS 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 CMS.

4. Verify that CMS is in single user mode and data collection is off for all ACDs.

## Maintaining the Avaya CMS software

- From the main menu, select **Maintenance > Restore Data**.

The system displays the **Restore Data** window.

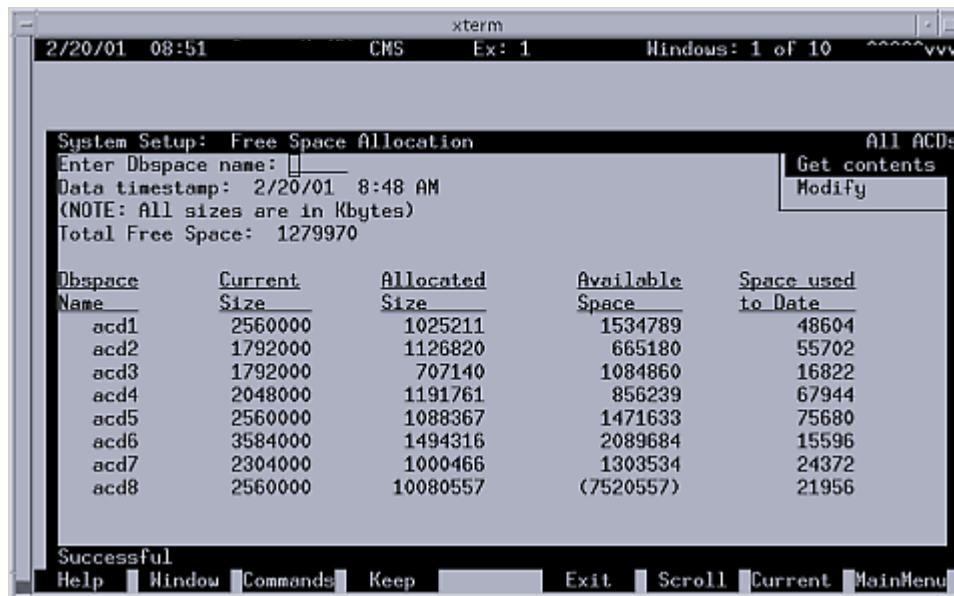


- Deselect **Historical data** and **Non-CMS data**.
- Press **Enter** to access the action list in the upper right corner of the window.
- Select **Run** and press **Enter**.

The system restores the data from tape.
- Exit the **Restore Data** window by pressing **F5**.

- From the main menu, select **System Setup > Free Space Allocation**.

The system displays the **Free Space Allocation** window.



- In the **Enter Dbspace name:** field, enter the Dbspace name of the ACD.
- Press **Enter** to access the action list in the upper right corner of the window.
- Select **Modify**.
- Press **Enter**.
- 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.
- 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.

- Exit the **Free Space Allocation** window by pressing **F5**.
- From the main menu, select **Maintenance > Restore Data**.

The system displays the **Restore Data** window.

## Maintaining the Avaya CMS software

19. Deselect:

- **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.

---

## Changing the system date and time

*Changing the system date and time* describes how to change the UNIX system date and time. Changing the system time may cause a small distortion in the Avaya CMS data. For example, a change due to daylight savings time.

*Changing the system date and time* contains the following procedures:

- [Checking the Solaris system date and time](#) on page 285
- [Setting the system date and time](#) on page 285
- [Setting the system country and time zones](#) on page 286

## 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 CMS
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 CMS.

## 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 CMS, or administer a new CMS installation, you may need to:

- Verify what Solaris patches are currently installed
- Install a Solaris patch
- Remove one or more Solaris patches.

*Working with Solaris patches* contains the following procedures:

- [Installing Solaris patches](#) on page 287
- [Checking installed Solaris patches](#) on page 290
- [Removing a Solaris patch](#) on page 290

## Installing Solaris patches

To install the Solaris patches:

1. If the system is an E3000 or E3500 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:**

CMS 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 CMS.

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 CMS base load upgrade procedures. When the upgrade is complete, notify your CMS support organization as instructed.

13. Enter:  
**eject cdrom**
14. If the system is a Sun Fire V880, Enterprise 3000, 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 pkgm 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 CMS patches

*Working with CMS patches* provides procedures for maintaining patches for CMS on a Sun platform.

*Working with CMS patches* contains the following procedures:

- [CMS patch requirements](#) on page 292
- [Listing installed CMS patches](#) on page 293
- [Listing CMS patches on the CD-ROM](#) on page 293
- [Installing CMS patches](#) on page 293
- [Removing CMS patches](#) on page 295

### CMS patch requirements

The three occasions when you may have to install CMS patches are:

- During a factory installation
- Immediately after upgrading CMS
- 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 CMS until you have the patches installed. The patches have different prerequisites for installation. Some require that CMS be turned off, others require that data collection be turned off, and still others require CMS to be in single-user mode. To be absolutely safe, and to help the upgrade proceed as quickly as possible, turn off CMS.

### 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 CMS off. The system will display a message if you need to do anything special to accomplish the load.

The CMS patch **read me** file for CMS lists the CMS 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. For more information, see [Avaya CMS helplines](#) on page 24.

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 CMS patches

To list 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 cms patches that are installed on the system.

## Listing CMS patches on the CD-ROM

To list CMS patches that are on the CD-ROM and available to be installed:

1. Log in as **root**.
2. Insert the CMS CD-ROM into the CD-ROM drive and wait 15 seconds.
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 CMS patches

To install the CMS patches:

1. Log in as **root** and insert the CMS CD-ROM into the CD-ROM drive.
2. Enter:

```
cd /
```

## Maintaining the Avaya CMS software

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 4.

5. Enter:

```
eject cdrom
```

## Removing CMS patches

To remove 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 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 the Informix SQL package after IDS and ILS have been installed

*Adding the Informix SQL package after IDS and ILS have been installed* 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 7.20*.
2. Record the serial number and serial number key that is printed on the CD-ROM. This information will be used later in this procedure.
3. Log in as **root**.
4. Enter:

```
cd /
```

5. 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
```

6. Load the CD-ROM, Informix SQL into the CD-ROM drive.
7. After about 15 seconds, enter **mount** to verify the name of the CD-ROM.

The program displays a list of devices and file systems currently mounted. The last line displayed should look similar to the following example:

```
/cdrom/informix on /vol/dev/dsk/c0t2d0/informix read
only/setuid/maplcase/noglobal/rr/traildot/dev=16c0001 on
(current date and time)
```

8. Enter the following commands:

```
. /opt/informix/bin/cmsenv
```

9. Enter:

```
cd $INFORMIXDIR
```



10. Enter:

```
pwd
```

The system should display:

```
/opt/informix
```

If the correct path is not displayed, repeat Steps 8 through 10.

11. Enter:

```
tar cvf informix.tar .
```

The system preserves the existing Informix installation and configuration, and displays a message similar to the following:

```
a ./ OK
a ./profile 1K
a ./local.cshrc 1K
.....
.....
.....
a ./console.msgs 2K
a ./jvp.log OK
tar: ./informix.tar same as archive file
```

12. Enter:

```
tar xvf /cdrom/unnamed_cdrom*/sql.tar
```

The system copies the Informix-SQL files from the CD-ROM to the current directory, and displays a message similar to the following:

```
x installsql, XXX bytes, XX tape blocks
x bin/cace, XXX bytes, XX tape blocks
.....
.....
.....
x gls/lc11/os/sv.lc, XXX bytes, XX tape blocks
```

13. Enter:

```
eject cdrom
```

## Maintaining the Avaya CMS software

14. Enter:

```
./installsql
```

The system begins to install the Informix-SQL software:

```
INFORMIX-SQL Version XXXX
Copyright (C) 1984-1996 Informix Software, Inc.
.....
.....
.....
Press RETURN to continue,
or the interrupt key (usually CTRL-C or DEL) to abort.
```

15. Press **Enter**.

The system displays the following message:

```
Enter your serial number (e.g., INF#R999999) >
```

16. Enter the 11-character license serial number you recorded earlier in Step 2.

The system displays the following message:

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

17. Enter the 6-character serial number key you recorded earlier in Step 2.

The system displays the following message:

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

18. Press **Enter**.

The system displays the following message:

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

19. 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.

20. Press **Esc**. Then enter **:wq!** to save and close the file.

21. Enter:

```
cp /opt/informix/etc/.snfile /tmp/
```

22. Enter:

```
tar xvf 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
```

23. Enter:

```
rm informix.tar
```

24. 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 56 and [Resetting a device alias](#) on page 58.

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 a E3500 system see [Resetting a device alias](#) on page 58.

---

## 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.

*Maintaining the chkDisks crontab* contains the following procedures:

- [Verifying chkDisks](#) on page 301
- [Changing the chkDisks run time](#) on page 301
- [Canceling chkDisks](#) on page 301

### 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. If there is no entry for chkDisks, go to [Activating chkDisks](#) on page 198.

### 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 `crontab` 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

*Identifying a faulty disk* contains several procedures that can be used to identify a faulty disk in a mirrored system.

*Identifying a faulty disk* contains the following procedures:

- [Identifying down chunks](#) on page 302
- [Identifying the disk from the /var/adm/messages file](#) on page 303
- [Identifying the submirrors](#) on page 305

## 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 302 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 the following file:

```
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.

## Maintaining the Avaya CMS software

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 314.

## Recovering a non-mirrored system after data disk failure

Use *Recovering a non-mirrored system after data disk failure* 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 352.

**Note:**

If you use the CMS LAN backup feature, see *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715. The *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715 provides information about using the 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 CMS and IDS.

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
```

## Maintaining the Avaya CMS software

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. Verify that *all* soft partition metadevices have been removed by entering:

```
metastat -p
```

18. Record *all* the device names of any remaining soft partition metadevices. The soft partition metadevices have the format *dxxx*. *Do not record metadevices with the format dXX.*

19. Enter the following command for *every* disk with soft partition metadevices:

```
metaclear -p cXtXd0s7
```

where **cX** is the device controller number.

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

**Note:**

The `metaclear -p` command may not always remove the soft partition metadevices on a disk. If soft partition metadevices remain, remove the individual soft partition metadevices by entering:

```
metaclear -r dXXX
```

where `dXXX` is the soft partition metadvice.

Example:

```
metaclear -r d100 d101 d102
```

20. Verify that *all* soft partition metadevices have been removed by entering:

```
metastat -p
```

21. 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
```

22. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

23. 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
```

24. 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:
```

25. Repeat Steps 22 through 24 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
```

26. 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 [Setting up CMS interactively from a terminal](#) on page 170.
  - 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
```

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)
```

## Maintaining the Avaya CMS software

- 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.

27. Enter:

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

The system reboots.

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

29. Set the IDS environment by entering:

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



30. 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.

31. Restore the CMS data.

For more information, see [Verifying Free Space Allocation during a maintenance restore](#) on page 281.

---

## Recovering a mirrored system after disk failure

*Recovering a mirrored system after disk failure* contains procedures for the recovery of a mirrored system after the failure of a hard drive.

### Important:

If the system loses both the primary boot disk and the alternate 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 352.

*Recovering a mirrored system after disk failure* contains the following topics:

- [Prerequisites](#) on page 314
- [Mirrored system disk pairs](#) on page 314
- [Verifying boot disk integrity](#) on page 316
- [Installing a replacement disk on an Enterprise 3500 or Sun Fire V880](#) on page 317
- [Installing a replacement disk on an Enterprise 3000 or Sun Blade system](#) on page 317
- [Recovering a mirrored system after the primary boot disk fails](#) on page 318
- [Recovering a mirrored system after the secondary boot disk fails](#) on page 324
- [Recovering a mirrored system after a single data disk fails](#) on page 329
- [Recovering a mirrored system after a mirrored pair of data disks fail](#) on page 335

## 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 300 for more information.
- Identify the faulty disk or disks. See [Identifying a faulty disk](#) on page 302 for more information.
- The system must boot off of a functioning boot disk.

## Mirrored system disk pairs

Use the following tables to determine the disk layout for your system.

### Note:

A mirrored system may 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 3000 mirrored disk pairs**

| Primary disk | Mirrored disk |
|--------------|---------------|
| c0t0d0       | c0t11d0       |
| c0t1d0       | c0t12d0       |
| c0t2d0       | c0t13d0       |
| c0t3d0       | c0t14d0       |
| c0t10d0      | c0t15d0       |

**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 the 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 either:
  - [Installing a replacement disk on an Enterprise 3500 or Sun Fire V880](#) on page 317
  - [Installing a replacement disk on an Enterprise 3000 or Sun Blade system](#) on page 317 or
- 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 352.

## Installing a replacement disk on an Enterprise 3500 or Sun Fire V880

To install the replacement disk on an Enterprise 3500 or Sun Fire V880 system:

 **Important:**

Do not immediately remove and replace the faulty disk. Remove and replace the disk only after being instructed to do so by the `luxadm` command.

1. Verify that the system is booting from the functioning boot disk.
2. Perform one of the following steps:
  - To boot off the primary boot disk, enter:  
`boot disk`
  - To boot off the secondary boot disk, enter:  
`boot bootdevice2`The system boots from the appropriate disk.
3. Log into the system as **root**.
4. Use the `luxadm` command to:
  - a. Remove the defective disk or disks
  - b. Add the replacement disk or disks

For more information, see [Using the luxadm command](#) on page 346.

## Installing a replacement disk on an Enterprise 3000 or Sun Blade system

To install the replacement disk on an Enterprise 3000 or Sun Blade system:

1. Verify that CMS and IDS are off.
2. Enter:  
`/usr/sbin/shutdown -y -g0 -i0`
3. Remove the faulty disk and verify that the system boots from the functioning boot disk.
  - To boot off the primary boot disk, enter:  
`boot disk`

## Maintaining the Avaya CMS software

- To boot off the secondary boot disk, enter:

```
boot bootdevice2
```

The system boots from the appropriate disk.

4. Install the replacement disk.

**Note:**

For more information about installation of hard drives, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

5. As the console shows the system booting up, press **Stop + A**.

6. Perform one of the following steps:

- If the faulty disk is *not* a boot disk, go to Step 7.

- To boot off the primary boot disk, enter:

```
boot disk -r
```

- To boot off the secondary boot disk, enter:

```
boot bootdevice2 -r
```

The system boots from the appropriate disk.

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

8. Choose one of the following procedures, depending on the type of disk that failed:

- [Recovering a mirrored system after the primary boot disk fails](#) on page 318
- [Recovering a mirrored system after the secondary boot disk fails](#) on page 324
- [Recovering a mirrored system after a single data disk fails](#) on page 329
- [Recovering a mirrored system after a mirrored pair of data disks fail](#) on page 335

## Recovering a mirrored system after the primary boot disk fails

To restore the primary boot device:

1. Enter:

```
cd /
```

2. Enter:

```
. /olds/olds-funcs
```

3. Partition the replacement disk by entering:

```
copy_partition_image mirrored_boot primary_boot
```

where *mirrored\_boot* is the mirrored boot device, and

where *primary\_boot* is the primary boot device.

Example:

```
copy_partition_image c0t11d0 c0t0d0
```

The system records a message in **/cms/install/logdir/admin.log** that is similar to the following:

```
fmthard: New volume table of contents now in place.
copy_partition_image: Success copying partition image
from c1t3d0 to
c1t0d0
```

4. Verify the file properties for partitions 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 partition 4, 5, 6, or 7.

If the file properties are not correct, enter the following commands:

- a. Enter:

```
change_perms primary_boot
```

where *primary\_boot* is the primary boot device.

Example:

```
change_perms c0t0d0
```

The system records the permission change in **/cms/install/logdir/admin.log**

5. Display the soft partitions for the faulty disk by entering:

```
metastat -p | grep faulty_disk
```

where *faulty\_disk* is the device name of the faulty disk.

Example:

```
metastat -p | grep c0t0d0
```

The system displays a message similar to the following if soft partitions were present on the disk.

```
d11 1 1 c0t0d0s0
d21 1 1 c0t0d0s1
d31 1 1 c0t0d0s3
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
```

**Note:**

Soft partition metadvice names have the format *dxxx*, not *dxx*.

6. Perform one of the following actions:

- If soft partition metadevices were not displayed, go to Step 7.
- If soft partition metadevices were displayed, perform the following:
  - i. Remove the soft partitions on the disk by entering:

```
metaclear -p faulty_disk
```

where *faulty\_disk* is the faulty disk device name.

Example:

```
metaclear -p c0t0d0s7
```

**Note:**

Soft partitions are always located on slice 7.

- ii. View any remaining soft partitions on the disk by entering:

```
metastat -p | grep faulty_disk
```

where *faulty\_disk* is the device name of the faulty disk.

- iii. Record any remaining soft partition metadvice names.



- iv. Enter the following command for every remaining soft partition metadvice:

```
metaclear dXXX
```

where **XXX** is the metadvice number.

Example:

```
metaclear d100
```

The system displays a message similar to the following:

```
d100: Soft Partition is cleared
```

**Note:**

If the faulty soft partitions are still present, enter:

```
metaclear -r dXXX
```

where **XXX** is the metadvice number.

- v. Set up soft partitions by entering:

```
/cms/install/bin/softPart faulty_device
```

where *faulty\_device* is the boot device name.

Example:

```
/cms/install/bin/softPart c0t0d0
```

- vi. Verify that the soft partitions are set up correctly by entering:

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

The system displays a message similar to the following:

```
/cms/install/bin/softPart c0t0d0 run on: Thu Dec 6
10:29:58 MST 2001
Soft partitions on c0t0d0s7:
d100 not found in meta db, can be used
d100: Soft Partition is setup
d101: Soft Partition is setup
d102: Soft Partition is setup
d103: Soft Partition is setup
d104: Soft Partition is setup
Softpartitions on c0t0d0s7 have been setup
```

7. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu (CMSSVC menu)**.

8. Enter the number associated with the `run_cms` option.

## Maintaining the Avaya CMS software

9. Enter the number associated with the `Turn off both CMS and IDS` option.

10. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

11. Enter the number associated with the `select run_ids` option.

**Note:**

This can take a few minutes.

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

13. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

14. Enter the number associated with the `run_cms` option.

15. Enter the number associated with the `Turn on CMS` option.

16. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

17. 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:
```

18. Enter the number associated with the `Sync Primary and Mirror` option.

The system begins to resync the disks. This process can take several hours to complete.

19. 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 and chunk status messages are logged in this file.

20. Press **Delete** to break out of the `tail -f` command.

21. Set the INFORMIX environment by entering:

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

22. Enter:

```
metastat | more
```

23. Verify that the root, swap, and /cms metadevices are either in an Okay or resync state.

24. Enter:

```
onstat -d | egrep "MD"
```

25. Verify that the soft partitions were added to the database.

26. Enter:

```
onstat -d | egrep "MD|PD|R|X|N"
```

When the system displays only the command prompt as output, the mirroring and resync process is complete. If chunks are in the PD or MD state, repeat this procedure from Step 5.

 **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 up to five hours.

**Note:**

If a MX entry appears for the logdbs dbspace, enter:

```
ontape -s
```

The dbspace should be repaired.

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. When the system finishes syncing the disks, reboot the system when convenient. It is recommended you perform this step during low busy hours. After the reboot the system will boot normally from the primary disk.

## Recovering a mirrored system after the secondary boot disk fails

To recover a mirrored system after the secondary boot disk fails:

1. Enter:

```
cd /
```

2. Enter:

```
. /olds/olds-funcs
```

3. Partition the replacement disk by entering:

```
copy_partition_image primary_boot mirrored_boot
```

where *primary\_boot* is the primary boot device, and

where *mirrored\_boot* is the mirror boot device.

Example:

```
copy_partition_image c0t0d0 c0t11d0
```

The system records a message similar to the following in **/cms/install/logdir/admin.log**

```
fmthard: New volume table of contents now in place.
copy_partition_image: Success copying partition image
from c1t3d0 to
c1t0d0
```

4. Verify the file properties for partitions 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 partition 4, 5, 6, or 7.

If the file properties are not correct, enter the following command:

```
change_perms mirrored_boot
```

where *mirrored\_boot* is the mirror boot device.

Example:

```
change_perms c1t3d0
```

The system records the permission change in **/cms/install/logdir/admin.log**

5. Display the soft partitions for the faulty disk by entering:

```
metastat -p | grep faulty_disk
```

where *faulty\_disk* is the device name of the faulty disk.

Example:

```
metastat -p | grep c0t2d0
```

The system displays a message similar to the following if soft partitions were present on the disk.

```
d12 1 1 c0t2d0s0
d22 1 1 c0t2d0s1
d32 1 1 c0t2d0s3
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
```

**Note:**

Soft partition metadevice names have the format *dxxx*, not *dxx*.

6. Perform one of the following actions:

- If soft partition metadevices were not displayed, go to Step 7.
- If soft partition metadevices were displayed, perform the following:
  - i. Remove the soft partitions on the disk by entering:

```
metaclear -p faulty_disk
```

where *faulty\_disk* is the faulty disk device name.

Example:

```
metaclear -p c0t11d0s7
```

- ii. View any remaining soft partitions on the disk by entering:

```
metastat -p | grep faulty_disk
```

where *faulty\_disk* is the device name of the faulty disk.

- iii. Record any remaining soft partition metadevice names.

## Maintaining the Avaya CMS software

- iv. Enter the following command for every remaining soft partition metadvice:

```
metaclear dXXX
```

where **XXX** is the metadvice number.

Example:

```
metaclear d152
```

The system displays a message similar to the following:

```
d152: Soft Partition is cleared
```

### Note:

If the faulty soft partitions are still present, enter:

```
metaclear -r dXXX
```

where **XXX** is the metadvice number.

- v. Create new soft partitions by entering the following command on a single line at the command prompt:

```
/cms/install/bin/softPart primary_device faulty_device
```

where ***primary\_device*** is the primary boot device name, and

where ***faulty\_device*** is the faulty boot device name.

Example:

```
/cms/install/bin/softPart c0t0d0 c0t11d0
```

- vi. Verify that the soft partitions are set up correctly by entering:

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

The system displays a message similar to the following:

```
/cms/install/bin/softPart c0t11d0 run on: Thu Dec 6
10:29:58 MST 2001
Soft partitions on c0t11d0s7:
d150 not found in meta db, can be used
d150: Soft Partition is setup
d151: Soft Partition is setup
d152: Soft Partition is setup
d153: Soft Partition is setup
d154: Soft Partition is setup
Softpartitions on c0t11d0s7 have been setup
```

7. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu (CMSSVC menu)**.

8. Enter the number associated with the `run_cms` option.

9. Enter the number associated with the `Turn off both CMS and IDS` option.

10. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

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

**Note:**

This can take a few minutes.

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

13. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

14. Enter the number associated with the `run_cms` option.

15. Enter the number associated with the `Turn on CMS` option.

16. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

17. 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:
```

18. Enter the number associated with the `Sync Primary and Mirror` option.

The system begins to resync the disks. This process can take several hours to complete.

19. 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 and chunk status messages are logged in this file.

20. Press **Delete** to break out of the `tail -f` command.

21. Set the INFORMIX environment by entering:

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

22. Enter:

```
metastat | more
```

23. Verify that the root, swap, and /cms metadevices are either in an Okay or resync state.

24. Enter:

```
onstat -d | egrep "MD"
```

25. Verify that the soft partitions were added to the database.

26. Enter:

```
onstat -d | egrep "MD|PD|R|X|N"
```

When the system displays only the command prompt as output, the mirroring and resync process is complete.

 **CAUTION:**

Do not reboot the system until the resync is complete. The Solaris and IDS resync can take up to five hours.

**Note:**

If a `MX` entry appears for the logdbs dbspace, enter:

```
ontape -s
```

The dbspace should be repaired.

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. When the system finishes syncing the disks, reboot the system when convenient. It is recommended you perform this step during low busy hours. After the reboot the system will boot normally from the primary disk.



## Recovering a mirrored system after a single data disk fails

To recover a mirrored system after a single data disk fails:

### CAUTION:

This procedure is only for data disks, not a boot or alternate boot device. Performing this procedure on the incorrect disk type will result in the system being rebuilt back to factory standards.

1. Replace the faulty disk. See [Installing a replacement disk on an Enterprise 3500 or Sun Fire V880](#) on page 317 or [Installing a replacement disk on an Enterprise 3000 or Sun Blade system](#) on page 317 for more information.

### Note:

For more information about installation of hard drives, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

2. Enter:

```
cd /
```

3. Enter:

```
. /olds/olds-funcs
```

4. Enter one of the following commands to partition the disk:

- If the failed disk is a primary data disk, enter:

```
copy_partition_image mirrored_disk primary_disk
```

- If the failed disk is a mirror data disk, enter:

```
copy_partition_image primary_disk mirrored_disk
```

where *primary\_disk* is the primary data disk, and

where *mirrored\_disk* is the mirror data disk.

Example:

```
copy_partition_image c0t1d0 c1t5d0
```

The system records a message similar to the following in **/cms/install/logdir/admin.log**

```
fmthard: New volume table of contents now in place.
copy_partition_image: Success copying partition image
from c0t1d0 to
c1t5d0
```

## Maintaining the Avaya CMS software

5. 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 command:

```
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**

6. Display the soft partitions for the faulty disk by entering:

```
metastat -p | grep faulty_disk
```

where **faulty\_disk** is the device name of the faulty disk.

Example:

```
metastat -p | grep c0t12d0
```

The system displays a message similar to the following if soft partitions were present on the disk.

```
d250 -p c0t12d0s7 -o 1 -b 4194304
d251 -p c0t12d0s7 -o 4194306 -b 4194304
d252 -p c0t12d0s7 -o 8388611 -b 524288
d253 -p c0t12d0s7 -o 8912900 -b 524288
d254 -p c0t12d0s7 -o 9437189 -b 524288
```

7. Perform one of the following actions:

- If soft partition metadevices were not displayed, go to Step 8.
- If soft partition metadevices were displayed, perform the following:

- i. Remove the soft partitions on the disk by entering:

```
metaclear -p faulty_disk
```

where *faulty\_disk* is the faulty disk device name.

Example:

```
metaclear -p c0t12d0s7
```

- ii. View any remaining soft partitions on the disk by entering:

```
metastat -p | grep faulty_disk
```

where *faulty\_disk* is the device name of the faulty disk.

- iii. Record the soft partition metadvice names.

- iv. Enter the following command for every soft partition metadvice displayed in Step 6:

```
metaclear dXXX
```

where *xxx* is the metadvice number.

Example:

```
metaclear d250
```

The system displays a message similar to the following:

```
d250: Soft Partition is cleared
```

**Note:**

If the faulty soft partitions are still present, enter:

```
metaclear -r dXXX
```

where *xxx* is the metadvice number.

8. Perform one of the following commands:

- If the failed disk is a primary disk, enter:

```
/cms/install/bin/softPart faulty_disk
```

where *faulty\_disk* is the primary disk device name.

Example:

```
/cms/install/bin/softPart c0t12d0
```

## Maintaining the Avaya CMS software

- If the failed disk is a secondary disk, enter the following command on a single line at the command prompt:

```
/cms/install/bin/softPart primary_disk faulty_disk
```

where *primary\_disk* is the primary disk device name and

where *faulty\_disk* is the mirror disk device name.

Example:

```
/cms/install/bin/softPart c0t1d0 c0t12d0
```

9. Verify that the soft partitions were set up by entering:

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

The system displays a message similar to the following:

```
Add softpartitions
/cms/install/bin/softPart c0t12d0 run on: Wed Dec 5 14:30:18 MST
2001
Soft partitions on c0t12d0s7:
d250 -p c0t12d0s7 -o 1 -b 4194304
d251 -p c0t12d0s7 -o 4194306 -b 4194304
d252 -p c0t12d0s7 -o 8388611 -b 524288
d253 -p c0t12d0s7 -o 8912900 -b 524288
d254 -p c0t12d0s7 -o 9437189 -b 524288
c0t12d0s7 has been soft partitioned, exiting...
```

10. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu (CMSSVC menu)**.

11. Enter the number associated with the `run_cms` option.
12. Enter the number associated with the Turn off both CMS and IDS option.
13. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

14. Enter the number associated with the `run_ids` option.
15. Enter the number associated with the Turn on IDS option.

**Note:**

This can take up to 10 minutes.

16. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

17. Enter the number associated with the `run_cms` option.

18. Enter the number associated with the `Turn on CMS` option.

19. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

20. 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:
```

21. Enter the number associated with the `Sync Primary and Mirror` option.

The system begins to resync the disks. This process can take several hours to complete.

22. Check the progress of the resync by entering:

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

```
disk_space command started Wed Dec 5 14:35:58 MST 2001
The System Type is E3000.
The System Type is E3000.
Launching ins_proc to synchronize disks in background
disk_space command completed Wed Dec 5 14:36:04 MST 2001
Synchronizing disks ..
/olds/olds -synch run on: Wed Dec 5 14:36:06 MST 2001
OLDS synch already synchronizing or nothing to synchronize
Synchronizing the IDS chunks.
```

**Note:**

More detailed information about the resync progress can be found in **/opt/informix/cmsids.log**. Enter:

```
tail -f /opt/informix/cmsids.log
```

```
14:42:11 Chunk number 59 '/dev/rdisk/c0t12d0s0' -- Recovery
Complete(202441064)
14:42:13 Chunk Number 60 - '/dev/rdisk/c0t12d0s1' -- Recovery
Begins(202441064)
14:43:10 Chunk Number 60 - '/dev/rdisk/c0t12d0s1' -- Online
14:43:11 Checkpoint Completed: duration was 0 seconds.
14:43:11 Checkpoint loguniq 6, logpos 0xfc018
```

23. Press **Delete** to break out of the `tail -f` command.

24. Set the INFORMIX environment by entering:

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

25. Enter:

```
onstat -d | egrep "MD"
```

26. Verify that the soft partitions were added to the database.

27. Enter:

```
onstat -d | egrep "MD|PD|R|X|N"
```

When the system displays only the command prompt as output, the mirroring and resync process is complete.

**⚠ CAUTION:**

Do not reboot the system until the resync is complete. The Solaris and IDS resync can take up to five hours.

28. Enter:

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

29. Verify that no error messages are displayed. Then press **Delete** to break out of the `tail -f` command.

**Note:**

If a **MX** entry appears for the logdbs dbspace, enter:

```
ontape -s
```

The dbspace should be repaired.

## 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:

1. Enter:

```
cd /
```

2. Turn off CMS and IDS.

**⚠ WARNING:**

CMS setup will be re-run in this procedure. Record any current CMS administration.

3. Replace, format, and partition the replacement pair of disks. See [CMS disk partition values](#) on page 430 for more information.

**Note:**

For more information about disk drives, see [Installing a replacement disk on an Enterprise 3500 or Sun Fire V880](#) on page 317, [Installing a replacement disk on an Enterprise 3000 or Sun Blade system](#) on page 317 or the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

4. 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**

5. Set the IDS environment by entering:

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

## Maintaining the Avaya CMS software

6. Enter:

```
vi /opt/informix/etc/onconfig.cms
```

The system displays the **onconfig.cms** file.

7. Change the `PHYSDBS` setting to:

```
rootdbs
```

8. Change the `LOGFILES` setting to:

```
3
```

9. Press **Esc**. Then enter:

```
:wq!
```

The system saves and exits the file.

10. 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
```

b. Enter:

```
chmod 644 /opt/informix/etc/onconfig.cms
```

11. Enter the following commands:

```
cd /opt/informix/etc
```

```
rm onconfig.bak
```

```
rm onconfig.def
```

12. Enter:

```
onmode -yuk
```

Ignore any error messages.

13. 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)?
```

14. Enter: **y**



15. Verify that *all* soft partition metadevices have been removed by entering:

```
metastat -p
```

16. Record the device names of *any* remaining soft partition metadevices.

**Note:**

Soft partition metadevice names have the format `dXXX`, not `dXX`.

17. If *any* soft partition metadevices remain, enter:

```
metaclear -p cXtXd0s7
```

where `cX` is the device controller number, and

where `tX` is the device target number.

**Note:**

To remove individual soft partition metadevices, enter:

```
metaclear -r dXXX
```

where `dXXX` is the soft partition metadevice.

Example:

```
metaclear -r d100 d101 d102
```

18. Repeat Step 17 for the secondary mirror disk.

19. Verify that *all* soft partition metadevices have been removed by entering:

```
metastat -p
```

20. Enter:

```
metastat | more
```

21. 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.

## Maintaining the Avaya CMS software

22. 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
```

23. Verify that IDS is on.

24. Enter:

```
cmssvc
```

The system displays the **Avaya Call Management System Services Menu (CMSSVC menu)**.

25. Enter the number associated with the `auth_display` option.
26. Record all of the authorized features. You will need this information later in the procedure.
27. Enter:

```
mv /cms/db/backupDevice /cms/db/backupDevice.old
```

28. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

29. Enter the number associated with the `auth_set` option.
- The system displays a series of prompts to authorize features.
30. Re-set the authorizations to those you recorded in Step 26 *except* for disk mirroring. When the disk mirroring option is displayed, enter: `n`

 **Important:**

Disk mirroring must *not* be authorized. If it is repeat Step 27.

31. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.

32. 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.

33. Enter: `q`

34. Enter:

```
/olds/olds -cleanup
```

**Note:**

The system may display a prompt telling you to reboot the system. If the system displays this prompt, reboot the system as directed.

35. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

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

The system displays a series of prompts to authorize features.

37. Authorize disk mirroring.

38. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

## Maintaining the Avaya CMS software

39. 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:
```

40. 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
```

41. 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.
```

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

43. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

44. 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
```

45. 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:
```

46. Repeat Steps 43 through 46 for every 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
```

**Note:**

The system will be slow during the resync. To speed up the resync, reboot the system and log in as root. From the **CMSSVC** menu select `disk_space`. Then select `Sync Primary and Mirror`.

47. 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 [Setting up CMS interactively from a terminal](#) on page 170.

- 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
```

- 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.

48. Enter:

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

The system reboots.

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

50. Set the IDS environment by entering:

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

51. Enter:

```
onstat -d | egrep "MD"
```

52. Verify that the soft partitions were added to the database.

53. 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.

**Note:**

If a **MX** entry appears for the logdbs dbspace, enter:

```
ontape -s
```

The dbspace should be repaired.

54. Enter:

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

55. Verify that no error messages are displayed. Then press **Delete** to break out of the `tail -f` command.

56. Restore the CMS data and verify the Free Space Allocation. See [Verifying Free Space Allocation during a maintenance restore](#) on page 281 for more information.



 **WARNING:**

If the system is rebooted, enter:

```
onstat -d | egrep "MD|PD|R|X"
```

To verify that the resync process is complete. If the resync process is not complete, select Sync Primary and Mirror from the disk\_space option in the **CMSSVC** menu.

---

## 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

*Using the luxadm command* contains the following procedures:

- [Displaying disk WWN numbers on an Enterprise 3500](#) on page 346
- [Displaying disk WWN numbers on a Sun Fire V880](#) on page 347
- [Removing a disk with the luxadm command](#) on page 349
- [Adding a disk with the luxadm command](#) on page 351

## 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 302.

## 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.

## Maintaining the Avaya CMS software

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 302.
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 346 or [Displaying disk WWN numbers on a Sun Fire V880](#) on page 347.
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 351.)

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 454.
5. Choose one of the following:
  - If the disk was added to the system because additional disk space was needed, see the appropriate hardware, installation, maintenance and troubleshooting book for instructions on maintaining disk drives.
  - If the disk was added to the system because of a disk failure, perform one of the following procedures:
    - [Recovering a mirrored system after the primary boot disk fails](#) on page 318
    - [Recovering a mirrored system after the secondary boot disk fails](#) on page 324
    - [Recovering a mirrored system after a single data disk fails](#) on page 329
    - [Recovering a mirrored system after a mirrored pair of data disks fail](#) on page 335

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## Performing a CMSADM restore of a mirrored or non-mirrored system

*Performing a CMSADM restore of a mirrored or non-mirrored system* 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

*Performing a CMSADM restore of a mirrored or non-mirrored system* contains the following topics:

- [Prerequisites](#) on page 352
- [Mirrored system disk pairs](#) on page 352
- [Choosing your CMSADM restore procedure](#) on page 354
- [Restoring a system with a restore script](#) on page 354
- [Restoring a system without a restore script](#) on page 358

### 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.

### Mirrored system disk pairs

Use the following tables to determine the disk layout for your system.

**Note:**

A mirrored system may occasionally display controllers that differ 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        |

### Sun Blade mirrored disk pairs

| Primary disk | Mirrored disk |
|--------------|---------------|
| c0t0d0       | c0t2d0        |
| c1t0d0       | c1t2d0        |
| c1t1d0       | c1t3d0        |

### Enterprise 3000 mirrored disk pairs

| Primary disk | Mirrored disk |
|--------------|---------------|
| c0t0d0       | c0t11d0       |
| c0t1d0       | c0t12d0       |
| c0t2d0       | c0t13d0       |
| c0t3d0       | c0t14d0       |
| c0t10d0      | c0t15d0       |

### Enterprise 3500 mirrored disk pairs

| Primary disk | Mirrored disk |
|--------------|---------------|
| c0t0d0       | c1t4d0        |
| c0t1d0       | c1t5d0        |

| Primary disk | Mirrored disk |
|--------------|---------------|
| c0t2d0       | c1t6d0        |
| c0t3d0       | c1t7d0        |

## Choosing your CMSADM restore procedure

There are two ways to perform a CMSADM restore:

- [Restoring a system with a restore script](#) on page 354  
The restore script automates most of the restore process and takes the least amount of time. The restore script may not be present in all R3V11 CMS loads. Contact the National Customer Care Center, or consult with your product distributor or representative for instructions on how to obtain the restore script.
- [Restoring a system without a restore script](#) on page 358  
Restoring the system manually can take some time. If the restore script is not available for your system, you must use the manual procedure.

## 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.

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 8 Software disk 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  $\text{^H}$ . On some systems **Backspace** will not work. If this is the case, substitute  $\text{^^H}$  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 may 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.

## Maintaining the Avaya CMS software

- If a S99restorecms process is running, enter the following commands:

```
pkill -9 tee
```

```
pkill -9 S99restorecms
```

20. Verify that IDS is on.

21. Enter:

```
cmsvc
```

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 CMS data. See [Verifying Free Space Allocation during a maintenance restore](#) on page 281 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 restore script

To restore a system:

### Important:

If you have successfully completed the procedure [Restoring a system with a restore script](#) on page 354, do not perform this procedure.

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.

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

The system displays the `ok` prompt.

3. Insert the CD-ROM, *Solaris 8 Software 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  $\text{^H}$ . On some systems **Backspace** will not work. If this is the case, substitute  $\text{^H}$  for **Backspace**.

6. Set the terminal environment by entering:

```
export TERM=sun
```

7. Format the boot disk according to the following partition table.

- If the system is a mirrored system, partition only the primary boot disk.
- If the system is not mirrored, partition the boot disk.

| Partition number | Size                 | Name       |
|------------------|----------------------|------------|
| 0                | 4 GB                 | root       |
| 1                | 1 GB                 | swap       |
| 3                | 3 GB                 | unassigned |
| 4                | 2 GB                 | unassigned |
| 5                | 2 GB                 | unassigned |
| 6                | 2 GB                 | unassigned |
| 7                | Remaining disk space | unassigned |

**Note:**

For more information about using the **format** command to partition the disk or the **label** command to save the changes, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.

8. Add a file system to partition 0 on the disk by entering the following command:

```
newfs /dev/rdisk/cXtXd0s0
```

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

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

9. Enter: **y**

## Maintaining the Avaya CMS software

10. Add a file system to partition 3 on the disk by entering the following command:

```
newfs /dev/rdisk/cXtXd0s3
```

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

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

11. Enter: **y**

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

```
/usr/sbin/installboot
/usr/platform/`uname -i`/lib/fs/ufs/bootblk
/dev/rdisk/cXtXd0s0
```

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

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

**Note:**

On most Sun keyboards, the accent grave ( ` ) is located with the tilde ( ~ ) key.

13. Enter:

```
mount /dev/dsk/cXtXd0s0 /mnt
```

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

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

14. Enter:

```
cd /mnt
```

15. Enter:

```
mkdir /mnt/cms
```

16. Enter:

```
mount /dev/dsk/cXtXd0s3 /mnt/cms
```

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

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

17. Verify that you are in the root directory by entering:

```
pwd
```

The system displays the following message:

```
/mnt
```

18. Perform one of the following steps:



## Performing a CMSADM restore of a mirrored or non-mirrored system

- If the CMS system is *not* backing up data to a TANDBERG SLR5 tape drive or an EXABYTE EXB-8900 tape drive, go to Step 19.
- If the CMS system is backing up data to a TANDBERG SLR5 tape drive or an EXABYTE EXB-8900 tape drive, perform the following procedure:

- i. Obtain the SCSI tape ID by entering:

```
modinfo|grep "SCSI tape"
```

The system displays a message similar to the following:

```
99 78046000 10E85 33 1 st (SCSI tape Driver 1.202)
```

- ii. Locate the SCSI tape ID. It is the first entry on the left.

In the previous example, 99 is the SCSI tape module ID.

- iii. Remove the tape drive module from the kernel by entering:

```
modunload -i id
```

where *id* is the SCSI tape st module ID.

- iv. Enter:

```
cd /kernel
```

- v. Copy the tape drives to the **/tmp** directory by entering:

```
find drv | cpio -pdm /tmp
```

- vi. Enter:

```
vi /tmp/drv/st.conf
```

The system displays the **st.conf** file.

- vii. Depending on the model tape drive being used, locate or create either the TAND-8G-FIXED line or the EXB-8900 line in the file.
- viii. Modify or create the appropriate tape drive entry so it matches the example shown below. The modifications for existing entries are shown in bold.

Example:

```
Begin CMS tape configuration list.
#tape-config-list=
 "EXABYTE EXB-8900", "Mammoth EXB-8900 8mm Helical Scan", "EXB-8900",
 "TANDBERG SLR5", "Tandberg 8 Gig QIC", "TAND-8G-FIXED";
 EXB-8900 = 1,0x29,0,0xce39,4,0x7f,0x7f,0x7f,0;
 TAND-8G-FIXED = 1,0x37,512,0x963a,4,0xA0,0xD0,0xD0,0xD0,3;
End CMS Tape configuration list.
```

- ix. If you modify a line be sure to uncomment that line.

## Maintaining the Avaya CMS software

x. Press **Esc** and enter:

```
:wq!
```

xi. Enter:

```
cd /
```

xii. Enter:

```
mount -F lofs /tmp/drv /kernel/drv
```

xiii. Enter:

```
cd /kernel/drv
```

xiv. Enter:

```
modload ./st
```

xv. Enter:

```
cd /mnt
```

19. Insert the most recent CMSADM backup tape into the tape drive.

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

```
cpio -icmudvf -C 10240 -I /dev/rmt/dev# "dev/dsk" "dev/rdsk"
"dev/dsk/*" "dev/rdsk/*" "etc/path_to_inst" "dev/md"
"dev/md/*" "devices" "devices/*" "cms/db/gem/c_custom/*"
"cms/db/gem/h_custom/*" "cms/db/gem/r_custom/*"
```

where *dev#* is the tape device name.

**Note:**

If you do not know 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:

|             |                                                                                       |
|-------------|---------------------------------------------------------------------------------------|
| /dev/rmt/0  | Indicates the first noncompressing tape drive with the lowest target address          |
| /dev/rmt/1  | Indicates the second noncompressing tape drive with the second lowest target address  |
| /dev/rmt/0c | Indicates the first compressed-mode tape drive with the lowest target address         |
| /dev/rmt/1c | Indicates the second compressed-mode tape drive with the second lowest target address |

If you enter an incorrect device path, the system displays a “No such file or directory” message; the correct device path displays 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
```

21. Create the files and directories that were not restored from tape:

**Note:**

Ignore any messages about the file already existing on the system.

- a. Create and modify the permissions for the **initpipe** file by entering the following commands:

```
mkfifo /mnt/etc/initpipe
chmod 600 /mnt/etc/initpipe
chgrp root /mnt/etc/initpipe
```

- b. Verify the changes by entering:

```
ls -ld /mnt/etc/initpipe
```

## Maintaining the Avaya CMS software

- c. Create and modify the permissions for the **utmppipe** file by entering the following commands:

```
mkfifo /mnt/etc/utmppipe
chmod 600 /mnt/etc/utmppipe
chgrp root /mnt/etc/utmppipe
```

- d. Verify the changes by entering:

```
ls -ld /mnt/etc/utmppipe
```

- e. Create and modify the permissions for **/proc**, **/var/tmp**, and **/lvm** by entering the following commands:

```
mkdir /mnt/proc /mnt/var/tmp /mnt/etc/lvm
chgrp sys /mnt/etc/lvm
chmod 1777 /mnt/var/tmp
chown root:sys /mnt/var/tmp
```

- f. Verify the changes by entering the following commands:

```
ls -ld /mnt/etc/lvm
ls -ld /mnt/var/tmp
```

22. Enter:

```
vi /mnt/etc/system
```

23. Place an asterisk (\*) in front of rootdev entry if it exists.

Example:

```

ident "@(#)system 1.18 97/06/27 SMI" / SVR4 1.5 */
*
* SYSTEM SPECIFICATION FILE
*
* moddir:
*
* Set the search path for modules. This has a format similar to the
* csh path variable. If the module isn't found in the first directory
* it tries the second and so on. The default is /kernel /usr/kernel
*
* Example:
* moddir: /kernel /usr/kernel /other/modules
*
* root device and root filesystem configuration:
*
* The following may be used to override the defaults provided by
* the boot program:
*
* rootfs: Set the filesystem type of the root.
*
*
* rootdev: Set the root device. This should be a fully
* expanded physical pathname. The default is the
* physical pathname of the device where the boot
* program resides. The physical pathname is
* highly platform and configuration dependent.
*
*
*
*
* rootdev: /pseudo/md@0:0,1,blk
* set msgsys:msginfo_msgmnb=24000
* set msgsys:msginfo_msgssz=32
* set msgsys:msginfo_msgtql=500
* set msgsys:msginfo_msgseg=4096
* set msgsys:msginfo_msgmni=150
* * Begin MDD database info (do not edit)
* set md:mddb_bootlist1="dad:1:16 dad:1:1050 dad:1:2084 dad:1:3118"
* * End MDD database info (do not edit)

```

24. Press **Esc**. Then enter:

**:wq!**

The system saves and exits the file.

25. Enter:

```
vi /mnt/etc/vfstab
```

The system displays a file similar to the following:

| #device<br>#to mount<br># | device<br>to fsck | mount<br>point | FS<br>type | fsck<br>pass | mount<br>at boot | mount<br>options |
|---------------------------|-------------------|----------------|------------|--------------|------------------|------------------|
| /dev/dsk/c1d0s2           | /dev/rdisk/c1d0s2 | /usr           | ufs        | 1            | yes              | -                |
| fd                        | /dev/fd fd        | -              | no         | -            | -                | -                |
| /proc                     | /proc             | proc           | -          | no           | -                | -                |
| /dev/md/dsk/d2            | -                 | swap           | -          | no           | -                | -                |
| /dev/md/dsk/d1            | /dev/md/rdisk/d1  | /              | ufs        | 1            | no               | -                |
| /dev/md/dsk/d3            | /dev/md/rdisk/d3  | /cms           | ufs        | 2            | yes              | -                |
| swap                      | /tmp              | tmpfs          | -          | yes          | -                | -                |

26. Change all metadvice entries to physical devices.

a. If there is an entry for /dev/md/dsk/d2, change it to:

```
/dev/dsk/cXtXd0s1
```

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

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

b. If there are entries for /dev/md/dsk/d1 and /dev/md/rdisk/d1, change them to:

```
/dev/dsk/cXtXd0s0 /dev/rdisk/cXtXd0s0
```

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

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

c. If there are entries for /dev/md/dsk/d3 and /dev/md/rdisk/d3, change them to:

```
/dev/dsk/cXtXd0s3 /dev/rdisk/cXtXd0s3
```

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

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

 **Important:**

If incorrect physical device entries are made, the system will fail to operate correctly.

27. Press **Esc**. Then enter:

```
:wq!
```

The system saves and exits the file.

28. Enter:

```
vi /mnt/etc/inittab
```

The system displays a file similar to the following:

```
ap::sysinit:/sbin/autopush -f /etc/iu.ap
ap::sysinit:/sbin/soconfig -f /etc/sock2path
.....
.....
.....
od:234:respawn:/cms/dc/odbc/rqb_start
as:0236:respawn:/opt/cc/aas/bin/faasdb.sh </dev/null >/dev/null 2>&1
cm:0236:respawn:/cms/bin/cms_mon /cms </dev/null >/dev/null 2>&1
```

29. Look for a `cm:` entry in the file. If a `cm:` entry is present, remove it.

30. Look for an `id:` entry in the file. If an `id:` entry is present, remove it.

**Note:**

The `cm:` or `id:` entry may not always be located at the end of the file.

31. Press **Esc**. Then enter:

```
:wq!
```

The system saves and exits the file.

32. Enter:

```
cd /
```

33. Verify that you are in the root directory by entering:

```
pwd
```

The system displays the following message:

```
/
```

34. Enter:

```
devfsadm -r /mnt -p /mnt/etc/path_to_inst
```

35. Unmount the file system and reboot by entering the following commands:

```
umount /mnt/cms
```

```
umount /mnt
```

```
reboot -- -r
```

The system displays a series of prompts.

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

## Maintaining the Avaya CMS software

37. Enter:

```
cd /dev/rdisk
```

38. Change permissions for partition 4 of the boot device by entering the following commands:

```
chmod 660 cXtXd0s4
```

```
chown informix:informix cXtXd0s4
```

where **cX** is the device controller number, and  
where **tX** is the device target number.

39. Enter:

```
vi /opt/informix/etc/onconfig.cms
```

The system displays the **onconfig.cms** file:

40. Look for a device path in **MIRRORPATH**. If a device path entry is present, remove it.

41. Change the **PHYSDBS** setting to:

```
rootdbs
```

42. Change the **LOGFILES** setting to:

```
3
```

43. Press **Esc**. Then enter:

```
:wq!
```

The system saves and exits the file.

44. Verify the file properties for the **onconfig.cms** file. The group and owner should be **informix**, and the permissions should be **644**.

45. Set the **IDS** environment by entering:

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

46. Initialize Informix by entering:

```
oninit -iy
```

47. Verify that **IDS** is on-line by entering:

```
onstat -
```

**IDS** displays an "On-Line" message.

48. Move swap from **cXtXd0s1** to **d2** by entering:

```
/olds/olds -soft_part_mdbs
```

49. Verify the swap partition by entering:

```
swap -l
```

The system displays the swap file as **/dev/md/dsk/d2**.



50. Enter:

```
mv /cms/db/backupDevice /cms/db/backupDevice.old
```

51. Perform one of the following actions:

- If the system was *non-mirrored*, perform the following procedure:
  - i. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.
  - ii. Enter the number associated with the `disk_space` option.  
The system displays the `Disk_space_manager` options.
  - iii. Enter the number associated with the `Add New Disks` option.
  - iv. Enter the number associated with the disk you want to add to the system.
  - v. Repeat Steps i through iv for every disk displayed by the system.  
When all disks have been added, the system displays a `All disks are currently administered for the system` message.
- If the system was *mirrored*, perform the following procedure:
  - i. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.
  - ii. Enter the number associated with the `auth_set` option.  
The system displays a series of prompts to authorize features.
  - iii. Authorize disk mirroring and any other features.
  - iv. Enter:

```
cmssvc
```

The system displays the **CMSSVC menu**.
  - v. Enter the number associated with the `disk_space` option.  
The system displays the `Disk_space_manager` options.

- vi. Enter the number associated with the `Initiate Mirroring` option.

The system initiates mirroring. The system then displays a prompt to reboot the system. *Do not 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
```

### **CAUTION:**

Do *not* reboot the system. The system will become corrupt and will need to be rebuilt if it is rebooted while the disks are still syncing.

- vii. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

- viii. Enter the number associated with the `disk_space` option.

The system displays the `Disk_space_manager` options.

- ix. Enter the number associated with the `Add New Disks` option.
- x. Enter the number associated with the disk you want to add to the system.
- xi. Repeat Steps vii through x for every disk pair displayed by the system.

When all disks have been added, the system displays a `All disks are currently administered for the system` message:

52. Enter:

```
mv /cms/db/backupDevice.old /cms/db/backupDevice
```

53. 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 [Setting up CMS interactively from a terminal](#) on page 170.
- To set up CMS from a UNIX flat file.

## Performing a CMSADM restore of a mirrored or non-mirrored system

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
```

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**. Then enter:

```
:wq!
```

vi. Verify that IDS is on.

vii. Enter:

```
cmssvc
```

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

## Maintaining the Avaya CMS software

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.

54. Choose one of the following steps:

- If the system is not mirrored, go to Step 55.
- If the system is mirrored, perform the following procedure:
  - i. Set the Informix environment by entering:

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

ii. 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.

**Note:**

If a **MX** entry appears for the `logdbs` dbspace, enter:

```
ontape -s
```

The dbspace should be repaired.

 **CAUTION:**

Do *not* reboot the system while the disks are still syncing. The system will become corrupt and will need to be rebuilt if it is rebooted.

55. Enter:

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

The system reboots.

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

57. Verify that the Informix parameters are set correctly. See [Setting the Informix configuration parameters for CMS](#) on page 216 for more information.

58. Enter:

```
cp /cms/install/cms_install/fp.install /cms/db
```

The system will display one of two possible messages:

- If feature packages were installed on the system, the system displays the command prompt (#).
- If no feature packages were installed on the system, the system displays the following message:

```
cp: cannot access /cms/install/cms_install/fp.install
```

**Note:**

The **fp.install** file will be present on the tape backup if feature packages were installed. If the system cannot access the file, must manually set up the feature packages that were previously authorized and installed on the system. For more information, see [Installing feature packages](#) on page 189.

59. Choose one of the following procedures:

- If *no* feature packages were installed on the system, go to Step 60.
- If feature packages were installed on the system, perform the following procedure:

i. Enter:

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

ii. Enter:

```
export PATH=$PATH:/cms/install/bin
```

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

```
cp -p /cms/install/cms_install/fp.install
/cms/db/fp.install
```

iv. Enter the following command to install the feature packages that were present on the system before the restore:

```
/cms/install/bin/ins_proc -f
```

The system displays a message similar to the following:

```
Feature package installation begun Mon Apr 8 13:45:40 MDT 2002
Feature package installation begun.
Forecasting package begin installation Mon Apr 8 13:45:43 MDT
2002

Installation was successful
```

60. Enter:

```
cd /cms
```

61. Enter:

```
mkdir cmstables
```

62. Verify that IDS is on.

63. Enter:

```
cmssvc
```

The system displays the **CMSSVC** menu.

64. Enter the number associated with the `run_cms` option.

65. Enter the number associated with The `turn on CMS` option.

66. Perform one of the following steps:

- If the CMS system is *not* backing up data to a TANDBERG SLR5 tape drive or an EXABYTE EXB-8900 tape drive, go to Step 67.
- If the CMS system is backing up data to a TANDBERG SLR5 tape drive or an EXABYTE EXB-8900 tape drive, perform the following procedure:

i. Enter:

```
cd /kernel/drv
```

ii. Enter:

```
vi st.conf
```

The system displays the **st.conf** file.

- iii. Depending on the model tape drive being used, locate or create either the `TAND-8G-FIXED` line or the `EXB-8900` line in the file.
- iv. Modify or create the appropriate tape drive entry so it matches the example shown below. The modifications for existing entries are shown in bold.

Example:

```
Begin CMS tape configuration list.
#tape-config-list=
 "EXABYTE EXB-8900", "Mammoth EXB-8900 8mm Helical Scan", "EXB-8900",
 "TANDBERG SLR5", "Tandberg 8 Gig QIC", "TAND-8G-FIXED";
EXB-8900 = 1,0x29,0,0xce39,4,0x7f,0x7f,0x7f,0x7f,0;
TAND-8G-FIXED = 1,0x37,512,0x963a,4,0xA0,0xD0,0xD0,0xD0,3;
End CMS Tape configuration list.
```

v. Press **Esc** and enter:

```
:wq!
```

## Maintaining the Avaya CMS software

vi. Enter:

```
cd /
```

67. Verify the Free Space Allocation and restore the CMS data. See [Verifying Free Space Allocation during a maintenance restore](#) on page 281 for more information.
68. 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 25.
2. Re-install CMS and supporting software according to [Installing Avaya CMS and supporting software](#) on page 65.
3. Restore any available Avaya CMS data from the most recent CMS maintenance backup. See [Verifying Free Space Allocation during a maintenance restore](#) on page 281 for more information.
4. Re-administer terminals, printers, modems, and other peripheral devices as needed. For more information, see *Avaya CMS Terminals, Printers, and Modems*, 585-215-874.
5. 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 CMS LAN backup feature, see *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715. The *Avaya CMS R3V11 LAN Backup User Guide*, 585-215-715 provides information about using the 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"
```

## 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 199. Before upgrading a system for mirroring, verify that all the hardware requirements and prerequisites have been met. Depending on your current CMS load and system configuration, a hardware or software upgrade may be required.

 **WARNING:**

After disk mirroring is authorized, the 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.



# Troubleshooting

*Troubleshooting* provides solutions for common software-related problems. Use these procedures to troubleshoot the Avaya Call Management System (CMS) software.

*Troubleshooting* includes the following topics:

- [Determining your CMS version](#) on page 382
- [Solving X.25 installation problems](#) on page 383
- [Recognizing new hardware devices](#) on page 385
- [Adding and removing users from password aging](#) on page 386
- [Troubleshooting password aging](#) on page 390
- [Turning on SNMP](#) on page 391
- [CMS error logs](#) on page 392
- [Checking installed software packages](#) on page 393
- [Listing pkgchk errors](#) on page 394
- [Troubleshooting a system that fails to auto-boot](#) on page 395
- [Diagnosing a machine panic](#) on page 396
- [Using the Sun Explorer tool](#) on page 398
- [Using the remote console](#) on page 399
- [Using Sun Remote System Control](#) on page 406
- [Diagnosing dial-In access problems](#) on page 408
- [Booting Solaris into single-user mode](#) on page 414
- [Common problems using the CD-ROM drive](#) on page 415
- [Removing CMS package fails](#) on page 416
- [CMS installation fails](#) on page 416
- [CMSADM backup problems](#) on page 417
- [Disabling power management](#) on page 418
- [System messages](#) on page 419
- [Common error messages](#) on page 420

## Troubleshooting

- [CMS disk partition values](#) on page 430
- [Troubleshooting soft partitioning](#) on page 437
- [About mirrored systems](#) on page 443
- [Troubleshooting an installation of the DiskSuite software](#) on page 448
- [Cleaning up a replacement boot disk](#) on page 454
- [Checking for disk recognition errors](#) on page 456
- [Common error messages with mirrored systems](#) on page 461

### 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 CMS version

To determine the version of CMS installed on your system:

1. Enter:

```
pkginfo -x cms
```

The system displays the CMS version.

---

## Solving X.25 installation problems

*Solving X.25 installation problems* contains procedures that will help you solve common installation problems with the X.25 software.

*Solving X.25 installation problems* includes the following procedures:

- [Finding a misplaced X.25 password](#) on page 383
- [Solutions for X.25 error messages](#) on page 384

### Finding a misplaced X.25 password

If you are reinstalling the X.25 software and license, and have misplaced your X.25 password:

 **Important:**

Solaris 8 installs SUNWllc, SUNWllcr, and SUNWllcx packages during the Solaris installation. If the X.25 software needs to be uninstalled, do not remove SUNWllc, SUNWllcr, and SUNWllcx.

1. Enter the following command to display the password:

```
cat /etc/opt/licenses/licenses_combined
```

If this file no longer exists, check the customer acceptance worksheet in [Turning the system over to the customer](#) on page 223. If you still cannot find the password, call Sun license support to obtain your X.25 password again.

## Solutions for X.25 error messages

The following table contains error messages that are generated by the license system if you have problems during the installation.

| Message                                                                                                                                                                                       | Cause                                                                                                                                                                                                                                                           | Solution                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEMO mode supports only one SERVER host!                                                                                                                                                      | An attempt was made to configure a demonstration version of the software for more than one server.                                                                                                                                                              | Call Sun license support to obtain a permanent version of the X.25 license.                                                                                                                                                                                                                                                                                                        |
| hostname: Wrong hostid, exiting                                                                                                                                                               | The hostid is wrong for the host name. This can happen if the boot ROM or motherboard is replaced.                                                                                                                                                              | Call Sun license support to obtain a new X.25 license key for this new hostid name.                                                                                                                                                                                                                                                                                                |
| Starting the X.25 software - please wait<br>X.25 : Creating link XX....<br>X.25 : link XX has been started<br>Unable to get license, X.25 exiting<br>The network failed to come up correctly. | <ul style="list-style-type: none"> <li>- The X.25 license password was entered incorrectly</li> <li>- The password was generated for the wrong hostid or hostname</li> <li>- The license manager process (lmgrd) did not start when you started CMS.</li> </ul> | <ul style="list-style-type: none"> <li>- Enter the password correctly</li> <li>- Call Sun to reissue the password for the correct hostid or hostname</li> <li>- Check the license manager with the <code>ps - ef   grep lmgrd</code> command. If the lmgrd process is not running, restart the license manager with the <code>/etc/rc2.d/S85lmgrd start</code> command.</li> </ul> |



---

## Recognizing new hardware devices

Use *Recognizing new hardware devices* if externally powered devices, such as disk drives and tape drives, are not recognized during a Solaris installation. This problem may 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**.

---

## 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 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 254.

### 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.

*Adding and removing users from password aging* contains the following procedures:

- [Determining if a password is aged](#) on page 386
- [Excluding users from password aging](#) on page 387
- [Removing users from the password aging exclude file](#) on page 388
- [Aging specific passwords at different rates](#) on page 388

## 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 CMS or UNIX users from password aging. Some custom applications use 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 386.

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 386.

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 386.

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 CMS through Supervisor. Supervisor users will be prompted to enter a new password when their current password expires. Only users who access CMS through the command line will receive a warning message before their password expires.

## Troubleshooting password aging

*Troubleshooting password aging* provides options to help solve password aging problems.

*Troubleshooting password aging* contains the following topics:

- [Tracking changes to password aging](#) on page 390
- [Passwords of excluded users age](#) on page 390

### 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.

---

## Turning on SNMP

Custom software or performance packages may require SNMP to be turned on. The CMS software does not use SNMP so it should be off by default.

To turn on SNMP:

1. Enter:

```
cd /etc/rc3.d
```

2. Enter:

```
mv xS76snmpdx S76snmpdx
```

3. Enter:

```
sh S76snmpdx start
```

## 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 *Checking installed software packages* to check for previously installed software packages. The rules for specifying package names are as follows:

- You may omit *pkgname*, in which case the command 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 may list several package names separated by spaces. In that case, the command 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                                   |
|-------------------------------|--------------------------------------------|------------------------------------------|
| /cms/install/logdir/admin.log | group name <root><br>expected <cms> actual | After the installation and before setup. |
| /usr/lib/cms/pbxtrcflags      | pathname does not exist                    | After the installation and before setup. |
| /cms/env/cms_mon/State_tbl    | group name <bin><br>expected <other>actual | After the setup and before running CMS.  |
| /cms/install/logdir/admin.log | group name <root><br>expected <cms>actual  | After the setup and before running CMS.  |
| /usr/lib/cms/pbxtrcflags      | pathname does not exist                    | After the setup and before running CMS.  |
| /cms/env/cms_mon/State_tbl    | group name <bin><br>expected <cms> actual  | After running CMS.                       |
| /cms/install/logdir/admin.log | group name <root><br>expected <cms> actual | After running CMS.                       |
| /usr/lib/cms/pbxtrcflags      | group name <bin><br>expected <cms> actual  | After running CMS.                       |

---

# Troubleshooting a system that fails to auto-boot

Use *Troubleshooting a system that fails to auto-boot* 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.

*Troubleshooting a system that fails to auto-boot* contains the following procedures:

- [Checking the boot environment variables](#) on page 395
- [Changing the boot environment variables](#) on page 395

## 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.

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.

*Using the remote console* includes the following topics:

- [Remote console ports](#) on page 399
- [Redirecting the console using Solaris](#) on page 399
- [Redirecting the console from OpenBoot mode](#) on page 402

## 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 3000<br>Sun Enterprise 3500 | Remote console              | Not used       |
| Sun Blade                                  | Remote console <sup>1</sup> | N/A            |
| Sun Ultra 5                                | Switch link (optional)      | Remote console |

1. The Sun Blade 100 and Sun Blade 150 platforms have only one serial port.

Redirecting the console using Solaris

*Redirecting the console using Solaris* describes how to use the Solaris operating system to redirect the console to serial port ttya or ttyb on a CMS server. 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.

## 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/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,?]
```

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/abcadm -k
```

**Note:**

All remote access ports have a default speed of 9600 bps.

6. At the remote console, enter:

```
/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,?]
```



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/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,?]
```

## Troubleshooting

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

*Redirecting the console from OpenBoot mode* 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.

## 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.

- 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*.

- 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      |
| .              |       |               |
| .              |       |               |
| .              |       |               |

- If you are not already dialed in, dial in to the system from the remote console.
- Log into the system as **root**.
- 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.

- 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.

- To see what is on the ttyX port, enter:

```
/cms/install/bin/abcaadm -k
```

- 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:

- Cycle power on the CMS computer.
- 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.
- At the `ok` prompt, enter: `boot`
- When the system boots up, log into the system as **root** at the local console.
- To see what is on the ttya port, enter:

```
/cms/install/bin/abcaadm -k
```

- 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
```

- 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*.

*Using Sun Remote System Control* contains the following procedures:

- [Redirecting the local console to the RSC](#) on page 406
- [Redirecting the RSC to the local console](#) on page 407

### 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

*Diagnosing dial-In access problems* 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.

*Diagnosing dial-In access problems* contains the following topics:

- [No ringing and answered responses](#) on page 408
- [Answered and connected responses do not display](#) on page 408
- [Login prompt does not display](#) on page 409
- [Login prompt is scrambled](#) on page 411
- [Remote console port will not initialize](#) on page 412

### 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, including:



- Port A to the Sun Fire V880, Sun Enterprise 3000, Sun Blade 100, Sun Blade 150, and Enterprise 3500
- Port B to the Sun Ultra 5 platform

**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/abcaadm -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/abcaadm -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/abcaadm -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 399 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/abcadm -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/abcadm -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/abcaadm -i -b 9600 ttyX
```

where *x* is a or b.

This should initialize the port.

## Booting Solaris into single-user mode

*Booting Solaris into single-user mode* 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.

*Common problems using the CD-ROM drive* contains the following procedures:

- [CD-ROM drive fails to open](#) on page 415
- [CD-ROM drive cannot be mounted](#) on page 415

### 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 /` and repeat the `eject cdrom` command.

### 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.

---

## Removing CMS package fails

### Problem:

If you exited the system when removing a Avaya CMS package (cms or /cms.2), you may 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.

---

## CMS installation fails

If the CMS installation fails and the system displays the `cannot add another instance of CMS` message, either the 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 CMS installation.



---

## CMSADM backup problems

If you receive an error message during a backup or recovery, refer to [Common error messages](#) on page 420.

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. For more information, see [Avaya CMS helplines](#) on page 24.

## Disabling power management

Power management is installed in an inactive state when CMS is initially set up. If power management becomes enabled on a CMS system, the system will turn off after a set amount of time has passed with no input from the mouse or keyboard. Power management can be disabled from either the desktop or the command line.

*Disabling power management* contains the following procedures:

- [Disabling power management from the desktop](#) on page 418
- [Disabling power management from the command line](#) on page 418

### Disabling power management from the desktop

To disable power management from the desktop:

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 **Power Manager** option.

The system displays the **Dtpower** window.

4. In the **Current Power Saving Scheme** drop down menu, select **Disabled**.

5. Press **OK**.

### Disabling power management from the command line

To disable power management from the command line:

1. Enter:

```
cd /
```

2. Enter:

```
touch /noautoshtdown
```

3. Reboot the system by entering:

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

The system reboots and disables power management. The system removes the **/noautoshtdown** file during the reboot.

---

# 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 glml: 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

*Common error messages* lists and explains messages you may encounter during an upgrade, including messages from CMS and DiskSuite, as well as messages printed to the migration logs.

### Error message table

---

**Message:** ERROR: Password aging cannot be implemented on systems using NIS, NIS+ or LDAP.

**Cause:** The system is using either NIS, NIS+ or LDAP.

**Resolution:** Contact your network administrator. The passwords will have to be aged from the server running the directory service.

---

**Message:** \*\* WARNING:

\*\* Only one user may run age\_pw at one time.

**Cause:** More than one person is attempting to use the `passwd_age` option in the **CMSADM** menu.

**Resolution:** Attempt to run the command after a few minutes have passed. If you still receive the warning message, contact CMS services.

---

**Message:** *synonym name* begins with non-alpha character. Change name after migration. Look for *synonym* in *synonym group*

**Cause:** Synonym names must begin with a letter in CMS R3V8 or later. The synonym *synonym name* does not begin with a letter and was migrated to CMS R3V11.

**Resolution:** List the synonym in the R3V11 Dictionary subsystem, and modify *synonym name* to begin with a letter.

---

**Message:** Cannot find database item in dictionary: *name*

**Cause:** The database item *item name* was not found in the R3V11 Dictionary.

**Resolution:** If you need the database item in a custom report, manually add it to the R3V11 Dictionary.

---

**Message:** Collision in user login: *username*. All ownerships are transferred to user 'cms'.

**Cause:** There is already a login ID established for this user name. The user name being migrated is causing the conflict. The CMS administrator (`cms`) becomes the owner of custom reports, timetables, shortcuts, etc. that were previously owned by the migrated user name.

**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 R3V11 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 R3V11 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 R3V11 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.

## Troubleshooting

---

**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.

---

**Message:** Dictionary collision: name='name' item\_type='const'  
formula='value'

**Cause:** There is already a constant with the name but a different value.

**Resolution:** You need to enter the constant again and rename it.

---

**Message:** Dictionary collision: name='name' item\_type='calc'  
formula='calculation'

**Cause:** There is already a calculation with 'name' as the name but with different contents.

**Resolution:** You need to enter the formula again and rename it.

---

**Message:** Dictionary collision: name='column name' table='table name'

**Cause:** There is already a dictionary item for this column in the same table.

**Resolution:** 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.

---

**Message:** Disk devicename already attached, exiting...

**Cause:** You are trying to attach a disk that is already attached.

**Resolution:** Verify the name of the disk by doing a **Stop+A, probe-scsi-all**. If it's an external disk, check the target number on the back of the drive. Consult the device documentation.

---

**Message:** Due to name collision, item type 'name' (username) has been changed to tempname

**Cause:** The name of the migrated historical report, real-time report, timetable, or shortcut belonging to user *username* has been renamed *tempname* because of a collision with an already existing, identically named item in R3V11.

**Resolution:** Rename the report to something more meaningful than *tempname*.

---

**Message:** Error in adding directory.

**Cause:** The migration program could not add the home directory to the UNIX system.

---

**Resolution:** Use the FACE program to add the login to the UNIX system.

---

**Message:** Error in adding *login ID* to UNIX.

**Cause:** The migration program could not add *login ID* to the password file.

**Resolution:** Use the FACE program to add the login to the UNIX system.

---

**Message:** Error in adding *synonym name* to table.

**Cause:** The migration program could not add the synonym *synonym name* to the R3V11 Dictionary database.

**Resolution:** List the names (synonyms) in the R3V11 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.

---

**Message:** Error in adding member *mbrnum* to group *grpname*.

**Cause:** The migration program could not add group member *mbrnum* to group *grpname*.

**Resolution:** Display the contents of the group in the R3V11 Dictionary subsystem, and add the member if necessary.

---

**Message:** Error in creating UNIX login for user '*username*'. The user may have already had UNIX log...

**Cause:** The user already has a UNIX system login in Avaya CMS R3V11.

**Resolution:** If the user *username* already has a UNIX system login, ignore this message. Otherwise, verify that this user can log on and report any problems to Services.

---

**Message:** Expression field being deleted because it goes beyond the width of report: row=*row* col=*col* width=*width* R3 expression: *expression*

**Cause:** This field in the migrated real-time custom report exceeded the allowable length of 132 columns and was not migrated.

**Resolution:** You need to add the field to the real-time custom report in R3V11 using the editor.

---

**Message:** Expression (*row=row number,col=column number*) exceeds maximum length and has been truncated: *expression*

**Cause:** During migration, the expression *expression* changed and is too long for the **Select** field of the **Field** window.

## Troubleshooting

**Resolution:** 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 `expression`. Edit the report and substitute the custom calculation for the expression in the **Select** field of the **Field** window.

---

**Message:** Getting user input...

**Cause:** This is an informational CMS migration processing message.

**Resolution:** No action required.

---

**Message:** `login ID` has no default printer. Assign default printer via User Data.

**Cause:** No default printer was assigned to `login ID` in the **User Data** window.

**Resolution:** Use the **User Data** window and assign a default printer to `<login ID>`.

---

**Message:** Initializing temporary database tables...

**Cause:** This is an informational CMS migration processing message.

**Resolution:** No action required.

---

**Message:** Insufficient number of free blocks (`#-of-blocks`) in `system name` for temporary database tables.

**Cause:** The file system does not contain enough free blocks for CMS R3V11 to create the temporary tables needed for the migration.

**Resolution:** Call services to resolve this situation.

---

**Message:** \*\*\* INTERNAL ERROR: contact services (`error#, timestamp`) \*\*\*

**Cause:** An internal error occurred during processing of the table listed above this message.

**Resolution:** 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.

---

**Message:** Invalid user `logname`. Permissions not migrated.

**Cause:** This is informational. The CMS R3V11 system found permission information for a deleted user, so did not migrate the permissions.

**Resolution:** No action required.

---

**Message:** `metadb: system: device:` has a metadevice database replica

**Cause:** There are already state database replicas existing on the indicated system and device.

---



**Resolution:** No action required.

---

**Message:** Multiple repeat statements on different rows in this report.  
Can't swap.

**Cause:** CMS R3V11 does not allow a vertically-repeated field to appear above another repeated field.

**Resolution:** Use the R3V11 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.

---

**Message:** *calculation name* not found in the R3 database.

**Cause:** One of the following conditions may cause this message to occur:

1. The formula for *calculation name* has items that cannot be found in the R3V11 Dictionary. Usually this occurs when a calculation contains a nested calculation, and the original calculation is migrated before the nested one.
2. The calculation or database item is misspelled, in which case the calculation fails.

**Resolution:** Perform the following:

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.
  2. If the calculation or database item is misspelled, use the R3V11 dictionary subsystem to correct the spelling. If you correct the spelling, the calculation or database item may work in R3V11.
- 

**Message:** – Request failed. See /cms/install/logdir/backup.log for more information.

**Cause:** 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.

**Resolution:** 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.

---

**Message:** Row Search *rownumber*: where clause contains too many characters, *length*, maximum is 468.

## Troubleshooting

**Cause:** When the criteria for row search ID `rownumber` was migrated to R3V11, it was too long for the “select rows where” field.

**Resolution:** 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.

---

**Message:** Terminated by user request?  
User not administered on UNIX: user login

**Cause:** The login `user login` was migrated to CMS R3V11 but does not exist as a login on the UNIX system.

**Resolution:** Users will be unable to log into Avaya CMS R3V11 until they are added to the UNIX system. To add the user login, access User Permissions: User Data window. Press **Ctrl+Z** simultaneously to clear all fields. Type `user login` in the first field, select “Find one,” and then select “Add.” This procedure adds `user login` to the UNIX system and allows the user to log into Avaya CMS R3V11. Follow the same steps for every user login that was not administered on the UNIX system.

---

**Message:** Text truncated after column 132: row=row col=col

**Cause:** A text field for a migrated real-time report either straddled or exceeded the allowable R3V11 line length of 132 columns. If the field exceeded 132 columns, it was not migrated. If it straddled 132 columns, it was truncated.

**Resolution:** Use the editor to add or modify the report text field in R3V11.

---

**Message:** The expression `expression` could not be resolved in the dictionary. You must fix the expression `expression` for the report to work.

**Cause:** There is a calculation in the custom report that contains an invalid database item, and the calculation cannot be resolved in R3V11. 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.

**Resolution:** 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.

---

**Message:** This report goes beyond the maximum number of rows (25).

**Cause:** This is a quad report, which R3V11 does not allow. Only the first quadrant is migrated.

**Resolution:** To regain the other quadrants, you must create an R3V11 custom report for each quadrant.

---

**Message:** Too many date display fields, now adding: date prompt.

**Cause:** 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.

**Resolution:** Use the Screen Painter to edit the report and correct the date.

---

**Message:** Unable to move scroll region to bottom of report. You must do this manually.

**Cause:** Not enough rows were available to move the repeated portion of the R2 report to the bottom of the R3V11 report.

**Resolution:** Edit the custom report via the R3V11 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 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 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 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 R3V11 User Data windows.

---

**Message:** VDN Synonym *VDN synonym name*, *VDN number* already exists as R3 synonym.

## Troubleshooting

**Cause:** A VDN synonym *VDN synonym name* already existed in the R3V11 Dictionary database when this migration was done.

**Resolution:** Modify the R2 VDN synonym name, and manually add it to the R3V11 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 R3V11.

**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 R3V11 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 CMS R3V11.

**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 R3V11.

**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.

---

## 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 [Installing the Solaris operating system](#) on page 25 for specific instructions on setting up the Solaris boot disk partitions. See [Supported disk drives](#) on page 45 for more information on currently supported disk drives.

*CMS disk partition values* contains the following topics:

- [Boot disk partition values](#) on page 430
- [Data disk partition values](#) on page 432
- [Soft partitions](#) on page 433

## Boot disk partition values

The following [Boot disk partition table](#) on page 430 is for CMS R3V11 systems only.

### Boot disk partition table

| Disk slice                             | 0                                                               | 1                                                                  | 2                      | 3                                              | 4                       | 5                       | 6                       | 7                              |
|----------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------------|------------------------|------------------------------------------------|-------------------------|-------------------------|-------------------------|--------------------------------|
| Slice name                             | <i>/ or (leave blank) if alternate boot on mirrored systems</i> | swap <i>or (leave blank) if alternate boot on mirrored systems</i> | overlap <sup>1</sup>   | <i>/cms if using formatleave as unassigned</i> | <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 | <i>(Remainder<sup>2</sup>)</i> |
| 18-GB FC-AL or SCSI starting cylinders | 0                                                               | 1781                                                               | <i>(Do not change)</i> | 2227                                           | 3563                    | 4454                    | 5345                    |                                |

| Disk slice                                                                                | 0                                                        | 1                                                           | 2                                      | 3                                        | 4                                    | 5                                    | 6                                    | 7             |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------|----------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---------------|
| Slice name                                                                                | / or (leave blank) if alternate boot on mirrored systems | swap or (leave blank) if alternate boot on mirrored systems | overlap <sup>1</sup>                   | /cms if using format leave as unassigned | (Leave blank)                        | (Leave blank)                        | (Leave blank)                        | (Leave blank) |
| Flag                                                                                      | wm                                                       | wu                                                          | wm                                     | wm                                       | wm                                   | wm                                   | wm                                   | wm            |
| <b>Partition size</b>                                                                     |                                                          |                                                             |                                        |                                          |                                      |                                      |                                      |               |
| 20-GB<br><br>20-GB EIDE starting cylinders<br>(Models ST320420A, ST320414A, or ST320011A) | 4096 MB<br>or<br>4.0 GB<br><br>0                         | 1024 MB<br>or<br>1.0 GB<br><br>8323                         | (Do not change)<br><br>(Do not change) | 3072 MB<br>or<br>3.0 GB<br><br>10404     | 2048 MB<br>or<br>2.0 GB<br><br>16646 | 2048 MB<br>or<br>2.0 GB<br><br>20808 | 2048 MB<br>or<br>2.0 GB<br><br>24970 | (Remainder)   |
| 36-GB<br><br>36-GB FC-AL starting cylinders                                               | 4096 MB<br>or<br>4.0 GB<br><br>0                         | 1024 MB<br>or<br>1.0 GB<br><br>2904                         | (Do not change)<br><br>(Do not change) | 3072 MB<br>or<br>3.0 GB<br><br>3630      | 2048 MB<br>or<br>2.0 GB<br><br>5808  | 2048 MB<br>or<br>2.0 GB<br><br>7260  | 2048 MB<br>or<br>2.0 GB<br><br>8712  | (Remainder)   |
| 40-GB<br><br>40-GB EIDE starting cylinders                                                | 4096 MB<br>or<br>4.0 GB<br><br>0                         | 1024 MB<br>or<br>1.0 GB<br><br>2057                         | (Do not change)<br><br>(Do not change) | 3072 MB<br>or<br>3.0 GB<br><br>2572      | 2048 MB<br>or<br>2.0 GB<br><br>4115  | 2048 MB<br>or<br>2.0 GB<br><br>5144  | 2048 MB<br>or<br>2.0 GB<br><br>6173  | (Remainder)   |
| 73-GB<br><br>73-GB FC-AL starting cylinders                                               | 4096 MB<br>or<br>4.0 GB<br><br>0                         | 1024 MB<br>or<br>1.0 GB<br><br>825                          | (Do not change)<br><br>(Do not change) | 3072 MB<br>or<br>3.0 GB<br><br>1032      | 2048 MB<br>or<br>2.0 GB<br><br>1651  | 2048 MB<br>or<br>2.0 GB<br><br>2064  | 2048 MB<br>or<br>2.0 GB<br><br>2477  | (Remainder)   |

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 CMS.

## Data disk partition values

The following [Data disk partition table](#) on page 432 is for CMS R3V11 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                   |
|                                         | <b>Partition size</b>   |                         |                        |                         |                         |                                |                         |                      |
| 4.2-GB                                  | 2048 MB<br>or<br>2.0 GB | 2048 MB<br>or<br>2.0 GB | <i>(Do not change)</i> | 0                       | 0                       | 0                              | 0                       | 0                    |
| 4.2-GB SCSI starting cylinders          | 0                       | 1942                    | <i>(Do not change)</i> | 0                       | 0                       | 0                              | 0                       | 0                    |
| 9.1-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 | <i>(Remainder)<sup>2</sup></i> | 0                       | 0                    |
| 9.1-GB FC-AL or SCSI starting cylinders | 0                       | 1169                    | <i>(Do not change)</i> | 2338                    | 3507                    |                                | 0                       | 0                    |
| 9.1-GB EIDE starting cylinders          | 0                       | 4162                    | <i>(Do not change)</i> | 8324                    | 12486                   |                                | 0                       | 0                    |
| 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)</i>   |
| 18-GB FC-AL or SCSI starting cylinders  | 0                       | 891                     | <i>(Do not change)</i> | 1782                    | 2673                    | 3564                           | 4455                    |                      |



| 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>   |                         |                        |                         |                         |                         |                         |                      |
| 20-GB<br><br>20-GB EIDE starting cylinders<br>(Models ST320420A, ST320414A, or ST320011A) | 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>   |
|                                                                                           | 0                       | 4162                    | <i>(Do not change)</i> | 8324                    | 12486                   | 16648                   | 20810                   |                      |
| 36-GB<br><br>36-GB FC-AL starting cylinders                                               | 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>   |
|                                                                                           | 0                       | 1452                    | <i>(Do not change)</i> | 2904                    | 4356                    | 5808                    | 7260                    |                      |
| 73-GB<br><br>73-GB FC-AL starting cylinders                                               | 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>   |
|                                                                                           | 0                       | 413                     | <i>(Do not change)</i> | 826                     | 1239                    | 1652                    | 2065                    |                      |

- 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.
- 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 CMS.

## Soft partitions

Soft partitioning is managed through DiskSuite 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.

## 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.
  - $m = 1, 2, 3, 4, 5,$  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  $n = 0, 1, 2, 3,$  or  $4$
    - On a mirror disk  $n = 5, 6, 7, 8,$  or  $9$
  - $k = 0, 1, 2, 3, 4, 5, 6, 7, 8,$  or  $9.$

**Note:**

Disk sizes smaller than 18 GB do not require soft partitions.

Examples:

### Non-mirrored E3000 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 E3000 with 18-GB disks

| Disk               | Slices 0 - 6 do not contain soft partitions | Slice 7 meta devices |      |
|--------------------|---------------------------------------------|----------------------|------|
| Primary 1 (c0t0d0) |                                             | d100                 | d101 |
| Mirror 1 (c0t11d0) |                                             | d150                 | d151 |
| Primary 2 (c0t1d0) |                                             | d200                 | d201 |
| Mirror 2 (c0t12d0) |                                             | d250                 | d251 |
| Primary 3 (c0t2d0) |                                             | d300                 | d301 |
| Mirror 3 (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 (dmnk) | dmn0   | dmn1   | dmn2   | dmn3   | dmn4   |
|-------------------|--------|--------|--------|--------|--------|
| 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      |

---

# 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
```

## Troubleshooting

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 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 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
```

---

## About mirrored systems

The 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 hard 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 CMS implements mirroring](#) on page 443
- [Mirroring through Informix](#) on page 443
- [Mirroring through DiskSuite](#) on page 444

## How CMS implements mirroring

CMS disk mirroring is done by using a combination of the DiskSuite and Informix software. DiskSuite 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.

A CMS system contains the following dbSPACES:

- rootdbs
- physdbs
- logdbs
- dbtemp
- aasdb

## Troubleshooting

- 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 a 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 a 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 DiskSuite

### State databases

---

The DiskSuite 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 DiskSuite 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.

DiskSuite cannot operate until you have created the state database and its replicas. The software must have an operating state database.

### Metadevices

---

A metadvice is a logical device that consists of a set of physical disk partitions. A system controlled by DiskSuite 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.

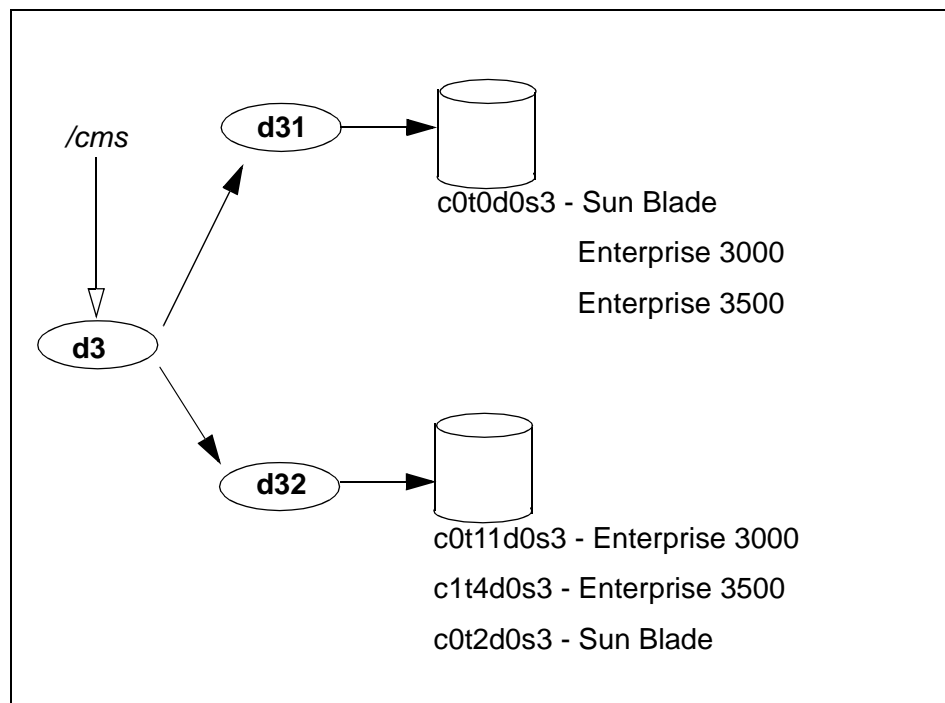
## Mirrors

A mirror is a metadevice that can copy data from one metadevice to another. The metadevices containing the data are called submirrors. The process of copying the data between submirrors is called mirroring.

## Slices

DiskSuite metadevices are built from slices (disk partitions). A system controlled by DiskSuite may contain any number of metadevices, each of which may comprise any combination of slices.

To implement disk mirroring, the system creates a metadevice d32 as a duplicate of d31. The system then configures the two metadevices as submirrors of d3, as shown in the following example:



In a CMS computer system with */cms* mirrored, *root* is also mirrored. The root mirror is d1; its submirrors are d11 and d12. If your CMS system is running CMS R3V11, your swap partition is also mirrored. The swap mirror is d2; its submirrors are d21 and d22.

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.

- 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 computer

| 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 3000 computer

| 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 |
|                                    |                  |                               |                  |                                |                  |

| mirror d1<br><i>/ (root) filesystem</i> |           | mirror d2<br><i>(swap partition)</i> |           | mirror d3<br><i>(/cms filesystem)</i> |           |
|-----------------------------------------|-----------|--------------------------------------|-----------|---------------------------------------|-----------|
| c0t0d0s0                                | c0t11d0s0 | c0t0d0s1                             | c0t11d0s1 | c0t0d0s3                              | c0t11d0s3 |

**Mirror layout on a Sun Enterprise 3500 computer**

| mirror d1<br><i>/ (root) filesystem</i> |                  | mirror d2<br><i>swap partition</i> |                  | mirror d3<br><i>/cms filesystem</i> |                  |
|-----------------------------------------|------------------|------------------------------------|------------------|-------------------------------------|------------------|
| 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 an installation of the DiskSuite software

Use the procedures and tips in *Troubleshooting an installation of the DiskSuite software* to help you identify and resolve problems with:

- CMS scripts that administer DiskSuite software
- Physical disks
- Metadevices
- **/cms** file system

*Checking for disk recognition errors* includes the following topics:

- [Excessively long resync](#) on page 448
- [Problems with CMS administration scripts](#) on page 449
- [Disk I/O problems](#) on page 449
- [Checking metadevices](#) on page 450
- [Checking the /cms file system](#) on page 451
- [Problems with disk administration](#) on page 453

### 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.



## Problems with CMS administration scripts

To verify that the DiskSuite software is installed:

1. Enter:

```
pkginfo -x|grep SUNWmd
```

The system displays a message similar to the following:

|          |                                                   |
|----------|---------------------------------------------------|
| SUNWmdg  | Solstice DiskSuite Tool                           |
| SUNWmdja | Solstice DiskSuite Japanese localization          |
| SUNWmdnr | Solstice DiskSuite Log Daemon Configuration Files |
| SUNWmdnu | Solstice DiskSuite Log Daemon                     |
| SUNWmdr  | Solstice DiskSuite Drivers                        |
| SUNWmdu  | Solstice DiskSuite Commands                       |
| SUNWmdx  | Solstice DiskSuite Drivers(64-bit)                |

2. If the DiskSuite software has not been installed, you will have to reinstall DiskSuite.
3. Once the software has been installed, you must use the `olds` script to set up the environment so CMS can access the disks. For a step-by-step description of installing DiskSuite software and using the `olds` script, see [Installing Avaya CMS and supporting software](#) on page 65.

If you receive an error message from the `olds` script, see [Problems with disk administration](#) on page 453.

## 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
- *Avaya CMS Sun Ultra 5 Computer Hardware Installation, Maintenance and Troubleshooting*, 585-215-871
- *Avaya CMS Sun Enterprise 3000 and SPARCserver Computer Hardware, Maintenance and Troubleshooting*, 585-214-016

## Checking metadevices

To verify that a metadevice 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 metadevice 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.

- 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
```

## Checking the /cms file system

To check the `/cms` file system for errors:

- Log in as `root`.
- 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/rdsk/c1d0s2   | /usr       | ufs  | 1    | yes     | -       |
| fd                | -                  | /dev/fd fd | -    | no   | -       | -       |
| /proc             | -                  | /proc proc | -    | no   | -       | -       |
| /dev/dsk/c0t3d0s4 | -                  | -          | swap | -    | no      | -       |
| /dev/dsk/c0t3d0s0 | /dev/rdsk/c0t3d0s0 | /          | ufs  | 1    | no      | -       |
| /dev/md/dsk/d3    | /dev/md/rdsk/d3    | /cms       | ufs  | 2    | yes     | -       |

- Add a pound sign (#) at the beginning of the `/dev/md/dsk/d3` line. This “comments out” that line.
- Press `Esc` and enter:

```
:wq!
```

## Troubleshooting

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       | /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 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 metadevice being used. Then verify that the entry for **/cms** in the **/etc/vfstab** file is correct. If you find any errors, correct them.

## Problems with disk administration

In a system with the DiskSuite software installed, the total amount of disk space available to **/cms** should be about the same as the total amount of space provided by all the disk drives in the system. If there appears to be a problem, you can check the files **/etc/vfstab** and **/etc/lvm/md.cf** to verify that the DiskSuite software recognizes all the drives on your system. This applies to mirrored systems only.

- **/etc/vfstab** should name the d3 metadevice (*/dev/md/rdisk/d3*) as the **/cms** file system. Old **/cms** entries (in the form **/cms0** through **/cms12**) should not exist or, if they do exist, should be commented out by pound signs at the beginnings of the lines.
- **/etc/lvm/SUNWmd/md.tab** should account for all the disk drives. Check the **/cms** section of the file to make sure it names all existing disk devices. The following example shows two disks being administered by DiskSuite software:

```
. . .
#/cms d3 3 1 /dev/dsk/c0t1d0s1 1 /dev/dsk/c0t3d0s3
```

If there is any discrepancy between either file and the configuration required to run CMS, go to [Checking for disk recognition errors](#) on page 456.

## 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 may 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
```

9. Enter:

```
print
```

10. Verify that the disk is partitioned correctly. See [CMS disk partition values](#) on page 430 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.

15. Choose one of the following procedures depending on the type of disk that failed:

- [Recovering a mirrored system after the primary boot disk fails](#) on page 318
- [Recovering a mirrored system after the secondary boot disk fails](#) on page 324
- [Recovering a mirrored system after a single data disk fails](#) on page 329
- [Recovering a mirrored system after a mirrored pair of data disks fail](#) on page 335

## Checking for disk recognition errors

Use procedures *Checking for disk recognition errors* to help you diagnose problems with unrecognized disk drives. This procedure differs for the different hardware platforms.

 **CAUTION:**

Use this procedure only if the DiskSuite scripts indicate there is a disk recognition error.

*Checking for disk recognition errors* includes the following procedures:

- [Checking disk recognition errors on a Sun Blade or Ultra 5](#) on page 456
- [Disk recognition errors on an Enterprise 3500](#) on page 458
- [Disk recognition errors on an Enterprise 3000 or Sun Fire V880](#) on page 459

## Checking disk recognition errors on a Sun Blade or Ultra 5

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 an Enterprise 3000 or 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.

## Troubleshooting

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

*Common error messages with mirrored systems* presents, in alphabetical order, the messages commonly associated with DiskSuite and disk mirroring on a CMS system. Each message is accompanied by its probable cause and the likely solution.

|                     |                                                       |
|---------------------|-------------------------------------------------------|
| <b>Message:</b>     | DiskSuite must be installed                           |
| <b>Explanation:</b> | You must install the DiskSuite software package.      |
| <b>Response:</b>    | See <a href="#">Installing DiskSuite</a> on page 103. |

|                     |                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | /etc/system has been updated since the last reboot. CMS cannot run without an up-to-date /etc/system 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>     | metadetach: systemname: d21: resync in progress                                                        |
| <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 <b>metastat</b> command. |

|                     |                                                                                                                                                                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | panic: vfs_mountroot: cannot mount root<br>rebooting...<br>resetting....                                                                                                                                                              |
| <b>Explanation:</b> | The system is misconfigured.                                                                                                                                                                                                          |
| <b>Response:</b>    | There are two possible causes: <ol style="list-style-type: none"> <li>1. <i>You attempted to boot from a nonbootable device.</i> Check the device name and try again. The alternate boot device may be set up incorrectly.</li> </ol> |

## Troubleshooting

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <p>2. <i>You failed to reboot after initiating mirroring (olds -mirrored), leaving the system unstable. In that case, do the following:</i></p> <ol style="list-style-type: none"><li>a. Boot from the CD-ROM.</li><li>b. Mount <code>/dev/dsk/c0t0d0s0 /a</code> (or whatever partition is your root partition).</li><li>c. Remove DiskSuite entries from <code>/a/etc/system</code> (that is, everything between tags “mddb...”)</li><li>d. Remove <code>/a/etc/lvm/md*</code> files, that is:<br/><pre>rm /a/etc/opt/SUNWmd/md*</pre></li><li>e. Replace <code>/dev/md/rdisk/d1</code> entries with <code>/dev/rdisk/c0t3d0s0</code> (or whatever your boot device name is).</li><li>f. Boot: <code>/usr/sbin/shutdown -y -g0 -i6</code></li><li>g. If the system still refuses to reboot, reload <i>Solaris</i>.</li></ol> |
| <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 resynched.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <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 DiskSuite Software must be installed to run this script.     |
| <b>Explanation:</b> | The DiskSuite software is not installed.                         |
| <b>Response:</b>    | Install DiskSuite software before attempting to run this script. |

|                     |                                                                                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | The file <i>filename</i> could not be restored.                                                                                                                         |
| <b>Explanation:</b> | The previous action failed, and the <b>md.tab</b> or <b>vfstab</b> 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 /cms filesystem needs to be mounted        |
| <b>Explanation:</b> | /cms must be mounted for the command to work.  |
| <b>Response:</b>    | Mount /cms with the command: <b>mount /cms</b> |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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: <b>N</b> (to prevent the probe from continuing).</li> <li>2. Enter: <b>setenv auto-boot? false</b><br/>(to keep the system from rebooting)</li> <li>3. Enter: <b>reset-all</b><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/><b>setenv auto-boot? true</b><br/>Failure to do so will cause the reboot to stop at the boot prompt.</li> </ol> |

## Troubleshooting

|                     |                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | <code>touch: /cms/db/unix_start cannot create</code>                                                                         |
| <b>Explanation:</b> | A CMSADM backup was done when CMS was still running. An attempt is made to restart cms, but cms files are not yet available. |
| <b>Response:</b>    | No response required. The message will disappear after you have restored and migrated CMS.                                   |

|                     |                                                                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Message:</b>     | <code>Unbalanced configurations not supported.</code>                                                                                                   |
| <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>     | <code>Warning: inode blocks/cyl group (230 &gt;= data blocks (135) in lost cylinder group. This implies 2160 sector(s) cannot be allocated.</code> |
| <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>     | <code>You must be root in order to run this command.</code>                                 |
| <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 Automatic Call Distribution (ACD)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Acknowledgment</b>                    | A window that requires the user to confirm an action or to acknowledge a system message (for example, system going down, warning, or fatal error for the user window). This window cannot be moved, sized, or scrolled and disappears only when the user confirms the message.                                                                                                                                                                                                                                          |
| <b>Action list</b>                       | A menu in the upper right corner of most user windows. The menu lists the actions available for that particular user window (for example, add, modify, delete, and so on). The user selects an action after entering necessary data in the window.                                                                                                                                                                                                                                                                      |
| <b>Add package</b>                       | A Solaris operating system command ( <code>pkgadd</code> ) that allows you to add an additional software package.                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ADU</b>                               | See Asynchronous Data Unit (ADU)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <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 login ID</b>                    | A 1- to 4-digit number (Generic 2) or a 1- to 9-digit number (Generic 3) entered by the agent at the ACD extension to activate the position. Agent logins are required for all CMS-measured ACD agents.                                                                                                                                                                                                                                                                                                                 |
| <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. See "Primary Skill" or "Secondary Skill" definitions in this Glossary.                                                                                                                                                                                                                                                                         |
| <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>                                                                                                                                                                                                                                        |

## Avaya CMS

|                                                               |                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Avaya CMS</b>                                              | Avaya Call Management System (CMS). 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 Automatic Call Distribution (ACD) feature of the switch.                                                                                            |
| <b>Backup</b>                                                 | The process of protecting data by writing the contents of the disk to a tape that can be removed from the computer and stored safely. A spare copy of data or software that you keep in case the original is damaged or lost. CMS provides three different types of backups: CMSADM File System Backup, CMS Full Maintenance Backup, and CMS Incremental Maintenance Backup. |
| <b>Boot</b>                                                   | To load the system software into memory and start it running.                                                                                                                                                                                                                                                                                                                |
| <b>Bus</b>                                                    | <p>A signal route to which several items of a computer system may be connected in parallel so that signals can be passed between them.</p> <p>In general, a multiconductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.</p>                                                             |
| <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>CLI<br/>Call level interface</b>                           | A database programming interface from the Structured Query Language (SQL) Access Group, an SQL membership organization. Under CLI, SQL statements are passed directly to the server without being recompiled.                                                                                                                                                                |
| <b>Call Management<br/>System query language<br/>(CMS-QL)</b> | A relational database management (operating) system used to organize most of CMS's data. Automatically comes with CMS and runs in the background.                                                                                                                                                                                                                            |
| <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>Cartridge tape</b>                                         | A 0.25-inch (6.35-mm) magnetic tape used in the tape drive of the Desktop Backup Pack and External Storage Module to read and write data.                                                                                                                                                                                                                                    |
| <b>CMS</b>                                                    | Call Management System. See <i>Avaya CMS</i> .                                                                                                                                                                                                                                                                                                                               |
| <b>CMSADM</b>                                                 | Call Management System Administration. The part of the CMS software that allows a user to administer features of CMS. See also "CMSSVC."                                                                                                                                                                                                                                     |
| <b>CMSADM file system<br/>backup</b>                          | A backup that saves all the file systems on the machine which includes <i>Solaris 8</i> system and programs, CMS programs and data, and non-CMS data you place on the computer in addition to the CMS data. See the "Backup" definition for more details.                                                                                                                    |

|                                   |                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CMSSVC</b>                     | Call Management System Services. The part of the CMS software product that allows a user to manage CMS system services. See also “CMSADM.”                                                                                                                                                                        |
| <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>Copy</b>                       | Copy means to duplicate information.                                                                                                                                                                                                                                                                              |
| <b>Custom reports</b>             | Real-time or historical reports that have been customized from standard reports or created from original design.                                                                                                                                                                                                  |
| <b>Daemon</b>                     | Pronounced “demon.” A UNIX program that executes in the background ready to perform an operation when required. Usually unattended processes initiated at start-up, such as print spoolers, e-mail handlers or schedulers.                                                                                        |
| <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>Disk</b>                       | A round platter, or set of platters, coated with magnetic medium and organized into concentric tracks for storing data.                                                                                                                                                                                           |
| <b>EAD</b>                        | See Expert Agent Distribution (EAD)                                                                                                                                                                                                                                                                               |

**EAS**

**EAS** See Expert Agent Selection (EAS)

**ECC** See Error Correction Codes (ECC)

**EIA** Electronic Industries Association. An organization that sets standards for consumer products and electronic components.

**Error correction code (ECC)** A code that protects the customer's system and data from single bit soft errors that can occur frequently depending on the environment.

**Error message** An error message is a response from a program indicating that a problem has arisen or something unexpected has happened, requiring your attention.

**Ethernet** 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.

**Ethernet address** 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.

**Exception** 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).

**Expert Agent Distribution (EAD)** 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.

**Expert Agent Selection (EAS)** 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** 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.

**Gigabyte (GB)** One gigabyte equals  $2^{30}$  bytes (1073741824 bytes).

**Hand-shaking logic** A format used to initiate a data connection between two data module devices.

**Hard disk** A device that stores operating systems, programs, and data files.

**High speed serial interface (HSI)** The HSI controller card is a 4-port serial communications card. Each of the four ports is used for a single physical X.25 link. It is an add-on package that is needed by CMS for multiple ACDs.

|                                              |                                                                                                                                                                                                                                                                     |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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. The Sun SPARCserver or Sun Enterprise 3000 computer is your host computer and hosts the CMS application software. |
| <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 8</i> operating system (and also to the network).                                                                                               |
| <b>Hung system</b>                           | A system that does not respond to input from the keyboard or mouse.                                                                                                                                                                                                 |
| <b>IDS</b>                                   | See Informix Dynamic Server (IDS)                                                                                                                                                                                                                                   |
| <b>ITU</b>                                   | See International Telecommunications Union (ITU)                                                                                                                                                                                                                    |
| <b>Informix</b>                              | A relational database management system used to organize CMS data. An add-on software package needed by CMS.                                                                                                                                                        |
| <b>Informix Dynamic Server</b>               | The relational database management system used with CMS Release 3 Version 9.                                                                                                                                                                                        |
| <b>Install</b>                               | The procedures used to set up the hardware and software of a computer, terminal, printer, and modem so that they can be used. Installing often includes customizing the system for a particular situation or user.                                                  |
| <b>Interface</b>                             | A common boundary between two systems or pieces of equipment.                                                                                                                                                                                                       |
| <b>Internet protocol (IP)</b>                | An integral part of the internet communication protocol system (see Transmission Control Protocol/Internet Protocol [TCP/IP]). The IP provides the routing mechanism of the TCP/IP. See also Network Address.                                                       |
| <b>LAPB</b>                                  | See Link Access Procedure Balanced (LAPB)                                                                                                                                                                                                                           |
| <b>Link access procedure balanced (LAPB)</b> | The ITU standard error correction protocol used on most current X.25 packet switching networks.                                                                                                                                                                     |
| <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.                                                                                                                                                                                                                               |

## Logical unit

|                                                  |                                                                                                                                                                                                                                                                   |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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>Menu</b>                                      | A list of items from which the user can select one. A menu cannot be moved or sized and does not count in the user window count.                                                                                                                                  |
| <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 Network Terminal Server (NTS)                                                                                                                                                                                                                                 |
| <b>NVRAM</b>                                     | See Non-Volatile Random Access Memory (NVRAM)                                                                                                                                                                                                                     |
| <b>Open window</b>                               | A window that remains open because the user has not yet closed it with the "Exit" Screen Label Key (SLK). An open window becomes the current window when it initially appears on the screen or when the user makes it the current window using the "Current" SLK. |
| <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. See “Agent Skill” in this Glossary.                                                                                                                                                                                                                               |
| <b>Primary window</b>            | The first window opened in response to a menu selection. A primary window may also generate another user window (secondary window). A primary window can be moved, sized, or scrolled, and counts in the window count.                                                                                                                        |
| <b>Printer</b>                   | A physical device that takes electronic signals, interprets them, and prints them on paper.                                                                                                                                                                                                                                                   |
| <b>Processor interface (PI)</b>  | A hardware device on the Generic 3i switches that prepares and sends architecture messages to other switches or application adjuncts.                                                                                                                                                                                                         |
| <b>QIC</b>                       | Quarter-Inch Cartridge                                                                                                                                                                                                                                                                                                                        |
| <b>Recommended standard (RS)</b> | Any one of several Electronic Industries Association (EIA) standards commonly used in U.S. electronic applications.                                                                                                                                                                                                                           |
| <b>Refresh rate</b>              | The number of seconds CMS should wait for each update of the real-time report data. A user’s fastest allowable refresh rate is defined in the User Permissions — User Data window as a minimum refresh rate. The default refresh rate when a user brings up the report input window is the administered minimum refresh rate plus 15 seconds. |
| <b>RISC</b>                      | Reduced Instruction Set Computer. A computer architecture that reduces chip complexity by using a simpler instruction set. RISC keeps instruction size constant, bans the indirect addressing mode, and retains only those instructions that can be overlapped and made to execute in one machine cycle or less.                              |
| <b>RS</b>                        | See Recommended Standard (RS)                                                                                                                                                                                                                                                                                                                 |
| <b>RS-422</b>                    | A balanced electrical interface (for example, RS-422 has a positive and a negative voltage). This interface is used by the HSI card.                                                                                                                                                                                                          |
| <b>RS-449</b>                    | A 37-pin physical interface used by the HSI card.                                                                                                                                                                                                                                                                                             |
| <b>RSC</b>                       | See Sun Remote System Control (RSC)                                                                                                                                                                                                                                                                                                           |
| <b>SBus</b>                      | The Input/Output bus for the Sun SPARCserver and Enterprise computers. Provides slots for additional cards (for example, HSI Controller Card).                                                                                                                                                                                                |

## **SBus expansion subsystem**

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SBus expansion subsystem</b>          | A peripheral device attached to a computer system. The SBus expansion subsystem provides three additional SBus slots and space for two optional SCSI hard disk drives. The SBus expansion subsystem consists of the following: the SBus expansion chassis, the expansion adapter card (in the computer system), and the SBus expansion subsystem cable.                                          |
| <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.                                                                                                                                                                                                   |
| <b>SCSI</b>                              | See Small Computer System Interface                                                                                                                                                                                                                                                                                                                                                              |
| <b>SCSI bus</b>                          | An industry standard peripheral bus that is used to connect intelligent peripherals to a computer. It uses a daisy-chained cabling arrangement that originates at the Host Adapter to interconnect up to seven intelligent peripheral controllers on the bus. The Sun SPARCserver computer uses a fast SCSI-2 implementation.                                                                    |
| <b>SCSI ID</b>                           | Each tap on the SCSI bus is required to have a unique identification or address, which is the SCSI ID. The ID is set by a switch located on each controller. In a Lucent Technologies' implementation, the Host Adapter card (with a SCSI ID of 7) is preset. The remainder can be set with external devices "push buttons." Users never have to open a chassis or touch a circuit-board switch. |
| <b>SCSI single-ended bus</b>             | A version of the SCSI bus designed to minimize cost and space. Cable lengths up to 6 meters are supported. It is not compatible with the differential version of the SCSI bus.                                                                                                                                                                                                                   |
| <b>Secondary skill</b>                   | An agent will handle secondary skill calls after primary skill calls. See "Agent Skill" in this Glossary.                                                                                                                                                                                                                                                                                        |
| <b>Secondary window</b>                  | A user window that is generated from a primary window. Secondary windows can be moved, sized, or scrolled and do not count in the user window count.                                                                                                                                                                                                                                             |
| <b>Serial asynchronous interface/PCI</b> | A card that provides access to eight serial ports by connecting to an eight-port patch panel.                                                                                                                                                                                                                                                                                                    |
| <b>Single-user mode</b>                  | 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.                                                                                                                                                                                                                             |
| <b>Skill</b>                             | 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.                                                                                                                                                                                                                                                    |
| <b>SQL</b>                               | See Structured Query Language (SQL)                                                                                                                                                                                                                                                                                                                                                              |
| <b>Slot</b>                              | 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).                                                                                                                                                                                                                                        |



|                                               |                                                                                                                                                                                                                                                         |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Small computer system interface (SCSI)</b> | A hardware interface that allows the connection of peripheral devices (such as hard disks, tape drives and CD-ROM drives) to a computer system.                                                                                                         |
| <b>Soft partitions</b>                        | DiskSuite metadevices on partition 7 that allow disk sizes larger than 14 GB to be fully utilized by CMS.                                                                                                                                               |
| <b>Split</b>                                  | 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.                                                                                      |
| <b>Storage device</b>                         | 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.                                                                                                     |
| <b>Structured Query Language (SQL)</b>        | 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.                                   |
| <b>Submenu</b>                                | A menu that appears as a result of a menu selection. All menu selections followed by a ">" have submenus.                                                                                                                                               |
| <b>Subsystem</b>                              | Each CMS main menu selection (for example, Reports, Dictionary, System Setup, Exceptions, and so on), along with Timetable and Shortcut, is referred to as a subsystem of the Call Management System throughout this document.                          |
| <b>Sun Enterprise system</b>                  | A series of host computer systems manufactured by Sun Microsystems Inc. The Sun Enterprise 3000 or 3500 computer is a platform used to support Avaya CMS R3V6 and later versions as a replacement for the discontinued Sun SPARCserver 10/20 platforms. |
| <b>Sun Remote System Control (RSC)</b>        | A server management tool that provides remote system administration.                                                                                                                                                                                    |
| <b>Super-user</b>                             | 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.                                                                                                                                                                                   |

**TCP/IP**

**TCP/IP** See Transmission Control Protocol/Internet Protocol (TCP/IP)

**TSC** Technical Service Center. The Avaya organization that provides technical support for Avaya products.

**Transmission control protocol/internet protocol (TCP/IP)** A communications protocol that provides interworking between dissimilar systems. It is the de facto standard for UNIX systems.

**Trunk** A telephone line that carries calls between two switches, between a Central Office (CO) and a switch, or between a CO and a phone.

**Trunk group** A group of trunks that are assigned the same dialing digits — either a phone number or a Direct Inward Dialing (DID) prefix.

**UNIX system** The operating system on the computer on which CMS runs. A user can access the UNIX system from the “Commands” SLK. SUN uses Solaris as its UNIX operating system.

**User ID** The login ID for a CMS user.

**User name** A combination of letters, and possibly numbers, that identifies a user to the system.

**User window** A window the user can move, size, or scroll. It may contain input fields, reports, or help information.

**VDN** See Vector Directory Number (VDN)

**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.

**Write permission** A mode of CMS that allows the CMS user to add, modify, or delete data and execute processes. Write permission is granted from the User Permissions subsystem.

**X.25** An ITU communications protocol standard for packet switching networks that typically operates at 56 Kbps or less. An add-on software package that allows CMS to communicate with the switch using X.25 protocol.

# Index

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## A

|                               |     |
|-------------------------------|-----|
| ACD                           |     |
| creating                      | 248 |
| defining                      | 248 |
| removing                      | 250 |
| testing link                  | 230 |
| acd_create                    | 248 |
| acd_remove                    | 250 |
| adding disk drives            | 346 |
| administer                    |     |
| remote console port           | 209 |
| switch LAN                    | 164 |
| TCP/IP                        | 164 |
| terminals modems and printers | 254 |
| administration log            | 147 |
| Alarm Origination Manager     |     |
| alarm test                    | 214 |
| config file set up            | 212 |
| set up                        | 212 |
| alternate boot device         |     |
| creating                      | 56  |
| enabling                      | 300 |
| NVRAM                         | 58  |
| testing                       | 231 |
| AOM                           | 212 |
| assigning customer passwords  | 232 |
| auth_display                  | 259 |
| auth_set                      | 260 |
| authorizations                |     |
| CMS                           | 141 |
| displaying                    | 259 |
| EAS                           | 141 |
| External Call History         | 141 |
| Feature Packages              | 141 |
| graphics                      | 141 |
| setting                       | 260 |
| auto-boot failures            | 395 |

## B

|                             |          |
|-----------------------------|----------|
| back_all                    | 266      |
| backing out a Solaris patch | 290      |
| backup                      | 251      |
| CMS maintenance backup      | 267      |
| CMSADM                      | 222, 268 |
| CMSADM checking             | 272      |
| CMSADM troubleshooting      | 417      |
| system                      | 222      |

|                                       |     |
|---------------------------------------|-----|
| backup restoring without              | 377 |
| Bay Networks Annex NTS                |     |
| driver installation                   | 84  |
| set up                                | 84  |
| start-up files                        | 88  |
| boot device                           |     |
| creating the alternate                | 56  |
| enabling the alternate                | 300 |
| boot problems                         |     |
| system fails to auto-boot             | 395 |
| booting Solaris into single-user mode | 414 |

## C

|                                    |               |
|------------------------------------|---------------|
| CD-ROM                             |               |
| drive does not mount               | 415           |
| drive fails to open                | 415           |
| ejecting                           | 415           |
| changing                           |               |
| date or time                       | 285           |
| checking                           |               |
| /cms file system                   | 451           |
| CMSADM backup                      | 272           |
| installed software packages        | 393           |
| installed Solaris patches          | 290           |
| chkDisks                           | 301           |
| chunks                             | 443           |
| CMS                                |               |
| administration menu                | 247           |
| authorizations                     | 141           |
| checking installed Solaris patches | 290           |
| configuration                      | 261           |
| data storage parameters            | 161           |
| disk_space                         | 261           |
| error logs                         | 392           |
| installation fails                 | 416           |
| installing patches                 | 264, 265      |
| maintenance backup                 | 267           |
| passwords                          | 232           |
| patch installation                 | 147           |
| patches                            | 147           |
| patches, removing                  | 295           |
| removal fails                      | 416           |
| removing patches                   | 265, 266      |
| required software                  | 22            |
| services menu                      | 257           |
| set up                             | 169, 170, 181 |
| software installation              | 138           |
| Supplemental Services              | 132           |

|                                                       |               |
|-------------------------------------------------------|---------------|
| testing . . . . .                                     | 238           |
| turning on and off . . . . .                          | 253, 261      |
| CMS patches                                           |               |
| installing . . . . .                                  | 293           |
| listing available patches . . . . .                   | 293           |
| listing installed patches . . . . .                   | 293           |
| requirements . . . . .                                | 292           |
| CMS setup methods                                     |               |
| from a terminal . . . . .                             | 170           |
| using a UNIX system flat file . . . . .               | 181, 186      |
| CMSADM                                                |               |
| acd_create . . . . .                                  | 248           |
| acd_remove . . . . .                                  | 250           |
| administering modems terminals and printers . . . . . | 254           |
| backup . . . . .                                      | 222, 251, 268 |
| checking backup . . . . .                             | 272           |
| creating ACDs . . . . .                               | 248           |
| file system backup . . . . .                          | 251           |
| installing packages . . . . .                         | 252           |
| menu . . . . .                                        | 247           |
| passwd_age . . . . .                                  | 254           |
| pkg_install . . . . .                                 | 252           |
| pkg_remove . . . . .                                  | 252, 253      |
| port_admin . . . . .                                  | 254           |
| removing ACDs . . . . .                               | 250           |
| removing packages . . . . .                           | 252, 253      |
| restoring from full and incremental backup . . . . .  | 278           |
| restoring specific files . . . . .                    | 378           |
| run_cms . . . . .                                     | 253           |
| run_ids . . . . .                                     | 253           |
| troubleshooting . . . . .                             | 417           |
| CMSADM restore . . . . .                              | 352           |
| CMSSVC                                                |               |
| auth_display . . . . .                                | 259           |
| auth_set . . . . .                                    | 260           |
| back_all . . . . .                                    | 266           |
| changing switch options . . . . .                     | 262           |
| CMS                                                   |               |
| turning on and off . . . . .                          | 261           |
| disk_space . . . . .                                  | 261           |
| displaying authorizations . . . . .                   | 259           |
| displaying switch options . . . . .                   | 262           |
| IDS                                                   |               |
| turning on and off . . . . .                          | 260           |
| installing patches . . . . .                          | 264, 265      |
| load_all . . . . .                                    | 265           |
| menu . . . . .                                        | 257           |
| patch_inst . . . . .                                  | 264           |
| patch_rmv . . . . .                                   | 265           |
| removing                                              |               |
| CMS patches . . . . .                                 | 266           |

|                                  |     |
|----------------------------------|-----|
| removing patches . . . . .       | 265 |
| run_cms . . . . .                | 261 |
| run_ids . . . . .                | 260 |
| setting authorizations . . . . . | 260 |
| setup . . . . .                  | 261 |
| swinfo . . . . .                 | 262 |
| swsetup . . . . .                | 262 |
| configure, CMS . . . . .         | 261 |
| console, redirecting             |     |
| in OpenBoot mode . . . . .       | 402 |
| with Solaris . . . . .           | 399 |
| creating                         |     |
| ACDs . . . . .                   | 248 |
| customer acceptance              |     |
| procedures . . . . .             | 242 |
| worksheet . . . . .              | 243 |
| customer passwords . . . . .     | 232 |
| customer support . . . . .       | 24  |

---

## D

|                                      |     |
|--------------------------------------|-----|
| data storage parameters              |     |
| storage.def file . . . . .           | 161 |
| vector.def file . . . . .            | 161 |
| date and time                        |     |
| checking . . . . .                   | 224 |
| dbspace . . . . .                    | 443 |
| default router file . . . . .        | 167 |
| defining a new ACD . . . . .         | 248 |
| determining                          |     |
| CMS version . . . . .                | 382 |
| devices, not recognized . . . . .    | 385 |
| dial-in access problems . . . . .    | 408 |
| disk                                 |     |
| I/O problems . . . . .               | 449 |
| partitioning . . . . .               | 40  |
| recognition errors . . . . .         | 456 |
| disk drives                          |     |
| device alias . . . . .               | 58  |
| resetting the device alias . . . . . | 58  |
| disk failure                         |     |
| recovery . . . . .                   | 314 |
| disk space                           |     |
| cooked . . . . .                     | 444 |
| raw . . . . .                        | 444 |
| disk_space . . . . .                 | 261 |
| DiskSuite                            |     |
| error messages . . . . .             | 461 |
| installing . . . . .                 | 103 |
| troubleshooting . . . . .            | 448 |
| displaying                           |     |
| switch options . . . . .             | 262 |

|                 |        |
|-----------------|--------|
| drivers         |        |
| HSI/P . . . . . | 79     |
| HSI/S . . . . . | 77     |
| NTS . . . . .   | 84     |
| SAI/P . . . . . | 81     |
| X.25 . . . . .  | 90, 91 |

---

## E

|                                           |     |
|-------------------------------------------|-----|
| EAS . . . . .                             | 141 |
| editing /etc/defaultrouter file . . . . . | 167 |
| editing /etc/hosts file . . . . .         | 164 |
| EEPROM parameters . . . . .               | 54  |
| error logs . . . . .                      | 392 |
| error messages . . . . .                  | 420 |
| ESQL . . . . .                            | 116 |
| External Call History                     |     |
| authorize . . . . .                       | 141 |
| installing . . . . .                      | 191 |

---

## F

|                                           |     |
|-------------------------------------------|-----|
| faulty disk                               |     |
| identifying . . . . .                     | 303 |
| Feature Packages . . . . .                | 191 |
| External Call History . . . . .           | 191 |
| Forecasting . . . . .                     | 189 |
| installing . . . . .                      | 189 |
| set authorizations . . . . .              | 141 |
| file system backup . . . . .              | 251 |
| finding misplaced X.25 password . . . . . | 383 |
| flat file                                 |     |
| CMS setup. . . . .                        | 181 |
| Forecasting                               |     |
| authorize . . . . .                       | 141 |
| installing . . . . .                      | 189 |

---

## G

|                    |     |
|--------------------|-----|
| graphics . . . . . | 141 |
|--------------------|-----|

---

## H

|                                     |         |
|-------------------------------------|---------|
| hard drive partition values         |         |
| boot disk. . . . .                  | 430     |
| data disk. . . . .                  | 44, 432 |
| hardware, required . . . . .        | 199     |
| hosts file . . . . .                | 164     |
| HSI/P driver installation . . . . . | 79      |
| HSI/S driver installation . . . . . | 77      |

---

## I

|                                              |          |
|----------------------------------------------|----------|
| identify down chunks . . . . .               | 302      |
| IDS . . . . .                                | 112      |
| turning on and off . . . . .                 | 253, 260 |
| ILS . . . . .                                | 119      |
| Informix                                     |          |
| environment set up . . . . .                 | 109      |
| IDS installation . . . . .                   | 112      |
| ILS installation . . . . .                   | 119      |
| initializing. . . . .                        | 129      |
| Runtime ESQL installation. . . . .           | 116      |
| SQL installation. . . . .                    | 110      |
| tunables . . . . .                           | 216      |
| initializing                                 |          |
| Informix IDS . . . . .                       | 129      |
| installation related problems . . . . .      | 381      |
| checking installed Solaris patches . . . . . | 290      |
| using pkgchk command . . . . .               | 394      |
| installing                                   |          |
| Bay Networks Annex NTS drivers . . . . .     | 84       |
| CMS patches . . . . .                        | 264, 265 |
| DiskSuite . . . . .                          | 103      |
| External Call History . . . . .              | 191      |
| Feature Packages . . . . .                   | 191      |
| Forecasting. . . . .                         | 189      |
| IP addresses for NTS. . . . .                | 222      |

---

## K

|                      |    |
|----------------------|----|
| Korn shell . . . . . | 51 |
|----------------------|----|

---

## L

|                          |          |
|--------------------------|----------|
| LAN . . . . .            | 164      |
| link . . . . .           | 230      |
| load_all . . . . .       | 265      |
| local console. . . . .   | 228, 401 |
| luxadm command . . . . . | 346      |

---

## M

|                           |     |
|---------------------------|-----|
| machine panics . . . . .  | 396 |
| maintenance               |     |
| backup . . . . .          | 267 |
| restore . . . . .         | 276 |
| metadevice                |     |
| troubleshooting . . . . . | 450 |
| metadevices . . . . .     | 444 |
| mirror layouts . . . . .  | 446 |
| mirrored system           |     |
| about. . . . .            | 443 |

|                             |     |
|-----------------------------|-----|
| DiskSuite . . . . .         | 444 |
| Informix . . . . .          | 443 |
| mirrors                     |     |
| error messages . . . . .    | 461 |
| layout . . . . .            | 446 |
| required hardware . . . . . | 199 |
| missing devices . . . . .   | 385 |

## N

|                                     |     |
|-------------------------------------|-----|
| network interface set up . . . . .  | 165 |
| nohup command . . . . .             | 66  |
| NTS                                 |     |
| driver installation . . . . .       | 84  |
| set up . . . . .                    | 222 |
| setting up start up files . . . . . | 88  |
| NVRAM . . . . .                     | 58  |

## O

|                                      |     |
|--------------------------------------|-----|
| ODBC installation . . . . .          | 153 |
| Open Database Connectivity . . . . . | 153 |
| OpenBoot mode                        |     |
| redirecting the console . . . . .    | 402 |

## P

|                                  |          |
|----------------------------------|----------|
| partitioning                     |          |
| hard drives . . . . .            | 40       |
| passwd_age . . . . .             | 254      |
| password                         |          |
| CMS . . . . .                    | 232      |
| customer . . . . .               | 232      |
| finding misplaced X.25 . . . . . | 383      |
| root . . . . .                   | 49       |
| password aging . . . . .         | 254      |
| exclude file . . . . .           | 386      |
| patch_inst . . . . .             | 264      |
| patch_rmv . . . . .              | 265      |
| patches                          |          |
| CMS . . . . .                    | 147      |
| installing CMS . . . . .         | 265, 293 |
| listing installed CMS . . . . .  | 293      |
| removing CMS . . . . .           | 266, 295 |
| requirements for CMS . . . . .   | 292      |
| Solaris . . . . .                | 287      |
| Solaris . . . . .                | 106      |
| pkg_install . . . . .            | 252      |
| pkg_remove . . . . .             | 252, 253 |
| pkgchk                           |          |
| command . . . . .                | 394      |
| errors . . . . .                 | 394      |

|                               |     |
|-------------------------------|-----|
| pkgname                       |     |
| command . . . . .             | 393 |
| port_admin . . . . .          | 254 |
| power management . . . . .    | 52  |
| publications center . . . . . | 14  |

## R

|                                            |                   |
|--------------------------------------------|-------------------|
| recognition errors on disk . . . . .       | 456               |
| recognizing new hardware devices . . . . . | 385               |
| recovering a system . . . . .              | 314               |
| recovery procedures                        |                   |
| NVRAM chip . . . . .                       | 58                |
| redirect remote console port . . . . .     | 226, 228, 400     |
| redirecting the console                    |                   |
| in OpenBoot mode . . . . .                 | 402               |
| with Solaris . . . . .                     | 399               |
| remote access port                         |                   |
| redirecting to local . . . . .             | 228, 401          |
| redirecting to remote . . . . .            | 226               |
| testing . . . . .                          | 226               |
| remote console                             |                   |
| administering the port . . . . .           | 209               |
| redirecting the port . . . . .             | 226, 228, 400     |
| single-user mode . . . . .                 | 414               |
| using . . . . .                            | 209, 399          |
| Remote System Control . . . . .            | 233, 236          |
| remote system control . . . . .            | 406               |
| Remote System Control software . . . . .   | 71                |
| removing                                   |                   |
| ACDs . . . . .                             | 250               |
| CMS package fails . . . . .                | 416               |
| feature packages . . . . .                 | 252, 253          |
| patches . . . . .                          | 265               |
| removing disk drives . . . . .             | 346               |
| restoring a system . . . . .               | 352               |
| restoring data                             |                   |
| disk failure . . . . .                     | 306, 314          |
| disk replacement . . . . .                 | 306, 314          |
| full and incremental backup . . . . .      | 278               |
| maintenance backup . . . . .               | 276               |
| specific files . . . . .                   | 378               |
| without backup . . . . .                   | 377               |
| resync problem . . . . .                   | 448               |
| root password . . . . .                    | 49                |
| RSC . . . . .                              | 71, 233, 236, 406 |
| run_cms . . . . .                          | 253, 261          |
| run_ids . . . . .                          | 253, 260          |

## S

|                                     |    |
|-------------------------------------|----|
| SAI/P driver installation . . . . . | 81 |
| set up                              |    |

|                                                    |               |
|----------------------------------------------------|---------------|
| Alarm Origination Manager . . . . .                | 212           |
| CMS . . . . .                                      | 169, 170, 181 |
| CMS authorizations . . . . .                       | 141           |
| data storage parameters . . . . .                  | 161           |
| Informix environment . . . . .                     | 109           |
| LAN for switch connections . . . . .               | 164           |
| network interface . . . . .                        | 165           |
| networking . . . . .                               | 164           |
| NTS . . . . .                                      | 222           |
| NTS start-up files. . . . .                        | 88            |
| remote console. . . . .                            | 208           |
| TCP/IP . . . . .                                   | 164           |
| Visual Vectors . . . . .                           | 195           |
| single-user mode . . . . .                         | 414           |
| slices . . . . .                                   | 445           |
| SNMP . . . . .                                     | 63, 391       |
| soft partitions . . . . .                          | 433           |
| software installation                              |               |
| Bay Networks Annex NTS . . . . .                   | 84            |
| booting from the Solaris software CD-ROM . . . . . | 27            |
| CMS . . . . .                                      | 65, 138       |
| CMS patches . . . . .                              | 147, 293      |
| CMS Supplemental Services . . . . .                | 132           |
| DiskSuite . . . . .                                | 103           |
| Feature Packages . . . . .                         | 189           |
| HSI/P . . . . .                                    | 79            |
| Informix IDS . . . . .                             | 112           |
| Informix Runtime ESQL. . . . .                     | 116, 119      |
| Informix software packages . . . . .               | 109           |
| Informix SQL. . . . .                              | 110           |
| ODBC . . . . .                                     | 153           |
| SAI/P . . . . .                                    | 81            |
| Solaris. . . . .                                   | 25            |
| Solaris. . . . .                                   | 25            |
| Solaris patches. . . . .                           | 106, 287      |
| Sun Online Validation Test Suite . . . . .         | 68            |
| SunLink HSI/S . . . . .                            | 77            |
| Visual Vectors . . . . .                           | 195           |
| X.25 driver . . . . .                              | 90            |
| X.25 license . . . . .                             | 96            |
| software maintenance . . . . .                     | 245           |
| Solaris                                            |               |
| assigning root password . . . . .                  | 49            |
| backing out a patch. . . . .                       | 290           |
| booting from CD-ROM . . . . .                      | 27            |
| checking installed patches . . . . .               | 290           |
| EEPROM parameters . . . . .                        | 54            |
| enabling Korn shell. . . . .                       | 51            |
| finalizing the installation . . . . .              | 50            |
| identifying the system. . . . .                    | 29            |
| installing . . . . .                               | 25            |
| opening a terminal window . . . . .                | 51            |
| partitioning disk drives. . . . .                  | 40            |
| patches . . . . .                                  | 106, 287      |
| redirecting the console . . . . .                  | 399           |
| selecting the system files . . . . .               | 36            |
| setting date and time . . . . .                    | 34            |
| system activity recorder . . . . .                 | 61            |
| Solstice for Server Connect                        |               |
| installing, X.25 package . . . . .                 | 90            |
| X.25 drivers . . . . .                             | 91            |
| spatches, backing out . . . . .                    | 290           |
| SQL installation . . . . .                         | 110           |
| starting CMS . . . . .                             | 253, 261      |
| starting IDS . . . . .                             | 253, 260      |
| state databases . . . . .                          | 444           |
| stopping CMS . . . . .                             | 253, 261      |
| stopping IDS . . . . .                             | 253, 260      |
| Sun Online Validation Test Suite (VTS) . . . . .   | 68            |
| Supplemental Services installation . . . . .       | 132           |
| swinfo . . . . .                                   | 262           |
| switch                                             |               |
| link. . . . .                                      | 164, 230      |
| options . . . . .                                  | 262           |
| setup. . . . .                                     | 262           |
| TCP/IP . . . . .                                   | 164           |
| swsetup . . . . .                                  | 262           |
| system                                             |               |
| backup . . . . .                                   | 222           |
| checking date and time . . . . .                   | 285           |
| country and time zones . . . . .                   | 286           |
| date and time . . . . .                            | 224, 285      |
| messages . . . . .                                 | 419           |
| restoring specific files . . . . .                 | 378           |
| restoring without backup. . . . .                  | 377           |
| system activity recorder. . . . .                  | 61            |
| system fails to auto-boot . . . . .                | 395           |
| system fails to boot properly . . . . .            | 414           |
| <hr/>                                              |               |
| <b>T</b>                                           |               |
| tape drives and cartridges . . . . .               | 269           |
| TCP/IP . . . . .                                   | 164           |
| technician support . . . . .                       | 24            |
| testing                                            |               |
| ACD link . . . . .                                 | 230           |
| CMS software . . . . .                             | 238           |
| connection to TSC . . . . .                        | 226           |
| remote access port . . . . .                       | 226           |
| time zones. . . . .                                | 286           |
| troubleshooting . . . . .                          | 381           |
| /cms file system. . . . .                          | 451           |
| CD-ROM drive . . . . .                             | 415           |
| checking installed software packages . . . . .     | 393           |

|                                                    |     |
|----------------------------------------------------|-----|
| CMS installation fails . . . . .                   | 416 |
| CMSADM . . . . .                                   | 417 |
| common error messages . . . . .                    | 420 |
| dial-In access problems . . . . .                  | 408 |
| disk I/O problems . . . . .                        | 449 |
| DiskSuite error messages . . . . .                 | 461 |
| DiskSuite software . . . . .                       | 448 |
| error logs . . . . .                               | 392 |
| machine panics . . . . .                           | 396 |
| metadevices . . . . .                              | 450 |
| mirrored system . . . . .                          | 448 |
| no power on peripherals . . . . .                  | 385 |
| password aging . . . . .                           | 390 |
| pkgchk errors . . . . .                            | 394 |
| problems with CMS administration scripts . . . . . | 449 |
| recognizing new hardware . . . . .                 | 385 |
| soft partitions . . . . .                          | 437 |
| solutions for X.25 error messages . . . . .        | 384 |
| system fails to auto-boot. . . . .                 | 395 |
| X.25 license installation problems . . . . .       | 383 |
| turnover system to customer . . . . .              | 223 |

---

## U

|                                       |     |
|---------------------------------------|-----|
| upgrading a mirrored system . . . . . | 379 |
| using the remote console . . . . .    | 399 |

---

## V

|                                          |     |
|------------------------------------------|-----|
| verifying system date and time . . . . . | 224 |
| Visual Vectors                           |     |
| set up . . . . .                         | 195 |
| start up. . . . .                        | 215 |
| VTS . . . . .                            | 68  |

---

## W

|                      |     |
|----------------------|-----|
| WWN number . . . . . | 346 |
|----------------------|-----|

---

## X

|                                         |        |
|-----------------------------------------|--------|
| X.25                                    |        |
| driver . . . . .                        | 90, 91 |
| error messages . . . . .                | 384    |
| finding license password . . . . .      | 383    |
| Golden Key. . . . .                     | 97     |
| license installation problems . . . . . | 383    |
| license password . . . . .              | 90     |
| manual license . . . . .                | 97     |
| retrieving system information . . . . . | 90     |





