Avaya™ CMS

R3V11

LAN Backup User Guide

585-215-715
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Notice

Every effort was made to ensure that the information in this document was complete and accurate at the time of printing. However, information is subject to change.

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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September 2003

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
LAN Backup User Guide

Contents

Preface

Purpose

This document is written for technicians and call center administrators who use the LAN backup feature in Release 3 Version 11 (R3V11) Avaya™ Call Management System (CMS).

Organization

This document includes the following:

- Introduction on page 15

  Outlines the support requirements for the LAN backup option.

- Software configuration for LAN backups on page 21

  Provides procedures and guidelines for configuring CMS servers to function with a storage manager.

- Backing up and restoring data on page 31

  Provides procedures and guidelines for backing up and restoring data with a storage manager.

- Troubleshooting the LAN Backup feature on page 61

  Provides procedures for troubleshooting CMS servers using the LAN backup option.

Reasons for reissue

This book contains the following updates:

- This book was updated to support Tivoli Storage Manager (TSM) Version 5.2.0
- Made general wording corrections to the document.

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, the 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.
- 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.
- Unless specified otherwise, CMS always implies Avaya Call Management System.
- Unless specified otherwise, Sun Blade refers to either the Sun Blade 100 computer or the Sun Blade 150 computer.

Related documents

Related documents lists sources of 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 (within the 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	
Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide	585-215-115
CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting	585-215-956
Setting up a disk-mirrored system	
Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide	585-215-115
CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting	585-215-956

Upgrade documents

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

- Base load upgrades

  A base load upgrade is used 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
Avaya CMS R3V11 Base Load Upgrades
CentreVu Call Management System Release 3 Version 9 Base Load Upgrade Procedures

- Platform upgrades and data migration

  A platform upgrade is used 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. 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
Avaya Call Management System Release 3 Version 11 Platform Upgrade and Data Migration
CentreVu Call Management System Release 3 Version 9 Platform Upgrade and Data Migration Instructions

- Avaya Call Management System Upgrade Express (CUE)

  CUE is used 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
Avaya Call Management System Release 3 Version 11 Sun Blade 100 Workstation CMS Upgrade Express
Avaya Call Management System Release 3 Version 11 Sun Blade 100 Workstation Mirrored System CMS Upgrade Express
Avaya Call Management System Release 3 Version 11 Sun Ultra 5 Computer CMS Upgrade Express
Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer CMS Upgrade Express
Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer Mirrored System CMS Upgrade Express
Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer CMS Upgrade Express
Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer Mirrored System CMS Upgrade Express
CentreVu Call Management System Release 3 Version 9 Sun Ultra 5 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer Mirrored System CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer CVUE Instructions
CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer Mirrored System CVUE Instructions

Hardware documents

Document title	Document number
Avaya Call Management System Sun Fire V880 Workstation Hardware Installation, Maintenance, and Troubleshooting	585-215-116
Avaya Call Management System Sun Fire V880 Workstation Connectivity Diagram	585-215-612
Avaya Call Management System Sun Blade 100/150 Computer Hardware Installation, Maintenance, and Troubleshooting	585-310-783
Call Management System Sun Blade 100/150 Computer Connectivity Diagram	585-310-782
Avaya Call Management System Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting	585-215-873
Call Management System Sun Enterprise 3500 Computer Connectivity Diagram	585-215-877
Avaya Call Management System Sun Ultra 5 Computer Hardware Installation, Maintenance, and Troubleshooting	585-215-871
Call Management System Sun Ultra 5 Computer Connectivity Diagram	585-215-872
Avaya Call Management System Sun Enterprise 3000 and SPARCserver Computers Hardware Maintenance and Troubleshooting	585-214-016
Avaya Call Management System Terminals, Printers, and Modems	585-215-874

Switch documents

Document title	Document number
Avaya CMS Switch Connections, Administration, and Troubleshooting	585-215-876

Administration documents

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

Other documents

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

Some useful Tivoli® Storage Manager documents are:

- *Tivoli Storage Manager Installing the Clients*
- *Tivoli Storage Manager Quick Reference for the Backup-Archive Clients*
- *Tivoli Data Protection for Informix Installation and User's Guide*

A useful Informix® document is:

- *Informix Backup and Restore Guide*

Introduction

The Avaya Call Management System LAN Backup feature provides an alternative to the traditional method of backing up and restoring data. Before Avaya Call Management System (CMS) R3V11, the only way to backup and restore data was to use a tape device located with the CMS system. LAN Backup allows you to back up CMS data and system information over a local area network (LAN) to a storage manager. The storage manager is a software package that controls where, how, and when the data is stored.

The benefits of using the Avaya Call Management System LAN Backup feature are:

- Automated data backups
- Centralized storage location for backing up multiple CMS servers
- Faster data backups and restores (dependent on network configuration and traffic)

Intended audience

This document is written for:

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

Required software

The following software is required to use the LAN backup feature:

- Storage manager client software
  - — Tivoli Data Protection for Informix Version 4.1.3
  - — Tivoli Storage Manager UNIX Backup/Archive Clients Version 4.2.1
- Tivoli storage manager server software

  Note:

  The only storage manager software packages that have been certified by Avaya are:

  - Tivoli Storage Manager™ (TSM) Version 4.2.0
  - Tivoli Storage Manager™ (TSM) Version 5.2.0
- CMS R3V11 and any associated software

Required hardware

The following hardware is required to use the LAN backup feature:

- A storage device that is capable of interfacing with the storage manager software
- A network server for the storage manager server software

  Note:

  A CMS system cannot be used as the storage manager server.
- Any hardware required by CMS R3V11

General roles and responsibilities

The Tivoli storage manager product is very sophisticated. You must be familiar with the Tivoli storage manager software product before using the CMS LAN backup feature. This document is not intended to replace the Tivoli storage manager documentation.

The following table summarizes the various tasks and responsibilities involved with setting up and maintaining a CMS system that is using the LAN backup feature.

Task	Customer	Avaya support[1]
Obtaining the storage manager client and server software	X	N/A
Obtaining a network server for the storage manager server software	X	N/A
Installing the storage manager client and server software	X	N/A
Obtaining a storage device capable of interfacing with the storage manager	X	N/A
Installing the Data Protection for Informix	X	N/A
Configuring the server software for LAN backups	X	N/A
Configuring the CMS system software for LAN backup	X	X
Backing up CMS data	X	N/A
Backing up the CMS system	X	N/A
Restoring CMS data	X	N/A
Enabling the CMS system to boot for a system restore	N/A	X
Installing new hardware	N/A	X
Preparing the system for a restore over the LAN	X	N/A
Restoring the CMS system data	X	N/A
Troubleshooting the storage manager server software	X	N/A
Troubleshooting the storage manager server	X	N/A

Task	Customer	Avaya support[1]
Troubleshooting the LAN	X	N/A
Troubleshooting the storage manager client software	X	N/A

1. Additional support provided by Avaya Inc. could result in additional time and material expenses.

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 > Call Center/CRM > Call Management System (CMS) (formerly CentreVu) > General Info > 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 > Escalation Lists US and International**. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Software configuration for LAN backups

Software configuration for LAN backups contains the procedures for configuring an Avaya Call Management System (CMS) for use with the LAN backup feature. The customer is responsible for the installation of the Tivoli software and the configuration of the Tivoli storage manager server software.

Prerequisites

Before configuring any software for the LAN backup, the customer must perform the following tasks:

- You must be familiar with the Tivoli storage manager software product.
- Install the Tivoli storage manager client software on the CMS system.
- Install the Tivoli storage manager server software.
- Install the Tivoli Data Protection for Informix software.
- Register the Tivoli storage manager licenses.
- Perform any customization required by the storage manager server software.
- Verify that the storage manager server can detect storage manager clients.
- Verify the node name of the server where the storage manager server software resides
- Register the client node of the CMS system with the server software.
- Obtain the password and user ID for the client node of the CMS system. This password and user ID was created when the CMS client node was registered with the server software.
- Verify that the **sm_versions** file contains the correct storage manager version. The file is located at **$INFORMIX/etc/sm_versions**
- Create a policy domain for CMS.

For more information about the Tivoli software installation, see *Tivoli Data Protection for Informix Installation and User's Guide*, *Tivoli Storage Manager Installing the Clients, Tivoli Storage Manager Quick Reference for the Backup-Archive Clients*, or the appropriate Tivoli storage manager quick-start guide.

Contents

Software configuration for LAN backups contains the following topics:

Initial configuration of the CMS software for LAN backup

Currently, no additional configuration of the CMS software is required to use the LAN backup feature.

Recommended ON-Bar configurations

The ON-Bar configuration should already be correctly configured for your CMS system. Use the following procedure to check the current ON-Bar configuration and make any necessary adjustments.

Procedure

To check the Informix ON-Bar configuration for use with LAN backup:

1. Set the IDS environment by entering:

   . /opt/informix/bin/setenv

2. Enter:

   cat /opt/informix/etc/onconfig.cms

3. Verify that the Informix configuration parameters for CMS have been set up.

   For more information, see “Setting the Informix configuration parameters for CMS” in *Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-115.

4. Verify that the BAR_ACT_LOG setting is:

   /cms/install/logdir/bar_act.log

   Example:

```
#**************************************************************************
#                          INFORMIX SOFTWARE, INC.
#  Title:       onconfig.cms
#  Description: Informix Dynamic Server Configuration Parameters for CMS
#**************************************************************************
.........................
.........................
.........................
# Backup/Restore variables

BAR_ACT_LOG     /cms/install/logdir/bar_act.log
BAR_MAX_BACKUP  0
BAR_RETRY       1
BAR_NB_XPORT_COUNT 10
BAR_XFER_BUF_SIZE 31
.........................
.........................
.........................
JVPCLASSPATH
```

5. Choose one of the following:
   - If the settings are correct, go to Recommended Tivoli storage manager client configurations on page 25.
   - If the settings are *not* correct for the CMS system:
     i. Enter:

        ```
        vi /opt/informix/etc/onconfig.cms
        ```

     ii. Change any required settings in the **onconfig.cms** file.
     iii. When finished press **Esc**. Then enter:

        ```
        :wq!
        ```

     iv. Go to Recommended Tivoli storage manager client configurations on page 25.

Recommended Tivoli storage manager client configurations

Information on installing the Tivoli storage manager client can be found in *Tivoli Storage Manager Installing the Clients* or the appropriate Tivoli storage manager quick-start guide, see Documentation Web sites on page 14 for more information. This section, *Recommended Tivoli storage manager client configurations* contains the recommended settings for a CMS system.

Contents

Recommended Tivoli storage manager client configurations contains the following topics:

Verifying dsm.opt

To verify that the **dsm.opt** file has been set up correctly:

1. Enter:

   `cat /usr/bin/dsm.opt`

2. Verify that the file contains the `SErvername` setting. The `SErvername` setting should contain the host name of the server running the storage manager server software.

   Example:

```
************************************************************************
* Tivoli Storage Manager                                               *
*                                                                      *
* Sample Client User Options file for UNIX (dsm.opt.smp)               *
************************************************************************
.................
.................
.................
* SErvername       A server name defined in the dsm.sys file
SErvername server_1
```

3. Choose one of the following:
   a. If the setting is correct, continue with Verifying dsm.sys on page 26.
   b. If the setting is *not* correct, perform the following steps:
      i. Enter:

         vi /usr/bin/dsm.opt

      ii. Change any required settings in the **dsm.opt** file.
      iii. Press **Esc**. Then enter:

         :wq!

      iv. Continue with Verifying dsm.sys on page 26

Verifying dsm.sys

To verify that the **dsm.sys** file has been set up correctly:

1. Enter:

   cat /usr/bin/dsm.sys

   The file should contain the following settings:

   - `SErvername` should contain the host name of the server running the storage manager server software.
   - `COMMmethod` should be set to TCPip.
   - `TCPServeraddress` should contain the host and domain name of the Tivoli server.
   - `PasswordAccess` should be set to generate.
   - `inclexcl` should contain the correct path for the include/exclude lists for the LAN backup. The path is **/cms/LANbkup/incl_excl/backup_excl.tivoli**
   - `errorlogname` should contain the correct path for the Tivoli storage manager error log. The path is **/cms/install/logdir/dsmerror.log**
   - `schedlogname` should contain the correct path for the Tivoli storage manager schedule log. The path is **/cms/install/logdir/dsmsched.log**

- `schedlogretention` should be set to 60

Example:

```
************************************************************************
* Tivoli Storage Manager                                               *
.................
.............
.............
SErvername  server_1
   COMMmethod         TCPip
   TCPPort            1500
   TCPServeraddress   server_1.domain.company.com

PasswordAccess generate

inclexcl /cms/LANbkup/incl_excl/backup_excl.tivoli
errorlogname /cms/install/logdir/dsmerror.log
schedlogname /cms/install/logdir/dsmsched.log
schedlogretention 60
```

2. Choose one of the following:
   a. If the settings are correct, go to Generating the Tivoli password file on page 27.
   b. If the settings are *not* correct, perform the following procedure:
      i. Enter:

         `vi /usr/bin/dsm.sys`

      ii. Change any required settings in the **dsm.sys** file.
      iii. Press **Esc**. Then enter:

         `:wq!`

      iv. Go to Generating the Tivoli password file on page 27.

Generating the Tivoli password file

A Tivoli password file must be generated on the CMS system. If this file is not created, system restores will fail. The password was set up when the CMS client node was registered with the storage manager server software. This password is controlled by the customer but the customer is required to provide this password to technical support personnel as needed. This password grants access to *only* the CMS node, not to any other client nodes. This file needs to be created only during a new client software installation, or if the storage manager client password has changed.

To generate a password file:

1. Enter:

   `cd /tmp`

2. Access the command line mode of the storage manager by entering:

   dsmc

   The system displays one of the following messages depending on your TSM version:

   - If your TSM is Version 4.2.0, the prompt changes to `tsm>`
   - If your TSM is Version 5.2.0, the system attempts to query any data that is backed up, and then displays the following message:

```
Please enter your user ID (default):
```

3. Choose one of the following procedures:

   - If your TSM is Version 4.2.0, perform the following procedure:

     i. Enter:

     query backup /

     The system attempts to query any data that is backed up, and then displays the following message:

```
Please enter your user ID (default):
```

     Important:
     Ignore any error messages about the backup.

     ii. Enter the user ID.

     The system displays the following message:

```
Please enter password for user ID "default"
```

     iii. Enter the password for the Tivoli storage manager server software.

     iv. Verify that the password file was created by entering:

     query backup /

     The system should not display prompts for a user ID and password. If the system does display these prompts, repeat this procedure.

     Important:
     Ignore any error messages about the backup.

   - If your TSM is Version 5.2.0, perform the following procedure:

i. Enter the user ID.

The system displays the following message:

```
Please enter password for user ID "default"
```

ii. Enter the password for the Tivoli storage manager server software.

Important:
Ignore any error messages about the backup.

4. Go to Verifying the presence of the include and exclude list on page 29.

Verifying the presence of the include and exclude list

To verify the presence of the include and exclude list:

1. Enter:

   cd /cms/LANbkup/incl_excl

2. Enter:

   ls

   The system displays the following message:

   ```
   backup_excl.tivoli
   ```

3. If the include and exclude list does not exist, contact Avaya technical support or your product representative for more information.

Recording network information

Some networking information is specific for the individual CMS system. This information can be very helpful for technical support personnel who may be troubleshooting your system. Use the following table to record your network information:

CMS system	
Host name	
IP address	
Subnet mask	
IP address of the gateway (also called the default router)	
IP address of the DNS server	
Tivoli storage manager	
Server host name	
Node name (also called the host name)	

Backing up and restoring data

Backing up and restoring data contains the procedures used to back up and restore data on your Avaya Call Management System (CMS). The CMS LAN backup feature works two ways, depending on the type of data to be backed up:

- Data backup — Runs through the Informix tool ON-Bar

  ON-Bar interfaces with the storage manager using the X/Open Backup Services Application Programmer's Interface (XBSA interface). ON-Bar backs up the data in the Informix database and the system tables.

- System backup — Uses a storage manager to manage the backup and restore

  The storage manager is either Tivoli Storage Manager (TSM) Version 4.2.0 or Tivoli Storage Manager (TSM) Version 5.2.0. The storage manager backs up the CMS operating-system files.

Contents

Backing up and restoring data contains the following topics:

Recommendations for backing up data

Avaya recommends the following:

- Routine backups should be scheduled to occur when network traffic is low.
- CMS data should be backed with a full backup on a weekly basis.
- CMS data should be backed up with an incremental backup on a daily basis.
- CMS system information should be backed up with a full backup on a monthly basis.
- CMS system information should be backed up with an incremental backup on a weekly basis.
- The three most recent system backups should be maintained for every CMS system.
- Schedule the CMS data backup to occur immediately after the system backup.
- A tape backup of the system is still required for data migrations.
- Create a policy domain for the CMS system.

Performing a system backup

Performing a system backup describes how to back up the CMS system data. The CMS system backup, is a backup option you can use instead of the CMSADM tape backup. The system backup saves all of the file systems on the computer, including:

- Solaris® system files and programs
- CMS programs

The system backup does *not* save CMS data tables.

Contents

Performing a system backup contains the following topics:

When to perform a system backup

Perform the system backup:

- 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.
- Before and after the CMS software is upgraded
- Once a month

Setting up automated system backups

See *Tivoli Storage manager Quick Reference for the Backup-Archive Clients* for information on how to configure the storage manager software to automate system backups. See Recommendations for backing up data on page 32 for more information.

Backing up the system on demand

To back up your CMS system data outside of the normal backup schedule:

1. Enter:

   `/cms/LANbkup/bin/backup.tivoli X`

   where ***`X`*** is one of the following:

   - `1` for an incremental data backup
   - `0` for a full data backup

   Note:

   The Tivoli documentation refers to the full data backup as a selective backup.

2. Verify that the backup has completed successfully by entering:

   `cat /cms/install/logdir/backup.log`

   For more information, see Backup logs on page 62.

3. Perform a data backup. For more information, see Performing a data backup on page 35.

Additional references

For information about backing up data, see *Tivoli Storage manager Quick Reference for the Backup-Archive Clients*.

Performing a data backup

Performing a data backup describes how to backup the CMS data in the Informix database and the system tables. The CMS data backup, is a backup option you can use instead of the CMS maintenance tape backup. You can perform a full or incremental backup of the CMS data. The data backup does not back up the CMS operating system files.

Contents

Performing a data backup contains the following topics:

When to perform a data backup

Perform the data backup:

- Immediately after a system backup
- Before and after the CMS software is upgraded
- On a daily basis

Setting up automated data backups

See *Tivoli Data Protection for Informix Installation and User's Guide* for information on how to configure the storage manager server software to automate data backups. See Recommendations for backing up data on page 32 for more information.

Backing up data on demand

To back up your CMS data outside of the normal backup schedule:

1. Enter:

   `/cms/LANbkup/bin/onbar_backup.tivoli X`

   where ***`X`*** is one of the following:

   - `1` for an incremental data backup
   - `0` for a full data backup

   Note:

   The Tivoli documentation refers to the full data backup as a selective backup.

2. Verify that the backup has completed successfully by entering the following commands:

   `cat /cms/install/logdir/backup.log`

   `cat /cms/install/logdir/bar_act.log`

   For more information, see Backup logs on page 62.

Additional references

For more information about backing up data, see the *Informix Backup and Restore Guide*.

Restoring CMS data

Use the restore command to obtain copies of backed up files from the server. To restore the files, you must specify the correct path and directory.

Contents

Restoring CMS data contains the following topics:

Restoring CMS data from a data backup

To restore all CMS data:

1. Enter:

   `cd /`

2. Enter:

   `/cms/LANbkup/bin/onbar_restore.tivoli`

   Note:
   If CMS is on, the restore script will automatically turn off CMS.

   The system displays the following message:

   ```
   Do you want to continue? (y/n)
   ```

3. Enter: **`y`**

   The system restores the data.

   Important:
   Some storage devices require the media to be changed manually. It may be necessary to have someone change the storage media.

4. Verify that the restore has completed successfully by entering:

   `cat /cms/install/logdir/restore.log`

   The system displays the CMS restore log.

For more information about restoring files, see *Tivoli Data Protection for Informix Installation and User's Guide*.

Restoring specific files from a data backup

For information about restoring specific files, see *Tivoli Storage Manager for UNIX Using the Backup-Archive Clients*.

Restoring a CMS system

Restoring a CMS system describes how to restore an entire system. You must re-enable the system to boot, and then restore the system software. 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

Prerequisites

Before you begin restoring the system, perform the following tasks:

- Locate the most recent system backup on the storage manager.
- Locate the most recent data backup on the storage manager.
- Obtain the Solaris 8 2/02 software.
- Perform any necessary hardware repairs.
- Obtain the storage manager client software:
  - Tivoli Data Protection for Informix Version 4.1.3
  - Tivoli Storage Manager UNIX Backup/Archive Clients Version 4.2

Contents

Restoring a CMS system contains the following procedures:

Enabling the system to boot

To enable the system to boot:

1. 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.

Booting from the Solaris software CD-ROM

To boot the system from the *Solaris 8 Software* CD-ROM using the local console:

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

5. Load the *Solaris 8 Software* disk 1 of 2 CD-ROM 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:
```

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. In 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.

   - If the system is an Ultra 5, Enterprise 3000, or Enterprise 3500, select **hme0**
   - If the system is a Sun Blade or 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:** box, enter the host name for the system.

5. Select **Continue**.

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

6. In the **IP address:** box, 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:** box, enter the desired subnet mask.

   Note:
   The default subnet mask is `255.255.255.0`.
10. Select **Continue**.

    The system displays the **IPv6** window.
11. Select **No**. Then select **Continue**.

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

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.

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.

   Note:

   When you select the Solaris system files, not all of the standard packages will be installed. The packages will be installed later in the procedure.

2. Select **Continue.**

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

3. Select **Continue**.

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

4. Select **End User System Support**.

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

5. Select **Continue**.

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

Partitioning the hard disks

To partition the hard disks:

1. Verify that the boot disk is selected for partitioning.
2. On the **Select Disks** window, select **Continue**.

   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.

   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**.

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

   Important:

   Disks are formatted in *megabytes*. Do not select the cylinders icon.
6. Use the information in the Boot disk partition table on page 45 to partition the boot disk on a non-mirrored system or the primary boot disk on a mirrored system. For more information, see Mirrored system disk pairs on page 79. Enter the slice name and size for each partition.

   Note:

   No values are entered for the data disk partitions or the secondary boot disk on a mirrored system.

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

   Important:

   Solaris will be installed on slice four and then moved over to slice 0. The system will panic if Solaris is installed on slice 0.

Boot disk partition table

Slice	Slice name	Partition size (MB)
0	(Leave blank)	4096
1	**swap**	1024
2	**overlap**[1]	(Do not change)
3	**/cms**	3072
4	/	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.

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.

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

   Note:
   Ignore any rounding error messages.

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

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

9. Select **OK**.

   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 and changing the default boot device.

13. Select **OK**.

    The system displays the reboot window.

14. Select **Auto Reboot**.

    The disk partitioning process begins, and the system displays the **Installing Solaris Software - Progress** window. This process may take some time, depending on the number of disks being partitioned, the hardware platform, and the speed of your CD-ROM drive.

    When the installation is finished, the system reboots and displays 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 'a1b2c3d4e5f6' as your root password, you
can use 'a1b2c3d4' 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. 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. Press **Enter** for a blank password.

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

Note:

The power-saving options may not be displayed on some systems.

```
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, you 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 a prompt for a user name.

5. Enter **root** for the user name.

6. Press **Enter**.

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

7. Select **Common Desktop Environment (CDE)**. Then select **OK**.

8. Open a terminal window.

9. From the command prompt enter:

   stty erase Backspace

   ksh -o vi

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

Restoring CMS system and data

To restore the system data:

1. Install the TSM client software on the CMS system. The Tivoli Storage Manager UNIX Backup/Archive Clients CD-ROM contains the **TIVsmCapi.pkg** and the **TIVsmCba.pkg** software packages.

   For more information about installing the client software, see the appropriate Tivoli quick start guide or *Tivoli Storage Manager Installing the Clients*.

2. Perform any customization required for communication with the server software.

3. Enter:

   vi /usr/bin/dsm.sys

   The file should contain the following settings:

   - `SErvername` should contain the host name of the server running the storage manager server software.
   - `COMMmethod` should be set to TCPip.
   - `TCPServeraddress` should contain the host and domain name of the Tivoli server.
   - `PasswordAccess` should be set to generate.

   Example:

```
************************************************************************
* Tivoli Storage Manager                                               *
.................
.............
.............
SErvername  server_1
   COMMmethod         TCPip
   TCPPort            1500
   TCPServeraddress   server_1.domain.company.com

PasswordAccess generate
```

4. If the settings are not correct in the **dsm.sys** file, make the appropriate changes.

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

   :wq!

6. Enter:

   vi /usr/bin/dsm.opt

   The file should contain the following setting:

- SErvername should contain the host name of the server running the storage manager server software.

Example:

```
************************************************************************
* Tivoli Storage Manager                                               *
*                                                                      *
* Sample Client User Options file for UNIX (dsm.opt.smp)               *
************************************************************************

*  This file contains an option you can use to specify the TSM
*  server to contact if more than one is defined in your client
*  system options file (dsm.sys).  Copy dsm.opt.smp to dsm.opt.
*  If you enter a server name for the option below, remove the
*  leading asterisk (*).

************************************************************************

* SErvername       A server name defined in the dsm.sys file
SErvername server_1
```

7. If the settings are not correct in the **dsm.opt** file, make the appropriate changes.
8. Press **Esc**. Then enter:

   :wq!
9. Customize any network settings for the CMS system. For more information, see Configuring the network settings on a CMS system on page 67.
10. Enter:

    cd /tmp
11. Access the command line mode of the storage manager by entering:

    dsmc
12. The system displays one of the following messages depending on your TSM version:
    - If your TSM is Version 4.2.0, the prompt changes to tsm>
    - If your TSM is Version 5.2.0, the system attempts to query any data that is backed up, and then displays the following message:

```
Please enter your user ID (default):
```

13. Choose one of the following procedures:
    - If your TSM is Version 4.2.0, perform the following procedure:

i. Enter:

query backup /

The system attempts to query any data that is backed up, and then displays the following message:

```
Please enter your user ID (default):
```

Important:
Ignore any error messages about the backup.

ii. Enter the user ID.

The system displays the following message:

```
Please enter password for user ID "default"
```

iii. Enter the password for the Tivoli storage manager server software.

iv. Verify that the password file was created by entering:

query backup /

The system should not display prompts for a user ID and password. If the system does display these prompts, repeat this procedure.

Important:
Ignore any error messages about the backup.

- If your TSM is Version 5.2.0, perform the following procedure:

i. Enter the user ID.

The system displays the following message:

```
Please enter password for user ID "default"
```

ii. Enter the password for the Tivoli storage manager server software.

Important:
Ignore any error messages about the backup.

14. Enter:

quit

15. Create a temporary error log by entering the following command on a single line at the command prompt:

    dsmc restore /cms/ -subdir=yes -latest 2>&1 | tee -a /tmp/tmp.log

    Note:

    You can check for error messages from the restore in **/tmp/tmp.log**. This log will not be present if the system is rebooted.

16. Choose one of the following:

    - If the system is *not* a mirrored Enterprise 3500, go to Step 17.
    - If the system is a mirrored Enterprise 3500 perform the following procedure:

      i. Enter:

      cat /cms/install/disk_mgr/mirror/E3500

      The system displays the E3500 mirroring file.

      ii. Perform one of the following steps:

      - If the mirror disks are on controller 1 go to Step 17.
      - If the mirror disks are *not* on controller 1 continue with this procedure.

      Example:

      This example shows that the mirror disks are *not* on controller 1. The mirror disks are on controller 2. For more information about disk controllers, see Appendix A: Mirrored system disk pairs on page 79.

```
c0t0d0  c2t4d0
c0t1d0  c2t5d0
c0t2d0  c2t6d0
c0t3d0  c2t7d0
```

      iii. Enter:

      halt

      The system displays the ok prompt.

      CAUTION:

      Do not continue with this procedure until the system displays the ok prompt. Failure to do so could result in the system having to be rebuilt.

      iv. Physically remove the disks that are on the secondary disk controller. These disks could be in slots 4, 5, 6, and 7.

      For more information about mirror disk configurations, see Appendix B: Mirror disk hardware configurations on page 81.

v. Enter:

boot cdrom -sw

The system reboots.

vi. Log in as **root**.

vii. Enter:

mount /dev/dsk/c0t0d0s4 /mnt

Note:

If the drive does not mount, it may be necessary to enter the following command: **fsck -y /dev/rdsk/c0t0d0s4**

viii. Enter:

rm -rf /mnt/dev /mnt/devices

ix. Enter:

devfsadm -r /mnt -p /mnt/etc/path_to_inst

x. Enter:

umount /mnt

xi. Enter:

halt

The system displays the ok prompt.

xii. Insert all the disks you removed in Step iv.

xiii. Enter:

boot -r

The system reboots.

xiv. Log in as **root**.

17. Restore the system data by entering:

/cms/LANbkup/bin/restore.tivoli

Important:

Some storage devices require the media to be changed manually. It may be necessary to have someone change the storage media.

The system displays the following message:

```
Do you want to continue? (y/n)
```

18. Enter: **y**

    The system restores the data and reboots.

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

20. Verify that the restore has completed successfully by entering:

    cat /cms/install/logdir/restore.log

    The system displays the CMS restore log.

21. Choose one of the following:
    - If the system is *not* mirrored, go to Step 22.
    - If the system is mirrored, perform the following procedure:
        i. Enter:

        `. /olds/olds-funcs`

        ii. Enter:

        `/olds/olds -mirror`

        iii. Enter:

        `rm /etc/rc2.d/S96mirror`

        iv. Enter:

        `change_swap /swap /dev/md/dsk/d2`

        v. Enter:

        `dumpadm -d swap`

        vi. Reboot the system by entering:

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

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

        Note:
        If the root password was changed after the last system backup, you will need to enter the previous root password.

        viii. Enter the following commands:

        `metattach d3 d32`

        `metattach d2 d22`

        `metattach d1 d12`

22. Restore the CMS data by entering:

    `/cms/LANbkup/bin/onbar_restore.tivoli`

    The system displays the following message:

```
Do you want to continue? (y/n)
```

23. Enter: **`y`**

    Note:
    The data restore could take several hours to complete.

24. Verify that the restore has completed successfully by entering:

    `cat /cms/install/logdir/restore.log`

    The system displays the CMS restore log.

    Important:
    Some storage devices require the media to be changed manually. It may be necessary to have someone change the storage media.

25. Enter:

    `cp -p /etc/system /olds`

26. Verify that the Informix configuration parameters for CMS are correct.

    For more information, see “Setting the Informix configuration parameters for CMS” in *Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-115.

27. Turn on CMS.

    a. Enter:

       `cmsadm`

       The system displays the **CMSADM menu**.

    b. Enter the number associated with the `run_cms` option.

    c. Enter the number associated with the `Turn on CMS` option.

Additional Information

For more information, see *Tivoli Storage manager Quick Reference for the Backup-Archive Clients*.

Recovering a non-mirrored system after data disk failure

Recovering a non-mirrored system after data disk failure contains procedures for the recovery of a CMS system after replacing 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 Restoring a CMS system on page 39.

Prerequisites

Before you begin restoring the system, perform the following:

- Locate the most recent successful system and data backups on the storage manager server.

Procedure

To recover a non-mirrored system data disk:

1. 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.

2. 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.

3. Log on as **root**.

4. Turn off CMS and IDS.
   a. Enter:

      cmsadm

      The system displays the **CMSADM menu**.
   b. Enter the number associated with the `run_cms` option.
   c. Enter the number associated with the `Turn off both CMS and IDS` option.
5. Restore the CMS data by entering:

   /cms/LANbkup/bin/onbar_restore.tivoli

   The system displays the following message:

   ```
   Do you want to continue? (y/n)
   ```

6. Enter: **y**

   The system restores the data.
7. Verify that the restore has completed successfully by entering:

   cat /cms/install/logdir/restore.log
8. Verify that the Informix configuration parameters for CMS are correct.

   For more information, see “Setting the Informix configuration parameters for CMS” in *Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-115.
9. Turn on CMS.
   a. Enter:

      cmsadm

      The system displays the **CMSADM menu**.
   b. Enter the number associated with the `run_cms` option.
   c. Enter the number associated with the `Turn on CMS` option.

Recovering a mirrored system after a mirrored pair of data disks fail

Recovering a mirrored system after a mirrored pair of data disks fail contains the procedure for the recovery of a mirrored system after replacement of a mirrored disk pair. For additional disk replacement procedures, see “Recovering a mirrored system after disk failure” in the *Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide*, 585-215-115.

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 Restoring a CMS system on page 39.

Platform considerations

This procedure is only for mirrored systems.

Prerequisites

Before you recover a mirrored system, perform the following tasks:

- Verify that the alternate boot device is set up. For more information, see “Enabling fail over of the alternate boot device” in *Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide*, 585-215-115.
- Identify the faulty disk or disks. For more information, see “Identifying a faulty disk” in *Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide*, 585-215-115.

Procedure

To recover a mirrored system after a mirrored pair of data disks fail:

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

      `cmsadm`

      The system displays the **CMSADM menu**.
   b. Enter the number associated with the `run_cms` option.
   c. Enter the number associated with the `Turn off both CMS and IDS` option.

2. Replace the faulty disk pair. For more information about installation of hard drives, see the appropriate hardware installation, maintenance, and troubleshooting book for your platform.
3. Restore the CMS data by entering:

   /cms/LANbkup/bin/onbar_restore.tivoli

   The system displays the following message:

   ```
   Do you want to continue? (y/n)
   ```

4. Enter: **y**

   The system restores the data.

   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**.
5. Verify that the restore has completed successfully by entering:

   cat /cms/install/logdir/restore.log
6. Verify that the Informix configuration parameters for CMS are correct.

   For more information, see “Setting the Informix configuration parameters for CMS” in *Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-115.
7. Turn on CMS.
   a. Enter:

      cmsadm

      The system displays the **CMSADM menu**.
   b. Enter the number associated with the `run_cms` option.
   c. Enter the number associated with the `Turn on CMS` option.

Troubleshooting the LAN Backup feature

Troubleshooting the LAN Backup feature provides solutions for common problems with the LAN Backup feature.

Contents

Troubleshooting the LAN Backup feature contains:

Basic troubleshooting

When trying to figure out why a backup or restore is not working, there are some basic steps you should take:

1. Verify that the CMS system, backup server, and storage device has power and is online.
2. Verify that the appropriate storage media is loaded in the storage device.
3. Check the cabling on the CMS system. Make sure all the cables and connectors are securely attached.
4. Verify that the CMS system can detect the backup server over the network.
5. Verify that the backup server can detect the CMS system over the network.

Backup logs

The backup logs are found in **/cms/install/logdir**

There are five backup logs that can be used to monitor the status of a backup:

- backup.log on page 62
- bar_act.log on page 64
- dsierror.log on page 64
- dsmerror.log on page 64
- restore.log on page 66

For more information on error codes, see the appropriate Tivoli storage manager administrator's guide.

backup.log

backup.log contains the most information about the status of backups. This log includes information on:

- When the backup started and ended
- The type of backup performed
- Connection to the storage manager server
- Level of the backup
- Files included in the backup
- Network status

Example:

```
===== LAN SYSTEM BACKUP STARTED Fri Feb 15 12:16:01 MST 2002

/cms/LANbkup/bin/backup.tivoli 0
Converter started Fri Feb 15 12:16:17 MST 2002
Converter completed successfully Fri Feb 15 12:16:30 MST 2002
Tivoli Storage Manager started Fri Feb 15 12:16:31 MST 2002
Tivoli Storage Manager
Command Line Backup Client Interface - Version 4, Release 2, Level 1.0
(C) Copyright IBM Corporation, 1990, 2001, All Rights Reserved.

Node Name: GROMMIT
Session established with server SERVER1: Solaris 7/8
  Server Version 4, Release 2, Level 1.0
  Server date/time: 02/15/02   12:20:54  Last access: 02/15/02   12:09:34


Total number of objects inspected:   39,925
Total number of objects backed up:   39,916
Total number of objects updated:          0
Total number of objects rebound:          0
Total number of objects deleted:          0
Total number of objects expired:          0
Total number of objects failed:           0
Total number of bytes transferred:     1.15 GB
Data transfer time:                  239.39 sec
Network data transfer rate:        5,049.49 KB/sec
Aggregate data transfer rate:        703.47 KB/sec
Objects compressed by:                    0%
Elapsed processing time:           00:28:38

===== LAN SYSTEM BACKUP SUCCESSFULLY FINISHED Fri Feb 15 12:45:12 MST 2002

+++++ ON-Bar BACKUP STARTED Fri Feb 15 13:12:00 MST 2002

/cms/LANbkup/bin/onbar_backup.tivoli 0
onbar -b -w -L 0 started Fri Feb 15 13:12:14 MST 2002
.................
.................
.................
Total number of bytes transferred:    19.30 MB
Data transfer time:                    4.14 sec
Network data transfer rate:        4,768.22 KB/sec
Aggregate data transfer rate:      1,299.32 KB/sec
Objects compressed by:                    0%
Elapsed processing time:           00:00:15

+++++ ON-Bar BACKUP SUCCESSFULLY FINISHED Fri Feb 15 13:13:10 MST 2002
```

bar_act.log

bar_act.log contains information about the status of the Informix On-Bar data backups. For more information, see the Informix documentation.

Example:

```
2002-02-15 12:04:59 793  791 /opt/informix/bin/onbar_d -r -w -p
2002-02-15 12:05:14 793  791 Successfully connected to Storage Manager.
2002-02-15 12:05:14 793  791 Begin cold level 0 restore rootdbs (Storage Manager copy
ID: 0 1423128).
2002-02-15 12:05:55 793  791 Completed cold level 0 restore rootdbs.
2002-02-15 12:05:55 793  791 Begin cold level 0 restore logdbs (Storage Manager copy ID:
0 1423130).
..................
..................
..................
2002-02-15 13:12:53 2401  2399 /opt/informix/bin/onbar_d complete, returning 15
2 (0x98)
```

dsierror.log

dsierror.log contains information about the communication between the X/Open Backup Services Application Programmer's Interface (XBSA interface) and On-Bar. This log may not exist on your system. The error log is created when a failure message is generated.

Example:

```
12/03/01   16:05:41 TcpOpen: TCP/IP error connecting to server.
12/03/01   16:05:41 sessOpen: Failure in communications open call. rc: -50
12/03/01   18:38:45 cuSignOnResp: Server rejected session; result code: 53
12/03/01   18:38:45 sessOpen: Error 53 receiving SignOnResp verb from server
```

dsmerror.log

dsmerror.log contains information about Tivoli storage manager software processes. This log provides error codes that can be used to obtain more information about any potential problems with the software. This log may not exist on your system. The error log is created when a failure message is generated.

Example:

```
03/04/02   14:07:21 TcpOpen: TCP/IP error connecting to server.
03/04/02   14:07:21 sessOpen: Failure in communications open call. rc: -50
03/04/02   14:07:21 ANS1017E Session rejected: TCP/IP connection failure
```

To display help information on a specific client error code:

1. From the # prompt, enter:

   dsmc

   The system enters the storage manager command line mode and the prompt changes to `tsm>`.

2. Enter

   help

   The system displays a help menu.

3. Scroll through the help menu to find the range of error codes that the error code would fit into.

4. Enter the numeric designation for the error code range.

5. Scroll through the error code table to find the entry for the error code.

   Example:

   If the log displays the error code ANS1115W, enter: **help**

   The system displays the help menu.

   Scroll through the list, and find the option for the error message:

   ```
   167 -  ANS1100-ANS1119
   ```

   Enter: **167**

   The system displays a table with error codes. Scroll through the table, and locate the error message.

   ```
   ANS1115W File 'file-namefile-namefile-name' excluded by
   Include/Exclude list
   ```

restore.log

restore.log contains information about the status of a data or system restore. This log is a CMS log. The other backup logs can be used to provide more detailed information about a particular backup or restore process.

Example:

```
===== LAN SYSTEM RESTORE STARTED Fri Feb 15 11:18:01 MST 2002

Restore root file system, please wait...
dsmc restore / /r_root -subdir=yes -preserv=complete started Fri Feb 15 11:18:07
 MST 2002
dsmc restore / /r_root -subdir=yes -preserv=complete finished Fri Feb 15 11:41:0
5 MST 2002
find /devices /dev | cpio -pmudv /r_root started Fri Feb 15 11:41:05 MST 2002
1 blocks
build devices tree finished Fri Feb 15 11:41:18 MST 2002
fmthard:  New volume table of contents now in place.

===== LAN SYSTEM RESTORE SUCCESSFULLY FINISHED Fri Feb 15 11:41:25 MST 2002

+++++ ON-Bar RESTORE STARTED Fri Feb 15 12:02:57 MST 2002

Tivoli Storage Manager
Command Line Backup Client Interface - Version 4, Release 2, Level 1.0
(C) Copyright IBM Corporation, 1990, 2001, All Rights Reserved.

Restore function invoked.
Node Name: GROMMIT
Session established with server SERVER1: Solaris 7/8
  Server Version 4, Release 2, Level 1.0
  Server date/time: 02/15/02   12:07:29  Last access: 02/15/02   11:22:27

ANS1247I Waiting for files from the server...
Restoring             512 /opt/informix/etc/conv [Done]
Restoring             512 /opt/informix/etc/en_us [Done]
..................
..................
..................
Restore processing finished.

Total number of objects restored:       139
Total number of objects failed:           0
Total number of bytes transferred:    19.15 MB
Data transfer time:                    1.33 sec
Network data transfer rate:        14,694.95 KB/sec
Aggregate data transfer rate:      1,111.19 KB/sec
Elapsed processing time:           00:00:17
Tivoli Storage Manager
Command Line Backup Client Interface - Version 4, Release 2, Level 1.0
(C) Copyright IBM Corporation, 1990, 2001, All Rights Reserved.
```

Configuring the network settings on a CMS system

The **hosts** file contains the network settings for a CMS system. If the system is unable to detect the network, the network settings may be incorrect.

To configure networking:

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 the customer domain name.

   Example:

   ```
   #
   # Internet host table
   #
   127.0.0.1       localhost
   192.168.2.1   hostname   hostname.company.com  loghost
   ```

2. Add a line to this file for the router that will connect to this computer. You must enter the IP address and designate it as a router.
3. Add a line to this file for the LAN backup server that will connect to this computer. You must enter the IP address and designate it with the host name.

   This example shows the recommended default IP addressing scheme for a closed network.

   ```
   #
   # Internet host table
   #
   127.0.0.1      localhost
   192.168.2.1    hostname   hostname.company.com  loghost
   192.168.2.103  router
   195.168.2.108  backup_server
   ```

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

   :wq!

5. If the CMS system uses DNS, see Enabling DNS on a CMS system on page 69.

Enabling DNS on a CMS system

If the system is receiving error messages pertaining to an inability to resolve a host name, DNS may be set up incorrectly.

To enable DNS:

1. Enter:

   cp /etc/nsswitch.dns /etc/nsswitch.conf

2. Enter:

   vi /etc/defaultrouter

   The system creates the **defaultrouter** file.

3. On the first line, enter the IP address of the gateway.

4. Press **Esc** and enter:

   :wq!

5. Enter:

   vi /etc/resolv.conf

   The system creates the **resolv.conf** file.

6. On the first line, enter the company domain name.

   Example:

   domain *company.com*

7. On the next line, enter the DNS IP address.

   Example:

   nameserver *135.9.1.39*

8. Press **Esc** and enter:

   :wq!

9. Enter:

   touch /etc/norouter

10. Enter:

    route add default *IP_address* 1

    where ***IP_address*** is the IP address of the gateway.

Troubleshooting the include and exclude list

To verify the files in the include and exclude list:

1. Enter:

   cd /cms/LANbkup/incl_excl

2. Enter:

   cat backup_excl.tivoli

   The system displays a file similar to the following example.

   Example:

```
exclude.dir /proc
exclude.dir /cdrom
exclude.dir /n
exclude.dir /vol
exclude.dir /floppy
exclude.dir /xfn
exclude.dir /dev
exclude.dir /devices
exclude.dir /tmp/.../*
exclude /tmp/*
exclude.dir /var/tmp/.../*
exclude /var/tmp/*
exclude /.../core
exclude /etc/path_to_inst
exclude /etc/nologin
exclude /etc/mnttab
exclude.dir /var/spool/lp/temp
exclude.dir /var/spool/lp/tmp
exclude.dir /var/spool/lp/requests
exclude.dir /var/spool/mqueue
exclude /var/spool/locks/*
exclude.dir /cms/tmp/.../*
exclude /cms/tmp/*
```

3. Perform the following steps *only* if a modification is required for the **backup_excl.tivoli** file:

   CAUTION:

   Modifying this file can cause future system restores to fail. Contact Avaya technical support or your product distributor before modifying this file. See Avaya CMS helplines on page 19 for more information.

   a. Enter:

      vi /cms/LANbkup/incl_excl/backup_excl.tivoli

   b. Change any required settings in the **backup_excl.tivoli** file.

      i. To exclude a directory from the backup, enter:

         exclude.dir *directory_path*

         where ***directory_path*** is the full path for the directory.

      ii. To exclude a file from the backup, enter:

         exclude *file_path*

         where ***file_path*** is the full path for the file.

   c. Press **Esc**. Then enter:

      :wq!

Storage pool variable error messages

The Tivoli storage manager server software can be configured to backup data to a disk drive and then migrate the data to another type of storage media. When a predetermined threshold value is reached, a set amount of data on the disk drive is migrated to another type of storage media. This process is controlled by the highmig and lowmig storage pool variables. If the highmig and lowmig storage pool variables are incorrectly set up, then the backup will generate error messages in **backup.log** and **bar_act.log**.

backup.log displays the following error message:

```
+++++ ON-Bar BACKUP FAILED Wed Feb 27 12:34:24 MST 2002
```

bar_act.log displays the following error message:

```
 2002-02-27 12:34:17 6549  6547 XBSA Error: (BSAEndTxn) Exceeded
available resources.
 2002-02-27 12:34:24 6549  6547 /opt/informix/bin/onbar_d complete,
returning 19 (0x13)
```

The error messages are generated because the system is attempting to migrate only part of an ACD dbspace to the storage media. Entire ACD dbspaces must be migrated. ACD dbspaces can contain more than 2 GB of data.

Contact your Tivoli administrator, if these error messages are generated. The administrator will need to adjust the highmig and lowmig storage pool variables based on the amount of data to be stored on the disk drive and the amount of data to be migrated to the storage media.

Verifying the network card settings

Use the following commands to verify the network card settings:

1. Enter:

   ndd -set /dev/*network_interface* instance *number*

   where ***network_interface*** is either:

   - **hme**
   - **eri**

   Note:

   Most systems use hme for their primary network interface. The Sun Blade or Sun Fire V880 systems use eri.

   and, where ***number*** is the instance of the network interface. The first instance of the primary network card is usually 0.

   Example:

   For the first instance of the hme interface, you would enter:

   ```
   ndd -set /dev/hme instance 0
   ```

2. Enter any combination of the following commands depending on the type of information you want to obtain:

   - To determine the duplex setting of the network card, enter:

     ndd /dev/*network_interface* link_mode

     where ***network_interface*** is either:

     - **hme**
     - **eri**

     The system displays a number representing the duplex setting for the network interface.

Number displayed	Link mode
0	half
1	full

- To determine the speed of the network connection, enter:

  ndd /dev/*network_interface* link_speed

  where ***network_interface*** is either:

  - **hme**
  - **eri**

  The system displays a number representing the speed setting for the network interface.

Number displayed	Link speed
0	10 Mbps
1	100 Mbps

- To determine network connectivity, enter:

  ndd /dev/*network_interface* link_status

  where ***network_interface*** is either:

  - **hme**
  - **eri**

  The system displays a number representing the status of the network interface.

Number displayed	Link status
0	no link
1	link established

Note:

If you need to change any network card settings, contact the National Customer Care Center, or consult with your product distributor or representative.

Checking shared memory parameters

If a data restore fails, check the shared memory parameters. Shared memory errors may be created if a data restore fails or is manually stopped before completion. If the shared memory errors are not removed, future restores will fail. The system may also display the following error message:

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

To check the shared memory:

1. Verify that CMS and IDS are off.
   a. Enter:

      cmsadm

      The system displays the **CMSADM menu**.

   b. Enter the number associated with the `run_cms` option.
   c. Enter the number associated with the `Turn off both CMS and IDS` option.
2. Determine if there are any shared memory errors by entering:

   ipcs

   The system displays one of the following messages:

   - If there are *no* memory errors the system displays a message similar to the following:

```
IPC status from <running system> as of Mon Mar  4 14:55:37 EST 2002
T         ID      KEY        MODE        OWNER    GROUP
Message Queues:
Shared Memory:
m          0   0x50000b2d --rw-r--r--     root     root
m          4   0x50302    --rw-rw-rw-     root     root
m          5   0x30302    --rw-rw-rw-     root     root
Semaphores:
s          4   0x540302   --ra-ra-ra-     root     root
```

- If there are memory errors the system displays a message similar to the following:

```
IPC status from <running system> as of Mon Mar  4 14:41:22 EST 2002
T         ID      KEY        MODE        OWNER    GROUP
Message Queues:
Shared Memory:
m          0   0x50000b2d --rw-r--r--     root     root
m       1318   0x52574801 --rw-rw----     root informix
m       1319   0x52574802 --rw-rw----     root informix
m       1320   0x52574803 --rw-rw-rw-     root informix
m          4   0x50302    --rw-rw-rw-     root     root
m          5   0x30302    --rw-rw-rw-     root     root
Semaphores:
s          4   0x540302   --ra-ra-ra-     root     root
```

3. Remove any entries that have a group of Informix by entering:

   ipcrm -m *ID*

   where ***ID*** is the ID number for the line.

   Example:

   ```
   ipcrm -m 1318
   ```

4. It may be necessary to repeat Step 3 several times. Remove all Informix entries under Message Queues, Shared Memory, and Semaphores.

Restarting a restore after it has stopped

If a data or system restore is stopped partway through the restore process, you may receive the following error message when you attempt to restart the restore:

```
An active restore for the same source file specification exsists.
```

The system generates this message when the restore command is run. This message is displayed from the terminal window and in the **dsmerror.log** file. This error is generated because the Tivoli server is still attempting to execute the previous restore session.

To start a new restore session:

1. Enter:

   dsmc cancel restore

   The system displays a list of the restore sessions that are still running.

2. Enter the number of the session you want to cancel. It may be necessary to repeat this process several times.

3. After removing the previous restore sessions, choose one of the following commands to start a new restore process:

   - Restore the system data by entering:

     /cms/LANbkup/bin/restore.tivoli

   - Restore the CMS data by entering:

     /cms/LANbkup/bin/onbar_restore.tivoli

4. Continue with the remainder of the restore procedure you were performing.

Appendix A: Mirrored system disk pairs

Use the following tables to determine the disk layout for your mirrored system.

Note:

A mirrored system may occasionally display different controllers than 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

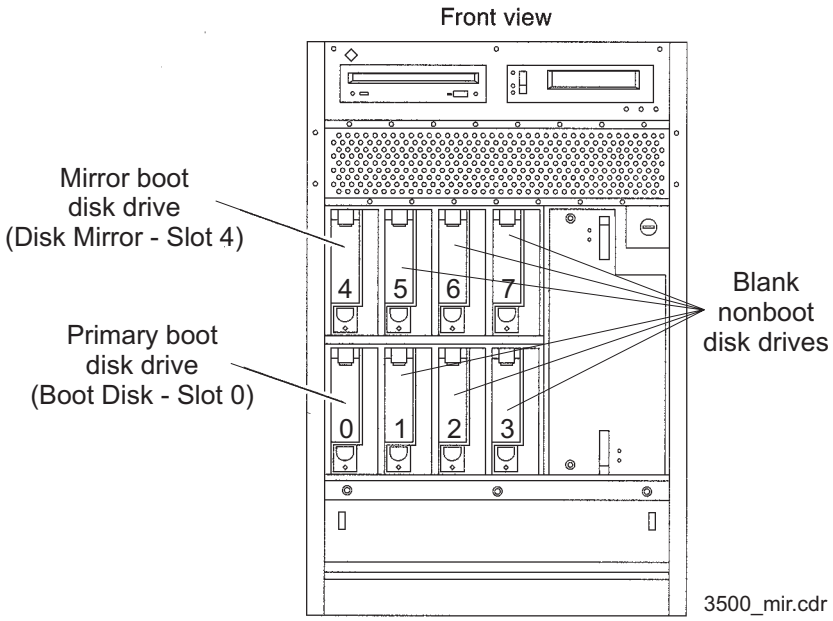
Sun Blade mirrored disk pairs

Primary disk	Mirrored disk
c0t0d0	c0t2d0
c1t0d0	c1t2d0
c1t1d0	c1t3d0

Appendix B: Mirror disk hardware configurations

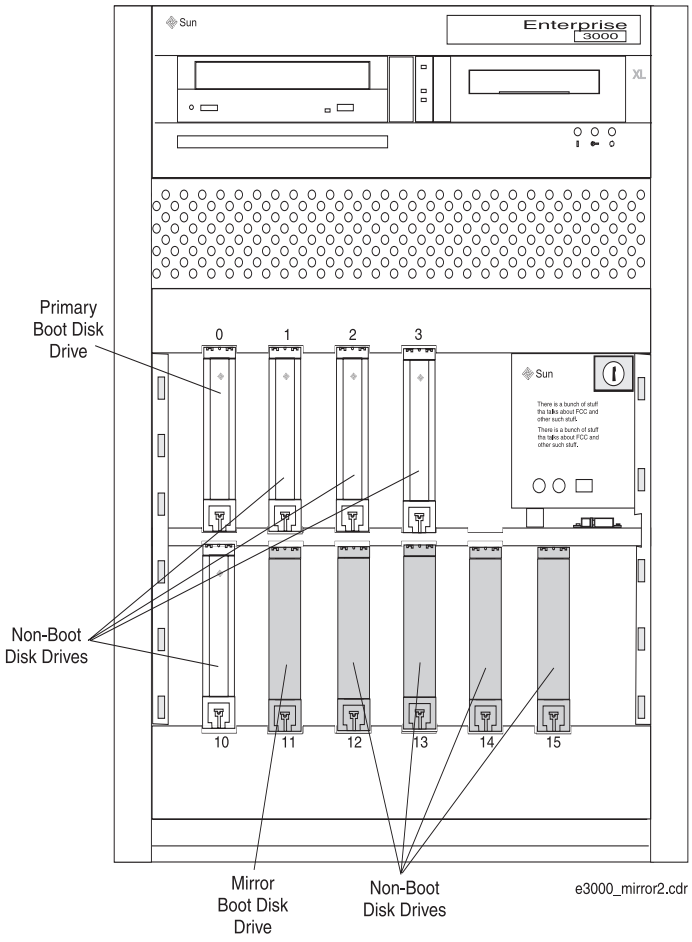
In an Enterprise 3500 computer, there are eight disk drive slots, four in each of two bays. The slots in the lower bay are labeled 0 through 3 and are on controller 0; the slots in the upper bay are numbered 4 through 7 and are on controller 1.

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.



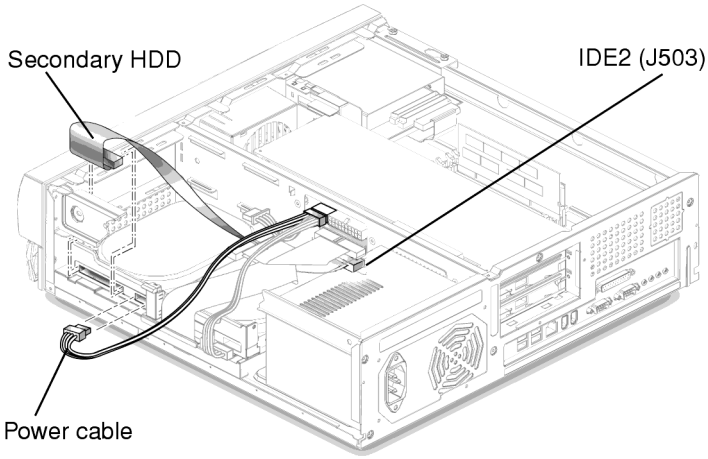
In an Enterprise 3000 computer, there are 10 slots, allowing up to five disks for each mirror. Each slot is labeled with a number 0 through 3 and 10 through 15; there are no slots numbered 4 through 9. All the drive slots are on controller 0.

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.



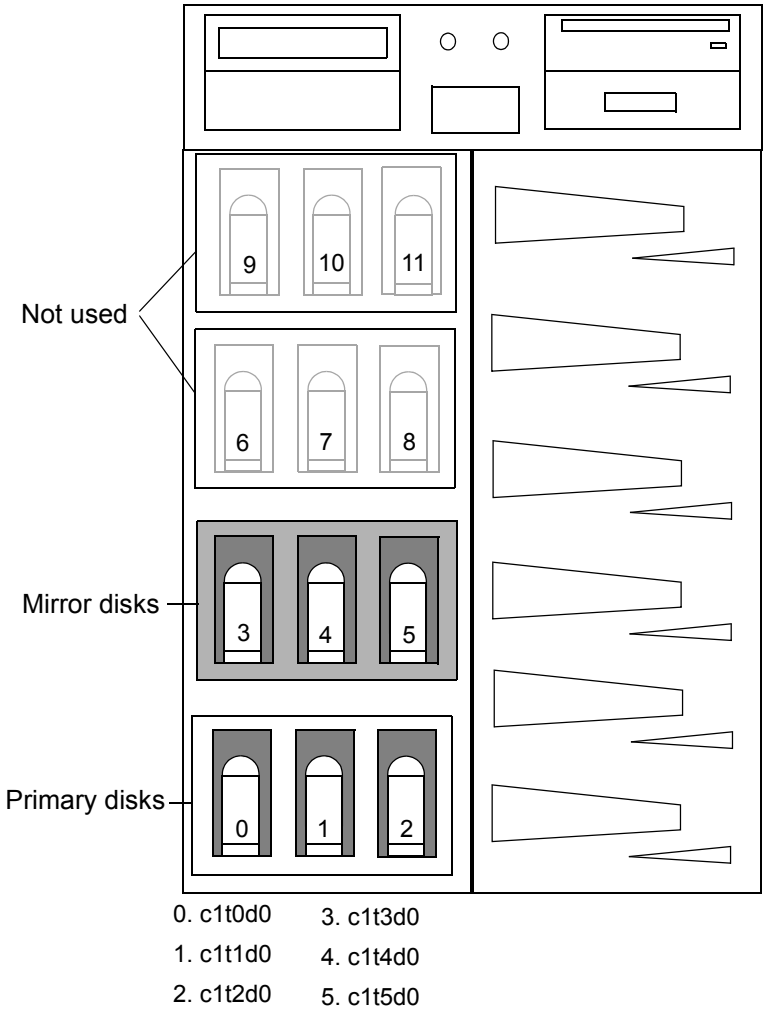
In a Sun Blade computer, there are 2 internal hard drive bays, and a SCSI card that will allow up to four 18 GB external SCSI drives. This will allow up to 3 disks for each mirror. The second internal hard drive will not be used for a data disk. The second internal hard drive will only be used for the mirror boot device.

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



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



Appendix C: Example policy domain

A policy domain is a group of clients that have similar requirements for backing up and archiving data. It is recommended that you create a separate policy domain for your CMS systems.*The settings for your particular policy domain will vary from those given in this procedure.* For guidelines on backing up a CMS system, see Recommendations for backing up data on page 32 and the appropriate Tivoli documentation.

Important:
Avaya support personnel are not responsible for configuring policy domains or providing Tivoli support.

Example procedure:

1. Enter:

   dsmadmc

   The system displays the following message:

```
Tivoli Storage Manager
Command Line Administrative Interface - Version 4, Release 2, Level 1.0
(C) Copyright IBM Corporation, 1990, 2001, All Rights Reserved.

Enter your user id:
```

2. Enter your user ID.

   The system displays the following message:

```
Enter your password:
```

3. Enter your password.

   The system displays the `tsm: SERVER1>` prompt.

4. Perform the following procedure to configure a policy domain:

   a. Create a copy of the standard policy domain by entering:

      copy domain standard *cmsdomain*

Note:

The dash (-) at the end of the following command, allows you to enter a single large command as several smaller lines of text. The dash allows the command to continue across multiple lines.

b. Update the backup copy group by entering:

```
update copygroup cmsdomain standard standard standard -
type=backup verexists=4
```

c. Verify the policy set by entering:

```
validate policyset cmsdomain standard
```

d. Activate the policy set for the policy domain by entering:

```
activate policyset cmsdomain standard
```

Note:

If the node is not registered, you must register the node by entering the following command:

```
register node samplenode samplepassword domain=cmsdomain -
userid=none
```

e. Add the node to the policy domain by entering:

```
update node samplenode domain=cmsdomain
```

Appendix D: Example CMS scheduler policy

The Tivoli scheduler is used to automate your backups. This appendix shows an example of how to set up a scheduler policy. *The settings for your particular scheduler policy will vary from those given in this procedure.* For guidelines on backing up a CMS system, see Recommendations for backing up data on page 32 and the appropriate Tivoli documentation.

Important:
Avaya support personnel are not responsible for configuring scheduler policies or providing Tivoli support.

Example procedure:

1. On the CMS system perform the following procedure:
   a. Enter:

      vi /etc/inittab

      The system displays the **inittab** file.
   b. Add the following line to the end of the file:

      ts::once:/usr/bin/dsmc sched > /dev/null 2>&1
   c. To save and close the file press **Esc**. Then enter:

      :wq!
   d. Enter:

      nohup dsmc sched > /dev/null 2>&1 &
2. Using the Tivoli Administrative interface, perform the following procedure:
   a. Enter:

      dsmadmc

      The system displays the `tsm SERVER >` prompt.

Note:
The dash (-) at the end of the following commands, allows you to enter a single large command as several smaller lines of text. The dash allows the command to continue across multiple lines.

b. Define the backup schedule for the daily CMS incremental data backup by entering the following commands:

```
define sched cmsdomain daily_cms_backup type=client -
desc="daily CMS incremental data backup" -
action=command obj="/cms/LANbkup/bin/onbar_backup.tivoli 1" -
startdate=06/01/2002 starttime=01:00:00 dayofweek=weekday
```

c. Define the backup schedule for the weekly CMS incremental system and full data backups by entering the following commands:

```
define sched cmsdomain weekly_cms_backup type=client -
desc="weekly CMS incremental system and full data backups" -
action=command obj="/cms/LANbkup/bin/backup.tivoli 1; " -
"/cms/LANbkup/bin/onbar_backup.tivoli 0" -
startdate=06/01/2002 starttime=01:00:00 -
duration=4 durunits=hours perunits=weeks dayofweek=saturday
```

d. Define the backup schedule for the monthly CMS full system and incremental data backups by entering the following commands:

```
define sched cmsdomain monthly_cms_backup type=client -
desc="monthly CMS full system and incremental data backups" -
action=command obj="/cms/LANbkup/bin/backup.tivoli 0; " -
"/cms/LANbkup/bin/onbar_backup.tivoli 1" -
startdate=06/01/2002 starttime=01:00:00 duration=4 -
durunits=hours perunits=months dayofweek=sunday
```

3. Enter the following commands:

```
define association cmsdomain daily_cms_backup samplenode
define association cmsdomain weekly_cms_backup samplenode
define association cmsdomain monthly_cms_backup samplenode
```

4. On the CMS system perform the following procedure:
   a. Enter:

      dsmc

      The system displays the `tsm>` prompt.

   b. Verify the schedule by entering:

      q sched

      The system displays a message similar to the following:

```
Node Name: samplenode
Session established with server SERVER1: Solaris 7/8
  Server Version 4, Release 2, Level 1.0
  Server date/time: 06/17/02   15:59:29  Last access: 06/17/02   15:58:31

    Schedule Name: DAILY_CMS_BACKUP
      Description: daily CMS incremental data backup
           Action: Command
          Options:
          Objects: /cms/LANbkup/bin/onbar_backup.tivoli 1
         Priority: 5
   Next Execution: 9 Hours and 1 Minute
         Duration: 1 Hour
           Period: 1 Day
      Day of Week: Weekday
           Expire: Never

    Schedule Name: WEEKLY_CMS_BACKUP
      Description: weekly CMS incremental system and fully data backups
           Action: Command
          Options:
          Objects: /cms/LANbkup/bin/backup.tivoli 1;
/cms/LANbkup/bin/onbar_backup.tivoli 0
         Priority: 5
   Next Execution: 105 Hours and 1 Minute
         Duration: 4 Hours
           Period: 1 Week
      Day of Week: Saturday
           Expire: Never

    Schedule Name: MONTHLY_CMS_BACKUP
      Description: monthly CMS full system and incremental data backups
           Action: Command
          Options:
          Objects: /cms/LANbkup/bin/backup.tivoli 0;
/cms/LANbkup/bin/onbar_backup.tivoli 1
         Priority: 5
   Next Execution: 465 Hours and 1 Minute
         Duration: 4 Hours
           Period: 1 Month
      Day of Week: Sunday
           Expire: Never
```

Glossary

Access Permissions — 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.

ACD — See Automatic Call Distribution (ACD).

Action List — 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.

Automatic Call Distribution (ACD) — A switch feature. ACD is software that channels high-volume incoming call traffic to agent groups (splits or skills).

Also an agent state where the extension is engaged in an ACD call (with the agent either talking to the caller or the call waiting on hold).

Avaya CMS — Avaya Call Management System (CMS). A software product used by business customers that have a telecommunications switch and receive a large volume of telephone calls that are processed through the Automatic Call Distribution (ACD) feature of the switch.

Backup — 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.

Boot — To load the system software into memory and start it running.

Cables — Wires or bundles of wires configured with adapters or connectors at each end and used to connect two or more hardware devices.

CMS — Call Management System. See Avaya CMS.

CMSADM — Call Management System Administration. The part of the CMS software that allows a user to administer features of CMS. See also “CMSSVC.”

CMSADM file system backup	A backup that saves all the file systems on the machine which includes Solaris 8 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.
CMSSVC	Call Management System Services. The part of the CMS software product that allows a user to manage CMS system services. See also “CMSADM.”
Command	A command is an instruction used to tell the computer to perform a function or to carry out an activity.
Common Desktop Environment	A desktop user interface for Solaris. This replaces OpenWindows.
Configuration	Configuration is the way that the computer is set up to allow for particular uses or situations.
Copy	Copy means to duplicate information.
Data Collection Off	CMS is not collecting ACD data. If you turn off data collection, CMS will not collect data on current call activity.
Data Backup	The backup that uses ON-Bar to backup the CMS Informix data.
Data Restore	The restore that uses ON-Bar to restore the CMS Informix data.
Database	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.
Database Item	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).
Database Tables	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.
Device	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).
Disk	A round platter, or set of platters, coated with magnetic medium and organized into concentric tracks for storing data.
EAD	See Expert Agent Distribution (EAD).
EAS	See Expert Agent Selection (EAS).

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.

Historical Database 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.

Historical Reports Reports that display past ACD data for various agent, split or skill, trunk, trunk group, vector, or VDN activities.

Host Name A name that you (or your system administrator) assign to your system unit to uniquely identify it to the *Solaris 8* operating system (and also to the network).

IDS	See Informix Dynamic Server (IDS).
Informix	A relational database management system used to organize CMS data. An add-on software package needed by CMS.
Informix Dynamic Server (IDS)	The relational database management system that is used with CMS Release 3 Version 9 and later.
Install	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.
Interface	A common boundary between two systems or pieces of equipment.
Internet Protocol (IP)	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.
LAPB	See Link Access Procedure Balanced (LAPB).
Link Access Procedure Balanced (LAPB)	The ITU standard error correction protocol used on most current X.25 packet switching networks.
Link	A transmitter-receiver channel or system that connects two locations.
Log In	The process of gaining access to a system by entering a user name and, optionally, a password.
Log Out	The process of exiting from a system.
Logical Unit	The term used to refer to a peripheral device such as a disk drive.
Measured	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.
Megabyte (MB)	One megabyte equals 2^{20} bytes (1048576 bytes).
Menu	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.
Multi-user Mode	A mode of CMS in which any administered CMS user can log into CMS. Data continues to be collected if data collection is “on.”
Network Address	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.

Network Hub	Hardware that connects a computer to a Network Terminal Server (NTS).
Network Terminal Server (NTS)	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.
Network Terminal Server Patch Panel	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.
Node	A unique name used to identify a client to the server.
Non-Volatile Random Access Memory (NVRAM)	A random access memory (RAM) system that holds its contents when external power is lost.
NTS	See Network Terminal Server (NTS).
NVRAM	See Non-Volatile Random Access Memory (NVRAM).
ON-Bar	An Informix IDS tool that works with a Storage Manager to backup and restore the Informix Database.
Open Window	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.
Operating System (OS)	The software that controls and allocates the resources, such as memory, disk storage, and the screen display for the computer.
Password	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.
Printer	A physical device that takes electronic signals, interprets them, and prints them on paper.
Recommended Standard (RS)	Any one of several Electronic Industries Association (EIA) standards commonly used in U.S. electronic applications.
Refresh Rate	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.

SBus	The Input/Output bus for the Sun SPARCserver and Enterprise computers. Provides slots for additional cards (for example, HSI Controller Card).
SBus Expansion Subsystem	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.
Screen Labeled Key (SLK)	The first eight function keys at the top of the keyboard that correspond to the screen labels at the bottom of the terminal screen. The screen labels indicate the function each key performs.
SCSI	See Small Computer System Interface.
SCSI Bus	An industry standard peripheral bus that is used to connect intelligent peripherals to a computer. It uses a daisy-chained cabling arrangement that originates at the Host Adapter to interconnect up to seven intelligent peripheral controllers on the bus. The Sun SPARCserver computer uses a fast SCSI-2 implementation.
SCSI ID	Each tap on the SCSI bus is required to have a unique identification or address, which is the SCSI ID. The ID is set by a 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.
SCSI Single-Ended Bus	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.
Serial Asynchronous Interface/PCI	A card that provides access to eight serial ports by connecting to an eight-port patch panel.
Single-User Mode	A CMS mode in which only one person can log into CMS. Data collection continues if data collection is "on." This mode is required to change some CMS administration.
Skill	In relationship to the call center, think of skill as a specific customer need or requirement, or perhaps a business need of the call center.
SQL	See Structured Query Language (SQL).
Slot	An electronic connection designed to receive a module or a printed circuit board (such as a Single In-line Memory Module [SIMM] or a frame buffer board).
Small Computer System Interface (SCSI)	A hardware interface that allows the connection of peripheral devices (such as hard disks, tape drives and CD-ROM drives) to a computer system.

Split	A group of extensions that receive special-purpose calls in an efficient, cost-effective manner. Normally, calls to a split arrive over one or a few trunk groups.
Storage Device	A hardware device that can receive data and retain it for subsequent retrieval. Such devices cover a wide range of capacities and speeds of access.
Storage Manager	A 3rd party software package that manages backups and restores. It gets the data from CMS and ON-Bar and writes it to the storage devices.
Structured Query Language (SQL)	A language used to interrogate and process data in a relational database. SQL commands can be used to interactively work with a database or can be embedded within a programming language to interface to a database.
Submenu	A menu that appears as a result of a menu selection. All menu selections followed by a “>” have submenus.
Subsystem	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.
Sun Enterprise System	A series of host computer systems manufactured by Sun Microsystems Inc.
Super-user	A user with full access privileges on a system, unlike a regular user whose access to files and accounts is limited.
Switch	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.
System	A general term for a computer and its software and data.
System Backup	The backup that uses a storage manager to backup the UNIX files.
System Restore	The restore that uses a storage manager to restore the UNIX files.
Tap	A tap is any intelligent (microprocessor-based) controller connected to the SCSI bus.
TCP/IP	See Transmission Control Protocol/Internet Protocol (TCP/IP).
Tivoli Storage Manager (TSM)	The Storage Manager supported in the first release of LAN Backup.
TSC	Technical Service Center. The Avaya organization that provides technical support for Avaya products.
TSM	See Tivoli Storage Manager (TSM).

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.
XBSA (X/Open Backup Services Application Programmer's Interface)	An open system interface that allows ON-Bar to communicate to the Storage Manager.

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