AVAYA

Avaya Call Management System
Release 12
LAN Backup User Guide

**Avaya Call Management System
Release 12
LAN Backup User Guide**

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Preface

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

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

This section includes the following topics:

Purpose

The purpose of this document is to describe how to use the LAN backup feature with Avaya CMS.

Intended users

This document is written for:

- Avaya support personnel
- Contact center administrators
- Tivoli administrators

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

Overview

This document includes the following topics:

- Overview of the LAN backup feature on page 17

  Provides an overview of the supported LAN backup software, supported hardware and support information.

- Software configuration for LAN backups on page 21

  Provides the LAN backup configuration procedures.

- Backing up and restoring data on page 31

  Provides the file system backup procedures and recovery procedures.

- Troubleshooting the LAN backup feature on page 57

  Provides information on how to fix various software - related problems.

- Appendix A: Mirrored system disk pairs on page 75

  Provides the disk layout of mirrored systems.

- Appendix B: Mirror disk hardware configurations on page 77

  Provides the disk drive hardware configuration of mirrored systems.

- Appendix C: Example policy domain on page 81

  Provides an example of a policy domain.

- Appendix D: Example Avaya CMS scheduler policy on page 83

  Provides an example of a scheduler policy.

Conventions and terminology

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

⚠ **CAUTION:**

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

⚠ **WARNING:**

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

⚠ **DANGER:**

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

⚠ **SECURITY ALERT:**

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

Reasons for reissue

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

● Updated Required software on page 18 with additional supported software versions.

● A general update and correction of a variety of small problems, such as typographical errors, was done.

Availability

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

Note:

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

● The Avaya online support Web site, http://www.avayadocs.com

● The Avaya Publications Center, which you can contact by:

Voice:

+1-207-866-6701
+1-800-457-1764 (Toll-free, U.S. and Canada only)

Fax:

+1-207-626-7269
+1-800-457-1764 (Toll-free, U.S. and Canada only)

Mail:

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

E-mail:

totalware@gwsmail.com

Related documentation

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

- Change description on page 11
- Software documents on page 11
- Administration documents on page 12
- Avaya CMS upgrade documents on page 12
- Hardware documents on page 14
- Communication Manager documents on page 14
- Documentation Web sites on page 15

Change description

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

- *Avaya Call Center 2.1 and CMS Release 12 Change Description*, 07-300197

Software documents

For more information about Avaya CMS software, see:

- *Avaya Call Management System Release 12 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-117
- *Avaya CMS Open Database Connectivity,* 585-780-701
- *Avaya Call Management System Release 12 LAN Backup User Guide,* 585-215-721
- *Avaya Call Management System Release 12 External Call History Interface,* 07-300064
- *Avaya CMS Custom Reports,* 585-215-822
- *Avaya CMS Forecast,* 585-215-825
- *Avaya Visual Vectors Release 12 Installation and Getting Started*, 07-300069
- *Avaya Visual Vectors Release 12 User Guide*, 07-300200
- *Avaya Business Advocate Release 12 User Guide*, 07-300063
- *Avaya CMS Release 12 Report Designer User Guide*, 07-300068

Administration documents

For more information about Avaya CMS administration, see:

- *Avaya Call Management System Release 12 Administration,* 07-300062
- *Avaya Call Management System Database Items and Calculations,* 07-300011
- *Avaya CMS Supervisor Release 12 Reports*, 07-300012
- *Avaya CMS Supervisor Release 12 Installation and Getting Started*, 07-300009
- *Avaya Call Management System High Availability User Guide*, 07-300065
- *Avaya Call Management System High Availability Connectivity, Upgrade and Administration*, 07-300065

Avaya CMS upgrade documents

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

This section includes the following topics:

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

Base load upgrades

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

For more information about base load upgrades, see:

- *Avaya CMS R12 Base Load Upgrades*

Platform upgrades and data migration

Use a platform upgrade when upgrading to a new hardware platform (for example, upgrading from a SPARCserver 5 to a Sun Blade 150). The new hardware platform is shipped from the Avaya factory with the latest CMS load. Therefore, as part of the upgrade you will have the latest CMS load (for example, R3V9 to R12 or the latest load of the same CMS version). For R12, a specific set of instructions is written for the upgrade and is shipped to the customer site with the new hardware.

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

● *Avaya Call Management System Release 12 Platform Upgrade and Data Migration*, 07-300067

Avaya Call Management System Upgrade Express (CUE)

Use CUE in the following conditions:

● CMS is being upgraded from an earlier version (for example R3V6) to the latest version (for example, R12).

● The hardware platform is not changing.

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

For more information about CUE upgrades, see:

● *Avaya Call Management System (CMS) Release 12 CMS Upgrade Express (CUE) Customer Requirements,* 07-300010

● *Avaya Call Management System Release 12 Sun Blade 100 Workstation CMS Upgrade Express*

● *Avaya Call Management System Release 12 Sun Blade 100 Workstation Mirrored System CMS Upgrade Express*

● *Avaya Call Management System Release 12 Sun Enterprise 3500 Computer CMS Upgrade Express*

● *Avaya Call Management System Release 12 Sun Enterprise 3500 Computer Mirrored System CMS Upgrade Express*

● *Avaya Call Management System Release 12 Sun Fire V880 Computer CMS Upgrade Express*

Hardware documents

For more information about Avaya CMS hardware, see:

- *Avaya Call Management System Sun Fire V880 Computer Hardware Installation, Maintenance, and Troubleshooting,* 585-215-116

- *Avaya Call Management System Sun Fire V880 Computer Connectivity Diagram,* 585-215-612

- *Avaya Call Management System Sun Blade 100/150 Computer Hardware Installation, Maintenance, and Troubleshooting,* 585-310-783

- *Call Management System Sun Blade 100/150 Computer Connectivity Diagram,* 585-310-782

- *Avaya Call Management System Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting,* 585-215-873

- *Call Management System Sun Enterprise 3500 Computer Connectivity Diagram,* 585-215-877

- *Avaya Call Management System Terminals, Printers, and Modems,* 585-215-874

Communication Manager documents

For more information about Avaya CMS communication servers, see:

- *Avaya Call Management System Switch Connections, Administration*, and Troubleshooting, 585-215-876

- *Avaya Communication Manager Call Center Software - Call Vectoring and Expert Agent Selection (EAS) Guide*, 07-300186

- *Avaya Communication Manager Call Center Software - Automatic Call Distribution (ACD) Guide*, 07-300185

- *Avaya Communication Manager Call Center Software - Basic Call Management System (BCMS) Operations*, 07-300061

Documentation Web sites

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

Use the following Web sites to view related support documentation:

- Information about Avaya products and service

    http://www.avaya.com

- Sun hardware documentation

    http://docs.sun.com

- Okidata printer documentation

    http://www.okidata.com

- Informix documentation

    http://www.informix.com

- Tivoli Storage Manager documentation

    http://www.tivoli.com

Support

Contacting Avaya technical support

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

For United States support:

1- 800- 242-2121

For international support:

See the 1-800 Support Directory listings on the Avaya Web site.

Escalating a technical support issue

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

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Overview of the LAN backup feature

The Avaya Call Management System (CMS) LAN backup feature provides an alternative to the traditional method of backing up and restoring data. In the past, the only way to backup and restore data was to use a tape device located with the Avaya CMS system. LAN backup allows you to back up Avaya 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 CMS LAN backup feature are:

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

This section includes the following topics:

Required software

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

- Storage manager client software

    - Tivoli Storage Manager UNIX Backup/Archive Clients Version 5.2.0

    - Tivoli Data Protection for Informix Version 4.1.3

- Tivoli storage manager server software

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

    - Tivoli Storage Manager (TSM) Version 5.2.0

    - Tivoli Storage Manager (TSM) Version 4.2.0

- Avaya CMS R12 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:
    An Avaya CMS system cannot be used as the storage manager server.

- Any hardware required by Avaya CMS R12

Support restrictions

LAN backup is not supported with:

- High Availability configurations
- Data migration

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 Avaya CMS LAN backup feature. This document is not intended to replace the Tivoli storage manager documentation.

Note:
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*

The following table summarizes the various tasks and responsibilities involved with setting up and maintaining an Avaya 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

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

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Software configuration for LAN backups

This section 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.

This section includes the following topics:

Prerequisites

Before configuring any Avaya CMS 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 Avaya 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 Avaya CMS system with the server software.
- Obtain the password and user ID for the client node of the Avaya CMS system. This password and user ID was created when the Avaya 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 the Avaya CMS client node.

The procedures for performing these prerequisites can be found in the Tivoli documentation. 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.

Initial configuration of the Avaya CMS software for LAN backup

Currently, no additional configuration of the Avaya 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 Avaya CMS system. Use the following procedure to check the current ON-Bar configuration and make any necessary adjustments.

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 Avaya CMS have been set up.

   For more information, see "Setting the Informix configuration parameters for Avaya CMS" in *Avaya CMS R12 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-117.

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 for Avaya CMS on page 25.

   - If the settings are *not* correct for the Avaya 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 for Avaya CMS on page 25.

Recommended Tivoli storage manager client configurations for Avaya CMS

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.

This section includes the following topics:

- Verifying dsm.opt on page 25
- Verifying dsm.sys on page 26
- Specifying the location of the XBSA library on page 27
- Generating the Tivoli password file on page 28
- Verifying the presence of the include and exclude list on page 29

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

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 28.

   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 Specifying the location of the XBSA library on page 27.

Specifying the location of the XBSA library

To specify the location of the XBSA library:

1. Enter the following command:

   **ln -s /opt/tivoli/tsm/client/informix/bin/libTDPinf.so /opt/
   informix/lib/ibsad001.so**

2. Go to Generating the Tivoli password file on page 28.

Generating the Tivoli password file

A Tivoli password file must be generated on the Avaya CMS system. If this file is not created, system restores will fail. The password was set up when the Avaya 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 Avaya 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

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 Avaya 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:

Avaya CMS system network information	
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

This section contains the procedures used to back up and restore data on your Avaya Call Management System (CMS). The Avaya 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 Avaya CMS operating-system files.

This section includes the following topics:

Recommendations for backing up data

Avaya recommends the following:

- Routine backups should be scheduled to occur when network traffic is low.
- Avaya CMS data should be backed up with a full backup on a weekly basis.
- Avaya CMS data should be backed up with an incremental backup on a daily basis.
- Avaya CMS system information should be backed up with a full backup on a monthly basis.
- Avaya 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 Avaya CMS system.
- Schedule the Avaya CMS data backup to occur immediately after the system backup.
- A tape backup of the system is still required for data migrations.
- Create a separate policy domain for the Avaya CMS systems.
- Verify that your LAN backup is correctly backing up your data before you discontinue using a tape device for system backups.

Performing a system backup

This section describes how to back up the Avaya CMS system data. The Avaya 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
- Avaya CMS programs

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

This section includes the following topics:

- When to perform a system backup on page 33
- Setting up automated system backups on page 33
- Backing up the system on demand on page 34

When to perform a system backup

Perform the system backup:

- After the Avaya CMS is provisioned

    This backup contains the Solaris system files and programs and Avaya CMS configuration data placed on the computer by TSC provisioning personnel.

- Before and after the Avaya 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 Avaya 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 58.

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

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

This section includes the following topics:

- When to perform a data backup on page 35
- Setting up automated data backups on page 35
- Backing up data on demand on page 35

When to perform a data backup

Perform the data backup:

- Immediately after a system backup
- Before and after the Avaya 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 Avaya 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 58.

Additional references

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

Restoring Avaya 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.

This section includes the following topics:

● Restoring Avaya CMS data from a data backup on page 37

● Restoring specific files from a data backup on page 38

Restoring Avaya CMS data from a data backup

To restore all Avaya CMS data:

1. Enter:

   cd /

2. Enter:

   /cms/LANbkup/bin/onbar_restore.tivoli

   Note:

   > If the Avaya CMS software is on, the restore script will automatically turn the Avaya CMS software off and Informix IDS off.

   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 Avaya 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 an Avaya CMS system

This section describes how to restore an entire system. A system restore will be required if:

● The boot disk fails or becomes corrupt on a non-mirrored system

● The boot disk pair fails or becomes corrupt on a mirrored system

This section includes the following topics:

● Prerequisites on page 38

● Enabling the system to boot on page 39

● Restoring an Avaya CMS system and data on page 45

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 9 4/03 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

Enabling the system to boot

You must re-enable the system to boot, and then restore the system software.

This section includes the following topics:

Booting from the Solaris software CD-ROM

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

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 the power to all of the external devices, such as disk drives and tape drives.

3. Turn on the monitor.

4. Turn on the Avaya CMS system.

   Note:

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

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

   The system displays an `ok` prompt.

   Note:

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

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

7. Enter:

   `boot cdrom`

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

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

   The system displays a list of locales.

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

   The system displays the **sysidtool** window.

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

Selecting your network settings

To select your network settings:

1. Press **F2** to continue.

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

2. Press **F2** to continue.

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

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

   The system displays the **DHCP** options.

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

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

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

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

6. Enter an IP address, and then press **F2** to continue.

   The system displays the **Subnets** options.

7. Choose one of the following steps:

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

     i. Select **Yes**.

     ii. Press **F2** to continue.

        The system displays a prompt for a netmask.

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

    ● If the Avaya CMS system is not on a subnet, select **No**.

8. Press **F2** to continue.

   The system displays the **IPv6** options.

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

   The system displays the **Set the Default Route** options.

10. Choose one of the following steps:

    ● If the Avaya CMS system connects to the network through a router, perform the following steps:

      i. Select **Specify One**.

      ii. Press **F2** to continue.

         The system displays a prompt for a router IP address.

      iii. Enter the appropriate IP address.

    ● If the Avaya CMS system is not on a subnet, select **None**.

11. Press **F2** to continue.

   The system displays your current network settings.

12. Verify that the settings are correct. If the settings are correct, press **F2** to continue.

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

Configuring your Kerberos security policy

To configure your security policy:

1. Verify that **No** is selected, and then press **F2** to continue.

   The system displays your current security settings.

2. Verify that the settings are correct. If the settings are correct, press **F2** to continue.

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

Selecting your regional settings

To select your regional settings:

1. Select **None**, and then press **F2** to continue.

   The system displays your current name service settings.

2. Verify that the settings are correct. If the settings are correct, press **F2** to continue.

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

3. Select the appropriate continent or ocean, and then press **F2** to continue.

   The system displays the **Country or Region** options.

4. Select the appropriate country or region, and then press **F2** to continue.

   The system displays more **Time Zone** options.

5. Select the appropriate time zone, and then press **F2** to continue.

   The system displays the **Date and Time** options.

6. Enter the correct date and time, and then press **F2** to continue.

   The system displays your current regional settings.

7. Verify that the settings are correct. If the settings are correct, press **F2** to continue.

   The system displays a **suninstall** window.

Selecting the Solaris software packages

To select the Solaris software packages:

> **Note:**
>
> On some systems, the **suninstall** window might display information which will require you to select the **Initial** option before continuing with the Solaris installation.

1. Press **F2** for the **Standard** option.

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

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

3. Select the following options:

   - **U.S.A (UTF-8)**

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

4. Press **F2** to continue.

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

> ⚠️ **Important:**
>
> On some platforms the system will display a list of 64-bit options. Select **End User System Support 64-bit**.

5. Press **F2** to continue.

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

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

Configuring the disk drives

To configure the disk drives:

1. Verify that the correct boot device is selected and press **F2** to continue.

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

2. Press **F2** to continue.

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

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

   The system displays the current file system and disk layout.

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

   The system displays the current partition information.

5. Enter the boot disk partition information according to the Boot disk partition table on page 44.

   ⚠ **Important:**

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

   Note:

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

   ● Sun Blade:

   - Boot - c0t0d0

   - Mirrored boot - c0t2d0

   ● Sun Fire V880:

   - Boot - c1t0d0

   - Mirrored boot - c1t3d0

   ● Enterprise 3500:

   - Boot - c0t0d0

   - Mirrored boot - c1t4d0

⚠ 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]
1	**swap**	1024
2	**overlap**[2]	(Do not change)
3	**/cms**	3072
4	**/**	2048
5	(Leave blank)	(Leave blank)
6	(Leave blank)	(Leave blank)
7	(Leave blank)	(Leave blank)

1. Some systems will automatically increase the partition size by one MB. Do not change the new partition size.

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

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

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

The system displays the new file system layout.

8. Press **F2** to continue.

The system displays a **Mount Remote File Systems?** option.

9. Press **F2** to continue.

The system displays the current instillation profile.

10. Press **F2** to continue.

The system displays an unused disk space warning.

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

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

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

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

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

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

Assigning a root password

To assign a root password:

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

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

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

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

3. Minimize this window.

Enabling the Korn shell

To enable the Korn shell:

1. Open a terminal window.

2. 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 an Avaya CMS system and data

To restore the system data:

1. Install the TSM client software on the Avaya 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. The CMS system must be on the network. For more information, see Configuring the network settings on an Avaya CMS system on page 63 and Enabling DNS on an Avaya CMS system on page 65.

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 Avaya CMS system. For more information, see Configuring the network settings on an Avaya CMS system on page 63.

10. Enter:

    cd /tmp

11. 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):
    ```

12. 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.

13. Enter:

quit

14. 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.

15. Choose one of the following:

- If the system is *not* a mirrored Enterprise 3500, go to Step 16.

- 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 16.

    - 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 75.

    ```
    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 77.

  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**.

16. 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)
```

17. Enter: **y**

The system restores the data and reboots.

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

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

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

The system displays the Avaya CMS restore log.

20. Choose one of the following:

    - If the system is *not* mirrored, go to Step 23.

    - 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

21. Enter:

    touch /cms/install/logdir/bar_act.log

22. Enter:

    chown informix:informix /cms/install/logdir/bar_act.log

23. Restore the Avaya CMS data by entering:

    /cms/LANbkup/bin/onbar_restore.tivoli

    The system displays the following message:

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

24. Enter: **y**

> **Note:**
>> Depending on the amount of data, the data restore could take several minutes or several hours to complete.

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

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

    The system displays the Avaya 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.

26. Enter:

    `cp -p /etc/system /olds`

27. Verify that the Informix configuration parameters for the Avaya CMS software are correct.

    For more information, see "Setting the Informix configuration parameters for Avaya CMS" in *Avaya CMS R12 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-117.

28. Turn on the Avaya CMS software.

    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

This section contains procedures for the recovery of an Avaya 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 an Avaya CMS system on page 38.

This section includes the following topics:

- Prerequisites on page 53
- Recovering a non-mirrored system on page 53

Prerequisites

Before you begin restoring the system, perform the following:

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

Recovering a non-mirrored system

To recover a non-mirrored system after data disk failure:

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. Restore the Avaya CMS data by entering:

   /cms/LANbkup/bin/onbar_restore.tivoli

   The system displays the following message:

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

5. Enter: **y**

   The system restores the data.

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

   cat /cms/install/logdir/restore.log

7. Verify that the Informix configuration parameters for the Avaya CMS software are correct.

   For more information, see "Setting the Informix configuration parameters for Avaya CMS" in *Avaya CMS R12 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-117.

8. Turn on the Avaya CMS software.

   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

This section 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 R12 Software Installation, Maintenance, and Troubleshooting Guide*, 585-215-117.

> ⚠ **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 an Avaya CMS system on page 38.

This section includes the following topics:

- Platform considerations on page 55
- Prerequisites on page 55
- Recovering a mirrored system on page 56

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 R12 Software Installation, Maintenance, and Troubleshooting Guide*, 585-215-117.

- Identify the faulty disk or disks. For more information, see "Identifying a faulty disk" in *Avaya CMS R12 Software Installation, Maintenance, and Troubleshooting Guide*, 585-215-117.

Recovering a mirrored system

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

1. 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.

2. Restore the Avaya CMS data by entering:

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

   The system displays the following message:

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

3. Enter: **y**

   The system restores the data.

   ⚠ **WARNING:**
   If the system is rebooted, enter the following commands:

   `. /opt/informix/bin/setenv`

   `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**.

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

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

5. Verify that the Informix configuration parameters for Avaya CMS are correct.

   For more information, see "Setting the Informix configuration parameters for Avaya CMS" in *Avaya CMS R12 Software Installation, Maintenance, and Troubleshooting Guide,* 585-215-117.

6. Turn on the Avaya CMS software.

   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

This section provides solutions for common problems with the Avaya Call Management System (CMS) LAN backup feature.

This section includes the following topics:

Basic troubleshooting

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

1. Verify that the Avaya 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 Avaya CMS system. Make sure all the cables and connectors are securely attached.

4. Verify that the Avaya CMS system can detect the backup server over the network.

5. Verify that the backup server can detect the Avaya CMS system over the network.

Backup logs

There are five backup logs that can be used to monitor the status of a backup. The backup logs are found in **/cms/install/logdir**

This section includes the following topics:

- backup.log on page 58
- bar_act.log on page 60
- dsierror.log on page 60
- dsmerror.log on page 60
- restore.log on page 61

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 an Avaya 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 an Avaya CMS system

The **hosts** file contains the network settings for an Avaya CMS system. If the system is unable to detect the network, the network settings might 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 Avaya 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 Avaya CMS system uses DNS, see Enabling DNS on an Avaya CMS system on page 65.

Enabling DNS on an Avaya CMS system

If the system is receiving error messages pertaining to an inability to resolve a host name, DNS might 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/*
   exclude /.../BI/add_on/data/forwarder/*
   exclude.dir /INFORMIXTMP
   ```

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.

   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**

   - **ce**

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

   Note:

   Enterprise 3500 systems use hme for their primary network interface. The Sun Blade systems can use either eri or ce. Sun Fire V880 systems use eri.

   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**

     - **ce**

     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**

  - **ce**

  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**

  - **ce**

  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 the Avaya CMS software and IDS software 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 might 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 might 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 Avaya CMS data by entering:

     /cms/LANbkup/bin/onbar_restore.tivoli

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

Troubleshooting the LAN backup feature

■   ■   ■   ■   ■   ■
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 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

Mirrored system disk pairs

■　■　■　■　■　■

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.

Front view

Mirror boot
disk drive
(Disk Mirror - Slot 4)

Blank
nonboot
disk drives

Primary boot
disk drive
(Boot Disk - Slot 0)

4　5　6　7

0　1　2　3

3500_mir.cdr
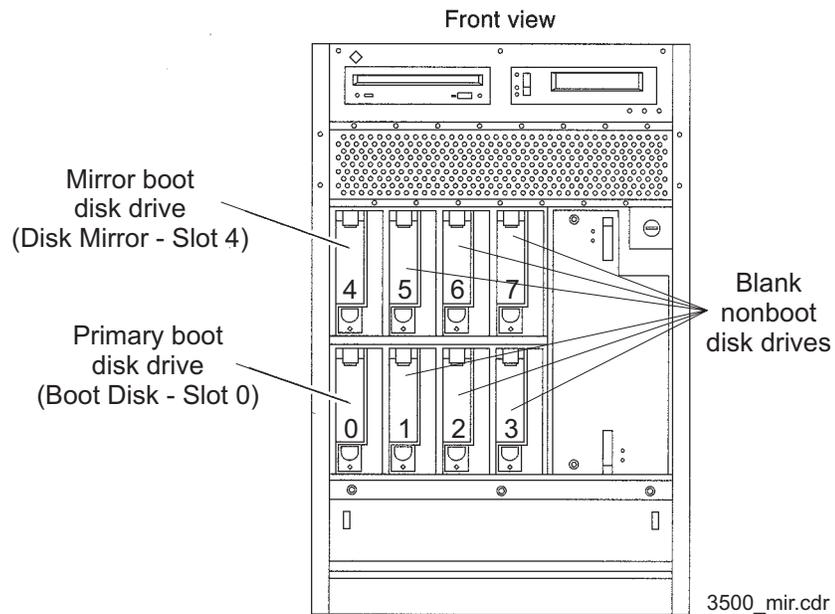
Mirror disk hardware configurations

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
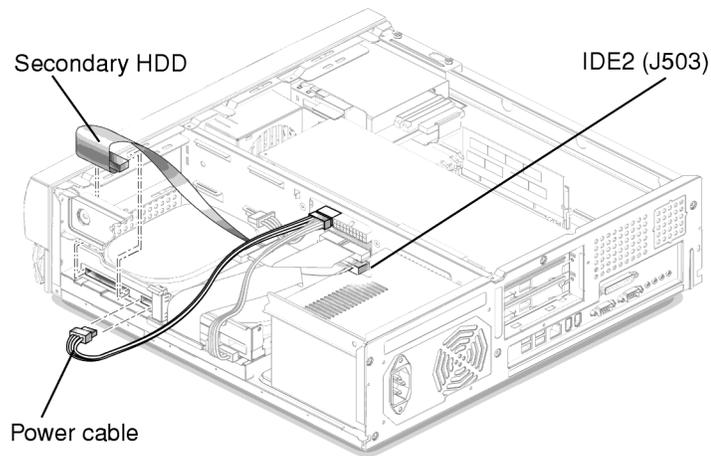
In a Sun Fire V880 computer, there are twelve disk drive slots, three in each of four bays. The slots are labeled 0 through 11 and are on controller 1. Currently, disk drives are only put in slots 0, 1, 3, and 4 for an Avaya CMS system. The Sun Fire V880 computer is only available as a mirrored system and is delivered from the factory already mirrored.

	Primary disk	Mirrored disk
Boot disks:	c1t0d0	c1t3d0
Data disks:	c1t1d0	c1t4d0
	c1t2d0	c1t5d0
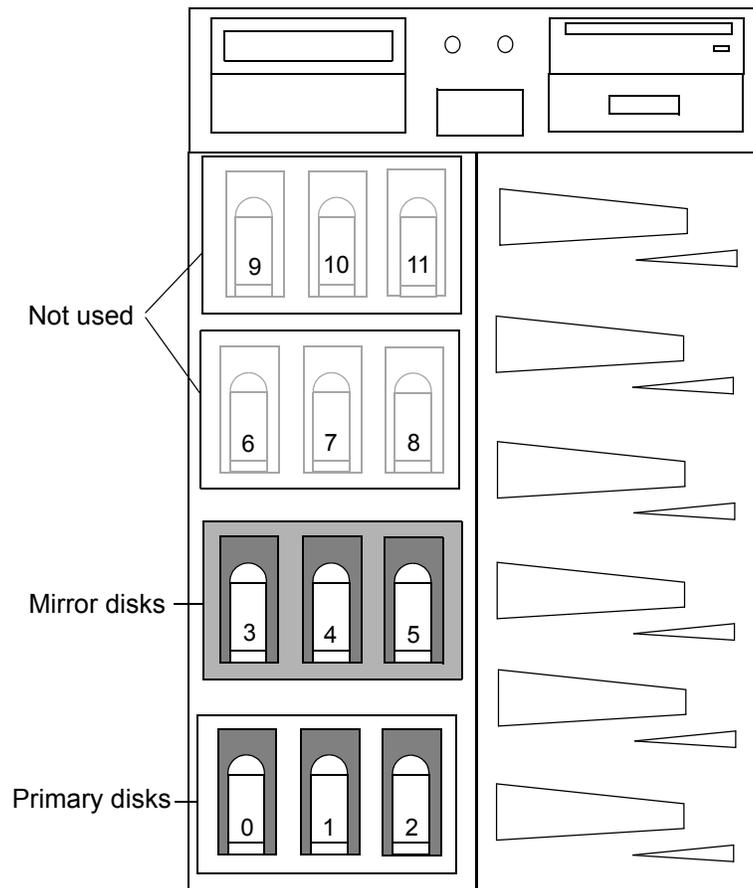
0. **c1t0d0**	3. **c1t3d0**
1. **c1t1d0**	4. **c1t4d0**
2. **c1t2d0**	5. **c1t5d0**

Mirror disk hardware configurations

■ ■ ■ ■ ■ ■

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 Avaya CMS systems.*The settings for your particular policy domain will vary from those given in this procedure.* For guidelines on backing up an Avaya 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 Avaya 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 an Avaya CMS system, see 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 Avaya 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 Avaya 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 Avaya 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 Avaya 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 Avaya 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
```

Example Avaya CMS scheduler policy

■ ■ ■ ■ ■ ■
Glossary

ACD   See Automatic Call Distribution (ACD).

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

Avaya CMS   See Avaya Call Management System (CMS).

Data collection off   Avaya CMS is not collecting ACD data. If you turn off data collection, Avaya
                                 CMS will not collect data on current call activity.

Data backup   The backup that uses ON-Bar to backup the Avaya CMS Informix data.

Data restore   The restore that uses ON-Bar to restore the Avaya 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 Avaya 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 Avaya CMS uses to collect, store, and retrieve ACD data.
                                 Standard Avaya CMS items (database items) are names of columns in the
                                 Avaya 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.
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 Avaya 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.
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 operating system (and also to the network).
IDS	See Informix Dynamic Server (IDS).
Informix Dynamic Server (IDS)	The relational database management system that is used with Avaya CMS Release 3 Version 9 and later.
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.
Measured	A term that means an ACD element (agent, split or skill, trunk, trunk group, vector, VDN) has been identified to Avaya CMS for collection of data.
Multi-user mode	A mode of Avaya 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.
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.

Operating system (OS)	The software that controls and allocates the resources, such as memory, disk storage, and the screen display for the computer.
Single-user mode	An Avaya 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).
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 Avaya 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.
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.

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 Avaya 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 an Avaya CMS user.
User name	A combination of letters, and possibly numbers, that identifies a user to the system.
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.
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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