CoolTools Utilities User’s Guide

Please Read This Entire Guide

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

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Preface

About This Guide

Purpose

This guide provides procedures for running the various CoolTools utilities that are included as part of the suite of Digital Broadband Delivery System (DBDS) Utilities. The CoolTools utilities are a collection of utility programs designed to improve the efficiency with which system operators manage their DBDS as a whole.

Installation of the CoolTools Utilities

Installation of the CoolTools utilities occurs automatically when you install the DBDS Utilities. Refer to *DBDS Utilities Installation Instructions and DNCS Utilities User's Guide*, part number 740020, for installation instructions for the DBDS Utilities.

Notes:

- Some of the chapters in this guide include a procedure for removing the specific CoolTool utility discussed in that chapter. Be sure you call Cisco Services before you remove any CoolTool utility from the DNCS or the Application Server.
- Procedures for removing the entire suite of DBDS Utilities are contained in Appendix C of the *DBDS Utilities Installation Instructions and DNCS Utilities User's Guide*.

Audience

This guide is written for the system operators of Cisco's digital cable television systems and Cisco field service engineers who help system operators manage their systems.

Scope

The utilities described in this installation and operation guide pertain to systems running either Cisco or other resident applications.

Read Me

Some of the utilities described in this guide interact with the DNCS and Application Server databases. Be sure you have a current database backup tape before running any of the utilities described in this guide.

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System Release Compatibility

Refer to the *DBDS Utilities Configuration Guide* for system release compatibility information for the CoolTools Utilities.

To access the most current version of the *CoolTools Utilities User's Guide*, please access your company's extranet site. For accessing instructions, contact your Cisco marketing manager. Check your extranet site often as the information is updated frequently.

Document Version

This is the fourth release of the *CoolTools Utilities User's Guide*. In addition to minor text changes, the following table provides the technical changes to this guide.

Description	See Topic
The following utilities were added to the suite of CoolTool Utilities:	
• convertIP	• See Chapter 11, **Convert IP Addresses With the convertIP Utility**.
• getEASdata	• See Chapter 12,**Troubleshoot the EAS with the getEASdata Utility**.
• tellDhctInfo	• See Chapter 13, **Obtain DHCT Authorization Data With the tellDhctInfo Utility**.

Chapter 1
Obtain Common Database Information With the dblook Utility

Overview

Introduction

System operators and Cisco engineers can use the dblook utility to query the database for some commonly requested information related to DHCTs, QAM and MQAM modulators, QPSK modulators and demodulators, and the BFS server. The utility displays a menu that features a numbered list of database queries when it is first run. To query the database, the system operator just types the number associated with the query the system operator wishes to perform. The system then displays the results of the query to the screen of the DNCS.

In This Chapter

This chapter contains the following topics.

Run the dblook Utility

Running the dblook Utility

Follow these instructions to run the dblook utility.

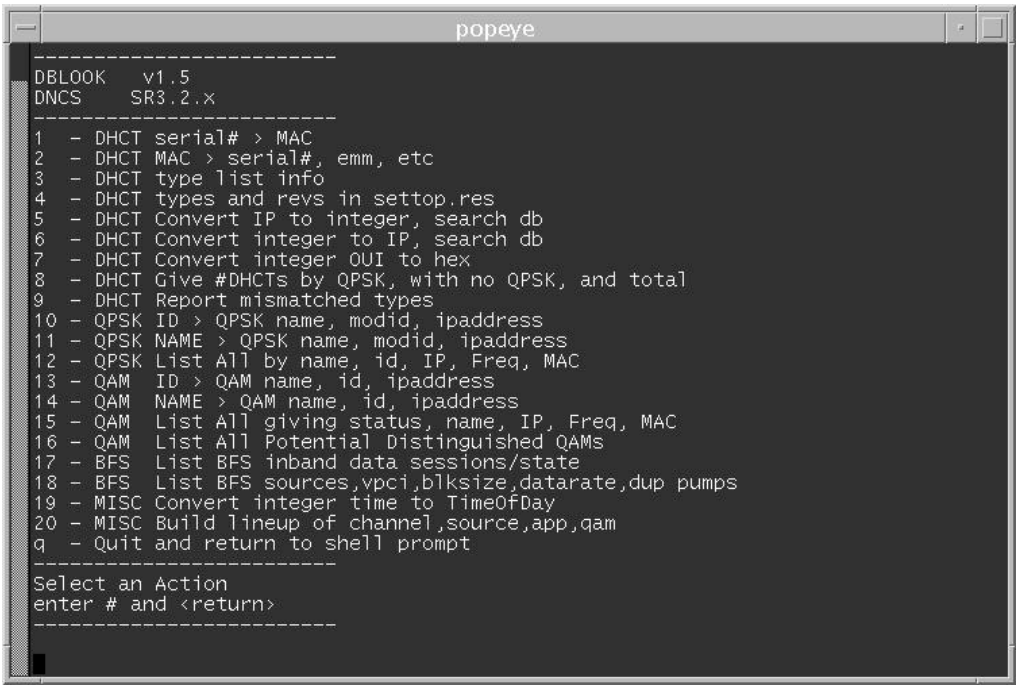
Important: You must be logged in to the DNCS as dncs user to run this utility.

1. If necessary, open an xterm window on the DNCS.
2. Click and drag the corner of the xterm window to resize it so that it is at least 100 columns wide.

   Note: As you resize the window, numbers appear on the window that indicate the current number of columns and rows.

3. Type **dblook.ksh** and then press **Enter**.

   Result: The system displays a menu listing the various database queries you can perform.



4. Type the number associated with the query and then press **Enter**.

   Result: The system displays the results of the query.

   Note: Refer to the following section, T**he dblook Utility Options**, for details related to each of the queries.

Options for the dblook Utility

Refer to the following table for an explanation of the options associated with the dblook utility.

Number	Function
1	**DHCT serial# > MAC** The system prompts the user to type a DHCT serial number and to then press **Enter**. The system then displays the DHCT serial number and the associated MAC address.
2	**DHCT MAC > serial#, emm, etc** The system prompts the user to type the last portion of a MAC address for a DHCT and to press **Enter**. **Example:** Type **F3:3F:8E** and then press **Enter**. The system then displays the following information: • Number of EMMs associated with the DHCT • Serial number of the DHCT • MAC address of the DHCT • Data for the DHCT from the hct_profile table • Data for the DHCT from the secure_micro table **Note:** If several DHCTs meet the search criteria, then data for each DHCT is displayed. To prevent data for more than one DHCT from appearing in the output, submit as much of the DHCT MAC address as possible to the dblook query.

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Number	Function
3	**DHCT type list info** A six-column table with the following information appears: 1. DHCT types and revisions loaded onto the system 2. OUI for each type/revision combination 3. Software Table of Contents (SWTOC) file associated with each type/revision/OUI combination 4. Y (for yes) or N (for no) indicating whether the type/revision/OUI combination is contained in the settop.res file currently loaded on the DNCS 5. Image file associated with each type/revision/OUI combination 6. Indicates potential conflicts based upon the values of the five previous columns. **Examples:** • **NO_SWTOC_OR_IMAGE** appears if there is neither a SWTOC file or an image file associated with a type/revision/OUI combination. • **SWTOC_AND_IMAGE** appears if a type/revision/OUI combination has both a SWTOC file and an image file.
4	**DHCT types and revs in settop.res** A list appears that contains the various type/revision/OUI combinations included in the settop.res file loaded into the Broadcast File System (BFS) server.
5	**DHCT Convert IP to integer, search db** The system prompts the user for a DHCT IP address, and then displays the integer form of that IP address as it is stored in the DNCS database. The system then asks the user if it should search the database for that IP address. The user can respond with an **s** (for search) or any other key to return to the menu. If the user responds with an **s**, the system displays the data for that DHCT as listed in the hct_profile table.

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Number	Function
6	**DHCT Convert integer to IP, search db** The system prompts the user for a 9-digit integer, which it converts to a DHCT IP address. The system then asks the user if it should search the database for that IP address. The user can respond with an **s** (for search) or any other key to return to the menu. If the user responds with an **s**, the system displays the data for that DHCT as listed in the hct_profile table.
7	**DHCT Convert integer OUI to hex** The system prompts the user for an integer, which it converts to a hexadecimal OUI.
8	**DHCT Give #DHCTs by QPSK, with no QPSK, and total** A list appears that contains the number of DHCTs associated with each QPSK, the number of DHCTs associated with no QPSK, and totals.
9	**DHCT Report mismatched types** A list appears that contains mismatched DHCT types as reported in the dncsLogs files. The system then asks if it should display the MAC addresses of these DHCTs.
10	**QPSK ID > QPSK name, modid, ipaddress** The system prompts the user to enter the ID of a QPSK. The system then displays the data for that QPSK as listed in the davic_qpsk table.
11	**QPSK NAME > QPSK name, modid, ipaddress** The system prompts the user to enter the name of a QPSK. The system then displays the data for that QPSK as listed in the davic_qpsk table.

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Number	Function
12	**QPSK List All by name, id, IP, Freq, MAC** The system displays the following information about each QPSK in the database: • ID • name • IP address • frequency • MAC address
13	**QAM ID > QAM name, id, ipaddress** The system prompts the user to enter the ID of a QAM. The system then displays the data for that QAM as listed in the pdcaqam table.
14	**QAM NAME > QAM name, id, ipaddress** The system prompts the user to enter the name of a QAM. The system then displays the data for that QAM as listed in the pdcaqam table.
15	**QAM List All giving status, name, IP, Freq, MAC** The system displays the following information about each QAM in the database: • On-line status • name • IP address • frequency • MAC address

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Number	Function
16	**QAM List All Potential Distinguished QAMs** The system searches the database for all QAMs that are not associated with a hub, and could thus potentially become a distinguished QAM. **Note:** This information is useful only to those systems supporting SR 1.4 or later software.
17	**BFS List BFS inband data sessions/state** The system displays a list containing even-numbered BFS sessions (between 2 and 22) and the session state for each session.
18	**BFS List BFS sources, vpci, blksize, datarate, dup pumps** The system lists the sources for the inband and out-of-band BFS sessions, along with the name, vpci number, blocksize, and datarate of each source. Additionally, the system looks for duplicate BFS and datapump processes and reports any that are found.
19	**MISC Convert integer time to TimeOfDay** The system prompts the user to enter a time in UNIX system time format (number of seconds from January 1, 1970). The system then displays the equivalent local time.
20	**MISC Build lineup of channel, source, app, qam** The system displays the following data for each source and for each channel in the displaychannels table: • hub number • hub name • channel number and description • source ID • display application • QAM and frequency for digital channels The user is then offered the opportunity to save the information to a tab-delimited text file, which can easily be imported into a spreadsheet.

Chapter 2
Save Core Files With the savecore Utility

Overview

Introduction

The savecore utility enables system operators to save the contents of system memory to a file for later analysis when the DNCS or the Application Server crashes.

Note: The contents of system memory at crash time is commonly referred to as a *core dump*.

System operators run the savecore utility once on the DNCS and once on the Application Server. The utility modifies system configuration files on the DNCS and the Application Server so that the contents of a core dump are written automatically to a file upon reboot. The system operator, Cisco engineers, or Sun Microsystems engineers can later examine the file to determine why the system crashed.

Important: The savecore utility modifies the /etc/init.d/sysetup file when it executes for the first time. However, before modifying the file, the utility saves a copy of the original file so that the original file can later be restored if the system operator should decide to no longer automatically save the contents of a core dump.

What System Releases Benefit From the savecore Utility?

Systems running SR 1.5.x and earlier benefit from running the savecore utility. These systems run on the Solaris version 2.5.1 Operating System (OS).

There is no need to run the savecore utility on sites that support SR 2.x or later system software. These systems run on the Solaris version 8 OS. Functionality of the savecore utility is enabled automatically by default in this OS.

Note: System operators may want to examine the online reference manual page (usually called the *man* page) for the UNIX *dumpadm* program. The dumpadm program can be used to modify the configuration of the savecore functionality at sites that support SR 2.x or later system software.

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In This Chapter

This chapter contains the following topics.

Run the savecore Utility on the DNCS

Running the savecore Utility on the DNCS

Follow these instructions to run the savecore utility on the DNCS.

1. If necessary, open an xterm window on the DNCS.
2. Follow these instructions to log in as root user in the xterm window.
   a) Type **su -** and then press **Enter**.
      Result: The **password** prompt appears.
   b) Type the root password and then press **Enter**.
3. Type **. /dvs/dncs/bin/dncsSetup** and then press **Enter**.

   Important: Type the period followed by a space before typing /dvs.

   Result: This command establishes the DNCS environment as a root user.

   Note: The system may also return a message that ends with **–o bad options** or **–o: bad options**. Ignore this message; it is normal.

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4. Type **savecore.ksh** and then press **Enter**.

   Results:

   - The system checks available free space in the /export/home directory.

     Note: Cisco recommends that the /export/home directory has at least 1 GB of free space available in which to create the core dump directory.

   - The system creates the core dump directory.

     Note: This directory is called /export/home/crash/[DNCS name] on the DNCS.

   - The system copies the /etc/init.d/sysetup file to sysetup.[date].
   - The system modifies the /etc/init.d/sysetup file.

     Note: The purpose of the file modification is to enable the system to check for core dumps and to write core dump output to the appropriate directory when the system reboots.

   Example: The system displays the following messages as the savecore utility executes:

   # savecore.ksh
   /export/home has 2439964 MB of available space.

   We will use /export/home for the base dump path.
   The dump directory will be /export/home/crash/[DNCS name]

   Creating the dump directory.
   Editing the /etc/init.d/sysetup file.

   Putting new sysetup file in place and change ownership and permissions.

   Removing temp files.

   SAVECORE has been enabled.

Run the savecore Utility on the Application Server

Transferring the savecore Utility to the Application Server

Before you can run the savecore utility on the Application Server, you must first transfer the file from the DNCS to the Application Server. Follow these instructions to transfer the savecore file from the DNCS to the Application Server.

1. From an xterm window on the Application Server, type **cd /dvs/appserv/bin** and then press **Enter**.

   Result: The /dvs/appserv/bin directory becomes the working directory.

2. Type **ftp dncsatm** and then press **Enter**.

   Result: A log in prompt appears.

3. Log in to the DNCS as **dncs** user.

   Result: An ftp session between the DNCS and the Application Server is established.

4. Type **cd /dvs/dncs/bin** and then press **Enter**.

   Result: The /dvs/dncs/bin directory becomes the working directory on the DNCS.

5. Type **bin** and then press **Enter**.

   Result: The system prepares the file transfer for binary mode.

6. Type **hash** and then press **Enter**.

   Result: The system is instructed to display hash marks (**#**) as the file transfers to show transfer progress.

7. Type **get savecore.ksh** and then press **Enter**.

   Result: The system transfers a copy of the savecore.ksh utility from the DNCS to the Application Server.

8. Type **bye** and then press **Enter**.

   Result: The ftp session closes.

9. Follow these instructions to log in as root user in the xterm window on the Application Server.

   a) Type **su -** and then press **Enter**.

   b) Type the root password and then press **Enter**.

10. Type **chmod +x savecore.ksh** and then press **Enter**.

    Result: The system applies executable permissions to the savecore.ksh utility.

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Running the savecore Utility on the Application Server

After transferring the savecore utility from the DNCS, run it next on the Application Server. Follow these instructions to run the savecore utility on the Application Server.

1. If necessary, open an xterm window on the Application Server.
2. Follow these instructions to log in as root user in the xterm window.
   - Type **su -** and then press **Enter**.

     Result: The **password** prompt appears.
   - Type the root password and then press **Enter**.
3. Type **savecore.ksh** and then press **Enter**.

   Results:

   - The system checks available free space in the /export/home directory.

     Note: Cisco recommends that the /export/home directory has at least 1 GB of free space available in which to create the core dump directory.
   - The system creates the core dump directory.

     Note: This directory is called /export/home/crash/[Application Server name] on the Application Server.
   - The system copies the /etc/init.d/sysetup file to sysetup.[date].
   - The system modifies the /etc/init.d/sysetup file.

     Note: The purpose of the file modification is to enable the system to check for core dumps and to write core dump output to the appropriate directory when the system reboots.

   Example: Refer to step 4 of the **Running the savecore Utility on the DNCS** procedure, in the **Run the savecore Utility on the DNCS** section of this chapter, for sample output for when the utility is run on the Application Server. Output displayed on the Application Server is similar to the output displayed on the DNCS.

Examine a Core File

Examining a Core File

When the savecore utility is enabled on the DNCS or the Application Server, the system automatically writes the contents of a core dump to a file on the DNCS or the Application Server. The system writes the contents of the core dump when the system reboots.

Note: The system names the core dump files **vmcore.0**, **vmcore.1**, **vmcore.2**, etc.

Follow these instructions to view the contents of a core dump.

1. If necessary, open an xterm window on the DNCS or Application Server, depending upon which computer contains the core file you want to examine.
2. Choose one of the following options:
   - To examine a core file on the DNCS, type **cd /export/home/crash/[DNCS name]** and then press **Enter**.
   - To examine a core file on the Application Server, type **cd /export/home/crash/[Application Server name]** and then press **Enter**.

   Result: The directory to which the core dump output was written becomes the working directory.
3. Type **ls -ltr** and then press **Enter**.

   Result: The system lists the files in the current directory according to modification time (most recently written files last).

   Note: The newest file, named similar to **vmcore.#**, contains the contents of system memory from the most recent system crash.
4. Type **strings vmcore.# | more** and then press **Enter**.

   Note: Substitute the number associated with the core file you want to examine for **#.**

   Example: strings vmcore.0 | more

   Result: The system opens the core file using the UNIX *strings* and *more* utilities.
5. Examine the core file to determine why the system crashed.

   Notes:
   - Press the **Spacebar** to advance through the file.
   - Press the **Ctrl** and **c** keys simultaneously to close the core file.
   - Call Cisco Services for help in examining the core file.

Disable the savecore Utility

Disabling the savecore Utility

If you have run the savecore utility on your DNCS and Application Server, the system will automatically save your core files when the DNCS or the Application Server reboots following a system crash. If you ever want to prevent your system from saving these core files automatically, you need to reverse the system changes brought about when you first ran the savecore utility. Follow these instructions to reverse those system changes.

1. If necessary, open an xterm window on the DNCS and the Application Server.
2. Follow these instructions to log in as root user in the xterm window on the DNCS.
   - Type **su -** and then press **Enter**.

     Result: The **password** prompt appears.
   - Type the root password and then press **Enter**.
3. Type **rm -ir /export/home/crash** and then press **Enter**.

   Result: A confirmation message appears.
4. Type **y** (for yes) and then press **Enter**.

   Result: The system deletes the core dump directory and subdirectory.
5. Type **cd /etc/init.d** and then press **Enter**.

   Result: The /etc/init.d directory becomes the working directory.
6. Type **ls -l sysetup*** and then press **Enter**.

   Important: Be sure to type the asterisk (*) after typing sysetup.

   Result: The system displays all the files that start with the name sysetup.
7. Type **cp /etc/init.d/sysetup.[date] /etc/init.d/sysetup** and then press **Enter**.

   Note: Use the output from the command you executed in step 6 to substitute the date that the savecore utility changed your original sysetup file for [date].

   Example: Type **cp /etc/init.d/sysetup.021802 /etc/init.d/sysetup** and then press **Enter** if your sysetup file was changed by the savecore utility on February 18, 2002.

   Result: The system restores your original /etc/init.d/sysetup file.
8. Repeat steps 2 through 7 on the Application Server.

Chapter 3
Improve Backup Reliability With the bkchk Utility

Overview

Introduction

System operators can use the bkchk utility for help in managing backups of their DNCS database and file system. The bkchk utility displays messages on the DNCS that provide system operators with the following information:

- The date of the last successful backup
- Notification that an automated backup attempt failed
- Whether the backup tape from the previous day is still in the tape drive (and in danger of being overwritten)
- Reminder when a file system backup is due

System operators can elect to configure the bkchk utility to run automatically from the crontab file of the DNCS, or they can run the utility from the command line.

Note: Large systems require multiple tapes for backing up the database. These systems should consider the Autobackup Server as an alternative to the bkchk utility. Contact Cisco Services for information about the Autobackup Server.

In This Chapter

This chapter contains the following topics.

Configure the bkchk Utility

Introduction

System operators should decide the following configuration issues before using the bkchk.ksh utility:

- Whether to run the bkchk utility automatically everyday from the crontab file of the DNCS
- How the bkchk utility evaluates the tape in the tape drive of the DNCS
- How often the bkchk utility should remind the system operator to perform a file system backup

Read the remainder of this section for help in deciding each of these configuration issues.

crontab File Entry

System operators can run the bkchk utility with the *–i* option to create an entry in the crontab file of the DNCS. When an entry for the bkchk utility is placed in the crontab file, the system runs the bkchk utility automatically at 11:45 every evening, Monday through Saturday. System operators can later modify the crontab file entry for the bkchk utility if they want to run the utility at a different time.

Important: Cisco recommends that system operators elect to run the bkchk utility automatically through the crontab file.

Tape Evaluation

The bkchk utility contains a configurable parameter called DAYOFFSET. The DAYOFFSET parameter can be set to 0 or 1. The bkchk utility uses the DAYOFFSET parameter to evaluate the suitability of the tape in the tape drive of the DNCS. If the bkchk utility determines that the tape in the tape drive represents the previous day's backup, the system will display a message to the DNCS that warns that the previous backup is in danger of being overwritten by the current backup. System operators or headend personnel who see this message are thereby reminded to switch tapes.

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Example: The DNCS displays a message similar to the following when a backup tape is in danger of being overwritten.

Refer to the following section, **Deciding on the DAYOFFSET Parameter**, for guidance on configuring the DAYOFFSET parameter.

Deciding on the DAYOFFSET Parameter

When an entry for the bkchk utility is added to the crontab file, the system runs the utility by default at 11:45 each evening, Monday through Saturday. The default value for the DAYOFFSET parameter is **0**. These default conditions are most useful for systems that back up their DNCS database after-hours, when headend personnel have gone home. When headend personnel return in the morning, the DNCS displays the message noted in the preceding example. The message indicates that the tape in the tape drive is in danger of being overwritten. Headend personnel who see this message are therefore reminded to switch tapes in preparation for the current day's backup.

System operators who back up their DNCS database when headend personnel are still on duty, may find it beneficial to set their DAYOFFSET parameter to **1**. Additionally, system operators may need to edit the bkchk.ksh entry in the crontab file so that the system runs the utility *before* the scheduled database backup. This way, if the tape in the tape drive represents the previous day's backup, headend personnel on duty are reminded to change the tape before it is overwritten by the current day's backup.

Important: Call Cisco Services if you have any questions related to the interaction of the crontab file and the DAYOFFSET parameter. Cisco Services engineers will question you about when you perform your database backups and can advise you on how to configure your crontab file entry and the DAYOFFSET parameter.

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Changing the DAYOFFSET Parameter

Follow these instructions to change the DAYOFFSET parameter in the bkchk.ksh file.

Important: Note these important points:

- Call Cisco Services before changing the DAYOFFSET parameter. Cisco Services engineers will ensure that you understand the relationship between the DAYOFFSET parameter and the bkchk.ksh entry in your crontab file.
- Do not attempt to change the DAYOFFSET parameter unless you are knowledgeable in the use of the UNIX vi editor.

1. If necessary, open an xterm window on the DNCS.
2. Type **vi /dvs/dncs/bin/bkchk.ksh** and then press **Enter**.

   Result: The bkchk.ksh file opens for editing using the UNIX vi editor.
3. Locate the following line in the bkchk.ksh file:
   DAYOFFSET="0"

   Note: If you have previously changed the parameter, your DAYOFFSET parameter may already be set to **1**.
4. Change the number between the quotation marks to **1** or **0**, whichever is appropriate.
5. Save the bkchk.ksh file and close the vi editor.

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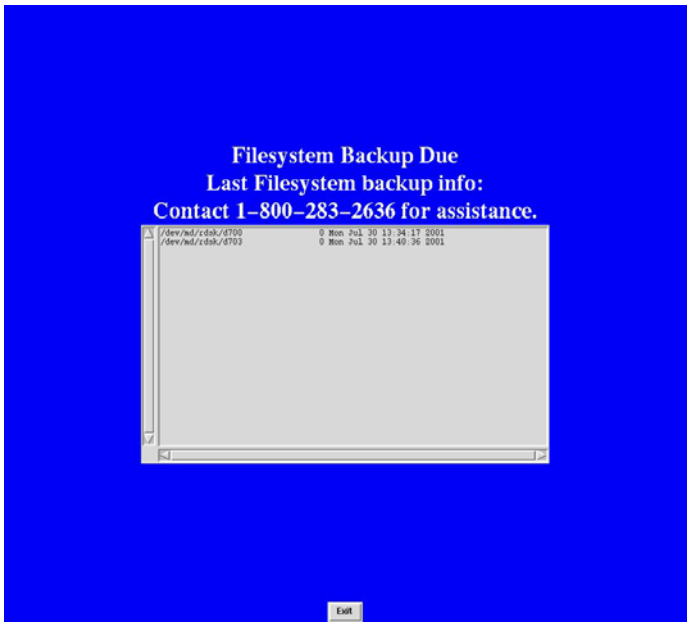
File System Backup Recommendation

Cisco recommends that system operators back up their DNCS file system at least once a month. In addition, system operators should back up the DNCS file system immediately following major change to system configuration.

Note: Procedures for backing up the DNCS file system are found in the set of backup and restore procedures that pertains to your system.

System operators can configure the bkchk utility to display the following message to the screen of the DNCS when the file system backup is due.



Decide how often you want to back up the DNCS file system and then complete the procedure in the next section, **Configuring the bkchk Utility for a File System Backup Reminder**.

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Configuring the bkchk Utility for a File System Backup Reminder

Follow these instructions to configure the bkchk utility to remind you when to perform a file system backup.

Note: This procedure reminds you to perform a file system backup; it does not actually perform the file system backup for you.

Important: Do not attempt to configure the bkchk utility unless you are knowledgeable in the use of the UNIX vi editor.

1. If necessary, open an xterm window on the DNCS.
2. Type **vi /dvs/dncs/bin/bkchk.ksh** and then press **Enter**.

   Result: The bkchk.ksh file opens for editing using the UNIX vi editor.
3. Locate the following two sequential lines in the bkchk.ksh file :
   #REMIND="01/05 03/05 05/05 07/05 09/05 11/05"
   REMIND=""
4. Insert dates between the quotation marks in the second line you located in step 3.

   Notes:

   - The dates you insert represent the dates you want to be reminded to perform a file system backup.
   - Use the line beginning with the number symbol (**#**) as an example.

   Example: To be reminded to perform a file system backup on the 5th of every month, edit the line in step 3 so that it looks like the following example":

   REMIND="01/05 02/05 03/05 04/05 05/05 06/05 07/05 08/05 09/05 10/05 11/05 12/05"
5. Save the bkchk.ksh file and close the vi editor.

Run the bkchk Utility

Introduction

System operators can run the bkchk utility with the following options:

- *-i* — installs an entry for the bkchk utility in the crontab file of the DNCS.
- *-t* — displays the backup date associated with the tape in the tape drive.
- *-h* — displays a screen that shows all the options with which the bkchk utility can be run.
- *-v* — displays the version number of the bkchk utility on your system

The procedures in this section guide you through the steps required to run the bkchk utility.

Creating a crontab Entry

Follow these instructions to configure your system to create an entry in the crontab file of the DNCS so that the system executes the bkchk utility automatically every day.

1. If necessary, open an xterm window on the DNCS.
2. Type **bkchk.ksh -i** and then press **Enter**.

   Result: The system creates an entry in the crontab file of the DNCS so that the bkchk utility executes every night at 11:45, Monday through Saturday.

   Note: System operators can later edit the crontab file to change the time during which the system runs the bkchk utility.

   Important: Do not attempt to edit the crontab file unless you are a skilled user of the UNIX vi text editor and have experience in editing the crontab file. Call Cisco Services for assistance.

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Confirming the Date on a Backup Tape

System operators may occasionally have to restore a system using data from a previous day's backup tape. Because it is crucial that a system be restored using the correct data, system operators can use the bkchk utility with the *–t* option to confirm the date that a backup tape was made. Follow these instructions to confirm the date on a backup tape.

1. Insert your backup tape into the tape drive of the DNCS.
2. If necessary, open an xterm window on the DNCS.
3. Type **bkchk.ksh -t** and then press **Enter**.

   Result: The system examines the tape and displays a message similar to the following:

   Date on tape in [device name] = [date]

   Note: The system substitutes the device name of the tape drive for [device name] and the date the backup tape represents for [date].
4. Compare the date shown in the message from step 3 with the date of the tape backup you need and then choose one of the following options.
   - If the tape has the correct date, proceed with the restoration.
   - If the tape has the incorrect date, eject the tape, obtain the correct backup tape, and repeat these steps.

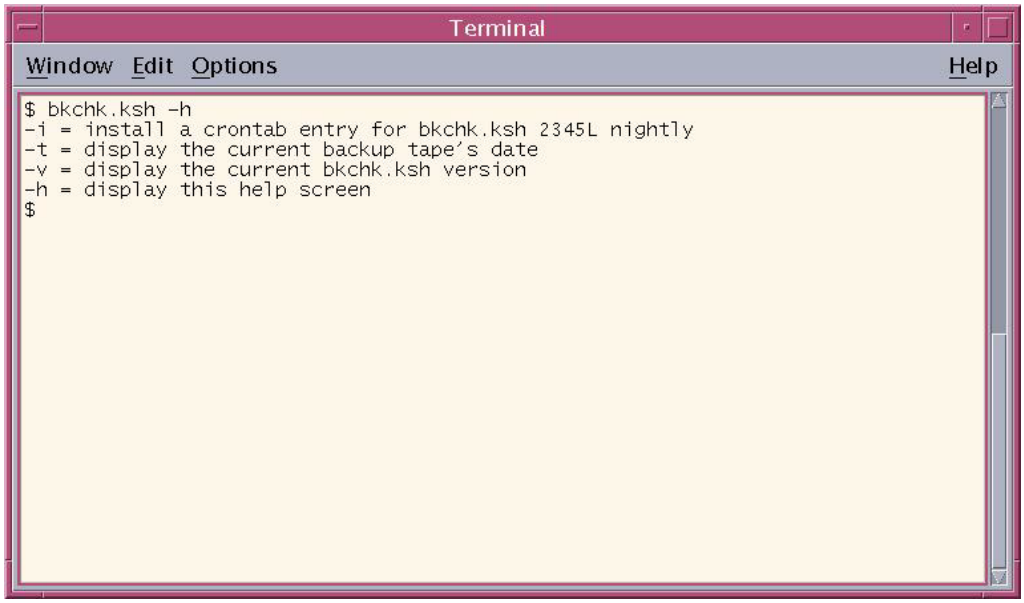
Continued on next page

Examining bkchk Utility Options

Run the bkchk utility with the *–h* option to display a list that shows all the options with which you can run the bkchk utility.

1. If necessary, open an xterm window on the DNCS.
2. Type **bkchk.ksh -h** and then press **Enter**.

   Result: The system displays a list of all the options you can use to run the bkchk.ksh utility.



Note: In addition to the options described earlier in this section, the list also shows that you can type **bkchk.ksh -v** and then press **Enter** to display the version number of the bkchk utility.

Remove the crontab Entry for the bkchk.ksh Utility

Introduction

Follow these procedures to remove the crontab entry for the bkchk utility from your system.

Removing the crontab Entry for the bkchk.ksh Utility

Follow this procedure only if you have created an entry in the crontab file of the DNCS that automatically executes the bkchk utility every day.

1. If necessary, open an xterm window on the DNCS.
2. Follow these procedures to specify the editor with which you will edit the crontab file.
   a) Type **EDITOR=vi** and then press **Enter**.
   b) Type **export EDITOR** and then press **Enter**.
3. Type **crontab -e** and then press **Enter**.

   Result: The crontab file opens for editing using the UNIX vi editor.
4. Remove the entry for the bkchk.ksh utility.
5. Save the crontab file and close the UNIX vi editor.

Chapter 4
Monitor Submirror Synchronization With the syncwait Utility

Overview

Introduction

Disk mirroring is supported on the Sun Enterprise 450 and the Sun Fire 880 Digital Network Control System (DNCS) platforms. Through disk mirroring, the DNCS stores identical information across sets of hard drives. Cisco engineers developed the syncwait utility to monitor the progress of mirrored disks as they synchronize their data.

Important: The syncwait utility is useful only on a Sun Enterprise 450 or a Sun Fire 880 DNCS. These two are the only DNCS platforms that support disk mirroring.

In This Chapter

This chapter contains the following topic.

Run the syncwait Utility

Introduction

Mirrored disks lose their synchronization whenever the disk mirroring function of the Sun Enterprise 450 or Sun Fire 880 DNCS is disabled. System operators or Cisco field service engineers may disable disk mirroring on a Sun Enterprise 450 or Sun Fire 880 DNCS just prior to a system upgrade. Then, after a successful upgrade, the disk mirroring function is re-enabled on the DNCS and the secondary mirrored disk synchronizes with the primary mirrored disk.

Note: Refer to *Using Disk Mirroring During an E450 DNCS Upgrade Technical Bulletin*, for a complete description of disk mirroring during the upgrade process.

Additionally, mirrored disks are out of synchronization whenever disk mirroring is first configured on a Sun Enterprise 450 or Sun Fire 880 DNCS, or when a hard drive that failed is replaced.

System operators and Cisco field service engineers can use the syncwait utility to monitor progress as mirrored disks synchronize their data.

Continued on next page

Running the syncwait Utility

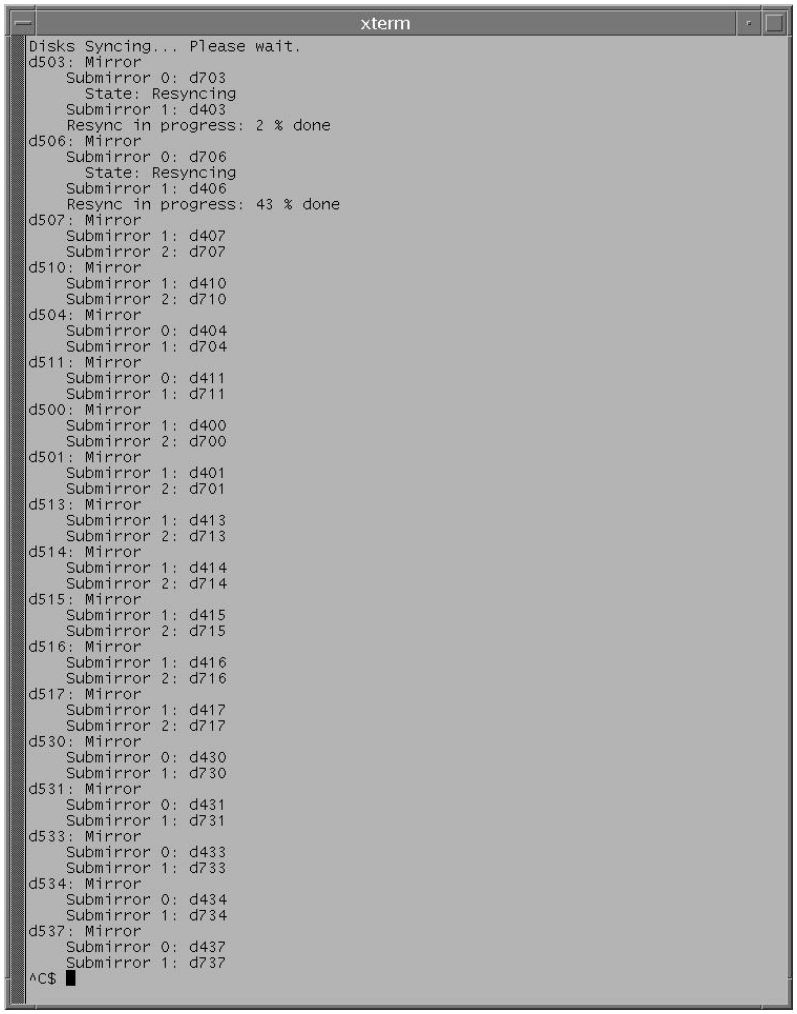
Use the following instructions to monitor progress as mirrored disks synchronize their data.

1. If necessary, open an xterm window on the DNCS.
2. Type **syncwait.ksh** and then press **Enter**.

   Result: The system displays a message stating the percentage of the mirror-synchronization process that is complete.

   Notes:

   - The following example shows two mirrored disk sets: d503 and d506. The submirrors associated with d503 are 2 percent synchronized. The submirrors associated with d506 are 43 percent synchronized.
   - The syncwait utility updates the display every 20 seconds.



Continued on next page

3. When the system displays the following message, type **n** (for no) and then press **Enter**:

   No Resync in progress …
   Continue monitoring status?

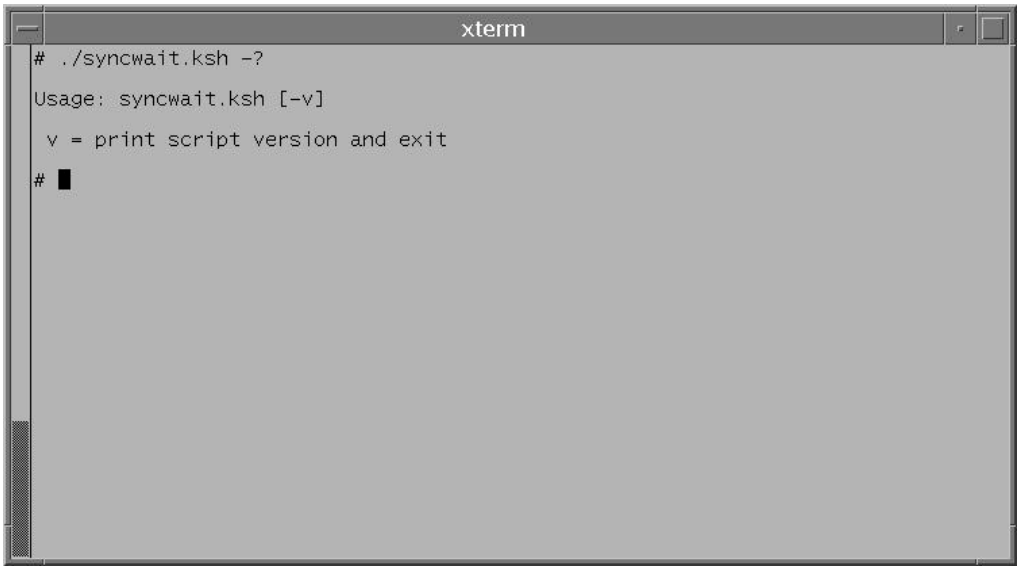
   Result: The syncwait utility exits.

Examining the syncwait Utility Options

Run the syncwait utility with the *–?* option to display a list that shows the other options with which you can run the syncwait utility.

1. If necessary, open an xterm window on the DNCS.
2. Type **syncwait.ksh -?** and then press **Enter**.

   Result: The system shows that the syncwait.ksh utility can be run with the *–v* option.



Note: You can type **syncwait.ksh -v** and then press **Enter** to display the version number of the syncwait utility.

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Chapter 5
Examine the Database for Expiring EMMs With the emm_check Utility

Overview

Introduction

The emm_check utility examines the DNCS database for EMMs that are about to expire. System operators who run the emm_check utility every few days can detect and prevent potentially serious DHCT timeout conditions.

The emm_check utility performs three checks on the DNCS database to detect impending or actual DHCT timeout conditions. The first two checks examine the database for conditions that may prevent the camAuditor process of the DNCS from functioning properly. The emm_check utility automatically corrects these conditions.

The third check examines the database for EMMs that are set to expire within 18 days. Normally, all operational EMMs have an expiration time at least 20 days in the future.

Prerequisite

Be sure that you have a current backup of your DNCS database before running the emm_check utility.

The deleteDhct Utility

In certain cases, the emm_check utility automatically calls the deleteDhct utility in order to delete DHCT records from the database. The logic of the emm_check utility is such that all references to the deleteDhct utility occur automatically; no user intervention is required. The deleteDhct utility is included on the DBDS Utility CD.

The deleteDhct utility was designed by Cisco to completely delete DHCT records from the DNCS database. It deletes a single DHCT or can delete all DHCTs in a list containing DHCT MAC addresses that are presented in a text file.

The logic in the deleteDhct utility is very good at finding all database rows in all the different DHCT tables that contain or used to contain records for the specified DHCT(s). The deleteDhct utility deletes orphaned DHCT records. While orphaned DHCT records are less common now than they have been in the past, at one time duplicate database rows were generated for RMA DHCTs when they were returned from repair with a changed secure_micro address. This utility helps correct this legacy condition.

Continued on next page

In This Chapter

This chapter contains the following topics.

Run the emm_check Utility

Introduction

System operators can run the emm_check utility in either of the following modes:

- Run the emm_check utility in default mode (no options) to check the DNCS database and to correct conditions that may prevent the camAuditor process from functioning correctly.
- Run the emm_check utility with the *–v* option to display the version number of the emm_check.sh utility currently installed on the DNCS.

  Note: When the emm_check utility is run with the *–v* option, no checks of the database occur.

Running the emm_check Utility

Follow these instructions to run the emm_check utility.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To check the DNCS database and to correct conditions that may prevent the camAuditor process from functioning correctly, go to step 3.
   - To display the version number of the emm_check utility currently installed on the DNCS, go to step 4.
3. Type **emm_check.sh** and then press **Enter** to check the DNCS database and to correct conditions that may prevent the camAuditor process from functioning correctly.

   Result: The emm_check utility runs to assess the soundness of the camAuditor process on the DNCS and displays the following message:

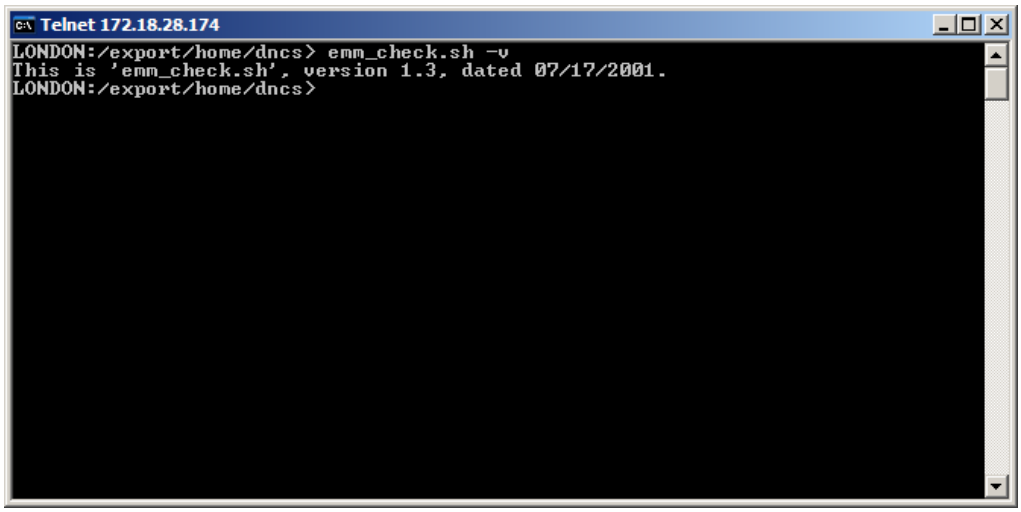
   This script performs three database checks on the DNCS to detect potentially serious conditions. Each check takes a few minutes. Please be patient …

   Note: Refer to **Analyze the Output of the emm_check Utility**, next in this chapter, for guidance in analyzing the output from the emm_check utility.

Continued on next page

4. Type **emm_check.sh -v** and then press **Enter** to display the version number of the emm_check.sh utility currently installed on the DNCS.

   Result: The system displays the version number of the emm_check utility.



Analyze the Output of the emm_check Utility

Introduction

The emm_check utility performs three checks of the DNCS database. As each check is performed, the script lists the check on the screen of the DNCS. At the conclusion of each check, the script lists the results of the check, and specifies if any actions were taken against the DNCS database.

This section provides detailed information on the three database checks performed by the emm_check utility. This section lists sample output that the system operator might see if the checks pass or if the checks fail.

Database Check 1 — Orphaned Authorization Packages

The first database check deletes any orphaned authorization packages it finds in the DNCS database.

Note: An orphaned authorization package exists when an authorization for a package is present in the database, but the corresponding package is no longer present.

After completing the first database check, the system reports how many orphaned authorization packages (if any) it deleted.

Examples:

- **Checking for orphaned authorization packages.**
  No orphaned authorizations exist …
- **Checking for orphaned authorization packages.**
  12 orphaned authorizations exist.
  12 orphaned authorizations were DELETED!

Continued on next page

Database Check 2 — secure_micro Rows

The second database check verifies that each secure micro serial number entry in the secure_micro table has a corresponding entry in the hct_profile table. The system then uses the deleteDhct utility to delete any entries in the secure_micro table that do not have a corresponding entry in the hct_profile table.

Three scenarios are possible as a result of running the second database check:

- When the system finds that each secure micro serial number entry in the secure_micro table has a corresponding entry in the hct_profile table, it displays the following message:

  Checking for secure_micro rows with SMSN not in hct_profile.
  There are 0 secure_micro MACs with sm_serial_num not in hct_profile …

- When the system finds secure micro serial number entries in the secure_micro table without corresponding entries in the hct_profile table, and is able to use the deleteDhct utility to delete the secure micro serial number entries, it displays a message similar to the following:

  Checking for secure_micro rows with SMSN not in hct_profile.
  There are 2 secure_micro MACs with sm_serial_num not in hct_profile.
  Deleting: MAC=00:02:DE:E5:E7:E6, OOS , SN=SABCGWFJT, SMSN=00:02:DE:F0:2F:97
  MAC=00:02:DE:E5:E7:E6 .... Mismatched SMSN=00:02:DE:DA:FD:93
  Deleting: MAC=00:02:DE:7C:C4:22, OOS , SN=SABBTWPRB, SMSN=00:01:A6:78:58:F6
  MAC=00:02:DE:7C:C4:22 .... Mismatched SMSN=00:02:DE:97:B9:87
  2 secure_micros with SMSN not in hct_profile were DELETED!

  Note: The "2 secure_micro rows" referenced in this example are for illustration purposes, only.

- When the system finds secure micro serial number entries in the secure_micro table without corresponding entries in the hct_profile table, and is *unable* to use the deleteDhct utility to delete the secure micro serial number entries, it displays a message similar to the following:

  Checking for secure_micro rows with SMSN not in hct_profile.
  There are 2 secure_micro MACs with sm_serial_num not in hct_profile.
  - -
  A serious EMM 'timeout' condition is beginning to develop!
  Automatic repair can not occur because the deleteDhct
  utility can not be found. Please install this utility and
  then re-run these tests. Call Cisco Services for help, if needed.
  - -
  Due to earlier errors, the third test is likely not valid.
  Therefore, this script is terminating.
  - -
  Please rerun the script again in 24 hours to check that
  the third test runs cleanly.
  - -

Continued on next page

Database Check 3 — secure_micro Expiration Times

The system runs the third database check only if the first two database checks pass. The third database check examines the expiration dates of EMMs in the DNCS database. The system alerts you to a potential timeout condition if at least 25 percent of DHCTs in the database have EMMs ready to expire in 18 days, or less.

Three scenarios are possible as a result of running the third database check:

- If no DHCTs have EMMs ready to expire in 18 days or less, the system displays the following message:

  Checking for secure_micro expiration times < 18 days.
  There are 0 'In-Service' boxes with 'soon-to-expire' EMMs.

- If fewer than 25 percent of DHCTs in the database have EMMs ready to expire in 18 days or less, the system displays a message similar to the following:

  Checking for secure_micro expiration times < 18 days.
  There are 150 'In-Service' boxes with 'soon-to-expire' EMMs.
  - -
  A serious EMM timeout condition is beginning to develop!
  Bounce camAuditor, then check that it is functioning properly.
  Rerun this test in 24 hours!
  - -

  Notes:

  – The 150 'In-Service boxes' referenced in this sample message are for illustration purposes only.

  – For instructions on how to "bounce" the camAuditor process, refer to the next section **Bounce the camAuditor Process**.

- If more than 25 percent of DHCTs have EMMs ready to expire in 18 days or less, the system displays a message similar to the following:

  Checking for secure_micro expiration times < 18 days.
  There are 550 'In-Service' boxes with 'soon-to-expire' EMMs.
  - -
  <<< YOU ARE IN A CRITICAL TIMEOUT STATE >>>
  <<< Please report this to Cisco immediately! >>>
  - -

  Note: The 550 'In-Service boxes' referenced in this sample message are for illustration purposes only.

Bounce the camAuditor Process

Introduction

When the emm_check utility runs the third database check, Cisco Services engineers may request that you bounce the camAuditor process. Follow these procedures to bounce the camAuditor process.

Note: When you bounce a process, you stop the process and then restart it.

Stopping the camAuditor Process

Follow these instructions to stop the camAuditor process.

1. On the DNCS Control window, highlight the **camAuditor** process**.**
2. Click **Process** and then select **Stop Process**.

   Result: A confirmation message appears.
3. Click **OK**.

   Result: In a few minutes, the indicator for the camAuditor process changes from green to red.
4. Wait a few minutes and then highlight again, if necessary, the **camAuditor** process
5. Click **Process** and then select **Start Process**.

   Result: A confirmation message appears.
6. Click **OK**.

   Result: In a few minutes, the indicator for the camAuditor process changes from red to green.

Chapter 6
Track Progress of the emmDistributor With the emmlst Utility

Overview

Introduction

The camAuditor process in the DNCS keeps EMMs from expiring and stores newly encrypted EMMs in the DNCS database. The DNCS then uses the emmDistributor process to refresh DHCTs with their EMMs. The emmDistributor process runs continuously. It constantly cycles through the database, assigning EMMs to the appropriate DHCT.

With DNCS version 1.5, it typically takes several days for the emmDistributor process to cycle through a database with more than 100,000 DHCTs. System operators and Cisco engineers may want to know how far through the database the emmDistributor process is at any given time. Cisco engineers developed the emmlst utility to keep track of the progress made by the emmDistributor process as it cycles through the DNCS database.

Restricted to SR 1.5.x Systems

The emmlst utility is only useful at sites that support version 1.5.x of DNCS software. The emmDistributor process at sites running DNCS software later than version 1.5.x is multi-threaded. When the emmDistributor process is multi-threaded, there is no single point in the database from where EMMs are read and distributed. For multi-threaded systems, the cycle time of the emmDistributor process is far shorter; hence the utility is no longer useful.

In This Chapter

This chapter contains the following topics.

Run the emmlst Utility

Introduction

The emmlst utility creates a list of DHCTs on the DNCS in the order that they are processed by the emmDistributor process. This list is written to a file in the /tmp directory of the DNCS. As system operators run the emmlst utility successive times, the utility may ask if the current list should be recreated or if the current list should be re-used.

Running the emmlst Utility

Follow these instructions to run the emmlst utility.

1. If necessary, open an xterm window on the DNCS.
2. Type **emmlst.ksh** and then press **Enter**.

   Result: The system displays a message similar to the following:

   A Distribution List already exists.
   Reusing this list will save execution
   time. Would you like to re-use the
   existing Distribution List? (y/n)

   Notes:

   - The previous message only appears if the distribution list does, in fact, already exist. The distribution list will not exist if the emmlst utility has not been run since the last time the DNCS rebooted.
   - Whether or not the distribution list already exists on the DNCS is a relatively minor point. System operators should focus on the output of the emmlst utility, displayed in step 3.

Continued on next page

3. Choose one of the following options:

   - If it has been a very short time (within the hour) since you last ran the emmlst utility, type **y** and then press **Enter**.

     Note: If it has been a very short time since you last ran the emmlst utility, the number of DHCTs in the database probably has not changed. You can safely use the existing distribution list.

   - If it has been several hours (or longer) since you last ran the emmlst utility, type **n** and then press **Enter**.

     Note: If it has been several hours or if a lot of staging activity has taken place since you last ran the emmlst utility, the number of DHCTs in the database may have changed. You should probably request that the emmlst utility generate a fresh list.

   Result: The emmlst utility runs and displays information pertaining to the progress of the emmDistributor process as it cycles through the database, as well as how long it takes the emmDistributor process to distribute EMMs to the entire DHCT population.

   Example: Sample output from the emmlst utility follows:

   The last MAC sent EMMs was: 00:01:A6:55:BC:3C
   This is MAC 82007 of 101012
   This is 81% of the way through the list of MACS

   EMMS are being sent to DHCTs
   at 5.0 second intervals on this system
   To change this value, update/add the variable
   EMM_DIST_THROTTLE in the dncs .profile, and
   bounce the emmDistributor process.

   It would take 1 days, 3 hours, and 0 minutes
   to complete the distribution list from this point.

   Total cycle time is: 5 days, 22 hours, and 5 minutes.

How EMMs are Distributed

The DNCS is typically configured to have EMMs expire within 30 days. The camAuditor process is designed to re-encrypt EMMs when the EMMs age to the point where they will expire within 19 days, or less. As stated in the **Overview** section of this chapter, the emmDistributor process cycles through the database and refreshes DHCTs with their newly encrypted EMMs. It may take several days for the emmDistributor process to completely cycle through a large database.

DHCTs may not receive their newly encrypted EMMs under the following circumstances:

- The DHCT is rebooting.
- The subscriber has powered-off the DHCT.
- Network problems prevent the delivery of EMMs to a DHCT.

Important: DHCTs that do not receive EMMs will time out and will be unable to support encrypted services.

Cisco's Recommendation for Systems Running SR 1.5.1

Cisco recommends that system operators run the emmlst utility at least once a day to ensure that the emmDistributor process is making steady progress through the database. System operators should ensure that it is taking the emmDistributor process no longer than 5 days to cycle through the database.

Important: Call Cisco Services if it appears that your emmDistributor process is taking longer than 5 days to cycle through the database. Cisco Services engineers may instruct you to change the value of the **EMM_DIST_THROTTLE** parameter in the .profile file on the DNCS.

Possible Error Condition

System operators who see the following message when running the emmlst utility should call Cisco Services immediately:
EMM distributor is not logging at this time.

Important: This message indicates that the emmDistributor process is not running. If the emmDistributor process is not running, the system is not updating DHCTs with EMMs. If this problem is not corrected, DHCTs may lose authorization for secure services.

Chapter 7
Reboot DHCTs or Obtain Sign-on Data With the listQpsk Utility

Overview

Introduction

The listQpsk utility provides system operators and Cisco engineers with the following capabilities:

- The ability to reboot DHCTs assigned to a specific Quadrature Phase-Shift Keying (QPSK) modulator
- A means for finding out how many DHCTs are signed on to the network through each modulator in the system

The information in this chapter provides instructions and examples for running the listQpsk utility.

In This Chapter

This chapter contains the following topics.

Run the listQpsk Utility

Introduction

When DHCTs sign on to the network, each DHCT is assigned to a specific QPSK modulator. System operators and Cisco engineers can use the listQpsk utility to reboot DHCTs or to examine DHCT signon data.

Note: The output of the listQpsk utility uses the terms **signon data** or **SignOn** when referring to the number of DHCTs assigned to each QPSK.

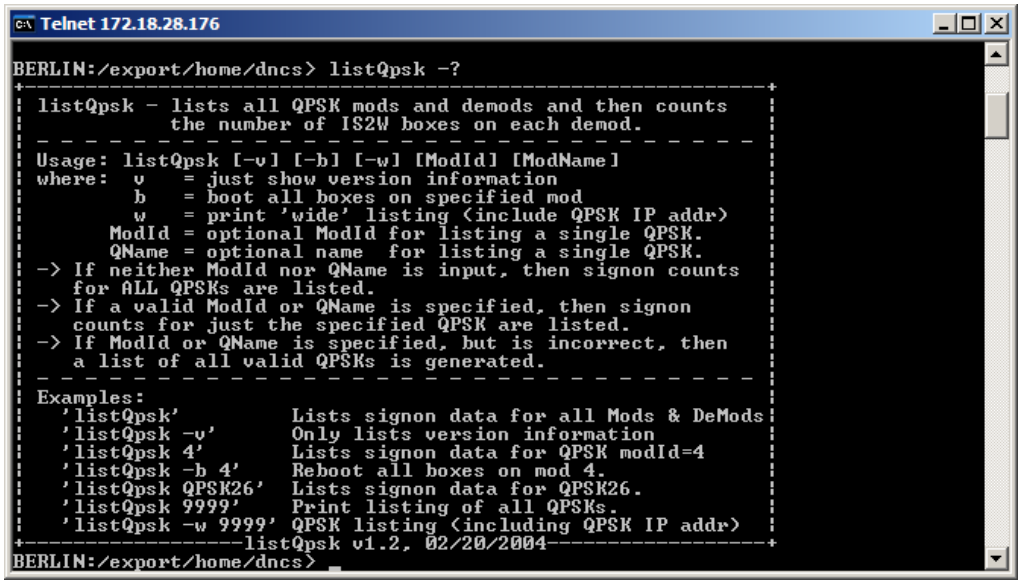
The information in the following sections, provide detailed instructions and examples for running the listQpsk utility.

Displaying the listQpsk Help Window

Use this procedure to display a window detailing the various options with which the listQpsk utility can be run.

1. If necessary, open an xterm window on the DNCS.
2. Type **listQpsk -?** and then press **Enter**.

   Result: The system displays the options you can use when you run the listQpsk utility.



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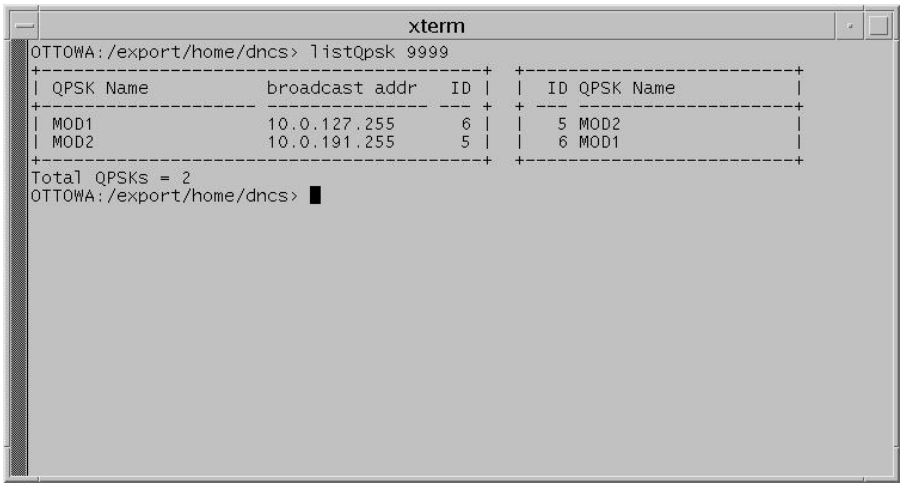
Rebooting DHCTs

Follow these instructions to use the listQpsk utility to reboot DHCTs.

Important: Service to subscribers is interrupted while the DHCT reboots.

1. If necessary, open an xterm window on the DNCS.
2. Do you know the modulator name or modulator ID associated with the DHCTs that you want to reboot?
   - If **yes**, go to step 3.
   - If **no**, follow these instructions.
     a) Type **listQpsk 9999** and then press **Enter**.

     Result: The system lists all QPSK modulators by name and ID.



     b) Note the modulator name or ID associated with the DHCTs that you want to reboot.
3. Type **listQpsk -b [modulator ID or modulator name]** and then press **Enter**.

   Note: Substitute the ID or the name of the QPSK modulator for [modulator ID or modulator name].

   Example: Type **listQpsk -b QPSK1** and then press **Enter**.

   Result: The utility displays a message similar to the following:

   I plan to Reboot all boxes on QPSK '[modulator name or modulator ID]' (using [broadcast address]).
   Do you want to continue? (Y/N)
4. Type **y** and then press **Enter**.

   Result: The system reboots the DHCTs assigned to the specified modulator.

Continued on next page

Displaying DHCT Sign-on Data for All QPSK Modulators and Demodulators

Follow these instructions to use the listQpsk utility to display DHCT sign-on data for all QPSK modulators and demodulators.

1. If necessary, open an xterm window on the DNCS.
2. Type **listQpsk** and then press **Enter**.

   Result: The xterm window updates to list the following information:

   - Each QPSK, identified by ID and name
   - The demodulators associated with each modulator
   - The number of IS2W DHCTs associated with each QPSK

     Note: IS2W is an acronym for *in-service, two-way*. This figure represents the number of DHCTs that have attempted to sign on to the network through the associated QPSK.
   - The number and percentage of DHCTs that have successfully signed on to the network through each QPSK

```
 ID QPSK Name           Demod   IS2W    SignOn  % SignOn
--- ------------------  -----  -----  --------  --------
 72   QPSK1                -   26444     26581       100
---
 70   QPSK2                -   61297     61464       100
---
129   QPSK3                -       0         0         -
---
 88   QPSK4                -    1258      1280       101
---
 57   QPSK5                -    4130      4149       100
---
 29   QPSK6                -       0         0         -
 29   QPSK6                1    1075      1035        96
 29   QPSK6                2    2032      1971        96
 29   QPSK6                3    1164      1130        97
 29   QPSK6                4    1176      1144        97
 29   QPSK6                5     351       331        94
 29   QPSK6                6       0         0         -
```

Note: QPSK modulators without an associated demodulator have been assigned DHCTs that use the DOCSIS sign-on method. DHCTs that use the DOCSIS method to sign on to the network do not require a demodulator.

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Displaying DHCT Sign-on Data for a Specific QPSK Modulator

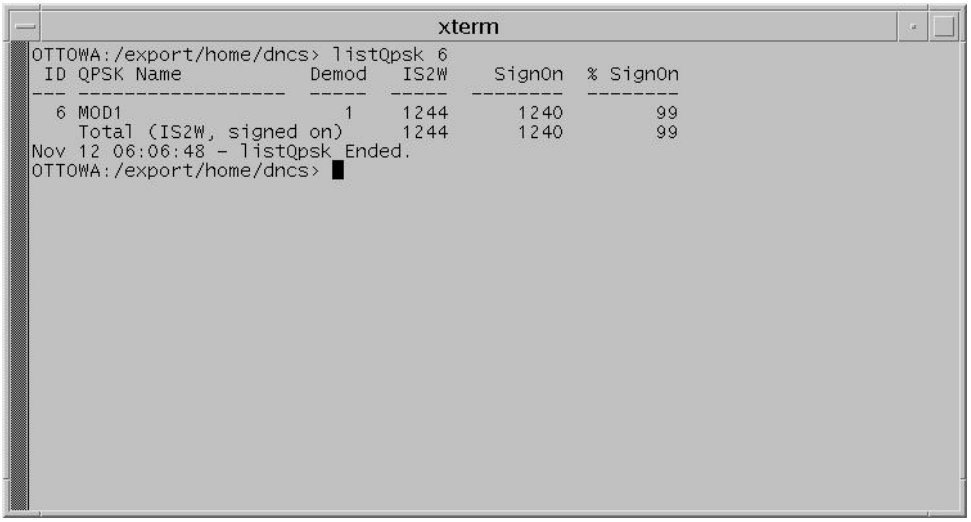
Follow these instructions to use the listQpsk utility to display DHCT sign-on data for a specific QPSK modulator.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To display DHCT sign-on data for a QPSK identified by modulator ID, go to step 3.
   - To display DHCT sign-on data for a QPSK identified by modulator name, go to step 4.
3. Type **listQpsk [modulator ID]** and then press **Enter**.

   Note: Substitute the QPSK modulator ID for [modulator ID].

   Example: Type **listQpsk 6** and then press **Enter** to obtain a list of DHCT sign-on data for a QPSK with a modulator ID of 6.

   Result: The xterm window updates to display DHCT sign-on data for the selected QPSK.



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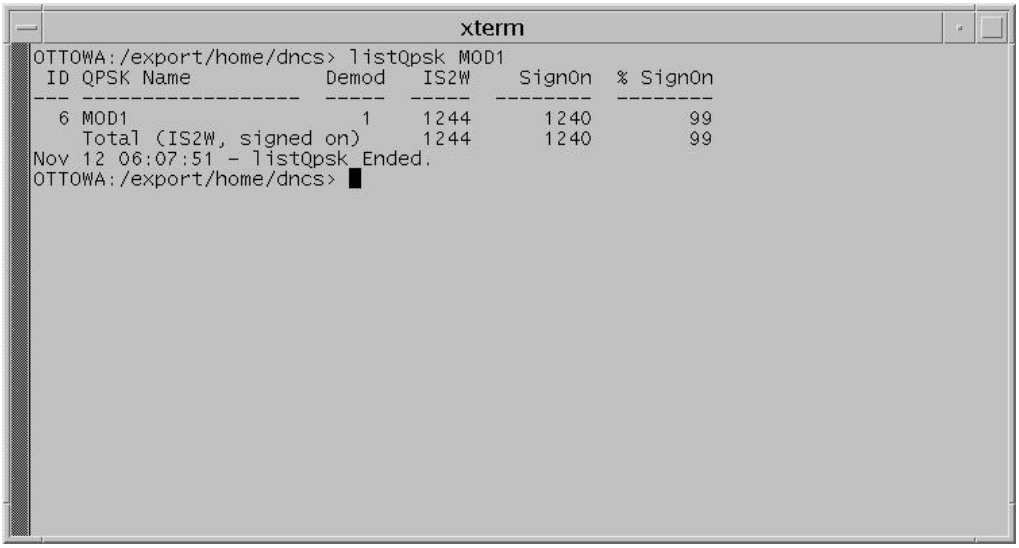
4. Type **listQpsk [modulator name]** and then press **Enter**.

   Note: Substitute the QPSK modulator name for [modulator name].

   Example: Type **listQpsk MOD1** and then press **Enter** to obtain a list of DHCT sign-on data for a QPSK with a modulator name of MOD1.

   Result: The xterm window updates to display DHCT sign-on data for the selected QPSK.



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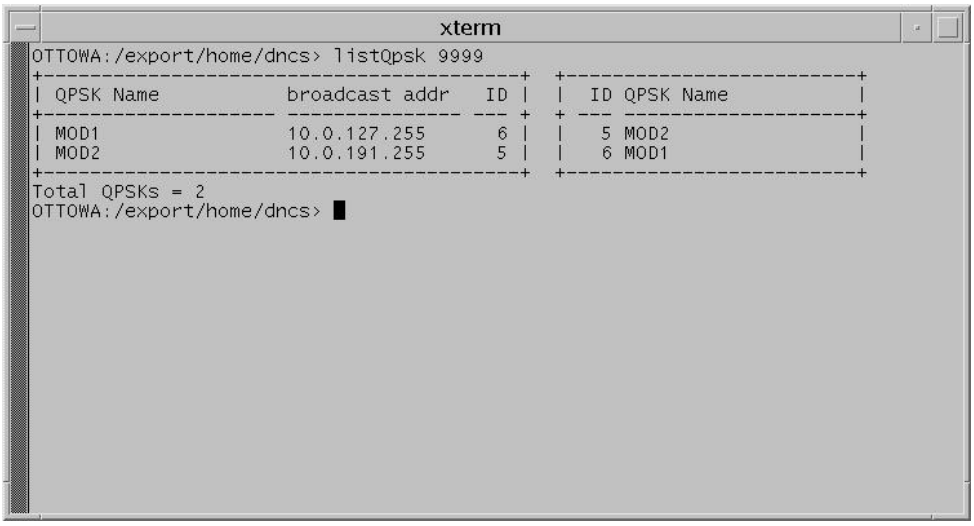
Displaying a List of All QPSKs

Follow these instructions to display a list of all QPSKs in the system.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To list each QPSK by name, broadcast address, and ID, go to step 3.
   - To list each QPSK using *wide* format, whereby the QPSK IP address is listed, in addition to the QPSK name, broadcast address, and ID, go to step 4.
3. Type **listQpsk 9999** and then press **Enter**.

   Result: The xterm window updates to list each QPSK by name, broadcast address, and ID.



Note: The output displays two parallel lists. The list on the left contains QPSKs sorted alphabetically by name. The list on the right contains QPSKs sorted numerically by ID.

Continued on next page

4. Type **listQpsk -w 9999** and then press **Enter**.

   Result: The system lists each QPSK, identified by name, broadcast address, ID, and IP address in wide format.

```
listQpsk -w 9999
+-------------------------------------------------------------------------------+
| QPSK Name          Broadcast_Addr  QPSK_IP_address CA_IP_address    ID |  |  ID QPSK Name          |
+------------------- --------------- --------------- --------------- --- +  + --- --------------------+
| 0437BAYONQP1       10.241.10.63    172.16.36.101   10.241.10.49     25 |  |  19 6236HUDSONQP01     |
| 6236HUDSONQP01     172.17.63.255   172.16.43.101   172.17.0.1       19 |  |  25 0437BAYONQP1       |
| 6236HUDSONQP02     172.17.127.255  172.16.43.102   172.17.64.1      29 |  |  29 6236HUDSONQP02     |
| 6236HUDSONQP03     172.17.191.255  172.16.43.103   172.17.128.1     30 |  |  30 6236HUDSONQP03     |
| 6236HUDSONQP04     172.17.255.255  172.16.43.104   172.17.192.1     31 |  |  31 6236HUDSONQP04     |
| 6236HUDSONQP05     172.18.31.255   172.16.43.105   172.18.0.1       32 |  |  32 6236HUDSONQP05     |
| 7274PATQP01        10.241.11.143   172.16.57.101   10.241.11.129    44 |  |  44 7274PATQP01        |
| LOCALQPSK          10.241.9.255    172.16.96.181   10.241.9.225     45 |  |  45 LOCALQPSK          |
| NJ2QPSKSTAGING     10.241.14.79    172.16.63.101   10.241.14.65     46 |  |  46 NJ2QPSKSTAGING     |
+-------------------------------------------------------------------------+  +----------------------+
Total QPSKs = 9
```

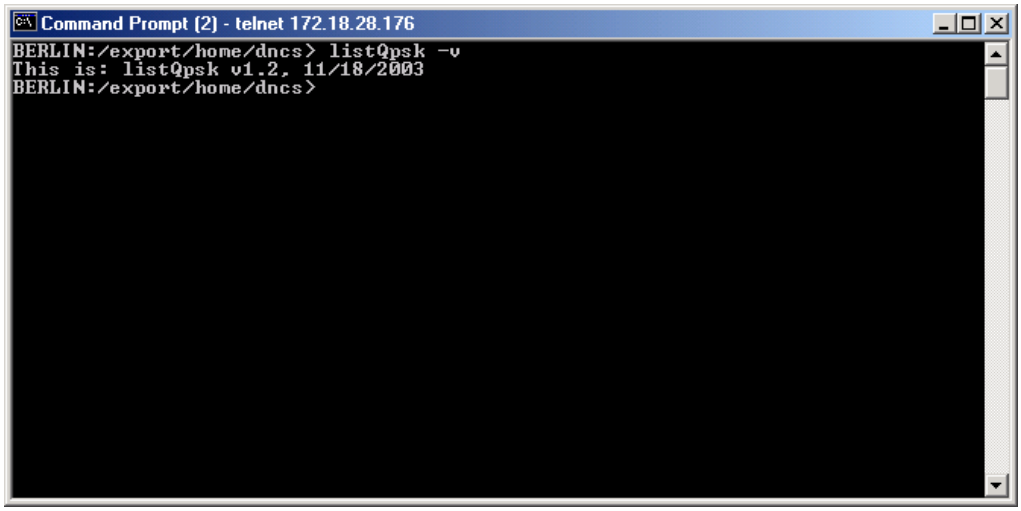
Continued on next page

Displaying the Version Number of the listQpsk Utility

Use these instructions to display the version number of the listQpsk utility.

1. If necessary, open an xterm window on the DNCS.
2. To display the version number of the listQpsk utility on your system, type **listQpsk -v** and then press **Enter**.

   Result: The xterm window updates to display the version number of the listQpsk utility.



Chapter 8
Transmit DHCT Billing Transactions With the IIH Utility

Overview

Introduction

System operators and Cisco engineers can use the IIH utility to transmit the following four types of billing transactions to DHCTs:

- dhctInstantHit
- resetClientNvm
- bootDhct
- setPin

These transactions can be transmitted to an individual DHCT, a list of DHCTs, DHCTs supported by a specific Quadrature Phase-Shift Keying (QPSK) modulator or demodulator, or a specific model number of DHCT. This chapter contains details of the four types of billing transactions supported by the IIH utility, as well as instructions and examples on using the utility.

Note: Each of these transactions can be run using a list of DHCTs. Each DHCT in the list is identified by MAC address. System operators typically prepare the list of DHCTs beforehand by using any text editor, such as vi. Instructions for preparing the list of DHCTs are found in **Prepare a Text File**, later in this chapter.

In This Chapter

This chapter contains the following topics.

Four Billing Transactions

Introduction

Cisco engineers developed the IIH utility to transmit four separate billing transactions to DHCTs. The system determines which billing transaction you want to transmit through the specific parameters you use when you run the IIH utility. The following list contains the four billing transactions, as well as the identifying parameter(s):

- dhctInstantHit—specified by the *–i* parameter
- resetClientNvm—specified by the *–r* parameter

  Note: The *–r* parameter is only supported by sites that use the Cisco Application Server.
- bootDhct—specified by the *–b* parameter
- setPin—specified by the *–bp* and *-pp* parameters

Each transaction is discussed in some detail in the remainder of this section.

dhctInstantHit

The dhctInstantHit transaction refreshes DHCTs with their Entitlement Management Messages (EMMs).

Note: EMMs are encrypted packets of information that the DNCS uses to supply secured service authorizations to DHCTs. EMMs enable DHCTs to use many digital and interactive broadcast services.

resetClientNvm

The resetClientNvm transaction resets the non-volatile memory (NVM) of a DHCT to default values established at the factory.

Note: While the resetClientNvm transaction can be run to reset the NVM of DHCTs associated with a specific QPSK modulator or demodulator, the need to use this application in this manner is unlikely.

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bootDhct

The bootDhct transaction is used to reboot a single DHCT, a list of DHCTs, or DHCTs associated with a specific QPSK.

setPin

The setPin transaction is used to reset two possible personal identification numbers (PINs) configured on the DHCT:

- The blocking PIN is used to restrict access to specific channels.
- The PPV PIN is used to authenticate the purchase of a PPV movie.

Prepare a Text File

Introduction

The four individual transactions supported by the IIH utility can act upon a single DHCT or upon a group of DHCTs. When processing a group of DHCTs, system operators will find it advantageous to input to the IIH utility a list of DHCT MAC addresses as contained in a text file. The information in this section provides guidelines and instructions for preparing the text file of MAC addresses.

Guidelines for Preparing the Text File

Use the following guidelines when preparing the input text file:

- Prepare the file using a standard text editor, such as vi.
- Prepare the file with one MAC address per line.

  Important: MAC addresses must be in hexadecimal format, and any letter characters must be uppercase.

  Example: 00:02:DE:4A:11:92
  00:02:DE:4A:11:93
  00:02:DE:4A:11:94
- Each MAC address must be left-justified on each line of text.

  Note: A MAC address contains 17 characters. The IIH utility reads only the first 17 characters of each line. Any additional characters per line are ignored and are treated as comments.
- Save the file using a name that is relevant to the contents of the file. Append the current date to the end of the file name.

  Example: iih-in_11.13.02 for a file that was created on November 13, 2002.
- Cisco recommends that you save the file to the /tmp directory on the DNCS. However, files in the /tmp directory are lost whenever the DNCS reboots. Store the file here only for one-time use.

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Preparing a Text File

Follow these instructions to prepare a text file for use with the IIH utility.

Important: These instructions use the vi text editor as an example. The vi text editor is not intuitive. These instructions are not a substitute for a good working knowledge of the vi text editor.

1. If necessary, open an xterm window on the DNCS.
2. Type **cd /tmp** and then press **Enter**.

   Note: Cisco recommends that you save the text file in the /tmp directory on the DNCS.
3. Type **vi [file name]** and then press **Enter**.

   Example: vi iih-in_11.31.02

   Result: The file opens for editing.
4. Insert your list of MAC addresses into the file you have just opened.

   Note: Use the guidelines set forth in **Guidelines for Preparing the Text File**, earlier in this section.

   Important: Type only one MAC address per line.
5. Save the file and close the vi editor.

Display the IIH Utility Help Window and Version Number

Introduction

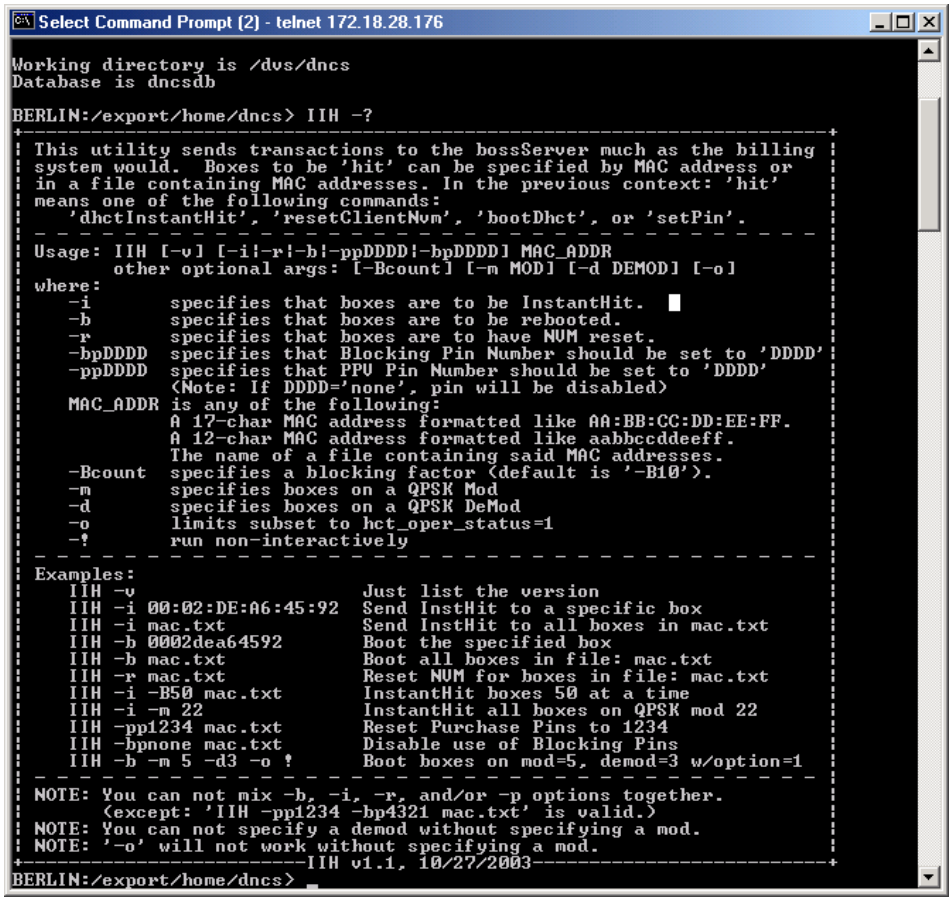
The IIH utility can be configured to send four separate billing transactions to DHCTs. Each transaction is identified by the system through specific parameters that are used in conjunction with the IIH utility. In addition to supporting four billing transactions, the IIH utility can be run to display a help window, as well as a window that displays the current version number of the utility. The IIH help window is especially useful in that it shows specific examples of how the IIH utility can be used. The remainder of this section provides detailed instructions on running the IIH utility.

Displaying the IIH Utility Help Window

The IIH help window displays all of the parameters that can be used in running the IIH utility. Follow these instructions to display the IIH help window.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -?** and then press **Enter**.

   Result: The IIH help window opens.



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Displaying the IIH Utility Version Number

Follow these instructions to display the version number of the IIH utility loaded onto your system.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -v** and then press **Enter**.

   Result: The system displays the version number of the IIH utility loaded onto your system.

What's Next

Choose one of the following options:

- To refresh DHCT EMMs, go to **Refresh DHCT EMMs With the dhctInstantHit Transaction**, next in this chapter.
- To reset the DHCT NVM, go to **Reset DHCT NVM With the resetClientNvm Transaction**, later in this chapter.
- To reboot a DHCT, go to **Reboot a DHCT With the bootDhct Transaction**, later in this chapter.
- To reset the DHCT PIN number(s), go to **Reset DHCT PINs With the setPin Transaction**, later in this chapter.

Refresh DHCT EMMs With the dhctInstantHit Transaction

Introduction

The dhctInstantHit transaction refreshes DHCTs with EMMs from the database. The following procedures provide detailed instructions for sending a dhctInstantHit transaction to an individual DHCT, DHCTs contained in a list, DHCTs associated with a specific QPSK modulator or demodulator, or DHCTs of a specific model type.

Refreshing the EMMs of an Individual DHCT

Follow these instructions to refresh the EMMs of an individual DHCT.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -i [DHCT MAC address]** and then press **Enter**.

   Notes:

   - Substitute the MAC address of the DHCT for [DHCT MAC address].
   - The MAC address can be formatted with or without colons (:).

   Examples:

   - **IIH -i 00:02:DE:A6:45:92**
   - **IIH -i 0002DEA64592**

   Result: The system refreshes the specified DHCT with its EMMs.

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Refreshing the EMMs of a List of DHCTs

Follow these instructions to refresh the EMMs of a list of DHCTs. You should already have prepared the list of DHCTs, identified by MAC address, according to the guidelines and instructions in the **Prepare a Text File** section, earlier in this chapter.

Note: When the IIH utility processes a list of DHCTs, ten DHCTs are processed at a time, by default. The reason ten DHCTs are processed at a time is to avoid monopolizing the bossServer process of the DNCS. If you have an urgent need to process more than ten DHCTs at a time, you can override the default value through use of the *–C* parameter.

1. If necessary, open an xterm window on the DNCS.
2. Do you want to force the system to process more than ten DHCTs at a time?
   - If yes, type **IIH -i -C[# of DHCTs] [text file name]** and then press **Enter.**

     Notes:
     - Substitute the number of DHCTs you want to process at once for [# of DHCTs].
     - Substitute the name (including path) of the text file for [text file name].

     Example: IIH -i -C50 /tmp/iih-in_11.31.02
   - If **no**, type **IIH -i [text file name]** and then press **Enter.**

     Note: Substitute the name (including path) of the text file for [text file name].

     Example: IIH -i /tmp/iih-in_11.31.02

   Result: A confirmation message, similar to the following, appears:
   DHCTs listed in file "[filename]" will be Instant-Hit …
   [#] MAC addresses will be involved.
   Do you want to continue? (Y/N) y
3. Type **y** and then press **Enter**.

   Result: The system lists the MAC addresses of the DHCTs as it sends a dhctInstantHit transaction to each one.

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Refreshing the EMMs of DHCTs Associated With a QPSK Modulator or Demodulator

The dhctInstantHit transaction can be configured to refresh the EMMs of DHCTs associated with a specific QPSK modulator or demodulator. Follow these instructions to refresh the EMMs of DHCTs associated with a specific modulator or demodulator.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To send a dhctInstantHit transaction to DHCTs associated with a specific modulator, type **IIH -i -m [modulator ID]** and then press **Enter**.
   - To send a dhctInstantHit transaction to DHCTs associated with a specific demodulator, type **IIH -i -m [modulator ID] -d [demodulator ID]** and then press **Enter.**

     Important: You must also specify a modulator when you specify a demodulator.

   Note: Substitute the ID of the modulator or demodulator for [modulator ID] and/or [demodulator ID].

   Examples:

   - **IIH -i -m 22**
   - **IIH -i -m 22 -d 8**

   Result: The system sends a dhctInstantHit transaction to each DHCT associated with the specific modulator or demodulator.

Continued on next page

Refreshing the EMMs of DHCTs of a Specific Model Number

The dhctInstantHit transaction can be configured to refresh the EMMs of a specific model number of DHCT. Follow these instructions to refresh the EMMs of DHCTs of a specific model number.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -i -M[model number]** and then press **Enter**.

   Note: Substitute the model number of DHCT for [model number].

   Example: IIH -i -M2100

   Result: A confirmation message, similar to the following, appears:
   DHCTs with DHCT Model=[model number] will be Instant-Hit …
   [#] MAC addresses will be involved.
   Do you want to continue? (Y/N)
3. Type **y** and then press **Enter**.

   Result: The system sends a dhctInstantHit transaction to each DHCT of the specified model number.

Reset DHCT NVM With the resetClientNvm Transaction

Introduction

The resetClientNvm transaction resets the non-volatile memory (NVM) of a DHCT to default settings established at the factory. The procedures in this section provide detailed instructions on resetting the NVM of an individual DHCT, a list of DHCTs, or DHCTs of a specific model number.

Note: The *–r* option, which is used to reset the NVM, is not a valid option at sites that use the Pioneer application server. The *–r* option is valid only at sites that use the Cisco Application Server. When the *–r* option is used at a site that uses the Pioneer application server, the system displays the following message:
'r' function is not supported by Pioneer AppServer
(assumed since saManager is not running)

Resetting the NVM of an Individual DHCT

Follow these instructions to reset the NVM of an individual DHCT.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -r [DHCT MAC address]** and then press **Enter**.

   Notes:

   - Substitute the MAC address of the DHCT for [DHCT MAC address].
   - The MAC address can be formatted with or without colons (:).

   Examples:

   - **IIH -r 00:02:DE:A6:45:92**
   - **IIH -r 0002DEA64592**

   Result: The system resets the NVM of the specified DHCT.

Resetting the NVM of a List of DHCTs

Follow these instructions to reset the NVM of a list of DHCTs. You should already have prepared the list of DHCTs, identified by MAC address, according to the guidelines and instructions in the **Prepare a Text File** section, earlier in this chapter.

Note: When the IIH utility processes a list of DHCTs, the transaction processes ten DHCTs at a time, by default. The reason ten DHCTs are processed at a time is to avoid monopolizing the bossServer process of the DNCS. If you have an urgent need to process more DHCTs than ten at a time, you can override the default value through use of the *–C* parameter.

1. If necessary, open an xterm window on the DNCS.

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2. Do you want to force the system to process more than ten DHCTs at a time?
   - If yes, type **IIH -r -C[# of DHCTs] [text file name]** and then press **Enter.**

     Notes:
     - Substitute the number of DHCTs you want to process at once for [# of DHCTs].
     - Substitute the name (including path) of the text file for [text file name].

     Example: IIH -r -C50 /tmp/iih-in_11.31.02
   - If **no**, type **IIH -r [text file name]** and then press **Enter.**

     Note: Substitute the name (including path) of the text file for [text file name].

     Example: IIH -r /tmp/iih-in_11.31.02

   Result: A confirmation message, similar to the following, appears:
   DHCTs listed in file "[filename]" will be NVM reset …
   [#] MAC addresses will be involved.
   Do you want to continue? (Y/N) y
3. Type **y** and then press **Enter**.

   Result: The system lists the MAC addresses of the DHCTs as it sends a resetClientNvm transaction to each.

Resetting the NVM of DHCTs of a Specific Model Number

The resetClientNvm transaction can be configured to reset the NVM of a specific model number of DHCT. Follow these instructions to reset the NVM of DHCTs of a specific model number.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -r -M[model number]** and then press **Enter**.

   Note: Substitute the model number of DHCT for [model number].

   Example: IIH -r -M2100

   Result: A confirmation message, similar to the following, appears:
   saManager is running
   DHCTs with DHCT model=[model number] will be NVM-Reset
   # MAC addresses will be involved.
   Do you want to continue (Y/N)?
3. Type **y** and then press **Enter**.

   Result: The system resets the NVM of the specified DHCTs.

Reboot a DHCT With the bootDhct Transaction

Introduction

The bootDhct transaction reboots a single DHCT, a list of DHCTs, DHCTs associated with a specific QPSK, or DHCTs of a specific model number. Follow these instructions to configure the IIH utility to send a bootDhct transaction.

Rebooting an Individual DHCT

Follow these instructions to reboot an individual DHCT.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -b [DHCT MAC address]** and then press **Enter**.

   Notes:

   - Substitute the MAC address of the DHCT for [DHCT MAC address].
   - The MAC address can be formatted with or without colons (:).

   Examples:

   - **IIH -b 00:02:DE:A6:45:92**
   - **IIH -b 0002DEA64592**

   Result: The system reboots the specified DHCT.

Rebooting a List of DHCTs

Follow these instructions to reboot a list of DHCTs. You should already have prepared the list of DHCTs, identified by MAC address, according to the guidelines and instructions in the **Prepare a Text File** section, earlier in this chapter.

Note: When the IIH utility processes a list of DHCTs, it processes ten DHCTs at a time, by default. The reason ten DHCTs are processed at a time is to avoid monopolizing the bossServer process of the DNCS. If you have an urgent need to process more DHCTs than ten at a time, you can override the default value through use of the *–C* parameter.

1. If necessary, open an xterm window on the DNCS.

Continued on next page

2. Do you want to force the system to process more than ten DHCTs at a time?
   - If **yes**, type **IIH -b -C[# of DHCTs] [text file name]** and then press **Enter.**

     Notes:
     – Substitute the number of DHCTs you want to process at once for [# of DHCTs].
     – Substitute the name (including path) of the text file for [text file name].

     Example: IIH -b -C50 /tmp/iih-in_11.31.02
   - If **no**, type **IIH -b [text file name]** and then press **Enter.**

     Note: Substitute the name (including path) of the text file for [text file name].

     Example: IIH -b /tmp/iih-in_11.31.02

   Result: A confirmation message, similar to the following, appears:
   DHCTs listed in file "[filename]" will be Rebooted …
   [#] MAC addresses will be involved.
   Do you want to continue? (Y/N) y

3. Type **y** and then press **Enter**.

   Result: The system lists the MAC addresses of the DHCTs as it sends a bootDhct transaction to each.

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Rebooting DHCTs Associated With a QPSK Modulator or Demodulator

Follow these instructions to reboot DHCTs associated with a specific QPSK modulator or demodulator.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To reboot DHCTs associated with a specific modulator, type **IIH -b m [modulator ID]** and then press **Enter**.
   - To reboot DHCTs associated with a specific demodulator, type **IIH -b -m [modulator ID] -d [demodulator ID]** and then press **Enter.**

     Important: You must also specify a modulator when you specify a demodulator.

   Note: Substitute the ID of the modulator and/or demodulator for [modulator ID] and [demodulator ID].

   Examples:

   - **IIH -b -m 22**
   - **IIH -b -m 22 -d 8**

   Result: The system reboots the DHCT associated with the specific modulator or demodulator.

Rebooting DHCTs of a Specific Model Number

Follow these instructions to reboot DHCTs of a specific model number.

1. If necessary, open an xterm window on the DNCS.
2. Type **IIH -b -M[model number]** and then press **Enter**.

   Note: Substitute the model number of DHCT for [model number].

   Example: IIH -b -M2100

   Result: A confirmation message, similar to the following, appears:
   saManager is running
   DHCTs with DHCT model=[model number] will be Rebooted
   # MAC addresses will be involved.
   Do you want to continue (Y/N)?
3. Type **y** and then press **Enter**.

   Result: The system reboots the specified DHCTs.

Reset DHCT PINs With the setPin Transaction

Introduction

Subscribers who use Cisco DHCTs have two personal identification numbers (PIN) they can use to enhance their digital interactive services. One PIN can be set to limit access to specific channels. Another PIN can be used to authenticate PPV purchases.

Notes:

- The PIN used to restrict access to specific channels is often referred to as the blocking PIN.
- The PIN used to authenticate PPV purchases is often referred to as the PPV PIN.

Follow the instructions in this section to reset the blocking and/or PPV PIN(s).

Resetting the PINs of Individual DHCTs

Follow these instructions to reset the PINs of individual DHCTs.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To reset the blocking PIN, go to step 3.
   - To reset the PPV PIN, go to step 4.
3. To reset the blocking PIN of an individual DHCT, choose one of the following options:
   - Type **IIH -bp[####] [DHCT MAC address]** and then press **Enter** to reset the blocking pin to [####].

     Notes:

     – Substitute the new PIN for [####].

     – Substitute the MAC address of the DHCT for [DHCT MAC address].

     Examples:

     – **IIH -bp1234 00:02:DE:A6:45:92**

     – **IIH -bp1234 0002DEA64592**
   - Type **IIH -bpnone [DHCT MAC address]** and then press **Enter** to stipulate that the blocking PIN be disabled on this specific DHCT.

     Note: Substitute the MAC address of the DHCT for [DHCT MAC address].

     Examples:

     – **IIH -bpnone 00:02:DE:A6:45:92**

     – **IIH -bpnone 0002DEA64592**

Continued on next page

4. To reset the PPV PIN of an individual DHCT, choose one of the following options:
   - Type **IIH -pp[####] [DHCT MAC address]** and then press **Enter** to reset the PPV pin to [####].

     Notes:
     - Substitute the new PIN for [####].
     - Substitute the MAC address of the DHCT for [DHCT MAC address].

     Examples:
     - **IIH -pp1234 00:02:DE:A6:45:92**
     - **IIH -pp1234 0002DEA64592**
   - Type **IIH -ppnone [DHCT MAC address]** and then press **Enter** to stipulate that the PPV PIN be disabled on this specific DHCT.

     Note: Substitute the MAC address of the DHCT for [DHCT MAC address].

     Examples:
     - **IIH -ppnone 00:02:DE:A6:45:92**
     - **IIH -ppnone 0002DEA64592**

Resetting the PINs of a List of DHCTs

Follow these instructions to reset the PINs of a list of DHCTs.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To reset the blocking PIN, go to step 3.
   - To reset the PPV PIN, go to step 4.

Continued on next page

3. To reset the blocking PIN for a list of DHCTs, choose one of the following options:

   - Type **IIH -bp[####] [text file name]** and then press **Enter** to reset the blocking PIN to [####].

     Notes:

     – Substitute the new PIN for [####].

     – Substitute the name (including path) of the text file for [text file name].

     Example: IIH -bp1234 /tmp/iih-in_11.31.02

   - Type **IIH -bpnone [text file name]** and then press **Enter** to stipulate that the blocking PIN be disabled for the list of DHCTs.

     Note: Substitute the name (including path) of the text file for [text file name].

     Example: IIH -bpnone /tmp/iih-in_11.31.02

4. To reset the PPV PIN for a list of DHCTs, choose one of the following options:

   - Type **IIH -pp[####] [text file name]** and then press **Enter** to reset the PPV pin to [####].

     Notes:

     – Substitute the new PIN for [####].

     – Substitute the name (including path) of the text file for [text file name].

     Example: IIH -pp1234 /tmp/iih-in_11.31.02

   - Type **IIH -ppnone [text file name]** and then press **Enter** to stipulate that the PPV PIN be disabled for the list of DHCTs.

     Note: Substitute the name (including path) of the text file for [text file name].

     Example: IIH -ppnone /tmp/iih-in_11.31.02

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Resetting the PINs of DHCTs of a Specific Model Number

Follow these instructions to reset the PINs of DHCTs of a specific model number.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - To reset the blocking PIN, go to step 3.
   - To reset the PPV PIN, go to step 4.
3. To reset the blocking PIN for DHCTs of a specific model number, choose one of the following options:
   - Type **IIH -bp[####] -M[model number]** and then press **Enter** to reset the blocking pin to [####].

     Notes:
     - Substitute the new PIN for [####].
     - Substitute the model number of DHCTs for [model number].

     Example: IIH -bp1234 -M2100
   - Type **IIH -bpnone -M[model number]** and then press **Enter** to stipulate that the blocking PIN be disabled for DHCTs of the specified model number.

     Note: Substitute the model number of DHCTs for [model number].

     Example: IIH -bpnone -M2100
4. To reset the PPV PIN for DHCTs of a specific model number, choose one of the following options:
   - Type **IIH -pp[####] -M[model number]** and then press **Enter** to reset the PPV PIN to [####].

     Notes:
     - Substitute the new PIN for [####].
     - Substitute the model number of DHCTs for [model number].

     Example: IIH -pp1234 -M2100
   - Type **IIH -ppnone -M[model number]** and then press **Enter** to stipulate that the PPV PIN be disabled for DHCTs of the specified model number.

     Note: Substitute the model number of DHCTs for [model number].

     Example: IIH -ppnone -M2100

Chapter 9
Change DHCT Status to Out-of-Service With the 2way2oos Utility

Overview

Introduction

System operators sometimes need a way to reclaim IP addresses of DHCTs that have been disconnected but never officially changed to "out-of-service" in the database. A DHCT that is no longer in use must have a status of out-of-service in the database in order for the system operator to use the IP address of the DHCT again. Systems that do not reclaim these IP addresses may run out of IP addresses when they try to deploy new DHCTs in the homes of subscribers.

Cisco engineers developed the 2way2oos utility to change the status of DHCTs to out-of-service in the database. System operators prepare a text file that contains a list of MAC addresses of DHCTs that they want to change to out-of-service and then use this text file as a parameter when they run the 2way2oos utility. The instructions in this chapter provide guidelines for preparing the text file and for running the 2way2oos utility.

In This Chapter

This chapter contains the following topics.

Prepare the Text File

Introduction

System operators who want to use the 2way2oos utility to change the database status of DHCTs to out-of-service must first prepare a text file that contains the MAC address of each DHCT that must be changed. This section contains guidelines and instructions for preparing the text file.

Guidelines for Preparing the Text File

Use the following guidelines when preparing the text file:

- Prepare the file using a standard text editor, such as vi.
- Prepare the file with one MAC address per line.

  Important: MAC addresses must be in hexadecimal format, and any letter characters must be uppercase.

  Example: 00:02:DE:4A:11:92
  00:02:DE:4A:11:93
  00:02:DE:4A:11:94
- Each MAC address must be left-justified on each line of text.
- The file must be saved in the **/dvs/dncs/tmp** directory of the DNCS and must be named **2way2oos.txt**.

  Important: The file *must* be saved to the specified directory under the specified name. The directory path and file name are hard-coded as part of the utility.

Preparing the Text File

Follow these instructions to prepare the text file for use with the 2way2oos utility.

Important: These instructions use the vi text editor as an example. The vi text editor is not intuitive. These instructions are not a substitute for a good working knowledge of the vi text editor.

1. If necessary, open an xterm window on the DNCS.
2. Type **cd /dvs/dncs/tmp** and then press **Enter**.

   Note: The file *must* be saved to the /dvs/dncs/tmp directory of the DNCS.
3. Type **vi 2way2oos.txt** and then press **Enter**.

   Result: The file opens for editing.

Continued on next page

4. Insert your list of MAC addresses into the file you have just opened.

   Note: Use the guidelines set forth in **Guidelines for Preparing the Text File**, earlier in this section.

   Important: Type only one MAC address per line.

5. Save the file and close the vi editor.

Run the 2way2oos Utility

Introduction

Before running the 2way2oos utility, be sure that you have followed the instructions in the previous section, **Prepare the Text File**, and you have properly created and saved the file of MAC addresses that is to be used as input for the 2way2oos utility.

Be sure of the following important points:

- The file must contain only one MAC address per line.
- The file must be saved in the /dvs/dncs/tmp directory.
- The file must be named 2way2oos.txt.

Note: As a further precaution, system operators may want to examine the file before running the 2way2oos utility to ensure that the file contains only those MAC addresses of DHCTs that are to be marked out-of-service in the database.

Running the 2way2oos Utility

Follow these instructions to run the 2way2oos utility.

1. If necessary, open an xterm window on the DNCS.
2. Type **2way2oos.ksh** and then press **Enter**.

   Result: A message similar to the following appears:

   ## Total Settops to process
   This could take approximately #.### hrs to complete.
   Do you want to continue? (y/n)

   Note: The number of DHCTs and the length of time it takes to process them varies depending upon the number of DHCTs you have included in your text file.
3. Type **y** and then press **Enter**.

   Results:

   - The **Beginning processing MAC addresses** message appears.
   - The **All MACs have been processed** message appears when the utility has finished running.
4. Go to **Stop and Restart the HCT Manager Processes**, next in this chapter.

   Note: You need to stop and restart the HCT Manager processes to make the IP addresses available for reuse.

Stop and Restart the HCT Manager Processes

Introduction

You need to stop and restart the HCT Manager processes on the DNCS in order to reclaim the IP addresses associated with the DHCTs in your text file. The instructions in this section guide you through the steps of stopping and restarting the HCT Manager processes.

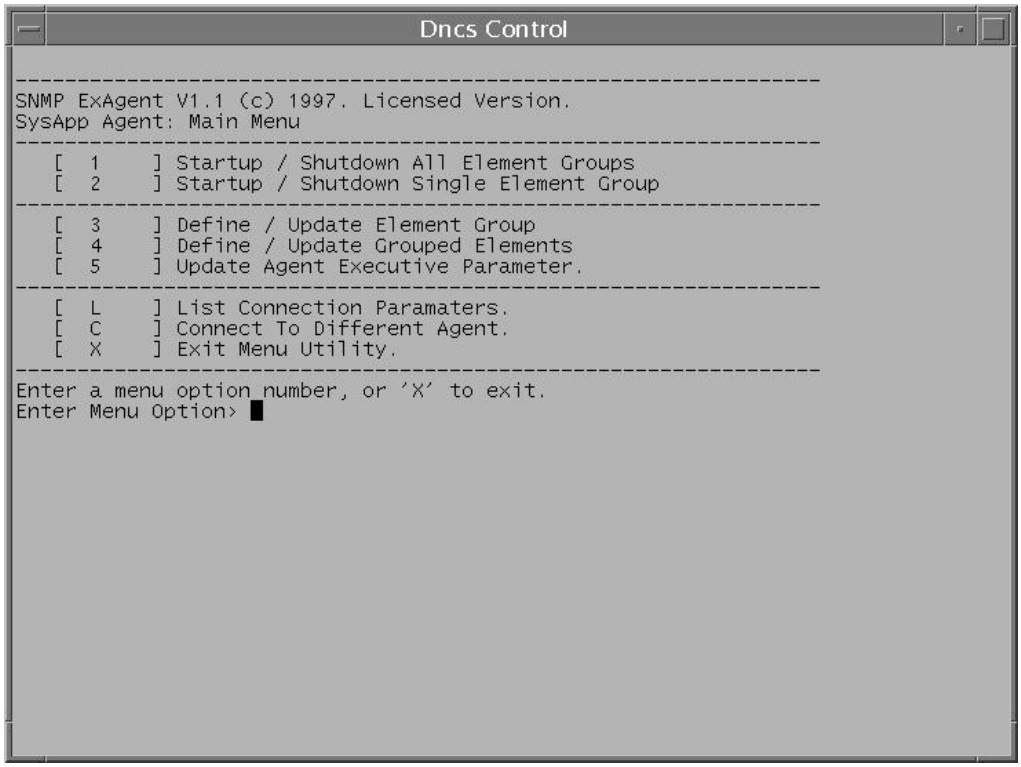
Note: Stopping and then restarting a process is often referred to as "bouncing" the process.

Stopping the HCT Manager Processes

Follow these instructions to stop the HCT Manager processes on the DNCS.

1. If necessary, open an xterm window on the DNCS.
2. Type **dncsControl** and then press **Enter**.

   Result: The Dncs Control window opens.



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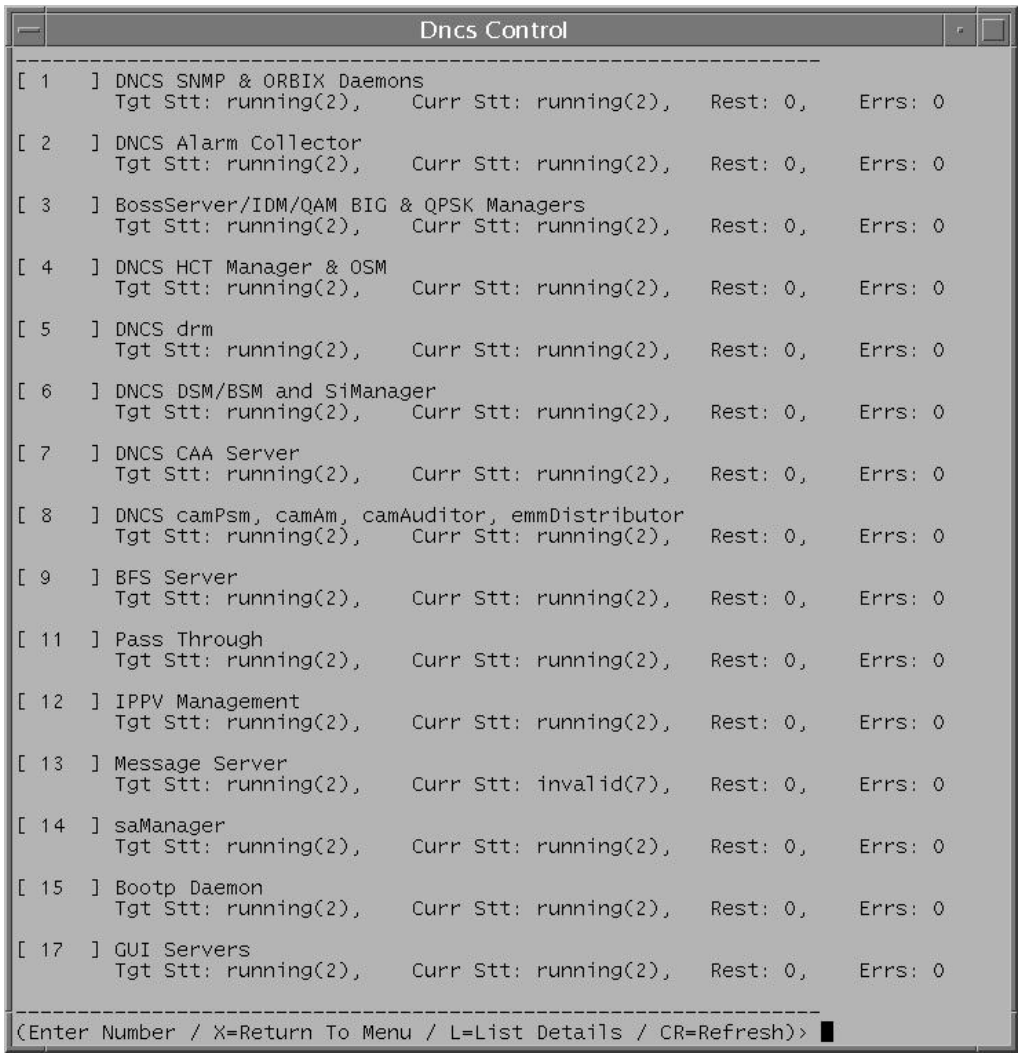
3. Type **2** (for Startup / Shutdown Single Element Group) and then press **Enter**.

   Result: The Dncs Control window updates to list the status of all of the processes and servers running on the DNCS.



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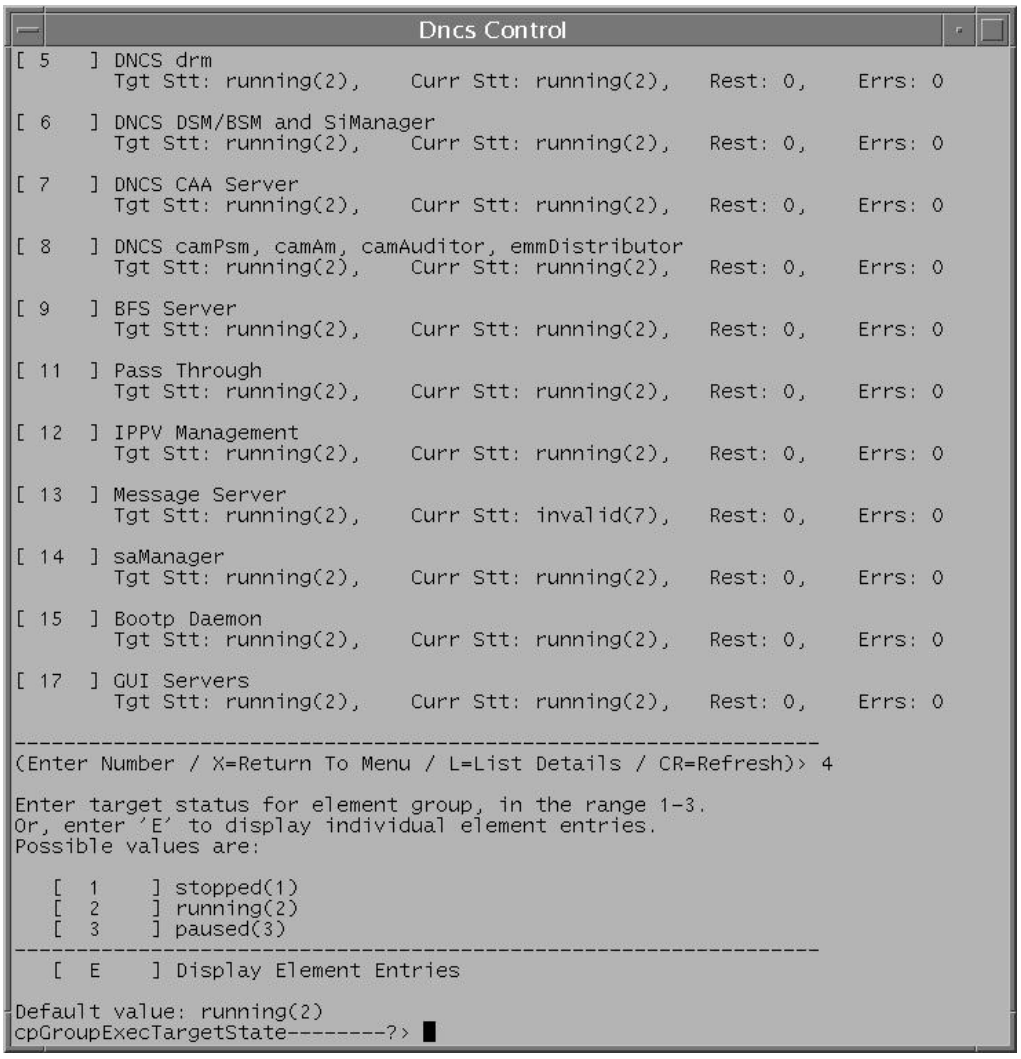
4. Type the number associated with **DNCS HCT Manager & OSM** and then press **Enter**.

   Result: The Dncs Control window updates to display a message that instructs you to enter the target status for the selected element group, or to type 'E' to display all of the elements in the group.



5. Type **1** (for stopped) and then press **Enter**.

   Result: A confirmation message appears.

Continued on next page

6. Type **y** (for yes) and then press **Enter**.

   Result: The Dncs Control window updates to list the status of all the processes and servers running on the DNCS.

7. Wait until the current status (**Curr Stt**) of DNCS HCT Manager & OSM is **stopped**.

   Note: The Dncs Control window updates automatically every few seconds or you can press **Enter** to force an update.

8. When the current status of DNCS HCT Manager & OSM is stopped, go to **Restarting the HCT Manager Processes**, next in this section.

Restarting the HCT Manager Processes

After stopping the HCT Manager processes on the DNCS, follow these instructions to restart them.

1. Type the number associated with the DNCS HCT Manager & OSM processes and then press **Enter**.

   Result: The Dncs Control window updates and displays a message that instructs you to enter the target status for the selected element group or to type 'E' to display all of the elements in the group.

2. Type **2** (for running) and then press **Enter**.

   Result: A confirmation message appears.

3. Type **y** (for yes) and then press **Enter**.

   Result: The Dncs Control window updates to list the status of all the processes and servers running on the DNCS.

4. Wait until the current status (**Curr Stt**) of DNCS HCT Manager & OSM is **running**.

   Note: The Dncs Control window updates automatically every few seconds or you can press **Enter** to force an update.

5. When the current status of the DNCS HCT Manager & OSM processes is running, follow the on-screen instructions to close the Dncs Control window.

Chapter 10
Detach and Attach Submirrors With the mirrState Utility

Overview

Introduction

The Sun Enterprise 450 and the Sun Fire 880 DNCS platforms support disk mirroring. Through disk mirroring, the DNCS stores identical information across sets of hard drives. System operators and Cisco engineers who perform maintenance operations on a Sun Enterprise 450 or Sun Fire 880 DNCS may first be required to disable the mirroring functions on the DNCS. Then, after the maintenance operations are complete, the mirroring functions must be re-enabled.

Note: The disabling and re-enabling of the mirroring functions are usually referred to as "detaching" and "re-attaching" the mirrors.

The mirrState utility helps system operators and Cisco engineers detach and re-attach the mirroring functions of the Sun Enterprise 450 and Sun Fire 880 DNCS. Refer to the procedures in this chapter for information on how to run the mirrState utility.

In This Chapter

This chapter contains the following topics.

Run the mirrState Utility

Introduction

Select one of the following options when you run the mirrState utility:

- To disable the disk mirroring functions on the Sun Enterprise 450 or Sun Fire 880 DNCS, go to **Detaching Mirrored Disks**.
- To re-enable the disk mirroring functions on the Sun Enterprise 450 or Sun Fire 880 DNCS, go to **Re-Attaching Mirrored Disks**.
- To obtain the version number of the mirrState utility currently loaded onto the DNCS, go to **Determining the Version Number of the mirrState Utility**.

Important: The mirrState utility is restricted for use on the Sun Enterprise 450 and Sun Fire 880 DNCS, only. If the mirrState utility is run on a DNCS using another platform (for instance, a Sun Enterprise 250), the system will display a message stating that no metadatabases are found and the utility will exit.

Detaching Mirrored Disks

Follow these instructions to detach the mirrored disks on the Sun Enterprise 450 or Sun Fire 880 DNCS.

1. Has the output of the check_metadevices utility revealed any errors associated with the metadevices on your system?

   Note: The check_metadevices utility was loaded onto your system when you installed DBDS Utilities. Refer to Chapter 16, **Monitor the Status of System Metadevices With the check_metadevices Utility**, of the *DNCS Utilities Installation and Operation Guide* for information on the check_metadevices utility.

   - If **yes**, correct those errors before proceeding any further.

     Important: The metadevices on your system must be working correctly before you can detach mirrored disks.

   - If **no**, go to step 2.

2. Follow these instructions to log in to an xterm window on the DNCS as **root** user.

   a) Type **su -** and then press **Enter**.

   Result: The **password** prompt appears.

   b) Type the root password and then press **Enter**.

3. Type **mirrState.ksh -d** and then press **Enter**.

   Result: The system displays the following message:

   WARNING!!
   Proceeding beyond this point will DETACH all Controller 2 submirrors.
   Are you certain you want to proceed?

Continued on next page

4. Type **y** and then press **Enter**.

   Result: The system disables the disk mirroring functions on the DNCS.

5. Type **exit** and then press **Enter**.

   Result: You log out as root user in the xterm window.

6. Perform your maintenance operations on the DNCS and then go to **Re-Attaching Mirrored Disks**, next in this section.

Re-Attaching Mirrored Disks

Follow these instructions to use the mirrState utility to re-attach the mirrored disks.

1. Follow these instructions to log in to an xterm window on the DNCS as **root** user.
   a) Type **su -** and then press **Enter**.
      Result: The **password** prompt appears.
   b) Type the root password and then press **Enter**.
2. Type **mirrState.ksh -a** and then press **Enter**.

   Result: The system displays the following message:

   WARNING!!
   Proceeding beyond this point will ATTACH all Controller 2 submirrors.
   Are you certain you want to proceed?

3. Type **y** and then press **Enter**.

   Result: The system re-enables the disk mirroring functions on the DNCS.

4. Type **exit** and then press **Enter**.

   Result: You log out as root user in the xterm window.

Determining the Version Number of the mirrState Utility

Follow these instructions to obtain the version number of the mirrState utility that is loaded on the DNCS.

1. If necessary, open an xterm window on the DNCS.
2. Type **mirrState.ksh -v** and then press **Enter**.

   Result: The system displays the version number of the mirrState utility.

Chapter 11
Convert IP Addresses With the convertIP Utility

Overview

Introduction

The DNCS database stores DHCT IP addresses in decimal format— our normal base-10 numbering system. IP addresses, however, are usually displayed in dotted-decimal notation: a format consisting of four 8-bit numbers separated by a dot.

Example: An example of an IP address in dotted-decimal notation is **10.1.64.86**. That very same IP address is stored in the database in decimal format as **167854166**.

Cisco engineers developed the convertIP utility to enable a quick conversion between the two formats. The utility converts an IP address in one format to an IP address in the other format.

Available Options When Running the convertIP Utility

The convertIP utility accepts as an argument either a single IP address, or the name of a file containing a list of IP addresses. In general, use the single IP address when you have only one or two IP addresses to convert. When you have many IP addresses to convert, consider creating a text file that contains the IP addresses that you want to convert.

This chapter provides instructions on preparing the text file, and then describes how to run the convertIP utility.

In This Chapter

This chapter contains the following topics.

Prepare the Text File

Introduction

System operators who want to use the convertIP utility to convert many IP addresses should prepare a text file beforehand. System operators can then run the convertIP utility with the name of the text file as an argument. This section contains guidelines and instructions for preparing the text file.

Guidelines for Preparing the Text File

Use the following guidelines when preparing the text file:

- Prepare the file using a standard text editor, such as vi.
- Prepare the file with one IP address per line.
- Use either format (decimal or dotted-decimal notation) when preparing the text file. The convertIP utility automatically recognizes the input format and converts the IP address to the other format.

  Note: You can even mix formats in the text file.
- Cisco recommends that you save the file in the **/dvs/dncs/tmp** directory of the DNCS.

Preparing the Text File

Follow these instructions to prepare the text file for use with the convertIP utility.

Important: These instructions use the vi text editor as an example. The vi text editor is not intuitive. These instructions are not a substitute for a good working knowledge of the vi text editor.

1. If necessary, open an xterm window on the DNCS.
2. Type **cd /dvs/dncs/tmp** and then press **Enter**.

   Note: Cisco recommends that you save the file in the **/dvs/dncs/tmp** directory of the DNCS.
3. Type **vi [file name].txt** and then press **Enter**.

   Note: Substitute the name of the input file you are creating for [file name].

   Example: Type **vi IP_input_file** and then press **Enter**.

   Result: The file opens for editing.
4. Insert your list of IP addresses into the file you have just opened.

   Note: Use the guidelines set forth in **Guidelines for Preparing the Text File**, earlier in this section.
5. Save the file and close the vi editor.

Run the convertIP Utility

Introduction

To run the convertIP utility, choose one of the following options:

- To convert a single IP address, follow the instructions in **Converting a Single IP Address**.
- To convert IP addresses listed in a file of IP addresses, follow the instructions in **Converting a File of IP Addresses**.

Converting a Single IP Address

Follow these instructions to convert a single IP address using the convertIP utility.

1. If necessary, open an xterm window on the DNCS.
2. Type **convertIP** and then press **Enter**.

   Result: The message **Enter IP address to convert** appears.
3. Type the IP address you want to convert and then press **Enter**.

   Note: You can type the IP address in either format, decimal or dotted-decimal notation.

   Examples:

   - Decimal—**167854166**
   - Dotted-decimal notation—**10.1.64.86**

   Result: The convertIP utility converts the IP address and displays both the original value and the converted value on the screen of the DNCS.

Continued on next page

Converting a File of IP Addresses

Follow these instructions to use the convertIP utility to convert a file of IP addresses. When the convertIP utility runs, it displays each original and converted IP address on the screen of the DNCS, as well as writes the output to a user-specified file.

Important: You should already have prepared a text file containing IP addresses using the guidelines and directions in **Prepare the Text File**, earlier in this chapter.

1. If necessary, open an xterm window on the DNCS.
2. Type **convertIP -f** and then press **Enter**.

   Result: The message **Enter the file name (full path) containing IP addresses to convert** appears.
3. Type the name of the file you prepared (including the full directory path) and then press **Enter**.

   Example: Type **/dvs/dncs/tmp/IP_input_file** and then press **Enter**.

   Result: The message **Enter the file name (full path) in which to store the converted IP addresses** appears.
4. Type the name of the file (including the full directory path) in which you want to store the output.

   Example: Type **/dvs/dncs/tmp/IP_output_file** and then press **Enter**.

   Results:

   - The convertIP utility converts the IP addresses and displays both the original value and the converted value on the screen of the DNCS.
   - The convertIP utility displays the number of IP addresses that were converted and suggests that you review the converted IP addresses by examining the output file.

     Example: There are 16 IP addresses in the /dvs/dncs/tmp/IP_input_file file that were converted.
     Please review the converted IP addresses in the /dvs/dncs/tmp/IP_output_file file.

Chapter 12
Troubleshoot the EAS With the getEASdata Utility

Overview

Introduction

The Federal Communications Commission established the Emergency Alert System (EAS) in 1994 as a tool for government officials to quickly transmit important emergency information that is targeted to specific geographical areas. Digital cable system operators need a reliable EAS at their headend to ensure that their subscribers receive national, state, and local warning messages about emergency conditions.

To ensure the reliability of a system operator's EAS, Cisco engineers developed the getEASdata utility. The utility helps system operators troubleshoot their EAS by reporting EAS-related errors and retrieving data associated with system components that pertain to the EAS. The following list includes some of the EAS-related data retrieved by the getEASdata utility:

- Emergency Alert Controller (EAC) network configuration
- Emergency Alert Receiver (EAR) and Multi-Media Message (MMM) Server processes

  Note: The EAR server monitors and receives EAS-related messages and then passes the messages to the MMM server for formatting and processing.
- Files in the /export/home/easftp directory
- Files converted to audio interchange file format (AIFF) and loaded onto the broadcast file server (BFS) carousel

  Note: Files in AIFF are high-quality sound files
- Configuration data in the orbix.hosts file
- Timing data comparing when the EAS message was transmitted by the EAC and received by the DNCS or the Application Server
- The Value Added Service Provider (VASP) entry for the MMM Server process

When to Use the getEASdata Utility

The getEASdata utility is a troubleshooting tool. Use the getEASdata utility if you discover that EAS messages are not displaying on test DHCTs in the headend within 5 minutes of transmitting that EAS message.

Note: Refer to **Before Running the getEASdata Utility**, next in this chapter, for additional system requirements that must be true for the getEASdata utility to be useful.

Continued on next page

Related Publication

Refer to the *Configuring and Troubleshooting the Digital Emergency Alert System, For Use With All System Releases* guide, part number 4004455, as you run the getEASdata utility. This guide provides valuable tips that can help you troubleshoot the EAS.

In This Chapter

This chapter contains the following topics.

Before Running the getEASdata Utility

These Conditions Must Exist on Your System

Before you run the getEASdata utility, the following system conditions must be true:

- The debug flag **L** must be set in the .profile file.

  The L debug flag indicates that logging is turned on for the MMM server group. The getEASdata utility needs access to the MMM server logs in order to retrieve EAS-related data.

  Note: For System Release (SR) 2.1 and later, the .profile file containing debug flag L is on the DNCS; for system software earlier than SR 2.1, the .profile file is on the Application Server.

- You have successfully sent EAS messages in the past.

  The getEASdata utility is a troubleshooting tool. Use the getEASdata utility only if you know that the EAS has worked successfully in the past.

- It has been at least 5 minutes and less than 15 minutes since you transmitted the EAS message.

  It sometimes takes up to 5 minutes for EAS data to reach the necessary system components. EAS data typically remains in the system for up to 15 minutes.

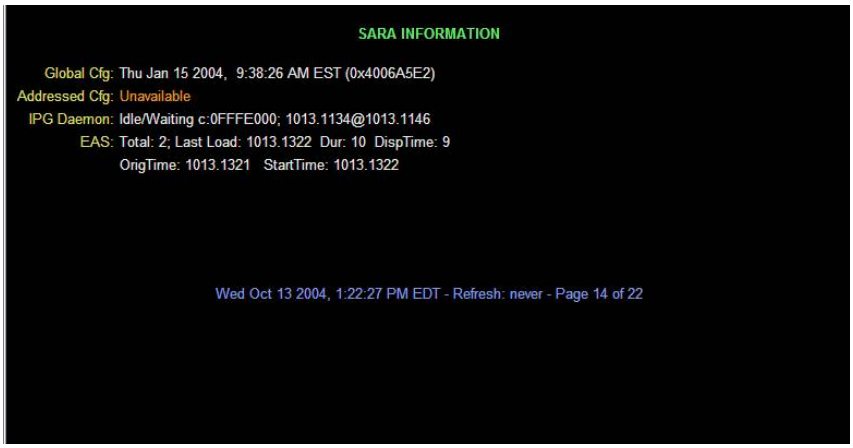
- You know the IP address of a test DHCT in the headend that should have received the EAS message.

- The DHCT is currently responding to a ping request.

- You know which DHCT diagnostic screen displays EAS-related data.

  Note: The diagnostic screen on which EAS-related data displays depends upon the version of the Cisco Resident Application (SARA) your system supports. Most systems now use page 14 for EAS-related data. Call Cisco Services if you are not sure.

  Example: A typical EAS diagnostic screen looks similar to this example:



Run the getEASdata Utility

Introduction

The getEASdata utility generates two reports, the **EAS Error Report** and the **EAS Data Report**. The EAS Error Report highlights errors that the utility discovers in its examination of the EAS configuration. The EAS Data Report displays EAS configuration data that the system operator can then examine to identify the source of the error.

Cisco engineers recommend that system operators generate each report whenever they run the getEASdata utility, even if the EAS Error Report shows no errors. Examining EAS configuration data may be useful in preventing errors before they develop.

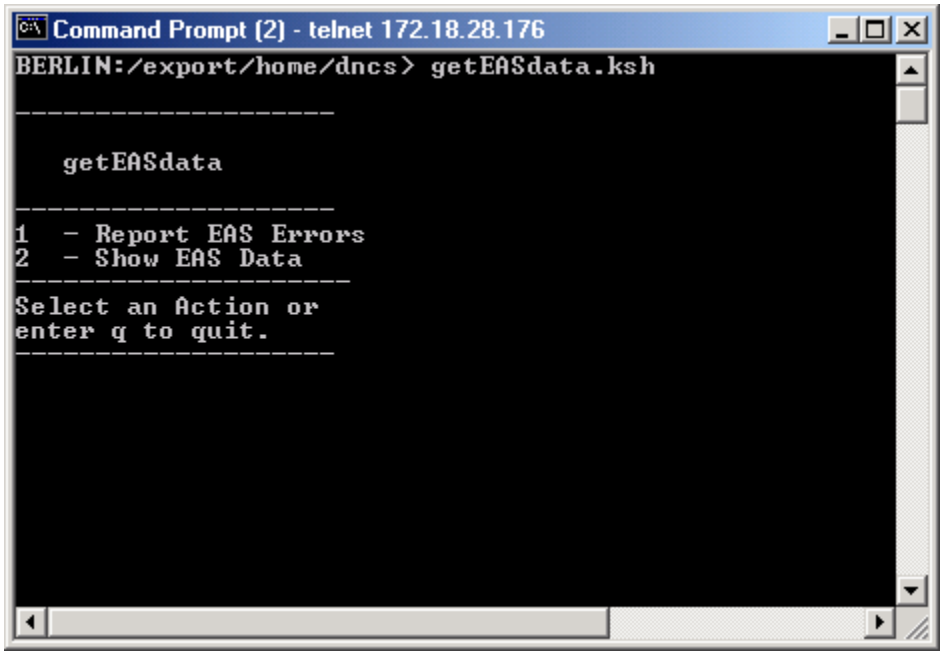
The remainder of this section provides procedures for generating the EAS Error Report and the EAS Data Report.

Running the getEASdata Utility

Follow these instructions to run the getEASdata utility.

1. If necessary, open an xterm window on the DNCS.
2. Type **getEASdata.ksh** and then press **Enter**.

   Result: The utility displays a menu instructing you to select **1** to generate an EAS Error Report or to select **2** to generate an EAS Data Report**.**



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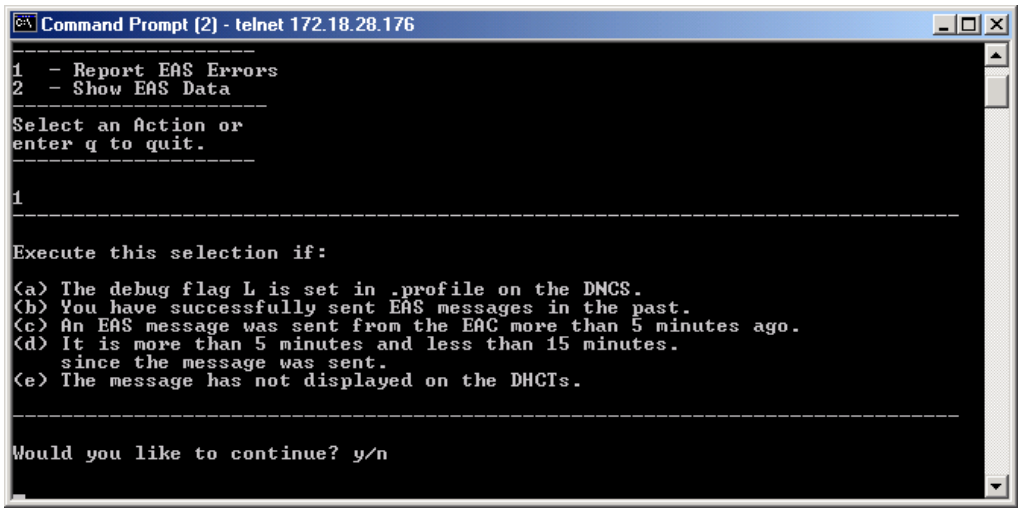
3. Type **1** (for Report EAS Errors) and then press **Enter**.

   Result: The utility lists several conditions that must be true before you should run the report.



   Note: These conditions were discussed in **Before Running the getEASdata Utility**, earlier in this chapter.

4. Type **y** and then press **Enter**.

   Result: The following message appears:

   Enter the IP address of a DHCT that should have received the EAS message and/or hit return to continue.

5. Type the IP address of a test DHCT that did not receive the EAS message, and then press **Enter**.

   Note: If you fail to provide an IP address, the utility will still run but it will not provide data in the **EAS data on a DHCT** section of the EAS Error Report.

   Result: The following message appears:

   Enter the diagnostic screen the EAS data is on and/or hit return to continue.

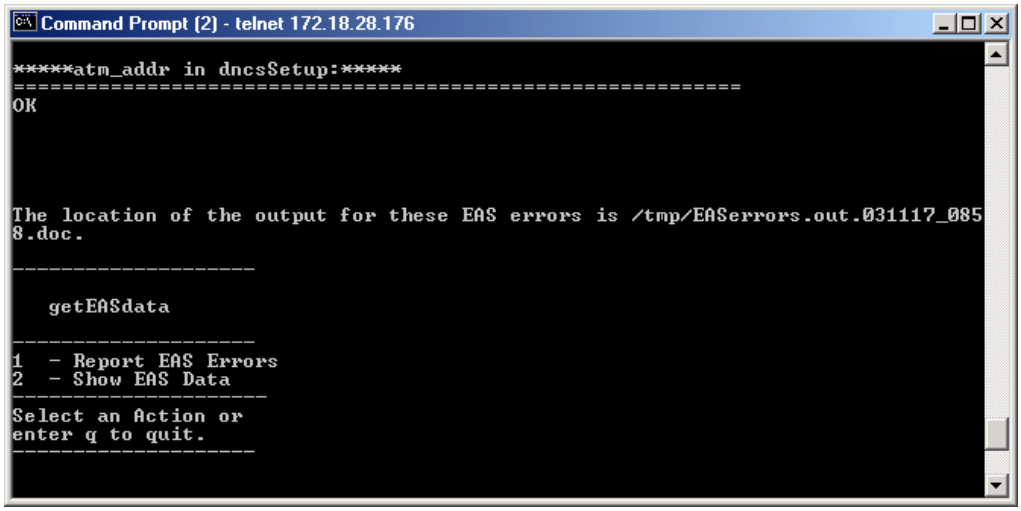
Continued on next page

6. Type the number of the DHCT diagnostic screen that contains EAS-related data and then press **Enter**.

   Note: If you fail to provide the number of the diagnostic screen, the utility will still run but it will not provide data in the **EAS data on a DHCT** section of the EAS Error Report.

   Results:

   - The system runs the EAS Error Report and displays the output to the screen of the DNCS.
   - The system displays a message that states that the EAS Error Report can also be found in the /tmp/EASerrors.out.[Date].doc file.
   - The system redisplays the menu of the getEASdata utility.



7. Type **2** (for Show EAS Data) and then press **Enter**.

   Result: The following message appears:

   Enter the IP address of a DHCT that should have received the EAS message and/or hit return to continue.

8. Type the IP address of a test DHCT that did not receive the EAS message, and then press **Enter**.

   Result: The following message appears:

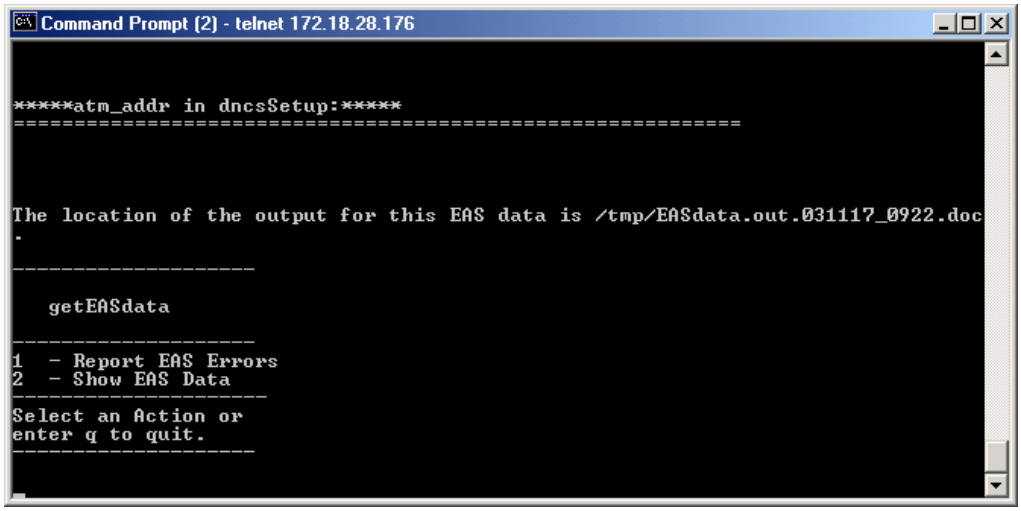
   Enter the diagnostic screen the EAS data is on and/or hit return to continue.

Continued on next page

9. Type the number of the DHCT diagnostic screen that contains EAS-related data and then press **Enter**.

   Results:

   - The system runs the EAS Data Report and displays the output to the screen of the DNCS.
   - The system displays a message that states that the EAS Data Report can also be found in the /tmp/EASdata.out.[Date].doc file.
   - The system redisplays the menu of the getEASdata utility.



10. Type **q** (for quit) and then press **Enter**.

    Result: The getEASdata utility closes.

11. Go to **Open and Examine the getEASdata Utility Reports**, next in this chapter.

Open and Examine the getEASdata Utility Reports

Introduction

This section provides instructions on opening the two reports generated and saved by the getEASdata utility, provides some guidance on examining the data, and shows a few examples of EAS-related errors that you might find.

Opening the getEASdata Utility Reports

Follow these instructions to open the two reports generated and saved by the getEASdata utility. The instructions direct you to open the reports side-by-side in two xterm windows. By examining the two reports simultaneously, you can better understand the relationship of the reports.

1. If necessary, open two xterm windows on the DNCS.
2. Type **cd /tmp** in both of the xterm windows and then press **Enter**.

   Result: The /tmp directory becomes the working directory.
3. In one xterm window, type **ls EASerrors*** and then press **Enter**.

   Result: The system lists all files in the /tmp directory that begin with EASerrors.

   Notes:

   - The system stores EAS Error Report files in **EASerrors.out.[date].doc** format, where the date is expressed in terms of YYMMDD_HHMM.
   - By listing all EAS Error Report files, you can easily identify which one pertains to the most recent report you generated.
4. In the same xterm window, type **more [EAS Error Report name]** and then press **Enter**.

   Note: Substitute the name of the EAS Error Report file that you want to open for [EAS Error Report name].

   Example: Type **more EASerrors.out.031008_1541.doc** and then press **Enter**.

   Result: The selected EAS Error Report opens in the xterm window using the UNIX *more* utility.

Continued on next page

5. In the other xterm window, type **ls EASdata*** and then press **Enter**.

   Result: The system lists all files in the /tmp directory that begin with EASdata.

   Notes:

   - The system stores EAS Data Report files in **EASdata.out.[date].doc** format, where the date is expressed in terms of YYMMDD_HHMM.
   - By listing all EAS Data Report files, you can easily identify which one pertains to the most recent report you generated.

6. In the xterm window you used in step 5, type **more [EAS Data Report name]** and then press **Enter**.

   Note: Substitute the name of the EAS Data Report file that you want to open for [EAS Data Report name].

   Example: Type **more EASdata.out.031008_1542.doc** and then press **Enter**.

   Result: The selected EAS Data Report opens in the xterm window.

7. Go to **Examining the EAS Reports**, next in this section, for help in understanding the reports.

Examining the GetEASdata Utility Reports

Refer to these instructions for general guidance in reviewing the two reports generated by the getEASdata utility. These instructions provide an example of one error that you might find. Refer to **Sample EAS-Related Errors**, later in this section, for additional examples.

1. Scroll through the EAS Error Report. As you scroll through the various headings contained in the report, look for errors. Errors are clearly marked in the report by the word **Error**.

   Example: The ***** **eac in /etc/hosts.equiv** ***** heading in the EAS Error Report might include an error message similar to the following:
   Error: There is no entry for eac in the hosts.equiv file.

   Note: The eac needs to have one entry in the /etc/hosts.equiv file.

2. After locating an error in the EAS Error Report, look for the corresponding data in the EAS Data Report.

   Example: Using the example in step 1, the ***** **eac in /etc/hosts.equiv** ***** heading in the EAS Data Report might show that there is no line in the /etc/hosts/equiv file that contains **eac**.

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3. Troubleshoot each error you find to the best of your ability.

   Notes:

   - The *Configuring and Troubleshooting the Digital Emergency Alert System, For Use With All System Releases* guide may be very useful in helping you troubleshoot and correct EAS-related errors.
   - Call Cisco Services for assistance if you need it.

4. After correcting errors, transmit another EAS message and run the getEASdata utility again.

Sample EAS-Related Errors

Refer to the following list for a discussion of a few additional EAS-related errors:

- The EAS Error Report may list the word **Error** under the ***** **Orbix.hosts on the DNCS configuration** ***** heading. The corresponding ***** **Orbix.hosts on the DNCS configuration** ***** heading in the EAS Data Report may then list a blank line.

  Solution: An entry for **NS:dncsatm:**, using the full path, is required in the Orbix.hosts file.

- The EAS Error Report may include an error under the ***** **VASP data for the MMM Server in the database** ***** heading. The error may be similar to **Error: VASP IP**. Meanwhile, the corresponding ***** **VASP data for the MMM Server in the database** ***** heading in the EAS Data Report may indicate that the asynchronous transfer mode (ATM) address of the DNCS or the Application Server is incorrect.

  Solution: Correct the IP address for the MMM server on the DNCS.

- The EAS Error Report may include the following error under the ***** **Timing Analysis** ***** heading: **Error: The message Origination Time and Appserver time are out of sync**. Under the ***** **EAS messages sent** ***** heading of the EAS Data Report, the data may show that too much time expired between when an EAS message was transmitted and then received.

  Solution: Call Cisco Services. Resolving timing issues requires the help of Cisco engineers.

- The EAS Error Report may include the following error under the ***** **atm_addr in .profile** ***** heading: **Error: atm_addr=dncseth is no longer required for EAS in SR 2.1 and higher**. Meanwhile, an entry for **atm_addr=dncseth** may be listed under the ***** **atm_addr in .profile** ***** heading in the EAS Data Report.

  Solution: Remove the atm_addr=dncseth entry in the /export/home/dncs/.profile file.

Chapter 13
Transmit the ModifyDhctConfiguration Transaction With the modDhctCfg Utility

Overview

Introduction

System operators can use the modDhctCfg utility to transmit the ModifyDhctConfiguration transaction to DHCTs. The ModifyDhctConfiguration transaction modifies the status and authorizations of one or more DHCT records.

Note: Consult your copy or your billing vendor's copy of the Business Operations Support System (BOSS) Interface Specification document for a complete description of the ModifyDhctConfiguration transaction.

The modDhctCfg utility retrieves authorization and package data from the database, formats it into the ModifyDhctConfiguration transaction, and transmits it to the appropriate DHCT(s). The main purpose of the utility is to regenerate and send EMMs to DHCTs. The utility essentially refreshes a DHCT by sending the last ModifyDhctConfiguration transaction that the DNCS received for the DHCTs.

Note: To generate and transmit staging EMMs, use the *–s* option with the modDhctCfg utility. Instructions for using the *–s* option, as well as other options supported by the modDhctCfg utility, are provided throughout this chapter.

The modDhctCfg Utility at a Glance

The modDhctCfg utility can transmit the ModifyDhctConfiguration transaction to a single DHCT or to a list of DHCTs. When you want to transmit the ModifyDhctConfiguration transaction to a single DHCT, supply the modDhctCfg utility with the MAC address of that DHCT. When you want to transmit the ModifyDhctConfiguration transaction to several DHCTs, supply the modDhctCfg utility with the name of a file that contains the MAC address of the appropriate DHCTs.

A Note About Staging Operations and the Billing Interface

When the modDhctCfg utility runs, it tends to compete for system resources with staging operations, as well as with the activities of the billing computer. If you have to process a large number of DHCTs with the modDhctCfg utility, and if time is important, consider temporarily disabling the billing interface and suspending staging operations.

Continued on next page

In This Chapter

This chapter contains the following topics.

Options Available With the modDhctCfg Utility

Introduction

This section describes the options that are available for use with the modDhctCfg utility.

Supported Options for the modDhctCfg Utility

Refer to the following table for an explanation of the options available with the modDhctCfg utility.

Option	Purpose
-?	The *-?* option displays the help window associated with the modDhctCfg utility. **Example: modDhctCfg -?**
-v	The *–v* option displays the version number of the modDhctCfg that is installed on your system. **Example: modDhctCfg -v**
-h	The *–h* option is used to specify the hostname or IP address of the DNCS in the event that the modDhctCfg utility executes on a remote computer. **Example: modDhct -h172.18.28.176 +dms [DHCT MAC address]**
+a / -a	The *+a* and *–a* options specify how the analog_enable parameter is set for the DHCT. The setting of the analog_enable parameter determines whether the DHCT supports analog descrambling. **Example: modDhctCfg +a [DHCT MAC address]**
-B#	The *–B* option sets the blocking factor for the modDhctCfg transaction. The blocking factor refers to the number of DHCT records transmitted at one time in the modDhctCfg transaction. **Example: modDhctCfg -B50 [file name]** **Note:** The default blocking factor is 10.
-c#	The *–c#* option specifies the credit limit assigned to the DHCT for IPPV purchases. This value is decremented with each DHCT IPPV purchase. **Example: modDhctCfg -c100 [DHCT MAC address]**

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Options Available With the modDhctCfg Utility, Continued

Option	Purpose
+dms / -dms	The *+dms* and *–dms* options enable or disable digital packages for the DHCT. **Example: modDhctCfg +dms [DHCT MAC address]**
+dis / -dis	The *+dis* and *–dis* options are used to enable or disable the decryption of encrypted sessions. **Example: modDhctCfg +dis [DHCT MAC address]**
-e#	The *–e#* option specifies the maximum number of IPPV purchases that the DHCT can make before IPPV purchase data is collected by the DNCS. **Example: modDhctCfg -e10 [DHCT MAC address]**
+f / -f	The *+f* and *–f* options determine whether the fast_refresh parameter is set to on or off. The DNCS sends EMMs to DHCTs that are on the "fast refresh list" automatically; subscribers or installation engineers are not required to telephone the headend when they want a DHCT enabled. **Example: modDhctCfg +f [file name]**
-I	The *–I* option instructs the DNCS to process imported DHCT records from another DNCS. This option deletes the secure_micro record from the database and sets to null the qpsk_mod, qpsk_demod, and ip_address fields. To restore this data, the DHCTs must reboot. **Example: modDhctCfg -I [file name]**
+i / -i	The *+i* and *–i* options determine whether a DHCT is enabled for IPPV. **Example: modDhctCfg +i -e10 [DHCT MAC address]**
+pXX / -pXX	The *+pXX* and *–pXX* options add or remove package XX from a DHCT. **Example: modDhctCfg +pHBO [DHCT MAC address]**

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Options Available With the modDhctCfg Utility, Continued

Option	Purpose
!pQQQ	The *!pQQQ* option replaces all packages assigned to a DHCT with the packages included in file QQQ. **Note:** File QQQ must contain only one package name per line. **Example: modDhctCfg !p[package file name] [DHCT MAC address]**
-s	The *–s* option restages DHCTs. The secure_micro record in the database is deleted and then re-added. **Example: modDhctCfg -s [file name]**

Prepare a Text File

Introduction

When you want to use the modDhctCfg utility to set authorization data for several DHCTs, you can usually save time by preparing a text file that contains a list of pertinent MAC addresses. This section contains guidelines and instructions for preparing the text file.

Guidelines for Preparing the Text File

Use the following guidelines when preparing the input text file:

- Prepare the file using a standard text editor, such as vi.
- Prepare the file with one MAC address per line.

  Examples:

  – 00:02:DE:4A:11:92
  00:02:DE:4A:11:93
  00:02:DE:4A:11:94

  – 0002DE4A1192
  0002DE4A1193
  0002DE4A1194

  – 0002de4a1192
  0002de4a1193
  0002de4a1194

- If you use the ":" character in the MAC address, the ":" character must either be all present or all absent in the file. The system cannot process a file where some MAC addresses contain the ":" character and some do not.
- Alphabetic characters in the MAC address can be all uppercase, all lowercase, or mixed.
- Each MAC address or serial number must be left-justified on each line of text.
- Save the file using a name that is relevant to the contents of the file. Append the current date to the end of the file name.

  Example: modDhctCfg-in_11.13.03 for a file that was created on November 13, 2003.
- Cisco recommends that you save the file to the /tmp directory on the DNCS.

Continued on next page

Preparing a Text File

Follow these instructions to prepare a text file for use with the modDhctCfg utility.

Important: These instructions use the vi text editor as an example. The vi text editor is not intuitive. These instructions are not a substitute for a good working knowledge of the vi text editor.

1. If necessary, open an xterm window on the DNCS.
2. Type **cd /tmp** and then press **Enter**.

   Note: Cisco recommends that you save the text file in the /tmp directory on the DNCS.
3. Type **vi [file name]** and then press **Enter**.

   Example: vi modDhctCfg-in_11.13.03

   Result: The file opens for editing.
4. Insert your list of MAC addresses or serial numbers into the file you have just opened.

   Note: Use the guidelines set forth in **Guidelines for Preparing the Text File**, earlier in this section.

   Important: Type only one MAC address or serial number per line.
5. Save the file and close the vi editor.

Display the modDhctCfg Help Window and Version Number

Introduction

The information in this section describes how to display the modDhctCfg help window and version number.

Tip: Many utilities include a help window. The help window is frequently a good place to start if you are unfamiliar with a utility.

Displaying the modDhctCfg Help Window

Follow these instructions to display the modDhctCfg help window.

1. If necessary, open an xterm window on the DNCS.
2. Type **modDhctCfg -?** and then press **Enter**.

   Result: The system displays the modDhctCfg help window.

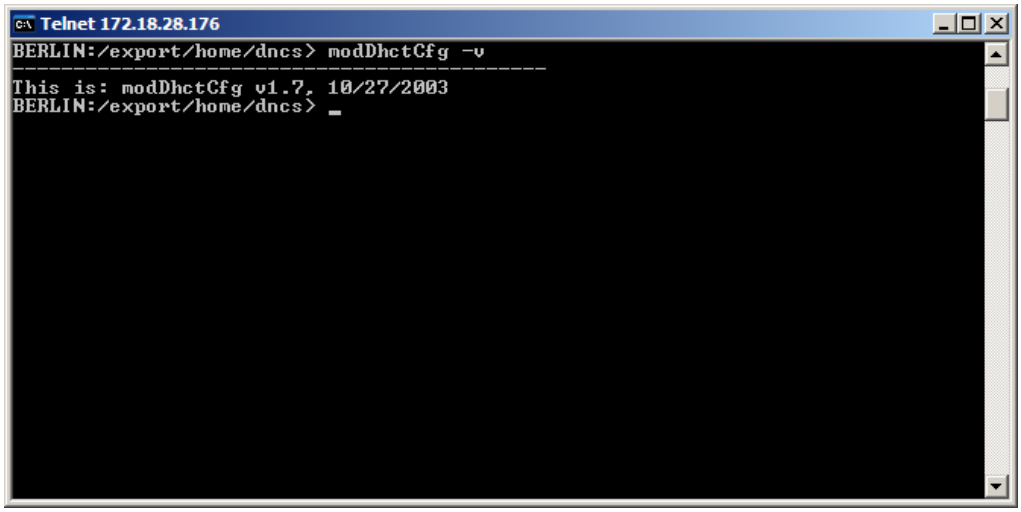
Continued on next page

Displaying the modDhctCfg Version Number

Follow these instructions to display the version number of the modDhctCfg utility that is installed on your system.

1. If necessary, open an xterm window on the DNCS.
2. Type **modDhctCfg -v** and then press **Enter**.

   Result: The system displays the modDhctCfg version number.



How to Use the modDhctCfg Utility

Introduction

The instructions and examples in this section describe how to use the modDhctCfg utility. This section covers those options that Cisco engineers think system operators are most likely to use. Refer to **Options Available With the modDhctCfg Utility**, earlier in this chapter, for examples showing how to use the various supported options.

Running the modDhctCfg Utility

Refer to the following procedures to run the modDhctCfg utility.

Note: The transaction that the utility sends is the same ModifyDhctConfiguration transaction that was sent to the DHCT(s) the last time the DHCTs received a ModifyDhctConfiguration transaction. The utility simply retrieves the data from the database and re-transmits it.

Sending the ModifyDhctConfiguration Transaction to a Single DHCT

Follow these instructions to send the ModifyDhctConfiguration transaction to a single DHCT.

1. If necessary, open an xterm window on the DNCS.
2. Type **modDhctCfg [DHCT MAC address]** and then press **Enter**.

   Note: Substitute the MAC address of the DHCT for [DHCT MAC address].

   Example: modDhctCfg 00:02:DE:4A:11:92

   Result: The system sends the ModifyDhctConfiguration transaction to the specified DHCT.

Sending the ModifyDhctConfiguration Transaction to a List of DHCTs

Follow these instructions to send the ModifyDhctConfiguration transaction to a list of DHCTs.

1. If necessary, open an xterm window on the DNCS.
2. type **modDhctCfg [file name]** and then press **Enter**.

   Note: Substitute the name of the file you prepared for [file name].

   Example: modDhctCfg modDhctCfg-in_11.13.03

   Result: The system sends the ModifyDhctConfiguration transaction to all the DHCTs represented in the file.

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Sending the ModifyDhctConfiguration Transaction With a Specified Blocking Factor

The blocking factor option specifies now many DHCT records the modDhctCfg utility transmits as a block. When the blocking factor is not specified with the modDhctCfg utility, the utility uses a default blocking factor of 10. When you urgently need to use the utility to send the ModifyDhctConfiguration transaction to a large number of DHCTs, you might want to increase the blocking factor. An increased blocking factor has the effect of increasing the priority of the transactions.

Important: Keep in mind, however, that increasing the blocking factor associated with the modDhctCfg utility increases the claim the utility has upon system resources. When practical, suspend staging activities and shut down the billing interface before running the modDhctCfg utility with a large blocking factor.

Follow these instructions to specify the blocking factor used with the modDhctCfg utility.

1. If necessary, open an xterm window on the DNCS.
2. Type **modDhctCfg -B# [file name]** and then press **Enter**.

   Notes:

   - Substitute the blocking factor that you want to use for #.
   - Substitute the name of the file you prepared for [file name].

   Examples:

   - **modDhctCfg -B100 modDhctCfg-in_11.13.03**

     Result: The system sends the ModifyDhctConfiguration transactions, blocked 100 at a time, to the DHCTs represented in the specified file.

   - **modDhctCfg -B2 modDhctCfg-in_11.13.03**

     Result: The system sends the ModifyDhctConfiguration transactions, blocked 2 at a time, to the DHCTs represented in the specified file.

     Important: This example (using a small blocking factor) minimizes the claim that the utility has upon system resources. Consider using a small blocking factor while staging operations are ongoing or during periods of high customer service representative (CSR) activity.

Continued on next page

Sending the ModifyDhctConfiguration Transaction to Enable or Disable Session-Based Encryption

The *dis* option is used to enable or disable session-based encryption. Follow these instructions to use the modDhctCfg utility with the *dis* option.

1. If necessary, open an xterm window on the DNCS.
2. Choose one of the following options:
   - Type **modDhctCfg +dis [DHCT MAC address]** and then press **Enter** to enable session-based encryption for the specified DHCT.
   - Type **modDhctCfg -dis [DHCT MAC address]** and then press **Enter** to disable session-based encryption for the specified DHCT.

   Note: Substitute the MAC address of the appropriate DHCT for [DHCT MAC address.

Sending the ModifyDhctConfiguration Transaction to Restage DHCTs

When used with the modDhctCfg utility, the *–s* option generates staging EMMs. Refer to the following instructions when using the modDhctCfg utility to stage DHCTs.

Important: The modDhctCfg utility cannot be used to stage a DHCT for the first time. The utility reads information about the DHCT from the database in order to formulate a valid ModifyDhctConfiguration transaction. DHCTs must be staged according to normal staging procedures in order to populate the database properly.

1. If necessary, open an xterm window on the DNCS.
2. Type **modDhctCfg -s [file name]** and then press **Enter**.

   Notes:
   - Substitute the name of the file you prepared for [file name].
   - Guidelines and instructions for preparing the file are in **Prepare a Text File**, earlier in this chapter.

   Example: modDhctCfg -s modDhctCfg-in_11.13.03

   Result: The system generates staging EMMs for the DHCTs listed in the specified file.

Chapter 14
Customer Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

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