



DHCT Status Reporting and signonCount 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.

Notices

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Preface

About This Guide

Purpose

The DHCT Status Reporting Utility and the signonCount Utility are two new programs that are included in version 4.1 of the DBDS Utilities. This guide provides instructions for running the two utilities, as well as guidelines for understanding the data generated by each.

Note: The version of the DHCT Status Reporting Utility (v2.6.0.x) included in version 4.1 of DBDS Utilities is compatible with systems supporting System Release (SR) 2.2 or later system software.

A brief description of each utility follows.

The DHCT Status Reporting Utility

Digital Home Communication Terminals (DHCTs) that are unable to establish or maintain two-way communication with the headend are known as non-responding DHCTs. The DHCT Status Reporting Utility was developed to help system operators and Cisco engineers minimize the impact of non-responding DHCTs on the DBDS network.

Note: Non-responding DHCTs are most commonly referred to as *non-responders*, both in this guide and in the field.

The signonCount Utility

DHCTs lose the contents of their volatile memory, including network configuration data, whenever they download new operating system or resident application software, or any time they reboot. As a part of the reboot process, DHCTs sign back on to the network and the contents of their volatile memory are updated. The signonCount Utility is useful in helping system operators monitor the rate at which DHCTs sign on to the network. In addition, the utility can automatically fix common problems that prevent DHCTs from signing on.

Installation of the Utilities

Installation of the DHCT Status Reporting Utility and the signonCount Utility 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.

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.

About This Guide, Continued

Scope

The DHCT Status Reporting Utility, as well as the signonCount Utility, pertain to systems running either the Cisco Resident Application (SARA) or the Pioneer resident application.

Important Notice About Database Backup

Before running the DHCT Status Reporting Utility or the signonCount Utility, be sure that you have a current backup of your DNCS and Application Server database. Refer to one of the following guides for procedures to back up the database:

- *Backup and Restore Procedures for the Digital Broadband Delivery System User's Guide*, part number 736094

Note: The backup and restore procedures in part number 736094 pertain to systems supporting software earlier than SR 2.1.1 or SR 3.0.1.

- *DBDS Backup and Restore Procedures For SR 2.1.1, SR 3.0.1, and SR 2.1.1 and SR 3.0.1 Service Pack 1*, part number 4003238
- *DBDS Backup and Restore Procedures For SR 2.2 and SR 3.2, and SR 2.2 and SR 3.2 Service Pack 1*, part number 4005871

Document Version

This is the second release of this guide.

Chapter 1

DHCT Status Reporting Utility

Overview

Introduction

The DHCT Status Reporting Utility is useful in helping system operators monitor two-way communications between DHCTs and the headend. DHCTs without two-way communications are said to be *non-responding*. Subscribers with a non-responding DHCT are unable to participate fully in the interactive features of the DHCT, while system operators are unable to maximize the revenue potential associated with a DHCT that can establish and maintain two-way communication.

Section A of this chapter develops the definition of non-responding DHCTs, from the point of view of Cisco, as well as from the point of view of the system operator. Subsequent sections of this chapter describe the interface of the utility, provide instructions on how to use the utility to poll DHCTs, and explain how to run and interpret the various lists and reports generated by the utility.

Screen-Captured Images

Some of the screens or illustrations included in this chapter may not match exactly what appears on the system you are operating. Software version numbers, build numbers, and displayed data may vary from site to site.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Section A Defining Non-Responding DHCTs	1-2
Section B Interface of the DHCT Status Reporting Utility	1-8
Section C DHCT Polling Option	1-15
Section D List DHCTs	1-25
Section E The Reporting Option	1-32

Section A

Defining Non-Responding DHCTs

Overview

Introduction

The DHCT Status Reporting Utility helps system operators minimize system impact caused by non-responding DHCTs. This chapter provides two definitions of non-responding DHCTs, explores some of the reasons DHCTs cannot respond, and describes some of the utilities that are available for system operators to use when managing non-responding DHCTs.

In This Section

This section contains the following topics.

Topic	See Page
What is a Non-Responding DHCT?	1-3
What Causes DHCTs to Become Non-Responders?	1-4
What Activities Can Minimize the Non-Responding Condition?	1-6

What is a Non-Responding DHCT?

Definition of Non-Responding DHCTs

A non-responding DHCT is a DHCT that is installed in the home of a subscriber and has been configured by the billing vendor to be capable of two-way communication. However, for some reason, the DHCT is unable to maintain or establish a two-way connection.

Note: Two-way communication (or connection) means that a working communication path exists between the headend and the DHCT, as well as between the DHCT and the headend.

What Causes DHCTs to Become Non-Responders?

Introduction

This section lists some of the conditions that may contribute to DHCTs becoming non-responders.

Conditions in the Subscriber's Home

Subscribers themselves may be responsible for causing some DHCTs to become non-responders. The following list contains a few examples of conditions that might exist in a subscriber's home that could cause the subscriber's DHCT to be a non-responder:

- Subscriber installs a one-way power amplifier – A one-way power amplifier blocks return transmissions.
- Subscriber installs a signal splitter – A signal splitter may reduce the strength of return transmissions or, in some cases, completely block the return transmission.
- Subscriber connects the DHCT to a light switch or a power strip – The DHCT receives no power when the light switch or power strip is turned off.

DHCT Memory and Hardware Issues

The following list contains some examples of DHCT memory and hardware issues that might cause a DHCT to become a non-responder:

- Outdated DHCT operating system – Early versions of the operating system used in DHCTs had memory issues that might cause a DHCT to malfunction.
- Miscellaneous internal failures – Internal components of the DHCT may fail and cause the DHCT to become a non-responder.

Return-Path Network Conditions

The following list contains some return-path network conditions that might cause a DHCT to become a non-responder:

- Laser clipping – Lasers that assist in return path communications may be calibrated incorrectly, resulting in a distortion of signal.
- Over-utilization of existing design – Installation technicians may have installed more signal splitters on the network than designed.
- Signal interference – The quality of the return transmission may be poor due to ingress or intermodulation.

Note: Ingress refers to noise from an external source; intermodulation refers to noise generated from within the network.

What Causes DHCTs to Become Non-Responders?, Continued

Hardware Failures on the DBDS Network

The following list contains some DBDS network components that could cause DHCTs to become non-responders should the network components fail:

- QPSK Modulator/Demodulator
 - Buffers full – Available memory for the standard operation of a modulator is limited. Abnormal activity through the modulator may exhaust the available memory and cause the modulator to reboot.
 - DHCT chattering – Numerous DHCTs trying to simultaneously sign on to the network may interfere with return path transmissions and cause modulators to reboot.
 - Excessive numbers of DHCTs assigned to modulator – Too many DHCTs assigned to a single modulator may overwhelm the modulator.
- Router/switch
 - The router or switch is improperly configured.
 - The router or switch lacks sufficient processing capability. The router or switch can act as a choke-point in the communication path. In extreme cases, the QPSK modulator may reboot.

DBDS Configuration and Management Issues

The following list contains some conditions that might exist in the configuration of the DNCS that may cause a DHCT to become a non-responder:

- Improper demodulator attenuation management – To maintain a communication link with the QPSK demodulator, DHCTs should transmit at a level between (and including) 25 to 55 dBmV (decibels with respect to 1 millivolt). Over time, DHCT transmission levels may shift too high or too low. The shifting levels may cause significant numbers of DHCTs assigned to a demodulator to become non-responders.
- Improper DHCT inventory management – The DNCS database may fall out of synchronization with the database of the billing vendor. This loss of synchronization may cause the DNCS to try to poll DHCTs that are not actually in subscribers' homes.
- Failure to run the updateOUI utility – DHCTs that attempt to sign on to the network using an incorrect organizationally unique identifier (OUI) are unsuccessful.

Note: Chapter 11, **Update the DHCT OUI With the updateOUI Utility**, of the *DNCS Utilities Installation and Operation Guide*, part number 740020, provides instructions to ensure that DHCTs have the correct OUI before they try to sign on to the network.

What Activities Can Minimize the Non-Responding Condition?

Introduction

This section summarizes some actions that system operators can take to reduce the non-responding condition on their network.

Review Network Configuration

Often, an examination of your basic network configuration can eliminate some conditions that cause DHCTs to become non-responders. Consider these points as you examine your network:

- Review your existing network topology. Verify that you have separately partitioned each hub. You do not want noise or interference on one hub to affect another hub.
- Review the concentration of DHCTs assigned to your system's QPSK modulators. Verify that DHCTs are assigned as evenly as possible to your system's modulators. Be certain that you never have more than 16,000 DHCTs assigned to any one modulator.
- Verify the integrity of all network elements. Examine your routers and switches for proper throughput. Examine your power supplies, amplifiers, nodes, and taps, elements that are frequently overlooked during an examination of a network.
- Examine and correct any laser calibration issues present on your network. A laser that is incorrectly calibrated may produce a distorted signal.

Run the signonCount Utility When Downloading DHCT Software

DHCTs lose the contents of their volatile memory when they reboot. After they reboot, DHCTs sign back on to the network and their network configuration data is then reloaded. Too many sign-on attempts by DHCTs contribute to network congestion and could cause DHCTs to become non-responders.

The signonCount utility can help the system operator monitor the following DHCT network sign-on activities:

- DAVIC connections and UN-Config requests on a minute-by-minute basis
- Excessive DHCT sign-on requests
- QPSK modulator reboots
- DHCTs signing on with an incorrect type, revision, or OUI
- Successful sign-on statistics

Note: Refer to Chapter 2 of this guide for instructions on running and interpreting the signonCount Utility.

What Activities Can Minimize the Non-Responding Condition?, Continued

Regularly Run the DHCT Status Reporting Utility

Run the DHCT Status Reporting Utility regularly. The DHCT Status Reporting Utility is designed to test and analyze two-way communications between the DHCT and the headend. The DHCT Status Reporting Utility provides system operators with the following data:

- Provides a current summary of the statuses of a system's DHCT population
- Polls all DHCTs that have an IP address and reports the following data:
 - DHCT transmit levels
 - DHCT delay values
 - Currently loaded resident application and operating system
- Provides the following reports:
 - DHCT non-responders by QPSK modulator and demodulator
 - DHCT transmit levels by QPSK modulator and demodulator
 - DHCT delay values by QPSK modulator and demodulator
 - Operating system and resident application by DHCT type and revision
 - General DHCT summary

Inventory Handling

Only DHCTs that are in homes of subscribers, labs, or ready to be immediately re-issued should have a status of in-service, two-way in the DNCS. DHCTs that have been returned from subscribers and are being processed in anticipation of being re-issued should have a status of out-of-service.

Section B

Interface of the DHCT Status Reporting Utility

Overview

Introduction

Two-way communication between DHCTs and the headend is vital if subscribers are to take full advantage of the interactive features of Cisco's DBDS. The DHCT Status Reporting Utility is designed to test and analyze two-way communications between the DHCT and the headend.

The information in this chapter tells you how to access the user interface of the DHCT Status Reporting Utility and how to interpret the data it displays. Subsequent chapters in this guide provide instructions for running the various features included as part of the DHCT Status Reporting Utility.

In This Section

This section contains the following topics.

Topic	See Page
DHCT Status Reporting Utility Interface	1-9
Understanding the Interface	1-10
DHCT Status Reporting Utility Help Option	1-14

DHCT Status Reporting Utility Interface

Introduction

This section provides instructions on how to access the interface of the DHCT Status Reporting Utility.

Accessing the Interface

Follow these instructions to access the interface of the DHCT Status Reporting Utility.

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

Important: You must be **dncs** user in the xterm window. You cannot run the DHCT Status Reporting Utility as root user.

2. Type **dhctStatus** and then press **Enter**.

Result: The initial screen of the DHCT Status Reporting Utility appears.

```
=====
-- DHCT Status Reporting Utility --          Tue Feb 24
Version : 2.6.0.3 Jan-06-2004              13:33:38
=====
--- STATUS AS OF LAST POLLING: [Feb-23-2004 17:43:04] ---
#DHCTs      Gen. DHCT Distrib.      #DHCTs  %DHCTs
Total # of Settops      DHCTs OutOfServ.:    1889  65.31%
Loaded in Database: 2832      DHCTs InServ1way:      0      0%
                        DHCTs InServ2way:    1003  34.68%
                        DHCTs Deployed:      0      0%
--- SETTOP InService 2 Way Poll Analysis ---
#DHCTs      DHCT RDC Analysis      #DHCTs  %POLLED
DHCTs InServ2Way: 1003      RDC Btwn 25-55 dBmV:    740  81.49%
                        Not Resp. to Poll:    72   7.92%
2Way w/IP Addr: 908 90.52%      RDC Below 25 dBmV:      5   .55%
2Way w/oIP Addr: 95 9.47%      RDC Above 55 dBmV:     91  10.02%
Total # of InService 2 Way Non-Responders: 167 DHCTs 16.65%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)
-----
* MAIN MENU OPTIONS *                      Options
DHCT Polling Menu - - - - - P
Generate Listings of DHCT's Menu - - - - - L
Report Options Menu - - - - - R
Help - - - - - H
To Quit Program - - - - - Q
=====
Enter Option : █
```

3. Go to **Understanding the Interface**, next in this chapter, for help in interpreting the information displayed on the initial window of the DHCT Status Reporting Utility.

Understanding the Interface

Introduction

An example of the initial screen of the DHCT Status Reporting Utility is presented here for reference. The major sections of the initial screen are referenced by section numbers **1** through **4**. Refer to this illustration as you read the remainder of this section.

Note: Data referenced by the numbers will not appear the first time you run the utility because there is no data to report. After the system is polled for the first time, the utility populates the fields referenced by these numbers with data from the entire DHCT population.

```
=====
|              -- DHCT Status Reporting Utility --              Tue Feb 24 |
|              Version : 2.6.0.3 Jan-06-2004                    13:33:38 |
|=====|
|              --- STATUS AS OF LAST POLLING: [Feb-23-2004 17:43:04] --- |
|              *DHCTs      Gen. DHCT Distrib.      *DHCTs 2DHCTs |
| 1  Total # of Settops      DHCTs OutOfServ.:      1889  65.31% |
|    Loaded in Database:    2832      DHCTs InServ1way:      0      0% |
|                                DHCTs InServ2way:      1003  34.68% |
|                                DHCTs Deployed:         0      0% |
|              --- SETUP InService 2 Way Poll Analysis --- |
|              *DHCTs      DHCT RDC Analysis      *DHCTs 2POLLED |
| 2  DHCTs InServ2Way:      1003      RDC Btwn 25-55 dBmV:      740  81.49% |
|    2Way w/IP Addr:      908  90.52%      Not Resp. to Poll:      72  7.92% |
|    2Way w/oIP Addr:      95  9.47%      RDC Below 25 dBmV:         5  .55% |
|                                RDC Above 55 dBmV:         91  10.02% |
| 3  Total # of InService 2 Way Non-Responders:      167 DHCTs 16.63% |
|    Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way) |
|-----|
|              * MAIN MENU OPTIONS *              Options |
| 4  DHCT Polling Menu - - - - - P |
|    Generate Listings of DHCT's Menu - - - - - L |
|    Report Options Menu - - - - - R |
|    Help - - - - - H |
|    To Quit Program - - - - - Q |
|-----|
| T11151 Enter Option : |
```

As you progress through this guide and run the various options offered by the DHCT Status Reporting Utility, you will see that the data displayed at numbers **1** and **2** appears at the top of many DHCT Status Reporting Utility screens. By displaying this data on many DHCT Status Reporting Utility windows, system operators can readily compare new data with old.

Understanding the Interface, Continued

Section 1 — Status As Of Last Polling

The **Status As Of Last Polling** section appears near the top of the initial screen and is referenced by the number **1**. This area of the screen lists the total number of settops (DHCTs) in the database and summarizes, by total and percentage, the number of DHCTs with the following statuses:

- **Out-of-service (DHCTs OutOfServ)** – DHCTs that are new or in inventory and may not yet be staged or installed into subscribers' homes should have a status of *out-of-service*.
- **In-service, two-way (DHCTs InServ2way)** – DHCTs with an *in-service two-way* status support communication between the headend and the DHCT, as well as return communication. DHCTs need two-way communication capability to take full advantage of Cisco's interactive services.

Example: Cisco's interactive services include IPPV, VOD, xOD, and PPV.

- **In-service, one-way (DHCTs InServ1way)** – DHCTs with an *in-service one-way* status support communications between the headend and the DHCT, only. These DHCTs are considered to be in broadcast-only mode and have no two-way services assigned to them. These DHCTs have most-likely been staged and may have been installed into subscribers' homes.

Note: Systems designed to have 100 percent of DHCTs with in-service, two-way status should not have any DHCTs with this configuration.

- **Deployed (DHCTs Deployed)** – DHCTs with a status of *deployed* are usually in transit. The DHCTs are not technically out-of-service, but not quite in-service, either. These DHCTs have been staged and will shortly be installed in the homes of subscribers. DHCTs with a status of deployed can sign on to the network.

Note: Most billing vendors do not yet support the Deployed status.

For the DHCT Status Reporting Utility to retrieve and analyze non-responder data from DHCTs, the DHCTs must have a status of in-service, two-way. DHCTs that have a status of in-service, two-way can generate revenue for the system operator. Ultimately, the system operator's billing system dictates which DHCTs can generate revenue.

Understanding the Interface, Continued

Section 2 — SETTOP InService 2 Way Poll Analysis

DHCT Analysis

The **SETTOP InService 2 Way Poll Analysis** section is referenced by the number **2**. This area of the interface of the DHCT Status Reporting Utility presents a detailed analysis of those DHCTs listed in the database that are capable of two-way communication. The **SETTOP InService 2 Way Poll Analysis** section includes the following items:

- The number of DHCTs with two-way capability that *have* an IP address (**2Way w/IP Addr**s) and the number of DHCTs with two-way capability that *do not have* an IP address (**2Way w/oIP Addr**s).
- For DHCTs *with* an IP address, the totals and percentages that transmit at the following transmit levels:
 - Between and including 25 and 55 dBmV (decibels referenced to 1 millivolt) (**RDC Btwn 25-55 dBmV**) – DHCTs communicate with the headend between and including 25 and 55 dBmV.
 - No response (**Not Resp. to Poll**) – The DNCS is unable to get a response after polling these DHCTs.
 - Below 25 dBmV (**RDC Below 25 dBmV**) – DHCTs respond to the poll, but respond at a transmit level below the optimum level specified by Cisco.
 - Higher than 55 dBmV (**RDC Above 55 dBmV**) – DHCTs respond to the poll, but respond at a transmit level higher than the optimum level specified by Cisco.

High or Low Transmit Levels

Even though DHCTs can transmit successfully at levels higher than 55 dBmV or lower than 25 dBmV, the fact that these DHCTs exist on a system may indicate a serious configuration problem. Occasionally, the entire population of DHCTs assigned to a specific QPSK modulator or demodulator may transmit at levels that are too high or too low. The system can support two-way communications with a portion of these DHCTs; other DHCTs assigned to this modulator or demodulator may transmit at levels that are too high or too low to even be recognized.

Consider this rule of thumb: if 3 percent or more of successfully responding DHCTs respond at levels higher than 55 dBmV or lower than 25 dBmV, you can assume that there are other DHCTs responding with signals too high or too low to be recognized.

Note: You can see an illustration of this concept in the graph under **Examples of Systems Needing Recalibration**, under the **DHCT Transmit Level Saturation Report** heading of Section E.

System operators can use the information provided by the DHCT Status Reporting Utility to identify modulators or demodulators associated with non-responding DHCTs. System operators can then take measures to adjust transmit levels so that they conform with Cisco recommendations. This issue is discussed in more detail in **DHCT Transmit Level Saturation Report** in Section E.

Section 3 — Total # of InService 2 Way Non-Responders

The **Total # of InService 2 Way Non-Responders** section is referenced by number **3**. This short section summarizes the total number and percentage of DHCTs that have two-way communication capability, but these DHCTs do not respond to poll requests from the DHCT Status Reporting Utility.

Section 4 — Main Menu Options

The **Main Menu Options** section is referenced by number **4**. This area lists the various options you can use when you run the DHCT Status Reporting Utility. Subsequent chapters in this guide provide detailed instructions for running each option.

Note: The **Help** option of the DHCT Status Reporting Utility briefly describes each of the options included in the utility. Go to **The DHCT Status Reporting Utility Help Option**, next in this chapter.

DHCT Status Reporting Utility Help Option

Displaying the Help Screen for the DHCT Status Reporting Utility

Follow these instructions to display the Help screen for the DHCT Status Reporting Utility.

1. From the DHCT Status Reporting Utility screen, type **h** and then press **Enter**.

Result: The screen updates to display the Main Menu Help Screen, which lists information that explains the options on the main menu.

```
=====
-- DHCT Status Reporting Utility --           Tue Feb 24
* Main Menu Options *                          13:37:57
=====
MAIN MENU Help Screen:

  Option  Description
  -----
  (P)      DHCT Polling Menu
           The Polling Menu provides options for polling the current
           settop population by QPSK Modulator, QPSK DeModulator, or
           polling of the whole system.

  (L)      Generate Listings of DHCT's Menu
           This menu will generate listings of set tops for DHCT's
           in-service 1way, in-service 2way, and out-of-service.
           Output files are in the format "MAC_ADDRESS | Serial Number".

  (R)      Report Options Menu
           The Reports Options Menu provides several reports which will
           assist in the non-resp Identif. Reports provided are non-resp.
           by QPSK Mod/DeMod, DHCT Type/Revision, DHCT transmit levels,
           DHCT Delay value, and Settop OS/ResApp dist rpt by type/rev.

  (H)      This help text
  (Q)      To exit the dhctStatus utility

=====
* - All reports generated by this utility can be found at: /dvs/dhcs/tmp/dhctSt
<ENTER> to Continue: █
```

2. Read the description of the **P**, **L**, and **R** options and then press **Enter** to return to the DHCT Status Reporting Utility window. Press **Q** to exit from the Help screen.

Note: Refer to sections C, D, and E of this chapter for detailed information (including examples) regarding these menu options.

Section C

DHCT Polling Option

Overview

Introduction

The DHCT Status Reporting Utility polls DHCTs to assess how well they are performing in the field, as well as providing the mechanism for identifying and correcting non-responding issues. By examining polling data, system operators can make changes to their system configuration that improve DHCT performance and reduce the number of non-responding DHCTs on a specific QPSK modulator or demodulator.

The information in this chapter provides instructions for using the DHCT Status Reporting utility to poll DHCTs.

In This Section

This section contains the following topic.

Topic	See Page
Poll DHCTs	1-16

Poll DHCTs

Introduction

The instructions in this section describe how to use the DHCT Status Reporting Utility to poll DHCTs.

Note: All procedures in this section assume that the DHCT Status Reporting Utility screen is open on the DNCS.

Polling DHCTs

Follow these instructions to poll the DHCTs on the system.

1. From the DHCT Status Reporting Utility screen, type **p** and then press **Enter**.

Result: The DHCT Polling Menu screen appears.

```
===== -- DHCT Status Reporting Utility -- Tue Feb 11 |
* DHCT Polling Menu * 13:35:50 |
=====
--- STATUS AS OF LAST POLLING: [Feb-10-2003 17:38:54] ---
#DHCTs Gen. DHCT Distrib. #DHCTs %DHCTs
Total # of Setups DHCTs OutOfServ.: 2873 9.40%
Loaded in Database: 30532 DHCTs InServ1way: 347 1.13%
DHCTs InServ2way: 27312 89.45%
DHCTs Deployed: 0 0%

--- SETTOP InService 2 Way Poll Analysis ---
#DHCTs DHCT RDC Analysis #DHCTs %POLLED
DHCTs InServ2Way: 27312 RDC Btwn 25-55 dBmV: 20164 77.40%
2Way w/oIP Adrs: 26051 95.38% Not Resp. to Poll: 3793 14.55%
2Way w/oIP Adrs: 1261 4.61% RDC Below 25 dBmV: 464 1.78%
RDC Above 55 dBmV: 1630 6.25%

Total # of InService 2 Way Non-Responders: 5054 DHCTs 18.50%
Non-Responders = (w/oIP + w/oIP Not Resp. to Poll) / (All InServ 2Way)

TO POLL: Select
All Active DHCTs - - - - - 1
DHCT per QPSK Modulator/DeModulator - - - - - 2
Help - - - - - H
Return to Main Menu - - - - - <ENTER>

Enter selection number: |
```

2. Choose one of the following options:
 - To poll all active DHCTs on the network, go to **Polling All Active DHCTs**, next in this section.
 - To poll DHCTs associated with a specific QPSK modulator or demodulator, go to **Polling DHCTs per QPSK Modulator or Demodulator**, later in this section.

Note: The first time you run the DHCT Status Reporting Utility, you must poll all active DHCTs.

Poll DHCTs, Continued

Polling All Active DHCTs

Follow these instructions to poll all active DHCTs on the network.

1. To poll all active DHCTs on the network, type **1** and then press **Enter**.

Result: The DHCT Polling Menu screen updates to briefly display a **Querying Database** message in the **To Poll** section of the screen.

Note: The Querying Database message means that the system is collecting information on the DHCTs so that the DHCTs can be efficiently polled.

```
=====
|                -- DHCT Status Reporting Utility --                | Tue Feb 11 |
|                * DHCT Polling Menu *                            | 13:38:38  |
|=====
|                --- STATUS AS OF LAST POLLING: [Feb-10-2003 17:38:54] ---                |
|                #DHCTs      Gen. DHCT Distrib.      #DHCTs  %DHCTs      |
| Total # of Settops          DHCTs OutOfServ.:      2873    9.40%      |
| Loaded in Database: 30532    DHCTs InServ1way:      347    1.13%      |
|                               DHCTs InServ2way:    27312   89.45%      |
|                               DHCTs Deployed:         0     0%         |
|=====
|                --- SETUP InService 2 Way Poll Analysis ---                |
|                #DHCTs      DHCT RDC Analysis      #DHCTs  %POLLED      |
| DHCTs InServ2Way: 27312      RDC Btwn 25-55 dBmV: 20164   77.40%      |
|                               Not Resp. to Poll:    3793   14.55%      |
| 2Way w/IP Addr: 26051  95.38%  RDC Below 25 dBmV:    464    1.78%      |
| 2Way w/oIP Addr: 1261   4.61%  RDC Above 55 dBmV:    1630   6.25%      |
|=====
| Total # of InService 2 Way Non-Responders: 5054 DHCTs 18.50%      |
| Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way) |
|=====
| TO POLL:                                     Select |
| All Active DHCTs: *** QUERYING DATABASE ***      |
| DHCT per QPSK Modulator/DeModulator - - - - - 2 |
| Help - - - - - H |
| Return to Main Menu - - - - - <ENTER> |
|=====
| Enter selection number: |
```

Poll DHCTs, Continued

2. Type **u** (for update) and then press **Enter**.

Notes:

- The **Currently Polling DHCTs** message should appear in a few minutes.
- Type **u** and then press **Enter** as often as necessary until the **Currently Polling DHCTs** message appears.

```
=====
|               -- DHCT Status Reporting Utility --               Tue Feb 11 |
|               * DHCT Polling Menu *                             13:40:12 |
|=====|
|               --- STATUS AS OF LAST POLLING: [Feb-10-2003 17:38:54] --- |
|               #DHCTs      Gen. DHCT Distrib.      #DHCTs  %DHCTs |
| Total # of Settops      DHCTs OutOfServ.:      2873   9.40% |
|   Loaded in Database:  30532      DHCTs InServ1way:      347   1.13% |
|                               DHCTs InServ2way:     27312  89.45% |
|                               DHCTs Deployed:         0     0% |
|=====|
|               --- SETUP InService 2 Way Poll Analysis --- |
|               #DHCTs      DHCT RDC Analysis      #DHCTs  %POLLED |
| DHCTs InServ2Way:     27312      RDC Btwn 25-55 dBmV:    20164  77.40% |
|                               Not Resp. to Poll:      3793  14.55% |
| 2Way w/IP Addr:     26051  95.38%      RDC Below 25 dBmV:     464   1.78% |
| 2Way w/oIP Addr:     1261   4.61%      RDC Above 55 dBmV:     1630   6.25% |
|=====|
| Total # of InService 2 Way Non-Responders:      5054 DHCTs  18.50% |
|   Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way) |
|=====|
| TO POLL:                                                     Select |
| All Active DHCTs: *** Currently Polling DHCT's ***      .53% Complete |
|   (for further info - type: "all" at the prompt) |
| DHCT per QPSK Modulator/DeModulator - - - - - 2 |
| Terminate Polling in Progress - - - - - T |
| Help - - - - - H |
| Return to Main Menu - - - - - <ENTER> |
|=====|
| Enter selection number: |
```

Poll DHCTs, Continued

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

Result: The DHCT Polling Menu screen updates to display the polling data collected so far.

Notes:

- The screen continues to display data from the previously completed polling operation, so that you can compare the newly collected data with data from the previous polling operation.
- The screen also displays the estimated poll completion time. In this example, the system expects polling to complete at 16:46:44, as indicated by the white oval, approximately 3 hours from the start of polling.
- The estimated completion time does not remain constant as the poll progresses. Type **all** and then press **Enter** again to obtain the latest estimate.

```
=====
-- DHCT Status Reporting Utility --           Tue Feb 11
-- * DHCT Polling Menu *                     13:40:45
=====
--- STATUS AS OF LAST POLLING: [Feb-10-2003 17:38:54] ---
          #DHCTs      Gen. DHCT Distrib.      #DHCTs 2DHCTs
Total # of Setups      DHCTs OutOfServ.:      2873   9.40%
Loaded in Database:    30532                  DHCTs InServ1way:    347   1.13%
                                DHCTs InServ2way:   27312  89.45%
                                DHCTs Deployed:         0    0%
--- SETUP InService 2 Way Poll Analysis ---
          #DHCTs      DHCT RDC Analysis      #DHCTs 2POLLED
DHCTs InServ2Way:      27312      RDC Btwn 25-55 dBmV: 20164  77.40%
                                Not Resp. to Poll:    3793  14.55%
2Way w/IP Addr:        26051  95.38%      RDC Below 25 dBmV:    464   1.78%
2Way w/oIP Addr:       1261   4.61%      RDC Above 55 dBmV:   1630   6.25%

Total # of InService 2 Way Non-Responders: 5054 DHCTs 18.50%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

TO POLL:                                     Select
All Active DHCTs: *** Currently Polling DHCT's ***
+-----+-----+-----+-----+
| Polling Start Time: 13:39:06 | Est. Completion Time: 16:46:44 |
+-----+-----+-----+-----+
          #DHCTs      XMIT Level Analysis      #DHCTs 2POLLED
| TTL DHCT's Queried: 27312 | TTL Within Range:    182  77.77%
| Current # Polled:    1425 | TTL NonResponders:   33  14.10%
| TTL Remaining:      25887 | XMIT Levels Too Low:   6   2.56%
| TTL w/o IP Address:  1191 | XMIT Levels Too Hi:    8   3.41%
| Percent Completed:    .09%
+-----+-----+-----+-----+
| TTL Time to Poll (1) DHCT: 0.431 Seconds
| TTL DHCTs Polled Per Second: 2.32 DHCTs/Second
| TTL DHCTs Polled Per Hour: 8352.00 DHCTs/Hour
+-----+-----+-----+-----+

DHCT per QPSK Modulator/DeModulator ----- 2

Terminate Polling in Progress ----- T
Help ----- H
Return to Main Menu ----- <ENTER>
=====
Enter selection number: █
```

Poll DHCTs, Continued

Polling DHCTs per QPSK Modulator or Demodulator

Follow this procedure to poll DHCTs associated with a specific QPSK modulator or demodulator.

1. To poll DHCTs associated with a specific QPSK modulator or demodulator, type **2** and then press **Enter**.

Results:

- The DHCT Polling Menu By QPSK Mod/DeMod window appears.
- The **Enter QPSK Modulator Name** prompt appears.

Note: Note that the screen lists the QPSK modulators on the system.

```
=====
-- DHCT Status Reporting Utility --          Tue Feb 11
* DHCT Polling Menu *                      13:45:14
- By QPSK Mod/DeMod -
=====

--- STATUS AS OF LAST POLLING: [Feb-10-2003 17:38:54] ---
#DHCTs   Gen. DHCT Distrib.   #DHCTs   %DHCTs
Total # of Setups      DHCTs OutOfServ.:    2873    9.40%
Loaded in Database: 30532  DHCTs InServ1way:     347    1.13%
                        DHCTs InServ2way:   27312   89.45%
                        DHCTs Deployed:      0      0%

--- SETUP InService 2 Way Poll Analysis ---
#DHCTs   DHCT RDC Analysis   #DHCTs   %POLLED
DHCTs InServ2Way: 27312      RDC Btwn 25-55 dBmV: 20164   77.40%
                        Not Resp. to Poll:  3793   14.55%
2Way w/IP Addr: 26051  95.38% RDC Below 25 dBmV:   464    1.78%
2Way w/oIP Addr: 1261   4.61% RDC Above 55 dBmV:  1630    6.25%

Total # of InService 2 Way Non-Responders: 5054 DHCTs 18.50%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

=====
QPSK Modulator Names:

try11qpskm1   try12qpskm1   try12qpskm3
try13qpskm1   try13qpskm3   try15qpskm1
try16qpskm1   try16qpskm3   try16qpskm5
try17qpskm1   try17qpskm3   try18qpskm1
try41qpskm1   try41qpskm3   try43qpskm1
try44qpskm1   try44qpskm3   try51qpskm1
try51qpskm3   try51qpskm5   try54qpskm1
try55qpskm1

=====
TO POLL:                                     Select
DHCT per QPSK Modulator & DeModulator - - - - - "QPSK MOD NAME"
Help - - - - - H
Return to Polling Menu - - - - - <ENTER>
=====

Enter QPSK Modulator Name: █
```

Poll DHCTs, Continued

2. Type the name of a QPSK modulator and then press **Enter**.

Important: The modulator name is case-sensitive; be sure to type it exactly as it appears.

Results:

- The DHCT Polling Menu By QPSK Mod/DeMod screen updates to list the QPSK demodulators associated with the selected modulator, as well as the number of DHCTs assigned to the modulator and demodulator(s).
- The **Enter DeMod ID or <ENTER> to poll for Mod ID** prompt appears.

```
=====
-- DHCT Status Reporting Utility --           Tue Feb 11
* DHCT Polling Menu *                       13:48:18
- By QPSK Mod/DeMod -

--- STATUS AS OF LAST POLLING: [Feb-10-2003 17:38:54] ---
          #DHCTs  Gen. DHCT Distrib.  #DHCTs  %DHCTs
Total # of Settops      DHCTs OutOfServ.: 2873   9.40%
Loaded in Database: 30532      DHCTs InServ1Way: 347   1.13%
                                DHCTs InServ2Way: 27312  89.45%
                                DHCTs Deployed: 0       0%

--- SETUP InService 2 Way Poll Analysis ---
          #DHCTs  DHCT RDC Analysis  #DHCTs  %POLLED
DHCTs InServ2Way: 27312      RDC Btwn 25-55 dBmV: 20164  77.40%
                                Not Resp. to Poll: 3793  14.55%
2Way w/oIP Adrs: 26051  95.38%  RDC Below 25 dBmV: 464   1.78%
2Way w/oIP Adrs: 1261   4.61%  RDC Above 55 dBmV: 1630  6.25%

Total # of InService 2 Way Non-Responders: 5054 DHCTs  18.50%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

- QPSK Mod & DeMod Information -

Modulator      Total DHCT's
  Name         Mod ID      per Mod/DeMod
try16qpskm3     44        1126 DHCTs
DeMod: 1         154 DHCTs
DeMod: 2         248 DHCTs
DeMod: 3         219 DHCTs
DeMod: 4         161 DHCTs
DeMod: 5          90 DHCTs
DeMod: 6         157 DHCTs
DeMod: 7          97 DHCTs

-----
TO POLL:                               Select
Currently Selected QPSK Modulator ----- <ENTER>
QPSK DeModulator ----- "DeMod Number"

Help ----- H
Return to QPSK Mod Menu ----- Q

=====
Enter DeMod ID or <ENTER> to poll for Mod ID [try16qpskm3]:
```

Poll DHCTs, Continued

3. Choose one of the following options:
 - Press **Enter** to poll all of the DHCTs associated with the selected modulator.
 - Type the demodulator ID and then press **Enter** to poll DHCTs associated with a specific demodulator.

Note: The next two steps, step 4 and step 5, develop an example based upon polling DHCTs by demodulator ID.

Result: The utility displays polling data *after* the entire polling operation has completed.



CAUTION:

Do not interrupt the polling operation while it is in progress. If you interrupt the polling operation before it has completed, you will not be able to poll this modulator or demodulator again until you remove a specific file from the /tmp directory of the DNCS that tells the DNCS that a polling operation is in progress. The file in the /tmp directory is in the form of dhctStatus.[mod ID or demod ID].

4. Open an xterm window on the DNCS and type
`cd /dvs/dncs/tmp/dhctStatus2/[DATE]/ALL/GR_REPORTS` and then press **Enter**.

Note: Substitute the current date (or the date you ran the poll) in YYYYMMDD format for [DATE].

Example: For a poll conducted on February 12, 2003, type
`cd /dvs/dncs/tmp/dhctStatus2/20030212/ALL/GR_REPORTS` and then press **Enter**.

Result: The selected directory becomes the working directory.

Poll DHCTs, Continued

- To see the non-responder report associated with the poll you just completed, type **page NR_M*** and then press **Enter**.

Result: The system displays the data associated with the poll you just completed.

```

=====
-- DHCT Status Reporting Utility --           Thu Jan 29
** Report Options Menu **                   23:05:03
- Non-Responder Report By QPSK Mod/DeMod -
=====
--- STATUS AS OF LAST POLLING: [Jan-29-2004 23:03:48] ---
#DHCTs      Gen. DHCT Distrib.      #DHCTs  %DHCTs
Total # of Settops      DHCTs OutOfServ.: 25119  16.78%
Loaded in Database: 149555      DHCTs InServ1way: 47      .03%
                                DHCTs InServ2way: 124499  83.18%
                                DHCTs Deployed: 0        0%

--- SETTOP InService 2 Way Poll Analysis ---
#DHCTs      DHCT RDC Analysis      #DHCTs  %POLLED
DHCTs InServ2Way: 124499      RDC Btwn 25-55 dBmV: 81107  70.84%
                                Not Resp. to Poll: 29197  25.50%
2Way w/IP Addr: 114482  91.95%  RDC Below 25 dBmV: 891      .77%
2Way w/oIP Addr: 10017  8.04%    RDC Above 55 dBmV: 3287   2.87%

Total # of InService 2 Way Non-Responders: 39214 DHCTs  31.49%
Non-Responders = (w/oIP + w/IP Not Resp. to Poll) / (All InServ 2Way)

Current Issues:
1) 100% QPSK DeMOD NonResp.: 3 DMods 42 DHCTs .03% of Pop.
2) NonResp. DMODs gt 80%: 4 DMods 755 DHCTs .65% of Pop.
3) NonResp. MODs gt 20%: 17 DMods 24210 DHCTs 21.14% of Pop.
4) NonResp. DMODs gt 20%: 82 DMods 24208 DHCTs 21.14% of Pop.
5) NonResp. MODs gt 50%: 3 DMods 5152 DHCTs 4.50% of Pop.
6) NonResp. DMODs gt 50%: 14 DMods 4823 DHCTs 4.21% of Pop.

NOTE - QPSK Mod/DeMods with a percent NonResponder greater
than "1201" will be highlighted in "RED".

=====
QPSK Mod Name/      QPSK Mod  # of DHCTs  TTL  % DHCTs
DeMod ID            Identif.  Not Respond. DHCTs  Not Respond.
=====
QPSK1                9          2028      8536   23.75%
DeModID: 1           244        1090   22.38%
DeModID: 2           351        1103   31.82%
DeModID: 3           327        1144   28.58%
DeModID: 4           217        1040   20.86%
DeModID: 5           248        1093   22.68%
DeModID: 6           247        1121   22.03%
DeModID: 7           96         924    10.38%
DeModID: 8           298        1021   29.18%

QPSK2                23          334      1950   17.12%
DeModID: 1           190        994    19.11%
=====

```

Note: Refer to **Explanation of Output From Non-Responder Report**, which follows, for an explanation of some of the findings revealed in this non-responder report.

Explanation of Output From Non-Responder Report

The **Current Issues** section of the report output lists those modulators and demodulators where non-responding DHCTs make up a significant percentage of the total number of DHCTs assigned to the modulator or demodulator. Using the example in step 5, three demodulators have 100 percent of their DHCTs in a non-responding state. This constitutes 42 DHCTs, or .03 percent of the total number of DHCTs supported by the system. Using another example from step 6, fourteen demodulators have 50 percent of their assigned DHCTs in a non-responding state. This constitutes 4,823 DHCTs, or 4.21 percent of the entire DHCT population.

The lower, unlabeled section of the report output displays all the modulators and demodulators running on the system. This section lists the number of non-responding DHCTs assigned to each modulator or demodulator, the total number of DHCTs supported by the modulator or demodulator, as well as the percentage of assigned DHCTs that are non-responders. The report highlights the percentage of non-responding DHCTs whenever that percentage exceeds 20 percent.

Note: System operators may want to examine the following conditions in order to troubleshoot the significant percentage of non-responding DHCTs revealed in the data from step 5:

- The system may lack proper attenuation
- The modulator may just have rebooted
- The cabling for the modulator or demodulator may have become loose
- The system may have just experienced a power outage

Data Files Resulting From Polling Operations

The following list contains the data files that are generated by the polling operation, as well as a description of the type of data contained in the file:

Note: Type **page [file name]** and then press **Enter** from the **/dvs/dncs/tmp/dhctStatus2/[DATE]/ALL/GR_REPORTS** directory to view the output.

- OS_TypeRev.txt — OS version sorted by DHCT type and revision
- NR_TypeRev.txt — Non-responder data sorted by DHCT type and revision
- NR_ModDeMod.txt — Non-responder data sorted by QPSK modulator and demodulator
- DL_ModDeMod.txt — DHCT delay values sorted by QPSK modulator and demodulator
- TL_ModDeMod.txt — DHCT transmit levels sorted by QPSK modulator and demodulator

Section D

List DHCTs

Overview

Introduction

The DHCT Status Reporting Utility provides system operators and engineers with the ability to query the database for a listing of MAC addresses and serial numbers of DHCTs that have a specific status. The utility can generate a list for DHCTs with the following statuses:

- DHCTs with a one-way status

Note: DHCTs with a one-way status support communication between the headend and the DHCT.

- DHCTs with a two-way status

Note: DHCTs with a two-way status support communication between the headend and the DHCT, as well as return communication between the DHCT and the headend.

- DHCTs with an out-of-service status

Note: DHCTs with a status of out-of-service are usually DHCTs that have yet to be installed in a subscriber's home or have been returned by subscribers. These DHCTs will eventually be redeployed to other subscribers.

- DHCTs with a deployed status

Note: DHCTs with a status of deployed are usually in a transition period. They have been staged and are awaiting placement in a subscriber's home. Most systems do not currently use the deployed status.

The lists of DHCTs that the DHCT Status Reporting Utility generates can become quite lengthy. For this reason, the utility does not display the lists on the screen of the DNCS. Instead, output is written to a file in the `/dvs/dncs/tmp/dhctStatus2/[DATE]` directory of the DNCS, where system operators and engineers can view it at their convenience. Instructions for viewing these output files are included later in this section.

In This Section

This section contains the following topics.

Topic	See Page
Generate a Listing of DHCTs	1-26
View the Output File	1-31

Generate a Listing of DHCTs

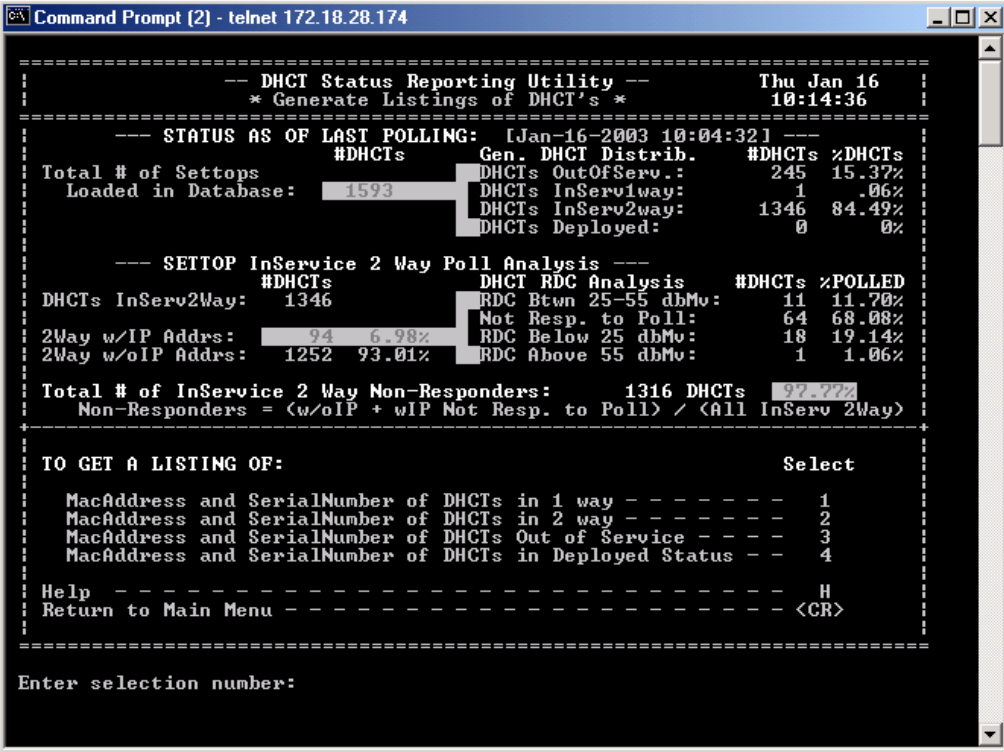
Generating a Listing of DHCTs

Follow these instructions to use the DHCT Status Reporting Utility to generate various listings of DHCTs.

1. From the DHCT Status Reporting Utility screen, type **l** and then press **Enter**.

Note: The “l” is a lowercase L.

Result: The Generate Listings of DHCTs screen appears.



```
Command Prompt [2] - telnet 172.18.28.174

=====
-- DHCT Status Reporting Utility --
* Generate Listings of DHCT's *
=====
Thu Jan 16 10:14:36

--- STATUS AS OF LAST POLLING: [Jan-16-2003 10:04:32] ---
#DHCTs      Gen. DHCT Distrib.      #DHCTs  %DHCTs
Total # of Settops      Loaded in Database: 1593
DHCTs OutOfServ.:      245  15.37%
DHCTs InServ1way:      1    .06%
DHCTs InServ2way:      1346  84.49%
DHCTs Deployed:        0    0%

--- SETTOP InService 2 Way Poll Analysis ---
#DHCTs      DHCT RDC Analysis      #DHCTs  %POLLED
DHCTs InServ2Way:      1346
RDC Btwn 25-55 dbMv:    11  11.70%
2Way w/IP Adrs:        94  6.98%
Not Resp. to Poll:      64  68.08%
2Way w/oIP Adrs:      1252  93.01%
RDC Below 25 dbMv:      18  19.14%
RDC Above 55 dbMv:      1  1.06%

Total # of InService 2 Way Non-Responders: 1316 DHCTs 97.77%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

=====
TO GET A LISTING OF:                                     Select
MacAddress and SerialNumber of DHCTs in 1 way - - - - - 1
MacAddress and SerialNumber of DHCTs in 2 way - - - - - 2
MacAddress and SerialNumber of DHCTs Out of Service - - - 3
MacAddress and SerialNumber of DHCTs in Deployed Status - 4
Help - - - - - H
Return to Main Menu - - - - - <CR>

=====
Enter selection number:
```

2. Choose one of the following options:
 - To generate a listing of DHCTs with a one-way status, go to step 3.
 - To generate a listing of DHCTs with a two-way status, go to step 5.
 - To generate a listing of DHCTs with a status of out-of-service, go to step 7.
 - To generate a listing of DHCTs with a status of deployed, go to step 9.

Generate a Listing of DHCTs, Continued

3. Type **1** and then press **Enter** to generate a listing of DHCTs with a one-way status.

Results:

- The system reports the number of database rows that matched the requirements of the selected list.
- The system displays a message that indicates the directory in which the output file can be found.

```
Command Prompt [2] - telnet 172.18.28.174
-- DHCT Status Reporting Utility --          Thu Jan 16
* Generate Listings of DHCT's *           10:14:36
-----
--- STATUS AS OF LAST POLLING: [Jan-16-2003 10:04:32] ---
Total # of Settops      #DHCTs      Gen. DHCT Distrib.      #DHCTs %DHCTs
Loaded in Database:    1593          DHCTs OutOfServ.:      245 15.37%
                                DHCTs InServ1way:       1  .06%
                                DHCTs InServ2way:     1346 84.49%
                                DHCTs Deployed:        0  0%

--- SETTOP InService 2 Way Poll Analysis ---
DHCTs InServ2Way:      1346          DHCT RDC Analysis      #DHCTs %POLLED
                                RDC Btwn 25-55 dbMv:      11 11.70%
                                Not Resp. to Poll:        64 68.08%
2Way w/oIP Adrrs:      94  6.98%    RDC Below 25 dbMv:     18 19.14%
2Way w/oIP Adrrs:     1252 93.01%    RDC Above 55 dbMv:     1  1.06%

Total # of InService 2 Way Non-Responders: 1316 DHCTs 97.77%
Non-Responders = <w/oIP + wIP Not Resp. to Poll> / <All InServ 2Way>

TO GET A LISTING OF:                                     Select
MacAddress and SerialNumber of DHCTs in 1 way - - - - - 1
MacAddress and SerialNumber of DHCTs in 2 way - - - - - 2
MacAddress and SerialNumber of DHCTs Out of Service - - - 3
MacAddress and SerialNumber of DHCTs in Deployed Status - 4
Help - - - - - H
Return to Main Menu - - - - - <CR>

Enter selection number: 1
Generating a Listing of All DHCT's currently in "1 Way" status...
Database selected.
1 row(s) retrieved.
Database closed.

THE OUTPUT FILE IS LOCATED IN: /dvs/dncs/tmp/dhctStatus2/20030116/mac1way

<CR> to continue:
```

4. Go to **View the Output File**, later in this chapter, for instructions on how to view the contents of the output file generated by the DHCT Status Reporting Utility.

Generate a Listing of DHCTs, Continued

- Type **2** and then press **Enter** to generate a listing of DHCTs with a two-way status.

Results:

- The system reports the number of database rows that matched the requirements of the selected list.
- The system displays a message that indicates the directory in which the output file can be found.

```
Command Prompt [2] - telnet 172.18.28.174
-- DHCT Status Reporting Utility --          Thu Jan 16
* Generate Listings of DHCT's *             12:21:55
-----
--- STATUS AS OF LAST POLLING: [Jan-16-2003 10:04:32] ---
Total # of Settops      #DHCTs      Gen. DHCT Distrib.      #DHCTs %DHCTs
Loaded in Database:    1593          DHCTs OutOfServ.:      245  15.37%
                                DHCTs InServ1way:       1    .06%
                                DHCTs InServ2way:     1346  84.49%
                                DHCTs Deployed:        0    0%

--- SETTOP InService 2 Way Poll Analysis ---
DHCTs InServ2Way:      1346          DHCT RDC Analysis      #DHCTs %POLLED
                                RDC Btwn 25-55 dbMv:      11  11.70%
                                Not Resp. to Poll:       64  68.08%
2Way w/oIP Adrrs:      94    6.98%    RDC Below 25 dbMv:     18  19.14%
2Way w/oIP Adrrs:     1252  93.01%    RDC Above 55 dbMv:      1  1.06%

Total # of InService 2 Way Non-Responders:      1316 DHCTs 97.77%
Non-Responders = <w/oIP + wIP Not Resp. to Poll> / <All InServ 2Way>

TO GET A LISTING OF:                                Select
MacAddress and SerialNumber of DHCTs in 1 way - - - - - 1
MacAddress and SerialNumber of DHCTs in 2 way - - - - - 2
MacAddress and SerialNumber of DHCTs Out of Service - - - 3
MacAddress and SerialNumber of DHCTs in Deployed Status - 4
Help - - - - - H
Return to Main Menu - - - - - <CR>

Enter selection number: 2
Generating a Listing of All DHCT's currently in "2 Way" status...
Database selected.
1346 row(s) retrieved.
Database closed.

THE OUTPUT FILE IS LOCATED IN: /dvs/dncs/tmp/dhctStatus2/20030116/mac2way

<CR> to continue: _
```

- Go to **View the Output File**, later in this chapter, for instructions on how to view the contents of the output file generated by the DHCT Status Reporting Utility.

Generate a Listing of DHCTs, Continued

7. Type 3 and then press **Enter** to generate a listing of DHCTs with a status of out-of-service.

Results:

- The system reports the number of database rows that matched the requirements of the selected list.
- The system displays a message that indicates the directory in which the output file can be found.

```
Command Prompt [2] - telnet 172.18.28.174
--- STATUS AS OF LAST POLLING: [Jan-16-2003 10:04:32] ---
Total # of Settops      #DHCTs      Gen. DHCT Distrib.      #DHCTs      %DHCTs
Loaded in Database:    1593
                        DHCTs OutOfServ.: 245 15.37%
                        DHCTs InServ1way: 1 .06%
                        DHCTs InServ2way: 1346 84.49%
                        DHCTs Deployed: 0 0%

--- SETTOP InService 2 Way Poll Analysis ---
DHCTs InServ2Way: 1346
2Way w/IP Adrs: 94 6.98%
2Way w/oIP Adrs: 1252 93.01%
DHCT RDC Analysis      #DHCTs      %POLLED
RDC Btwn 25-55 dbMv: 11 11.70%
Not Resp. to Poll: 64 68.08%
RDC Below 25 dbMv: 18 19.14%
RDC Above 55 dbMv: 1 1.06%

Total # of InService 2 Way Non-Responders: 1316 DHCTs 97.77%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

=====
TO GET A LISTING OF:                                     Select
MacAddress and SerialNumber of DHCTs in 1 way - - - - - 1
MacAddress and SerialNumber of DHCTs in 2 way - - - - - 2
MacAddress and SerialNumber of DHCTs Out of Service - - - 3
MacAddress and SerialNumber of DHCTs in Deployed Status - 4
Help - - - - - H
Return to Main Menu - - - - - <CR>

=====
Enter selection number: 3
Generating a Listing of All DHCT's currently in "Out-of-Service" status...
Database selected.

245 row(s) retrieved.

Database closed.

=====
THE OUTPUT FILE IS LOCATED IN: /dvs/dncs/tmp/dhctStatus2/20030116/macOutOfSvc

<CR> to continue:
```

8. Go to **View the Output File**, later in this chapter, for instructions on how to view the contents of the output file generated by the DHCT Status Reporting Utility.

Generate a Listing of DHCTs, Continued

- Type **4** and then press **Enter** to generate a listing of DHCTs with a status of deployed.

Results:

- The system reports the number of database rows that matched the requirements of the selected list.
- The system displays a message that indicates the directory in which the output file can be found.

```
Command Prompt [2] - telnet 172.18.28.174
--- STATUS AS OF LAST POLLING: [Jan-16-2003 10:04:32] ---
Total # of Settops      #DHCTs      Gen. DHCT Distrib.      #DHCTs      %DHCTs
Loaded in Database:    1593
DHCTs OutOfServ.:      245      15.37%
DHCTs InServ1way:       1         .06%
DHCTs InServ2way:     1346      84.49%
DHCTs Deployed:         0         0%

--- SETTOP InService 2 Way Poll Analysis ---
DHCTs InServ2Way:      1346
2Way w/IP Adrs:        94      6.98%
2Way w/oIP Adrs:      1252     93.01%
DHCT RDC Analysis      #DHCTs      %POLLED
RDC Btwn 25-55 dbMv:    11      11.70%
Not Resp. to Poll:      64      68.08%
RDC Below 25 dbMv:      18      19.14%
RDC Above 55 dbMv:       1       1.06%

Total # of InService 2 Way Non-Responders: 1316 DHCTs 92.72%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

=====
TO GET A LISTING OF:                                     Select
MacAddress and SerialNumber of DHCTs in 1 way - - - - - 1
MacAddress and SerialNumber of DHCTs in 2 way - - - - - 2
MacAddress and SerialNumber of DHCTs Out of Service - - - 3
MacAddress and SerialNumber of DHCTs in Deployed Status - 4
Help - - - - - H
Return to Main Menu - - - - - <CR>

=====
Enter selection number: 4
Generating a Listing of All DHCT's currently in "Deployed" status...
Database selected.

No rows found.

Database closed.

=====
THE OUTPUT FILE IS LOCATED IN: /dvs/dncs/tmp/dhctStatus2/20030116/macDeployed

=====
<CR> to continue: _
```

- Go to **View the Output File**, next in this section, for instructions on how to view the contents of the output file generated by the DHCT Status Reporting Utility.

View the Output File

Viewing the Output File

After using the DHCT Status Reporting Utility to generate a list of DHCTs, follow these instructions to view the list that the utility generated.

Note: The list contains DHCT MAC addresses and serial numbers.

1. If necessary, open an xterm window on the DNCS.
Note: You can be logged on as **dncs** user in the xterm window.
2. Type **more /dvs/dnscs/tmp/dhctStatus2/[DATE]/[filename]** and then press **Enter**.

Notes:

- Substitute the date you polled the DHCTs, in YYYYMMDD format, for [DATE].
- Substitute the name of the file you want to view for [filename].
 - Use **mac1way** for DHCTs with a one-way status.
 - Use **mac2way** for DHCTs with a two-way status.
 - Use **macOutofSvc** for DHCTs with a status of out-of-service.
 - Use **macDeployed** for DHCTs with a status of deployed.

Example: **more /dvs/dnscs/tmp/dhctStatus2/20030114/mac2way**

Result: The output file opens for viewing.

3. Use these guidelines to navigate through the list, which may be very lengthy.
 - a) Press the **Spacebar** to advance to the next page of the list.
 - b) Press the **Ctrl** and **C** keys simultaneously to close the file when you are finished.

Section E

The Reporting Option

Overview

Introduction

The DHCT Status Reporting Utility includes several reports that summarize various types of DHCT polling data. System operators or Cisco engineers can run the reports and examine the data in order to assess network conditions of the system.

This chapter contains a description of each report offered by the DHCT Status Reporting Utility, as well as detailed instructions on running the reports.

In This Section

This section contains the following topics.

Topic	See Page
Description of Reports	1-33
Reports Menu	1-34
Non-Responder Reports	1-36
DHCT Transmit Level Saturation Report	1-39
DHCT Delay Value Saturation Report	1-45
DHCT OS and ResApp Evaluation by Set Top Type and Rev Report	1-49

Description of Reports

DHCT Status Reporting Utility Reports

The DHCT Status Reporting Utility includes the following reports that system operators can generate to summarize various DHCT polling data:

- Non-responder reports – DHCTs with an IP address that fail to respond to poll requests from the DNCS are commonly known as non-responders. The utility generates two types of DHCT non-responder reports:
 - DHCT non-responders identified by QPSK modulator and demodulator
 - DHCT non-responders identified by DHCT type and revision

By analyzing the report, system operators can spot trends that may indicate that a disproportionate share of non-responding DHCTs are associated with a specific QPSK, or are DHCTs of a specific type or revision.

- Transmit level report – When a DHCT signs on to the network, the QPSK modulator informs the DHCT of the signal needed to maintain a communication link between the DHCT and the modulator. The DHCT Transmit Level Saturation Report summarizes the transmit levels of DHCTs associated with each QPSK modulator and demodulator in the system. By analyzing the transmit levels, system operators can quickly spot when network conditions are preventing effective communication between the headend and the DHCTs.
- Delay value report – When a DHCT signs on to the network, the QPSK modulator performs a test that evaluates the distance from the DHCT to the modulator. Based upon this distance, the modulator assigns a “delay value,” which indicates how often a DHCT will check in with the QPSK modulator. The closer the DHCT is to the modulator, the greater the delay value; the farther the DHCT is from the modulator, the shorter the delay value.

The DHCT Delay Value Saturation Report summarizes the delay values of DHCTs associated with each QPSK modulator and demodulator in the system. By analyzing the delay values, system operators can spot conditions under which it may be advantageous to configure a QPSK modulator for the QPSK Range Extension Feature.

Note: The QPSK Range Extension Feature allows DHCTs to sign on to the system and operate properly at extended distances from the QPSK modulator.

- Operating system and resident application report – The DHCT Status Reporting Utility generates a report that lists the version of operating system (OS) and resident application code running on each DHCT type and revision supported by the system.

Reports Menu

Accessing the Reports Menu

Follow these instructions to access the menu from which the various DHCT Status Reporting Utility reports can be run.

1. From the main menu of the DHCT Status Reporting Utility, type **r** and then press **Enter**.

Result: The Report Options Menu screen appears.

```
Command Prompt [2] - telnet 172.18.28.174

-----
-- DHCT Status Reporting Utility --           Mon Feb 3
-- ** Report Options Menu **                 12:38:01
-----

--- STATUS AS OF LAST POLLING: [Feb-02-2003 22:01:18] ---
#DHCTs      Gen. DHCT Distrib.      #DHCTs %DHCTs
Total # of Settops      DHCTs OutOfServ.:      266 16.45%
Loaded in Database: 1612      DHCTs InServ1way:      1 .06%
                        DHCTs InServ2way:      1349 83.42%
                        DHCTs Deployed:      0 0%

--- SETTOP InService 2 Way Poll Analysis ---
#DHCTs      DHCT RDC Analysis      #DHCTs %POLLED
DHCTs InServ2Way: 1349      RDC Btwn 25-55 dBmU:      40 39.60%
2Way w/IP Addr: 101 2.48%      Not Resp. to Poll:      61 60.39%
2Way w/oIP Addr: 1248 92.51%      RDC Below 25 dBmU:      0 0%
                        RDC Above 55 dBmU:      0 0%

Total # of InService 2 Way Non-Responders: 1309 DHCTs 97.03%
Non-Responders = <w/oIP + wIP Not Resp. to Poll> / <All InServ 2Way>

Current DHCT Issues:
1> NonResp. MODs gt 20%: 2 Mods 61 DHCTs 60.39% of Pop.
2> NonResp. DMODs gt 20%: 2 DMods 61 DHCTs 60.39% of Pop.
3> NonResp. MODs gt 50%: 1 Mods 46 DHCTs 45.54% of Pop.
4> NonResp. DMODs gt 50%: 1 DMods 46 DHCTs 45.54% of Pop.
5> 100% NonResp. by TYPE/REV: 7 Rev 11 DHCTs 11.34% of Pop.
6> MODs w/Delay Value Avg lt 400 ms: 2 Mods 10 DHCTs 25.00% o
7> 100% NonResp. by TYPE: 2 Type 3 DHCTs 3.09% of Pop.
8> DMODs w/Delay Value Avg lt 400 ms: 2 DMods 10 DHCTs 25.00% o

TO CHECK REPORTS GENERATED FROM POLLING:      SELECT      #of Issues
Non-Responder Report Submenu - - - - - NR      4 2
Transmit Level Report Submenu - - - - - TL
DHCT Delay Value Report Submenu - - - - - DL
DHCT OS/ResApp Report Submenu - - - - - OS

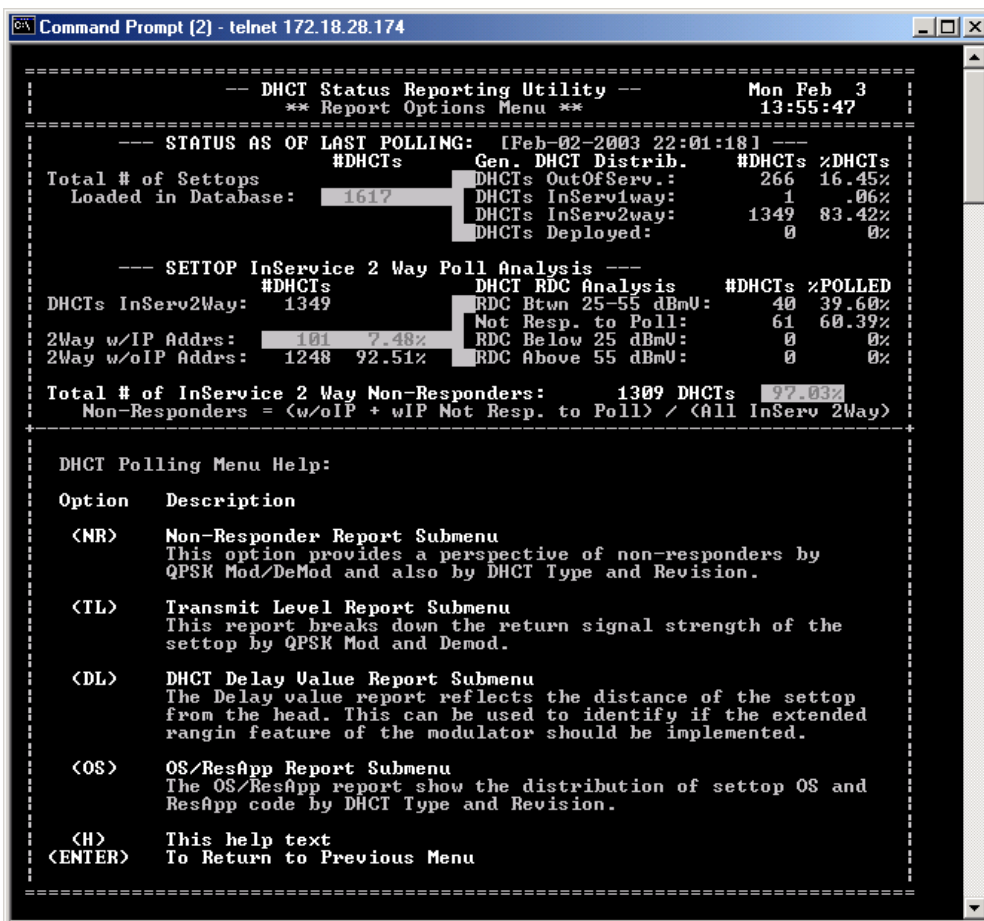
Help - - - - - H
To Return To Main Menu - - - - - <ENTER>

Enter selection:
```

Reports Menu, Continued

2. Type **h** and then press **Enter** to display the DHCT Status Reporting Utility help screen.

Note: The help screen summarizes the purpose of each report included in the DHCT Status Reporting Utility.



```
Command Prompt (2) - telnet 172.18.28.174

-----
-- DHCT Status Reporting Utility --
** Report Options Menu **
-----
Mon Feb 3 13:55:47

--- STATUS AS OF LAST POLLING: [Feb-02-2003 22:01:18] ---
#DHCTs Gen. DHCT Distrib. #DHCTs %DHCTs
Total # of Settops Loaded in Database: 1617
DHCTs OutOfServ.: 266 16.45%
DHCTs InServ1way: 1 .06%
DHCTs InServ2way: 1349 83.42%
DHCTs Deployed: 0 0%

--- SETTOP InService 2 Way Poll Analysis ---
#DHCTs DHCT RDC Analysis #DHCTs %POLLED
DHCTs InServ2Way: 1349
RDC Btwn 25-55 dBmU: 40 39.60%
Not Resp. to Poll: 61 60.39%
2Way w/oIP Addr: 101 7.48%
RDC Below 25 dBmU: 0 0%
2Way w/oIP Addr: 1248 92.51%
RDC Above 55 dBmU: 0 0%

Total # of InService 2 Way Non-Responders: 1309 DHCTs 97.03%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

DHCT Polling Menu Help:
Option Description
<NR> Non-Responder Report Submenu
This option provides a perspective of non-responders by
QPSK Mod/DeMod and also by DHCT Type and Revision.
<TL> Transmit Level Report Submenu
This report breaks down the return signal strength of the
settop by QPSK Mod and Demod.
<DL> DHCT Delay Value Report Submenu
The Delay value report reflects the distance of the settop
from the head. This can be used to identify if the extended
rangin feature of the modulator should be implemented.
<OS> OS/ResApp Report Submenu
The OS/ResApp report show the distribution of settop OS and
ResApp code by DHCT Type and Revision.
<H> This help text
<ENTER> To Return to Previous Menu
-----
```

3. Choose one of the following options:
 - To generate DHCT non-responder reports, go to **Non-Responder Reports**, next in this chapter.
 - To generate a DHCT transmit level report, go to **DHCT Transmit Level Saturation Report**, later in this chapter.
 - To generate a DHCT delay value report, go to **DHCT Delay Value Saturation Report**, later in this chapter.
 - To generate a report that lists the operating system and resident application software running on each DHCT type and revision on your system, go to **DHCT OS and ResApp Evaluation by Set Top Type and Rev Report**, later in this chapter.

Non-Responder Reports

Generating Non-Responder Reports

Follow these instructions to generate the Non-Responder Reports.

Note: A non-responding DHCT refers to a DHCT that does not respond to poll requests from the DNCS.

1. From the main menu of the DHCT Status Reporting Utility, type **nr** and then press **Enter**.

Result: The Non-Responder Report Sub-Menu screen appears.

Note: The Non-Responder Report Sub-Menu screen shows that you can generate the following two types of DHCT non-responder reports:

- Non-Responders by QPSK Mod and DeMod ID
- Non-Responders by DHCT Type/Rev

```
Select Command Prompt (2) - telnet 172.18.28.174
-----
-- DHCT Status Reporting Utility --          Thu Jan 16
** Report Options Menu **                  14:08:34
- Non-Responder Report Sub-Menu -
-----
--- STATUS AS OF LAST POLLING: [Jan-16-2003 10:04:32] ---
#DHCTs      Gen. DHCT Distrib.      #DHCTs %DHCTs
Total # of Settops      1593
Loaded in Database:
  DHCTs OutOfServ.:      245  15.37%
  DHCTs InServ1way:      1    .06%
  DHCTs InServ2way:     1346  84.49%
  DHCTs Deployed:        0    0%

--- SETTOP InService 2 Way Poll Analysis ---
#DHCTs      DHCT RDC Analysis      #DHCTs %POLLED
DHCTs InServ2Way:     1346
  RDC Btwn 25-55 dBmV:    11  11.70%
  Not Resp. to Poll:      64  68.08%
  RDC Below 25 dBmV:     18  19.14%
  RDC Above 55 dBmV:      1   1.06%
2Way w/oIP Addr:       94   6.98%
2Way w/oIP Addr:     1252  93.01%

Total # of InService 2 Way Non-Responders: 1316 DHCTs 97.77%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

Current DHCT Issues:
1) 100% NonResp. by TYPE/REV: 7 Rev      55 DHCTs 61.11% of Pop.
2) NonResp. MODs gt 50%:      2 Mods      64 DHCTs 68.08% of Pop.
3) NonResp. DMODs gt 50%:     2 DMods     64 DHCTs 68.08% of Pop.
4) NonResp. MODs gt 20%:      2 Mods      64 DHCTs 68.08% of Pop.
5) NonResp. DMODs gt 20%:     2 DMods     64 DHCTs 68.08% of Pop.
6) 100% NonResp. by TYPE:    2 Type      44 DHCTs 48.88% of Pop.

TO CHECK REPORTS GENERATED FROM POLLING:      SELECT      #of Issues
Non-Responder Reports-                        Hi Med Low
Non-Responders by QPSK Mod & DeMod ID      (1)      4
Non-Responders by DHCT Type/Rev            (2)      2

Help - - - - - H
To Return To Main Menu - - - - - <CR>

Enter selection number: _
```

2. Choose one of the following options:
 - To generate a Non-Responder Report for DHCTs based upon QPSK modulator and demodulator ID, go to step 3.
 - To generate a Non-Responder Report for DHCTs based upon DHCT type and revision, go to step 5.

Non-Responder Reports, Continued

- To generate a Non-Responder Report for DHCTs based upon QPSK modulator and demodulator ID, type **1** (for Non-Responders by QPSK Mod & DeMod ID) and then press **Enter**.

Result: The Non-Responder Report Sub-Menu screen updates to display the following information:

- QPSK modulator(s) name, ID, and demodulator ID
- The number of DHCTs associated with each modulator and demodulator
- The total number and percentage of DHCTs assigned to each modulator and demodulator that are classified as non-responders

Note: The report automatically highlights the data when more than 20 percent of DHCTs associated with a specific modulator or demodulator are non-responders.

Total # of InService 2 Way Non-Responders: 39214 DHCTs 31.49%				
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)				
Current Issues:				
1) 100% QPSK DeMOD NonResp.:	3 DMods	42 DHCTs	.03% of Pop.	
2) NonResp. DMODs gt 80%:	4 DMods	755 DHCTs	.65% of Pop.	
3) NonResp. MODs gt 20%:	17 Mods	24210 DHCTs	21.14% of Pop.	
4) NonResp. DMODs gt 20%:	82 DMods	24208 DHCTs	21.14% of Pop.	
5) NonResp. MODs gt 50%:	3 Mods	5152 DHCTs	4.50% of Pop.	
6) NonResp. DMODs gt 50%:	14 DMods	4823 DHCTs	4.21% of Pop.	
NOTE - QPSK Mod/DeMods with a percent NonResponder greater than "20" will be highlighted in "RED".				
<u>QPSK Mod Name/ DeMod ID</u>	<u>QPSK Mod Identif.</u>	<u># of DHCTs Not Respond.</u>	<u>TTL DHCTs</u>	<u>% DHCTs Not Respond.</u>
QPSK1	9	2028	8536	23.75%
DeModID: 1		244	1090	22.38%
DeModID: 2		351	1103	31.82%
DeModID: 3		327	1144	28.58%
DeModID: 4		217	1040	20.86%
DeModID: 5		248	1093	22.68%
DeModID: 6		247	1121	22.03%
DeModID: 7		96	924	10.38%
DeModID: 8		298	1021	29.18%
QPSK2	23	334	1950	17.12%
DeModID: 1		190	994	19.11%
DeModID: 2		144	956	15.06%

- Press **Enter** to return to the Non-Responder Report Sub-Menu screen.

Non-Responder Reports, Continued

- To generate a Non-Responder Report for DHCTs based upon DHCT type and revision, type **2** (for Non-Responders by DHCT Type/Rev) and then press **Enter**.

Result: The Non-Responder Report Sub-Menu screen updates to display the following information:

- Each DHCT type and revision supported by the system
- The number and percentage of DHCTs of each type and revision that are non-responders
- The total number of DHCTs of each type and revision

Note: The report automatically highlights the data when 100 percent of a specific DHCT type and revision are non-responders.

```

--- SETUP InService 2 Way Poll Analysis ---
DHCTs InServ2Way: 124499
2Way w/IP Addr: 114482 91.95%
2Way w/oIP Addr: 10017 8.04%

DHCT RDC Analysis
RDC Btwn 25-55 dBmV: 81107 70.84%
Not Resp. to Poll: 29197 25.50%
RDC Below 25 dBmV: 891 .77%
RDC Above 55 dBmV: 3287 2.87%

Total # of InService 2 Way Non-Responders: 39214 DHCTs 31.49%
Non-Responders = (w/oIP + wIP Not Resp. to Poll) / (All InServ 2Way)

Current Issues:
1) 100% NonResp. by TYPE: 3 Type 8 DHCTs 0% of Pop.
2) 100% NonResp. by TYPE/REV: 5 Rev 12 DHCTs .01% of Pop.

NOTE - DHCT TYPES/REVs with a percent NonResponder equal to "100%"
will be highlighted in "RED".

```

DHCT TYPE	DHCT Revision	# of DHCTs Not Respond.	TTL DHCTs	% DHCTs Not Respond.
2000		6518	15833	41.16%
	10	1190	2895	41.10%
	13	299	1017	29.40%
	14	1	1	100.00%
	15	5	14	35.71%
	19	1475	2689	54.85%
	21	3509	9102	38.55%
	24	0	4	0%
	28	26	82	31.70%
	35	0	1	0%
37	13	28	46.42%	
2005		5	17	29.41%
	10	5	17	29.41%
2010		7806	36637	21.30%
	30	5067	23928	21.17%
	31	2739	12709	21.55%
2100		8506	34040	24.98%
	20	28	208	13.46%
	21	628	2425	25.89%
	22	29	94	30.85%
	23	7770	31116	24.97%
	28	51	197	25.88%

- Press **Enter** to return to the Non-Responder Report Sub-Menu screen.
- Press **Enter** again to return to the Report Options Menu screen.

DHCT Transmit Level Saturation Report

Introduction

The DHCT sign-on process includes establishing the transmission level to use when communicating with QPSK modulators and demodulators. DHCTs transmit at various levels and the QPSK demodulator then measures the quality of the signal. Based upon these measurements, the QPSK modulator then sends a transaction to the DHCT that provides the DHCT with a target transmit level. The DHCT then attempts to communicate with the modulator by using the target transmit level. The DHCT may make several attempts to communicate by increasing the transmit level until the DHCT is able to maintain a communication lock with the modulator.

Over time, however, with the addition of other DHCTs to the network, signal-to-noise ratio issues are likely to affect the performance of the network. Likewise, attenuation issues are likely to surface as network configuration changes. DHCT transmission levels that were first established when the DHCT was added to the network may no longer be valid and the system may require adjustment. System operators can use the DHCT Transmit Level Saturation Report to view data pertaining to the transmission levels of DHCTs on the network and can use the data to adjust their system, if necessary.

Notes:

- DHCT transmit levels are expressed in terms of dBmV. The translation of dBmV is *decibels with respect to 1 millivolt over a characteristic impedance of 75 ohms*.
- Attenuation refers to the decrease in intensity between transmitted and received signals. The loss in intensity is usually a natural consequence of signal transmission over long distances.
- A signal-to-noise ratio is a measurement of signal strength relative to background noise. Competing transmissions from other DHCTs on the network tend to increase the background noise, thereby decreasing the signal-to-noise ratio.
- All demodulators assigned to a specific modulator should be configured to expect approximately the same transmit level from DHCTs. Compensate for variations in DHCT transmit levels by padding and combining. Do not configure transmit levels manually from the front panel of the demodulator.

DHCT Transmit Level Saturation Report, Continued

Generating a DHCT Transmit Level Saturation Report

Follow these instructions to generate a DHCT Transmit Level Saturation Report.

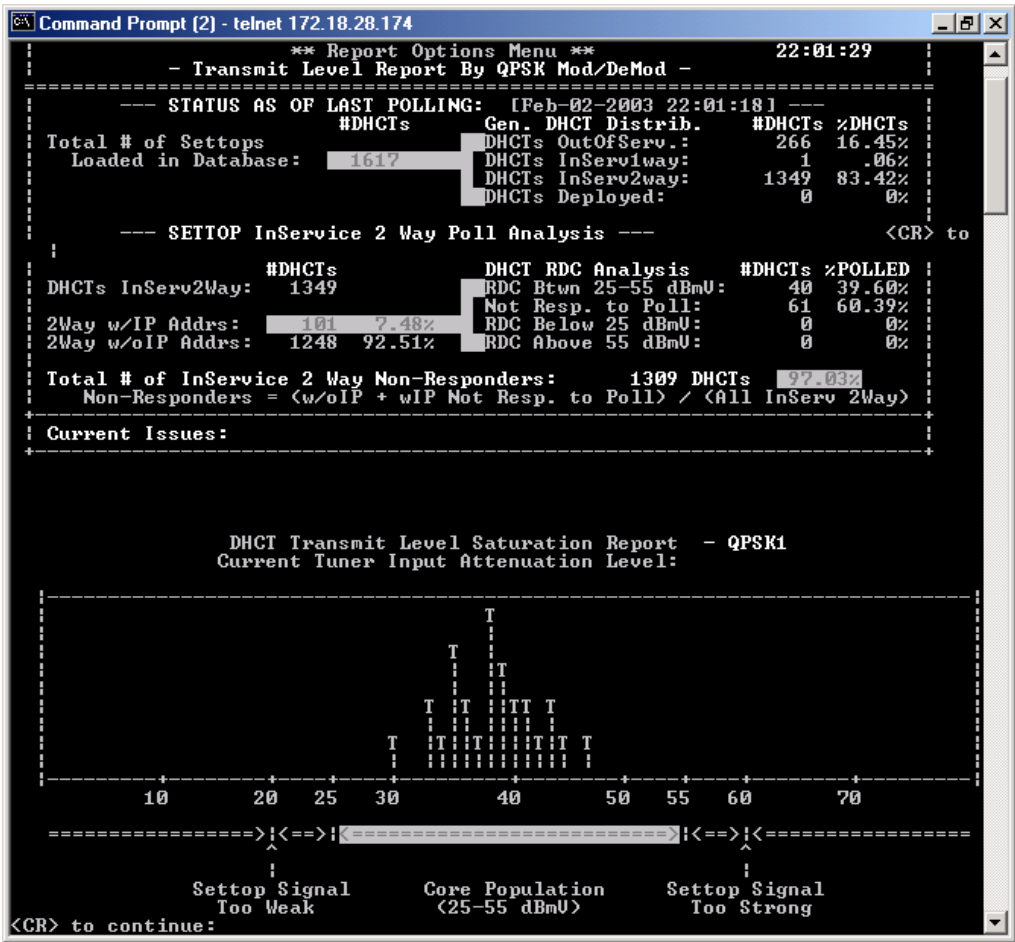
- 1. Maximize the xterm window.

Note: The data in the DHCT Transmit Level Saturation Report is designed to display best if the window is maximized.

- 2. From the main menu of the DHCT Status Reporting Utility, type **tl** and then press **Enter**.

Note: The “l” in “tl” is a lowercase “L.”

Result: The system generates the DHCT Transmit Level Saturation Report.



- 3. Go to **Understanding the DHCT Transmit Level Saturation Report**, next in this section, for help in interpreting the data displayed in the report.

DHCT Transmit Level Saturation Report, Continued

Notice the **Current Tuner Input Attenuation Level** of 2 in the header of this graph. This value is set at the **Tuner Input Attenuator** field, which is located on the **Advanced Parameters** tab in the Set Up QPSK Modulator window on the DNCS. A Current Tuner Input Attenuation Level of 2 corresponds to an attenuation level of -5 to 11 dBmV that currently exists on the network. DHCTs base the strength of their transmitting signal on this Current Tuner Input Attenuation Level. The higher the Current Tuner Input Attenuation Level, the stronger the transmitting signal; the lower the Current Tuner Input Attenuation Level, the weaker the transmitting signal.

Transmit Level Analysis

The second part of the DHCT Transmit Level Saturation Report provides a chart showing the detailed breakdown of the graphical data displayed in **Graphical Distribution of DHCT Transmit Levels**, earlier in this section. This part of the report contains the following data:

- Total number of DHCTs assigned to the modulator and each demodulator that transmit at each transmit level
- Note:** In the following example, the QPSKMOD1 modulator is configured with eight demodulators.
- The average and the median transmit level for the modulator and each demodulator

				Transmit Level Breakdown							
QPSK Mod	Name	ID	Avg.	Md	20db	25db	30db	50db	55db	60db	
----->											
QPSKMOD1		8	41.99	42	9	43	219	5865	490	225	0
DMod: 1			40.98	41	2	5	26	755	46	18	0
DMod: 2			43.47	44	0	0	8	633	84	42	0
DMod: 3			39.42	40	7	23	64	713	36	16	0
DMod: 4			40.56	41	0	9	46	718	35	20	0
DMod: 5			43.51	44	0	2	14	828	94	34	0
DMod: 6			41.96	42	0	3	38	1029	84	45	0
DMod: 7			43.12	43	0	1	15	853	74	37	0
DMod: 8			43.33	44	0	0	8	336	37	13	0
<-----											

The data confirms that the system is healthy. The average and median transmit levels (marked **Avg.** and **Md** respectively in the heading of the chart) for the modulator and each demodulator are reasonably close to the midpoint (40 dBmV) of Cisco's recommended range of 25 to 55 dBmV.

Examples of Systems Needing Recalibration

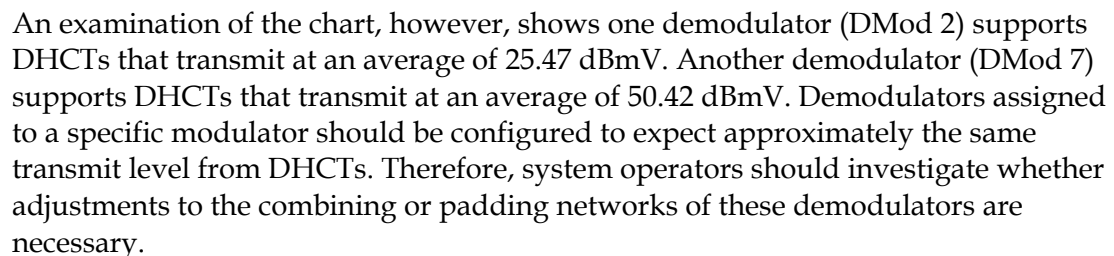
To further illustrate the value of the information contained in the DHCT Transmit Level Saturation Report, consider these two cases. The first case, **Case 1**, depicts a system where DHCTs transmit at levels higher than Cisco's recommended range of 25 to 55 dBmV. The graph clearly shows the excessively high transmit levels.

The second case, **Case 2**, illustrates a more subtle example of a system needing recalibration. The graph looks fine but the chart depicts one demodulator transmitting too low and another transmitting too high.

1-43

Case 2

DHCT Transmit Level Saturation Report - QPSKMOD1
Current Tuner Input Attenuation Level: 2 (-5 to 11 dBmV)



QPSK Mod Name		ID	Avg.	Md	Transmit Level Breakdown					
					20db	25db	30db	50db	55db	60db
QPSKMOD1	8	41.99	42	9	43	219	5865	490	225	0
DMod: 1		40.98	41	2	5	26	755	46	18	0
DMod: 2		25.47	40	0	0	8	633	84	42	0
DMod: 3		39.42	40	7	23	64	713	36	16	0
DMod: 4		40.56	41	0	9	46	718	35	20	0
DMod: 5		43.51	44	0	2	14	828	94	34	0
DMod: 6		41.96	42	0	3	38	1029	84	45	0
DMod: 7		50.42	47	0	1	15	853	74	37	0
DMod: 8		43.33	44	0	0	8	336	37	13	0

DHCT Delay Value Saturation Report

Introduction

The DHCT Delay Value Saturation Report is primarily used to determine whether the Range Extension feature needs to be enabled on a system. See *QPSK (Release C69) Software Upgrade and Installation Instructions*, part number 738174, for details on the Range Extension feature.

Generating the DHCT Delay Value Saturation Report

Follow these instructions to generate a DHCT Delay Value Saturation Report.

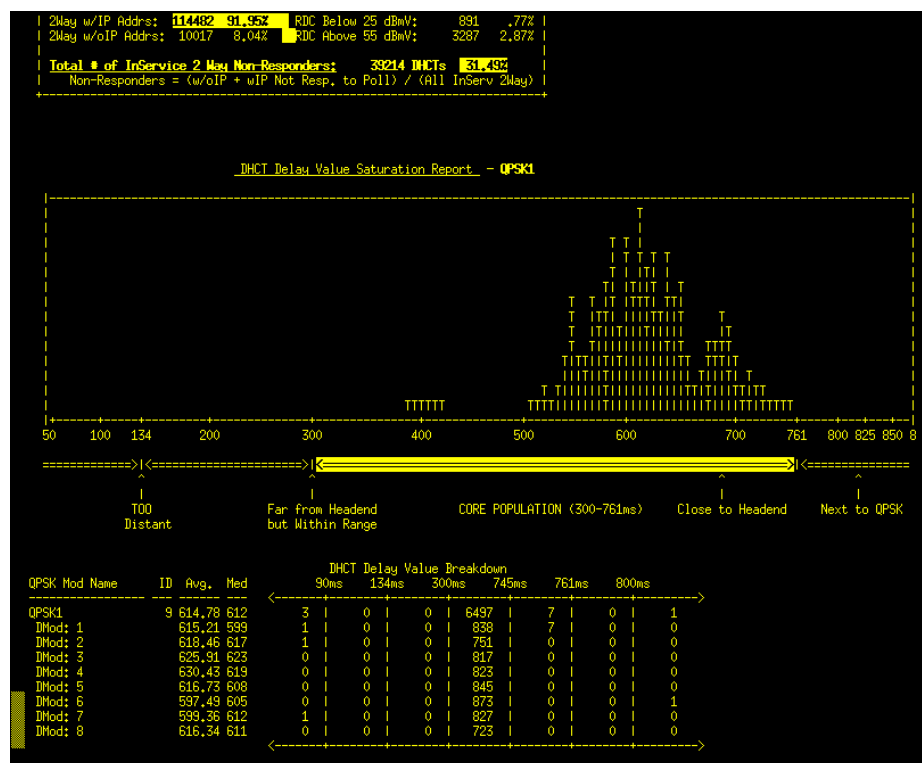
1. Maximize the xterm window.

Note: The data in the DHCT Delay Value Saturation Report is designed to display best if the window is maximized.

2. From the main menu of the DHCT Status utility, type **dl** and then press **Enter**.

Note: The “l” in “dl” is a lowercase “L.”

Result: The system generates the DHCT Delay Value Saturation Report.



3. Go to **Understanding the DHCT Delay Value Saturation Report**, next in this section, for help in interpreting the data displayed in the report.

DHCT Delay Value Saturation Report, Continued

Understanding the DHCT Delay Value Saturation Report

There are two parts to the DHCT Delay Value Saturation Report:

- A graphical representation of the distribution of the various delay values of DHCTs assigned to each QPSK modulator on the system

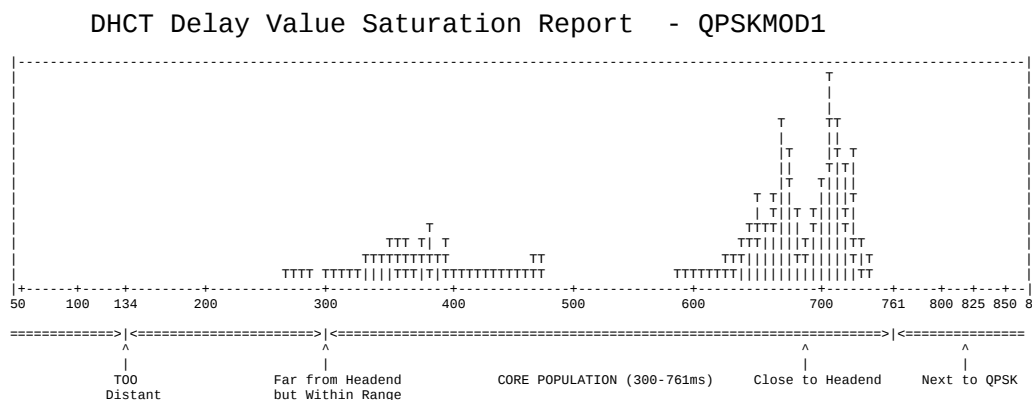
Note: Read **Graphical Distribution of DHCT Delay Values**, next in this section, for help in interpreting the graphical representation.

- A numerical analysis of the graphical representation of the various delay values of DHCTs assigned to each QPSK modulator on the system

Note: Read **Delay Value Analysis**, later in this section, for help in interpreting the graphical representation.

Graphical Distribution of DHCT Delay Values

The first part of the DHCT Delay Value Saturation Report contains a graph that shows the distribution of the various delay values of DHCTs assigned to a specific QPSK modulator. In the following example, the modulator is **QPSKMOD1**. The horizontal axis of the graph plots units of time in microseconds (ms); the vertical axis (not marked on the report) plots the relative number of DHCTs with each delay value.



The data in this graph shows that the QPSK called QPSKMOD1 supports two distinct clusters of DHCTs. The first cluster of DHCTs is located close to the headend, as confirmed by the **Close to Headend** label along the x-axis. These DHCTs have a delay value centered around 700 ms.

The second cluster of DHCTs is located farther from the headend, as confirmed by the **Far from Headend but Within Range** label along the x-axis. These DHCTs have a delay value centered around 400 ms.

Having multiple clusters of DHCTs, as illustrated in this example, is normally not a problem. Non-responding DHCTs begin to appear only when delay values fall below the 134 microsecond range, as designated by the **Too Distant** label along the x-axis.

DHCT Delay Value Saturation Report, Continued

Delay Value Analysis

The second part of the DHCT Delay Value Saturation Report provides a detailed breakdown of the graphical data displayed in **Graphical Distribution of DHCT Delay Values**, earlier in this section. This part of the report contains the following data:

- A listing of the QPSK modulator and associated demodulators
Note: In the following example, Modulator QPSKMOD1 is configured with eight demodulators.
- The average and the median delay values for the modulator and each demodulator
- A detailed listing showing the number of DHCTs with each delay value

QPSK Mod Name	ID	Avg.	Med	DHCT Delay Value Breakdown					
				90ms	134ms	300ms	745ms	761ms	800ms
QPSKMOD1	3	618.38	671	0	0	24	7150	0	0
DMod: 1		686.80	686	0	0	0	1086	0	0
DMod: 2		694.62	705	0	0	0	813	0	0
DMod: 3		695.50	708	0	0	0	792	0	0
DMod: 4		691.04	709	0	0	0	783	0	0
DMod: 5		681.21	669	0	0	0	1079	0	0
DMod: 6		664.94	660	0	0	0	1067	0	0
DMod: 7		367.46	369	0	0	24	753	0	0
DMod: 8		390.88	381	0	0	0	777	0	0

The data confirms the existence of two distinct clusters of DHCTs, with each cluster located a distinct radius away from the modulator.

- 7,150 DHCTs have a delay value of approximately 745 ms
Note: These DHCTs correspond to the cluster situated over the **Close to Headend** label along the x-axis of the graph shown under the **Graphical Distribution of DHCT Delay Values** heading, earlier in this section.
- 24 DHCTs have a delay value of approximately 300 ms
Note: These DHCTs correspond to the cluster located over the **Far from Headend but Within Range** label along the x-axis of the graph shown under the **Graphical Distribution of DHCT Delay Values** heading, earlier in this section.

DHCT Delay Value Saturation Report, Continued

QPSK Range Extension Feature

The Model D9482 QPSK Modulator is designed to be capable of successfully connecting to and operating DHCTs within a distance of approximately 128 km round trip (64 km each way when forward and reverse paths are equal). This distance limitation is mainly due to the width of the ranging slots defined in the Digital Audio-Visual Council (DAVIC) standard for operation over the hybrid fiber-coax (HFC) plant.

Some cable service providers prefer to physically locate the QPSK hardware in the headend and extend coverage to DHCTs that are farther from the QPSK modulator than the currently allowable maximum distance. This optional feature, known as the QPSK Range Extension Feature for the Model D9482 QPSK Modulator, allows Explorer DHCTs to sign on to the system and operate properly at extended distances from the QPSK modulator.

Note: Refer to *QPSK (Release A62) Software Upgrade and Installation Instructions*, part number 740224, for additional details about distances between the QPSK modulator and DHCTs, as well as additional details about the QPSK Range Extension Feature.

DHCT OS and ResApp Evaluation by Set Top Type and Rev Report

Introduction

A typical DBDS supports DHCTs of many types and revisions. The DHCT Status utility includes an option that generates a report that lists the following data:

- The number and percentage of each DHCT type and revision supported by the system
- The version of operating system and resident application software running on each DHCT type and revision

Generating the DHCT OS and ResApp Evaluation by Set Top Type and Rev Report

Follow these instructions to generate the DHCT OS and ResApp Evaluation by Set Top Type and Rev Report.

1. Maximize the xterm window.

Note: The data in the DHCT OS and ResApp Evaluation by Set Top Type and Rev Report is designed to display best if the window is maximized.

2. From the main menu of the DHCT Status utility, type **os** and then press **Enter**.

Result: The system generates the DHCT OS and ResApp Evaluation by Set Top Type and Rev Report.

```

-- DHCT Status Reporting Utility --          Thu Jan 29
** Report Options Menu **                  23:17:34
-- DHCT OS and ResApp Evaluation by Set Top TYPE and Rev --

--- STATUS AS OF LAST POLLING: [Jan-29-2004 23:03:48] ---
DHCTs      Gen. DHCT Distrib.  DHCTs  ZDHCTs
Total # of Setups      DHCTs OutOfServ.: 25119  16.78%
Loaded in Database: 149665  DHCTs InServ2Way: 47  .03%
                        DHCTs InServ3Way: 124499  83.18%
                        DHCTs Deployed: 0  0%

--- SETUP InService 2 Way Poll Analysis ---
DHCTs      DHCT RDC Analysis  DHCTs  ZPOLL'D
DHCTs InServ2Way: 124499  RDC Btwn 25-55 dBmW: 81107  70.84%
2Way w/TP Addr: 114482 91.95%  Not Resp. to Poll: 29197  25.50%
2Way w/oIP Addr: 10017 8.04%  RDC Below 25 dBmW: 691  .77%
                        RDC Above 55 dBmW: 3287  2.87%

Total # of InService 2 Way Non-Responders: 39214 DHCTs 31.43%
Non-Responders = (w/oIP + w/TP Not Resp. to Poll) / (All InServ 2Way)

DHCT Type  DHCT Rev  NumOf DHCTs (%)DHCT  DHCT Operating System  DHCT Resident Application
2000 10 1190 41.10% --- NOT RESPONDING TO POLL ---
2000 10 4 .13% --- BAD SNMP ---
2000 10 3 .10% 3.1b18s2 (1)Tue May 22 2001, 8:13 Name:SARA Version:1.15.22 Company:Scientifi
2000 10 1 .03% 3.2s2 (9)Thu Apr 25 2002, 3:41:11 Name:SARA Version:1.40.9 Company:Scientific
2000 10 1656 57.20% 3.3.2s2 (508)Tue May 27 2003, 5: Name:SARA Version:1.41.9a6 Company:Scientif
2000 10 22 .75% 3.3.2s2 (508)Tue May 27 2003, 5: Name:saixod Version:34018 Company:PRHSARA T
2000 10 1 .03% 3.3.2s2 (508)Tue May 27 2003, 5: *Name:SARA Version:1.41.9a6 Company:Scientifi
2000 10 16 .95% 3.3s2 (104)Thu Sep 5 2002, 5:47 Name:SARA Version:1.41.8 Company:Scientific
2000 10 1 .03% 3.3s2 (104)Thu Sep 5 2002, 5:47 Name:saixod Version:34018 Company:PRHSARA T
2000 10 1 .03% 6.4.2.1spThu Oct 30 2003, 4:21:13 Name:SARA Version:1.82.4.0 Company:Scientif

2000 13 299 29.40% --- NOT RESPONDING TO POLL ---
2000 13 1 .09% 2.2.11Mon Jun 12 2000, 10:38:55 A Name:SARA Version:1.14.17 Company:Scientifi
2000 13 1 .09% 3.2s2 (9)Thu Apr 25 2002, 3:41:11 Name:SARA Version:1.40.9 Company:Scientific
2000 13 1 .09% 3.3.2s2 (508)Tue May 27 2003, 5: Name:Guardian Version:1.0 Company:PowerTV T
2000 13 700 68.82% 3.3.2s2 (508)Tue May 27 2003, 5: Name:SARA Version:1.41.9a6 Company:Scientif
2000 13 10 .98% 3.3.2s2 (508)Tue May 27 2003, 5: Name:saixod Version:34018 Company:PRHSARA T
2000 13 5 .49% 3.3s2 (104)Thu Sep 5 2002, 5:47 Name:SARA Version:1.41.8 Company:Scientific

2000 14 1 100.00% --- NOT RESPONDING TO POLL ---
2000 15 5 35.71% --- NOT RESPONDING TO POLL ---
2000 15 9 64.28% 3.3.2s2 (508)Tue May 27 2003, 5: Name:SARA Version:1.41.9a6 Company:Scientif
2000 19 1475 54.85% --- NOT RESPONDING TO POLL ---
```

3. Press **Enter** as often as required to scroll through the entire report.

Chapter 2

signonCount Utility

Overview

Introduction

When DHCTs download new software for the operating system and resident application, they lose the contents of their volatile memory. After the download, DHCTs sign back on to the network and their network configuration data is reloaded. The signonCount utility is useful in monitoring the rate at which DHCTs sign on to the network.

Because some DHCTs make repeated attempts to sign on to the network before they are successful, too many sign-on attempts by DHCTs contribute to network congestion. The signonCount utility can help system operators quickly identify those DHCTs that are having trouble signing on, and the utility can then be used to facilitate the DHCT sign-on process.

When to Use the signonCount Utility

The signonCount utility enables system operators and Cisco engineers to monitor the rate at which DHCTs sign on to the network. This monitoring is required in the following circumstances:

- When DHCTs download new software—DHCTs lose the contents of their volatile memory when the DHCT downloads new software for the operating system and resident application. DHCTs reconnect to the network after the download, and the memory that contained information about the DHCT network connection (IP address, transmit timing and level) is re-loaded. For systems that are forced to rapidly load DHCT software, the signonCount utility is useful in determining when to trigger the next group of DHCTs to load code.
- When the QPSK modulator and demodulator software is upgraded—In this case, the signonCount utility is used in the following two situations:
 - The first situation is to determine if the system is healthy enough to be upgraded. If it is not, the signonCount utility also provides a secondary mode of operation that can dramatically improve the health of the system prior to moving forward with the upgrade.
 - The second situation is to use the signonCount utility to provide more meaningful guidance regarding when you can move forward with upgrading the next QPSK modulator. Previous upgrade guides instructed you either to wait a little while between upgrading units or to monitor the log file, but they offered no real tools to help in this effort.

Overview, Continued

Two Modes of Operation

You can run the signonCount utility in two modes: **Fix Mode Off** and **Fix Mode On**.

Both modes help system operators monitor the rate at which DHCTs are trying to sign on to the network. When run in *Fix Mode Off* mode, the utility takes no corrective action regarding DHCTs that are having difficulty signing on. When run in *Fix Mode On* mode, however, the utility reboots those DHCTs that have tried to sign on more than three times during a 10-minute period.

Note: By forcing DHCTs that are having trouble signing on to reboot, the memory in the DHCT is refreshed and the sign-on process is made easier.

Important: By default, the utility runs in Fix Mode Off mode. Because the utility interacts with the database when run in Fix Mode On mode, Cisco recommends that you contact Cisco Services before switching modes.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Review the signonCount Utility Help Window	2-3
Set DNCS Tracing Levels	2-5
signonCount Utility Interface	2-8
The signonCount Utility Data Fields	2-9
What to Look For in the signonCount Data	2-13

Review the signonCount Utility Help Window

Introduction

Before you use the signonCount utility on your system, Cisco recommends that you review the information on the utility's help window. The information on the help window may supplement the information and procedures in this chapter.

Reviewing the signonCount Utility Help Window

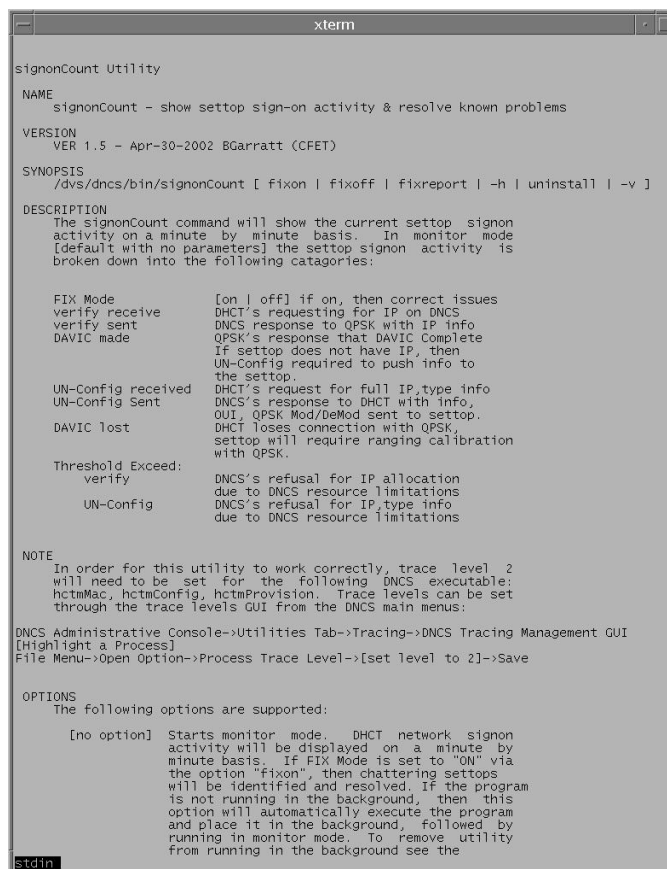
Follow these instructions to review the signonCount utility help window.

1. Open an xterm window on the DNCS and then maximize the window.

Note: The help window for the signonCount utility is large.

2. Type **signonCount -h** and then press **Enter**.

Result: The help window for the signonCount utility appears.



```
xterm
signonCount Utility
NAME
  signonCount - show settop sign-on activity & resolve known problems
VERSION
  VER 1.5 - Apr-30-2002 BGarratt (CFET)
SYNOPSIS
  /dvs/dnscs/bin/signonCount [ fixon | fixoff | fixreport | -h | uninstall | -v ]
DESCRIPTION
  The signonCount command will show the current settop signon
  activity on a minute by minute basis. In monitor mode
  [default with no parameters] the settop signon activity is
  broken down into the following categories:

  FIX Mode          [on | off] if on, then correct issues
  verify receive    DHCT's requesting for IP on DNCS
  verify sent       DNCS response to QPSK with IP info
  DAVIC made         QPSK's response that DAVIC Complete
                    IF settop does not have IP, then
                    UN-Config required to push info to
                    the settop.
  UN-Config received DHCT's request for full IP,type info
  UN-Config Sent     DNCS's response to DHCT with info,
                    OUI, QPSK Mod/DeMod sent to settop.
  DAVIC lost         DHCT loses connection with QPSK,
                    settop will require ranging calibration
                    with QPSK.
  Threshold Exceed:
  verify            DNCS's refusal for IP allocation
                    due to DNCS resource limitations
  UN-Config         DNCS's refusal for IP,type info
                    due to DNCS resource limitations

NOTE
  In order for this utility to work correctly, trace level 2
  will need to be set for the following DNCS executable:
  hctmMac, hctmConfig, hctmProvision. Trace levels can be set
  through the trace levels GUI from the DNCS main menus:
  DNCS Administrative Console->Utilities Tab->Tracing->DNCS Tracing Management GUI
  [Highlight a Process]
  File Menu->Open Option->Process Trace Level->[set level to 2]->Save

OPTIONS
  The following options are supported:

  [no option] Starts monitor mode. DHCT network signon
  activity will be displayed on a minute by
  minute basis. If FIX Mode is set to "ON" via
  the option "fixon", then chattering settops
  will be identified and resolved. If the program
  is not running in the background, then this
  option will automatically execute the program
  and place it in the background, followed by
  running in monitor mode. To remove utility
  from running in the background see the
  stdin
```

3. Press the **Spacebar** as often as necessary to page through the help window.

Review the signonCount Utility Help Window, Continued

DNCS Tracing Levels

The signonCount utility's help window indicates that for the utility to operate properly, the tracing levels of three DNCS processes need to be set to level 2. Refer to the next section, **Set DNCS Tracing Levels**, for instructions on setting the three DNCS processes to level 2.

Set DNCS Tracing Levels

Introduction

Before you can begin using the signonCount utility, you need to set the tracing levels of three DNCS processes to level 2. By setting the tracing levels for these processes to level 2, you ensure that the DNCS captures the maximum level of detail for these processes.

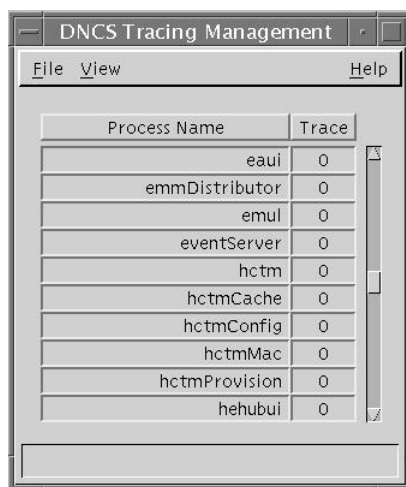
Note: The processes are hctmConfig, hctmMac, and hctmProvision.

Setting the DNCS Tracing Levels

Follow these instructions to set the tracing levels of the hctmConfig, hctmMac, and hctmProvision processes to level 2.

1. From the DNCS Administrative Console, select the **Utilities** tab.
2. Click **Tracing**.

Result: The DNCS Tracing Management window opens.



3. Scroll down until the **hctmConfig**, **hctmMac**, and **hctmProvision** processes come into view.
4. Are the tracing levels for all three of these processes already set to 2?
 - If **yes**, you have no need to complete the rest of this procedure; continue with **The signonCount Utility Interface**, next in this chapter.
 - If **no**, go to step 5 to begin setting the tracing levels.

Note: The **Trace** column lists the current tracing level.

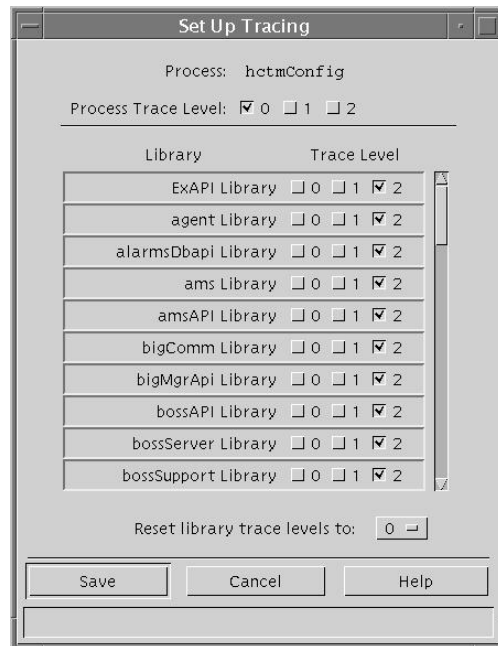
Example: In the example in step 2, the tracing levels are all set to 0.

Set DNCS Tracing Levels, Continued

5. Double-click one of the processes.

Example: Double-click **hctmConfig**.

Result: The Set Up Tracing window opens.



6. Follow these instructions to configure the Set Up Tracing window.
 - a) In the **Process Trace Level** field, select **2**.
 - b) Click **Save**.

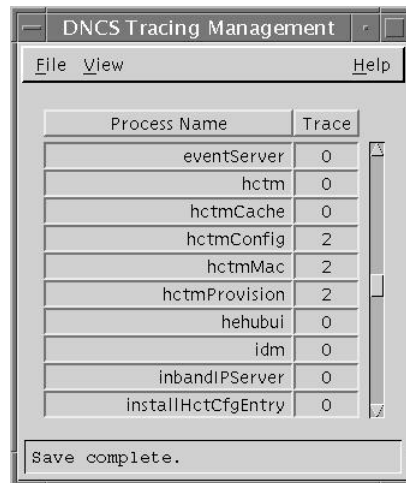
Results:

- The DNCS Tracing Management window updates with the new tracing level.
- The Set Up Tracing window closes.

Set DNCS Tracing Levels, Continued

7. Repeat steps 5 and 6 for the **hctmMac** and **hctmProvision** processes (if necessary) to update the tracing level to **2**.

Example: When you are finished, the DNCS Tracing Management window should look similar to the following example.



Note: The example shows the tracing levels for the **hctmConfig**, **hctmMac**, and **hctmProvision** utilities set to level 2.

8. Click **File** and select **Close** to close the DNCS Tracing Management window.
9. Go to **The signonCount Utility Interface**, next in this chapter.

signonCount Utility Interface

Introduction

The information in this section provides instructions on how to open the interface of the signonCount utility, as well as providing an explanation of the fields displayed on the interface.

Displaying the signonCount Interface

Follow these steps to display the interface of the signonCount utility.

1. If necessary, open an xterm window on the DNCS.
2. Click and drag the edges of the xterm window to maximize the screen width.

Note: The signonCount utility fills the width of the screen with data.

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

Result: The signonCount utility interface opens.

<<----- SETTOP SIGNON STATUS ----->>																
TIME	FIX Mode	Verified Rcvd Sent	DAVIC Made	UN-Config Rcvd Sent	DAVIC Lost	Threshold Exceeds Ver	UCfg	Inw HCT Type	DHCT Wrng Mod	Total In-Srvc 2-Way	Total NonResponding w/o IP	Total DHCTs w/IP	Total DAVIC 2-Way	NUM of DHCT CHANGE	TOTAL PERCENT SIGN-ON	QPSK Reboots
Feb 21 09:40	OFF	57 55	18	0 0	30	0 0		0 0		100694	6114	12331	82249	-8	81.68%	
Feb 21 09:41	OFF	73 73	26	0 0	23	0 0		0 0		100694	6113	12328	82253	4	81.68%	
Feb 21 09:42	OFF	62 59	8	4 4	23	0 0		0 0		100695	6114	12338	82243	-10	81.67%	
Feb 21 09:43	OFF	66 61	15	3 3	19	0 0		0 0		100695	6113	12343	82239	-4	81.67%	
Feb 21 09:44	OFF	64 62	20	6 6	28	0 0		0 0		100697	6115	12346	82236	-3	81.66%	
Feb 21 09:45	OFF	74 64	16	4 4	26	0 0		0 0		100697	6115	12349	82233	-3	81.66%	
Feb 21 09:46	OFF	94 95	37	8 8	33	0 0		0 0		100697	6115	12348	82234	1	81.66%	
Feb 21 09:47	OFF	70 66	17	3 3	20	0 0		0 0		100702	6118	12351	82233	-1	81.65%	
Feb 21 09:48	OFF	67 65	19	5 5	32	0 0		0 0		100703	6119	12358	82226	-7	81.65%	
Feb 21 09:49	OFF	78 72	22	2 2	17	0 0		0 0		100704	6120	12356	82228	2	81.65%	

The signonCount Utility Data Fields

Data Fields

The following tables list the fields included on the interface of the signonCount utility and provide an explanation of the meaning associated with each field.

Columns		Descriptions																					
<table><tr><th>TIME</th><th>FIX Mode</th></tr><tr><td>Feb 21 09:40</td><td>OFF</td></tr><tr><td>Feb 21 09:41</td><td>OFF</td></tr><tr><td>Feb 21 09:42</td><td>OFF</td></tr><tr><td>Feb 21 09:43</td><td>OFF</td></tr><tr><td>Feb 21 09:44</td><td>OFF</td></tr><tr><td>Feb 21 09:45</td><td>OFF</td></tr><tr><td>Feb 21 09:46</td><td>OFF</td></tr><tr><td>Feb 21 09:47</td><td>OFF</td></tr><tr><td>Feb 21 09:48</td><td>OFF</td></tr><tr><td>Feb 21 09:49</td><td>OFF</td></tr></table>	TIME	FIX Mode	Feb 21 09:40	OFF	Feb 21 09:41	OFF	Feb 21 09:42	OFF	Feb 21 09:43	OFF	Feb 21 09:44	OFF	Feb 21 09:45	OFF	Feb 21 09:46	OFF	Feb 21 09:47	OFF	Feb 21 09:48	OFF	Feb 21 09:49	OFF	• TIME – The system polls the communication link between the QPSK modulators and the DNCS every minute and records the date and time. • FIX Mode – This field reveals whether the signonCount utility is configured to automatically correct DHCT sign-on problems (<i>Fix Mode On</i>) or whether the utility is running in information-only mode (<i>Fix Mode Off</i>). Note: By default, the utility runs in Fix Mode Off mode. Important: Do not change modes unless you have been instructed to do so by Cisco Services engineers.
TIME	FIX Mode																						
Feb 21 09:40	OFF																						
Feb 21 09:41	OFF																						
Feb 21 09:42	OFF																						
Feb 21 09:43	OFF																						
Feb 21 09:44	OFF																						
Feb 21 09:45	OFF																						
Feb 21 09:46	OFF																						
Feb 21 09:47	OFF																						
Feb 21 09:48	OFF																						
Feb 21 09:49	OFF																						
<table><tr><th>Verified Rcvd Sent</th><th>DAVIC Made</th></tr><tr><td>57 55</td><td>18</td></tr><tr><td>73 73</td><td>26</td></tr><tr><td>62 59</td><td>8</td></tr><tr><td>66 61</td><td>15</td></tr><tr><td>64 62</td><td>20</td></tr><tr><td>74 64</td><td>16</td></tr><tr><td>94 95</td><td>37</td></tr><tr><td>70 66</td><td>17</td></tr><tr><td>67 65</td><td>19</td></tr><tr><td>78 72</td><td>22</td></tr></table>	Verified Rcvd Sent	DAVIC Made	57 55	18	73 73	26	62 59	8	66 61	15	64 62	20	74 64	16	94 95	37	70 66	17	67 65	19	78 72	22	• Verified Rcvd – The QPSK modulator reports the number of DHCTs that have made sign-on requests. • Verified Sent – The DNCS has allocated this number of DHCT IP addresses based upon the sign-on requests. • DAVIC Made – The QPSK modulator reports the number of DHCTs that have connected to the QPSK modulator and are waiting for UN-Config information.
Verified Rcvd Sent	DAVIC Made																						
57 55	18																						
73 73	26																						
62 59	8																						
66 61	15																						
64 62	20																						
74 64	16																						
94 95	37																						
70 66	17																						
67 65	19																						
78 72	22																						
<table><tr><th>UN-Config Rcvd Sent</th></tr><tr><td>0 0</td></tr><tr><td>0 0</td></tr><tr><td>4 4</td></tr><tr><td>3 3</td></tr><tr><td>6 6</td></tr><tr><td>4 4</td></tr><tr><td>8 8</td></tr><tr><td>3 3</td></tr><tr><td>5 5</td></tr><tr><td>2 2</td></tr></table>	UN-Config Rcvd Sent	0 0	0 0	4 4	3 3	6 6	4 4	8 8	3 3	5 5	2 2	• UN-Config Rcvd – This number of DHCTs are requesting a UN-Config message from the DNCS. Note: The UN-Config message contains information, like an IP address, that allows DHCTs to sign on to the network. • UN-Config Sent – The DNCS has sent this number of UN-Config messages to DHCTs, allowing the DHCTs to sign on to the network. Note: At this point, the DHCTs are physically in two-way mode and have completed the sign-on process.											
UN-Config Rcvd Sent																							
0 0																							
0 0																							
4 4																							
3 3																							
6 6																							
4 4																							
8 8																							
3 3																							
5 5																							
2 2																							

The signonCount Utility Data Fields, Continued

Columns	Descriptions																						
<table><tr><th>DAVIC Lost</th></tr><tr><td>30</td></tr><tr><td>23</td></tr><tr><td>23</td></tr><tr><td>19</td></tr><tr><td>28</td></tr><tr><td>26</td></tr><tr><td>33</td></tr><tr><td>20</td></tr><tr><td>32</td></tr><tr><td>17</td></tr></table>	DAVIC Lost	30	23	23	19	28	26	33	20	32	17	• DAVIC Lost– This field indicates the number of DHCTs that have lost the communication link with the QPSK modulator. Note: The QPSK modulator then sends a message to DHCTs that have lost the communication link. The message requests that the DHCTs recalibrate themselves with the modulator so the entire sign-on process can begin again.											
DAVIC Lost																							
30																							
23																							
23																							
19																							
28																							
26																							
33																							
20																							
32																							
17																							
<table><tr><th>Threshold Exceeds Ver</th><th>UCfg</th></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr></table>	Threshold Exceeds Ver	UCfg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	• Threshold Exceeds Ver– The DNCS reports the number of DHCTs that simultaneously attempt to verify their configuration in excess of what the system queues allow. • Threshold Exceeds UCfg– The DNCS reports the number of DHCTs that simultaneously attempt to sign on to the system in excess of what the system queues allow. Note: The numbers in the Threshold Exceeds Ver and Threshold Exceeds UCfg columns should theoretically be zero.
Threshold Exceeds Ver	UCfg																						
0	0																						
0	0																						
0	0																						
0	0																						
0	0																						
0	0																						
0	0																						
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The signonCount Utility Data Fields, Continued

<table><tr><th>Inv HCT Type</th><th>DHCT Wrng Mod</th></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td></tr></table>	Inv HCT Type	DHCT Wrng Mod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	• Inv HCT Type – This field represents the number of DHCTs in the database with the wrong type, revision, or OUI. • DHCT Wrng Mod – This field represents the number of DHCTs that have responded through a QPSK modulator that differs from the modulator through which the DHCT responded in the past. Note: Numbers in this column typically represent DHCTs that have been moved from one subscriber's home to another without having gone through the correct process.
Inv HCT Type	DHCT Wrng Mod																				
0	0																				
0	0																				
0	0																				
0	0																				
0	0																				
0	0																				
0	0																				
0	0																				
0	0																				
<table><tr><th>Total In-Srvc 2-Way</th></tr><tr><td>100694</td></tr><tr><td>100694</td></tr><tr><td>100695</td></tr><tr><td>100695</td></tr><tr><td>100697</td></tr><tr><td>100697</td></tr><tr><td>100697</td></tr><tr><td>100702</td></tr><tr><td>100703</td></tr><tr><td>100704</td></tr></table>	Total In-Srvc 2-Way	100694	100694	100695	100695	100697	100697	100697	100702	100703	100704	• Total In-Srvc 2-Way – The utility reports the number of DHCTs listed in the database with a status of In-Service 2-Way. Note: These DHCTs should be capable of two-way communication.									
Total In-Srvc 2-Way																					
100694																					
100694																					
100695																					
100695																					
100697																					
100697																					
100697																					
100702																					
100703																					
100704																					

The signonCount Utility Data Fields, Continued

Columns		Descriptions																								
<table><tr><th colspan="2">Total DHCTs NonResponding</th></tr><tr><th>w/o IP</th><th>wIP</th></tr><tr><td>6114</td><td>12331</td></tr><tr><td>6113</td><td>12328</td></tr><tr><td>6114</td><td>12338</td></tr><tr><td>6113</td><td>12343</td></tr><tr><td>6115</td><td>12346</td></tr><tr><td>6115</td><td>12349</td></tr><tr><td>6115</td><td>12348</td></tr><tr><td>6118</td><td>12351</td></tr><tr><td>6119</td><td>12358</td></tr><tr><td>6120</td><td>12356</td></tr></table>		Total DHCTs NonResponding		w/o IP	wIP	6114	12331	6113	12328	6114	12338	6113	12343	6115	12346	6115	12349	6115	12348	6118	12351	6119	12358	6120	12356	These fields list the number of DHCTs in the database that should be capable of two-way communication, but they are listed as non-responders. • w/o IP – This number of non-responding DHCTs do not have an IP address. • wIP – This number of non-responding DHCTs have an IP address.
Total DHCTs NonResponding																										
w/o IP	wIP																									
6114	12331																									
6113	12328																									
6114	12338																									
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6118	12351																									
6119	12358																									
6120	12356																									
<table><tr><th>Total DAVIC 2-Way</th><th>NUM of DHCT Change</th></tr><tr><td>82249</td><td>-8</td></tr><tr><td>82253</td><td>4</td></tr><tr><td>82243</td><td>-10</td></tr><tr><td>82239</td><td>-4</td></tr><tr><td>82236</td><td>-3</td></tr><tr><td>82233</td><td>-3</td></tr><tr><td>82234</td><td>1</td></tr><tr><td>82233</td><td>-1</td></tr><tr><td>82226</td><td>-7</td></tr><tr><td>82228</td><td>2</td></tr></table>		Total DAVIC 2-Way	NUM of DHCT Change	82249	-8	82253	4	82243	-10	82239	-4	82236	-3	82233	-3	82234	1	82233	-1	82226	-7	82228	2	• Total DAVIC 2-Way – This field represents the number of DHCTs that have physically signed on to the network with two-way communication ability. • NUM of DHCT Change – This field represents the number of DHCTs with two-way capability that have been added to or removed from the database during the last minute. Note: Substantial numbers in the column usually indicate staging activity.		
Total DAVIC 2-Way	NUM of DHCT Change																									
82249	-8																									
82253	4																									
82243	-10																									
82239	-4																									
82236	-3																									
82233	-3																									
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82233	-1																									
82226	-7																									
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<table><tr><th>TOTAL PERCENT SIGN-ON</th><th>QPSK Reboots</th></tr><tr><td>81.68%</td><td></td></tr><tr><td>81.68%</td><td></td></tr><tr><td>81.67%</td><td></td></tr><tr><td>81.66%</td><td></td></tr><tr><td>81.66%</td><td></td></tr><tr><td>81.66%</td><td></td></tr><tr><td>81.65%</td><td></td></tr><tr><td>81.65%</td><td></td></tr><tr><td>81.68%</td><td></td></tr><tr><td>81.68%</td><td></td></tr></table>		TOTAL PERCENT SIGN-ON	QPSK Reboots	81.68%		81.68%		81.67%		81.66%		81.66%		81.66%		81.65%		81.65%		81.68%		81.68%		• TOTAL PERCENT SIGN-ON – The DNCS reports the percentage of DHCTs with two-way capability that are signed on to your network. • QPSK Reboots – In the event that a QPSK modulator reboots, the name and ID of the modulator is listed in this column.		
TOTAL PERCENT SIGN-ON	QPSK Reboots																									
81.68%																										
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What to Look For in the signonCount Data

Concentrate on Three Fields

Allow the system to gather signonCount data for several minutes and then examine the numbers in the following fields:

- **Verified Rcvd** (Verified Received)
- **Verified Sent**
- **DAVIC Made**

These fields track the number of sign-on requests made by DHCTs (Verified Rcvd and Verified Sent), as well as the number of sign-on requests that were successful (DAVIC Made). Ideally, the numbers in the three fields should be equal.

If you notice that the numbers in the DAVIC Made column regularly fall more than two or three below the numbers in the Verified Rcvd and Verified Sent columns, your DHCTs may be having trouble signing on and may be contributing to network congestion.

Contact Cisco Services

If you notice that the numbers in the DAVIC Made column regularly fall more than two or three below the numbers in the Verified Rcvd and Verified Sent columns, contact Cisco Services. Cisco Services engineers may log in to your system and examine the logfiles associated with the hctmConfig, hctmMac, and hctmProvision processes. Additionally, Cisco Services engineers may instruct you to run the signonCount utility in *Fix Mode On* mode.

Important: Do not run the utility in *Fix Mode On* mode unless you have been instructed to do so by Cisco Services engineers.

Chapter 3

Customer Information

Overview

If You Have Questions

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

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.



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