



Understanding Diagnostic Screens for SSC Host DHCTs

in a SARA Environment

Please Read

Important

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

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About This Guide

Introduction

Providing customer support for any product or technology can be stressful. Customers want answers NOW! Cisco understands the need for providing quick and accurate responses to network users, and we strive to provide tools to make this task easier. The diagnostic screens for the Separable Security CableCARD™ (SSC) Host Digital Home Communications Terminals (DHCTs) are a quick way that you can monitor and diagnose performance relative to the system, as well as the Multi-Stream CableCARD (M-Card™) module.

This guide describes the diagnostics screens included on the following SSC DHCTs:

- 8300C™ and 8300HDC™ (8300C/HDC) Digital Video Recorders (DVRs)
- 8240C™ and 8240HDC™ (8240C/HDC) Digital-Only DVRs
- 4250C™ and 4250HDC™ (4250C/HDC) DHCTs
- 4240C™ and 4240HDC™ (4240C/HDC) Digital-Only DHCTs

Purpose

After reading this guide, you will be able to use the diagnostic screens to help identify and evaluate status and M-Card information for SSC DHCTs in your cable system. The following list includes some of the tasks you can perform using the diagnostic screens:

- Determine the software versions of the Cisco Resident Application (SARA), M-Card module, and the PowerTV® Operating System (OS)
- Confirm the tuning mode
- Verify encrypted and unencrypted modes
- View the Bootloader diagnostic screen to help determine the status of the Bootloader upgrade
- Monitor DVR performance
- Determine when the latest interactive program guide (IPG) data was received by the DHCT
- Confirm two-way operation and the success of the power-on self test (POST)
- Determine the hardware model and version number of the M-Card module
- Determine the MAC address of the M-Card module
- Determine the IP address of the M-Card module

About This Guide

- Verify the host ID number
- Verify the ECM and EMM counts
- Determine if there has been a decryption failure, and if so, when it occurred
- Determine the customer service number you need to start service
- Verify the current copy protection authorization

Audience

This guide is written for cable system operators, service providers, and Cisco personnel who have experience with accessing the SARA-based diagnostic screens for Explorer DHCTs.

Related Publications

You may find the following publications useful as resources when you implement the procedures in this document. Check the copyright date on your resources to assure that you have the most current version. The publish dates for the following documents are valid as of this printing. However, some of these documents may have since been revised:

- *Best Practices for Using Multi-Stream CableCARD™ Modules* (part number 4005658, expected publish date: mid-year 2007)
- *Explorer® Digital Home Communications Terminal Staging Guide* (part number 734375, published August 2006)
- *Explorer® Digital Home Communications Terminal Troubleshooting Guide* (part number 717867, published June 2002)
- *Setting Up the PowerKEY® CableCARD™ and M-Card™ Modules on the DNCS for System Releases 2.5/3.5 and 4.0* (part number 4011765, published November 2006)
- *Setting Up PowerKEY® CableCARD™ and M-Card™ Modules on the DNCS for System Releases 2.7/3.7 and 4.2* (part number 4014667, published July 2007)

Document Version

This is the second release of this document.

1

Understanding Diagnostic Screens

Introduction

The Cisco Resident Application captures system data from the DHCTs and then the application reports the data in the appropriate diagnostic screens. The diagnostic screens allow you to quickly confirm the current SARA and PowerTV OS version, check upgrade status by viewing Bootloader information, examine M-Card related information, and view details about the video-on-demand (VOD) and digital video recorder (DVR) services. For example, if customers call in with macroblocking questions, you can use the diagnostic screens to view the data transmission error rate and the signal levels.

To successfully view the information within the diagnostic screens, you must know how to access them. This section provides instructions to help you access, navigate, and exit the diagnostic screens. Instructions are provided for accessing the diagnostic screens using the following methods:

- Explorer Front Panel keys
- DNCS Web browser

This chapter also includes instructions for displaying a blended image. A blended image displays the current channel video in combination with the diagnostic screen. For more information on blended images, go to *Troubleshoot With a Blended Image* (on page 7).

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- Identify Information Within Diagnostic Screens..... 5
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Access the Diagnostic Screens

Explorer DHCT Front Panel Buttons

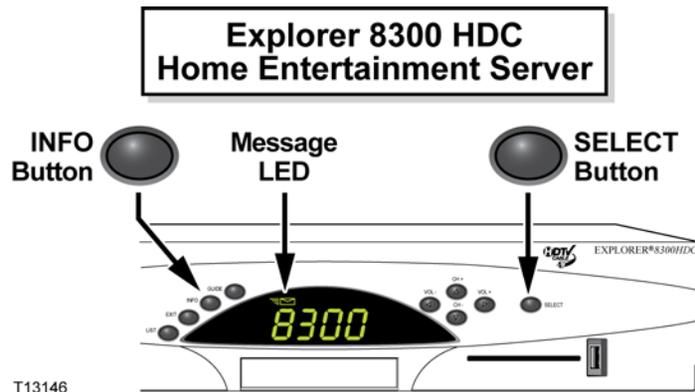
This section provides procedures to help you use the Explorer DHCTs to access and navigate the diagnostic screens, to display a blended image, and to exit the diagnostic screens.

You can access the diagnostic screens by pressing a combination of buttons on the front panel of the Explorer DHCT. The buttons that you press differ among the various models of Explorer DHCTs. The following illustrations show the buttons on the front panel of the Explorer DHCTs that you use to access the diagnostic screens.

Notes:

- After pressing the buttons on the front panel, the Message LED will flash. This indicates that diagnostic screens are ready to access. Go to *Accessing Diagnostic Screens Using Explorer Front Panel Buttons* (on page 4) for steps to access the diagnostic screens.
- To access the diagnostic screens on any of the SSC DHCTs, use the button combination shown in the following diagram.

Example:



Accessing Diagnostic Screens Using Explorer Front Panel Buttons

Follow these steps to access and navigate through the diagnostic screen sequence, to display a blended image, and to exit the diagnostic screens.

Note: Use the preceding diagram to locate the front panel buttons described in these instructions.

- 1 Press and hold the **Select** button until the Message LED on the front panel blinks, and then release the button.
- 2 While the Message LED continues to blink, press the **INFO** button.
- 3 To navigate the diagnostic screens one page at a time, press either the **Vol+** or the **Vol-** button.
- 4 To display a blended image for troubleshooting purposes, press the **Select** button to scroll through the following three blending levels:
 - Dark
 - Light
 - None

Note: For more information on using blended images, see *Troubleshoot With a Blended Image* (on page 7).
- 5 To exit the diagnostic screens, press the **EXIT** button.

Accessing the Diagnostic Screens Using the DNCS Web Browser

Use the Web browser on the DNCS to view the diagnostics screens of any DHCT that is booted "two-way" (information can travel to and from the headend) and accessible from that DNCS.

Follow these steps to access the diagnostic screens from the DNCS.

- 1 Launch a Web browser that is installed on the DNCS.
- 2 From the **Address** field located at the top of your Web browser, type **http://<the.dhct.ip.address>:5030/1.html** and then press **Enter**. Your Web browser displays the first diagnostic screen (Status Summary) of the DHCT you are using.

Note: In this command, <the.dhct.ip.address> represents the actual IP address of the DHCT you are using.
- 3 Follow the on-screen instructions and the links to view the other diagnostic screens.

Identify Information Within Diagnostic Screens

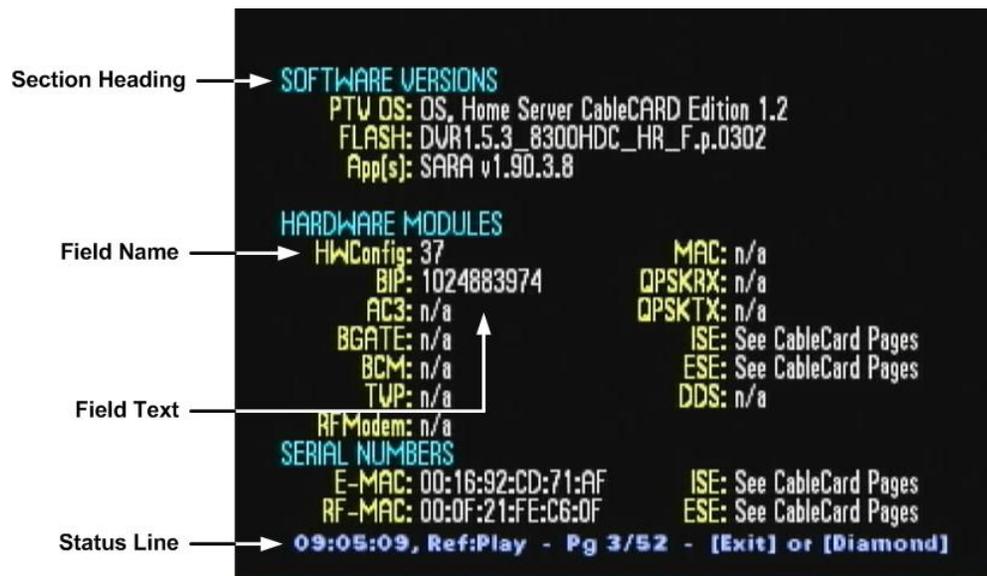
Overview

This section helps you to locate information within diagnostic screens and provides the following information:

- An example of a diagnostic screen with its key elements
- Descriptions of the color-coded text
- Descriptions of the status line content

Diagnostic Screen Layout

The following example of a diagnostic screen shows the section heading, the field name, the field text, and the status line that will appear on various sections of each diagnostic screen.



Locating Page Numbers on Diagnostic Screens

The page number for each diagnostic screen is located at the bottom of each screen in the Status Line. The page number is displayed in the following format:

Page<page number> **of** <total pages for DHCT>

Note: The page number for some diagnostic screens will vary depending on the version of software that is loaded on the DHCT.

Color-Coded Field Text

The color of the field text within the diagnostic screens varies depending on the condition of the specific component. The following table lists the conditions that the color represents.

Field Text Color	Condition
Green	Indicates a passed condition for a one-time test or self-test
White	Indicates a normal or and expected condition
Amber	Indicates an unusual condition
Red	Indicates an error, an unexpected condition, or an inability to obtain status information for that particular field

Status Line Descriptions

The status line appears at the bottom of all diagnostic screens. The following table describes the field information contained in the status line.

Field Information	Description
Time	Provides the time of day at which the screen was last displayed or refreshed
Ref	Provides the number of seconds between screen refreshes for the current page (example, Ref:5) Note: If the current page displays Play , it means that the information on the screen does not automatically refresh. To refresh the information on a screen that displays Play , press the Play key on the remote control.
Pg	Provides the current page number and the total number of diagnostic screen pages (current/total)
[Exit]	Indicates the method to exit the diagnostic screens

Troubleshoot with a Blended Image

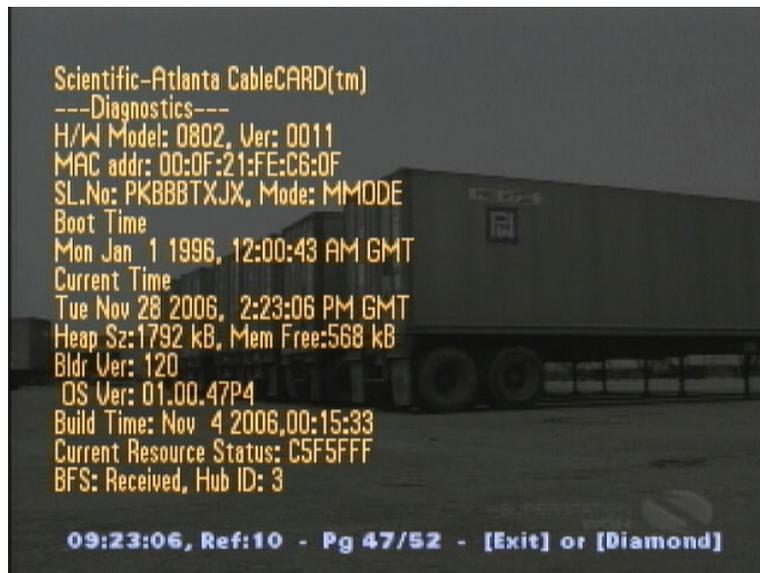
To help you troubleshoot the DHCT, you can view a blended image. A blended image displays the current channel program in combination with the diagnostic screen. You can display a blended image to diagnose macroblocking issues, to check the signal levels, and to capture a live problem on videotape. You can view a blended image of the diagnostic screen using the dark and light blending levels. This section provides an example of a blended image.

Note: The instructions for displaying a blended image are presented in *Accessing Diagnostic Screens Using Explorer Front Panel Buttons* (on page 4).

Blended Image Screen

The following example of a blended image (with light blended level selected) shows the current channel program in the background and the diagnostic screen in the foreground.

Note: You can only blend an analog or a digital channel. When you are tuned to a PPV channel with no event playing or tuned to a Music Channel, you cannot display a blended image.



2

System-Related Diagnostic Screens

Introduction

This chapter describes diagnostic screens that provide status information for SSC Host DHCTs, as well as the overall system. These screens accumulate data that relate to the software version, serial numbers, boot status, service availability, frequencies, and PPV purchases.

Note: Some pages are specific only to 4250C/HDCs and 4240C/HDCs while others are specific to 8300C/HDCs and 8240C/HDCs. These diagnostic pages are noted in the appropriate sections.

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Status Summary Diagnostic Screen

Information

This section provides a sample of the Status Summary diagnostic screen along with field descriptions. You can view this screen to obtain information concerning the status of the system initialization, memory, boot status, and clocks.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the current status of the boot process
- Check the amount of available memory
- View the power levels and frequencies of the tuner
- Check when the DHCT was last booted and if it is receiving the correct time of day

Screen Components

- Initialization
- Memory
- RF Parameters
- Clocks

Example:

Note: In the RF Parameters area of the screen, 8300C/HDC and 8240C/HDC DHCTs display the Tuner 1 field while 4250C/HDC and 4240C/HDC DHCTs display the Tuner field. This is because 8300C/HDC and 8240C/HDC DHCTs contain two tuners.

```

STATUS SUMMARY
INITIALIZATION
  Status: Ready - B'cast Only   CPU/Bus: 250/133
MEMORY
  System Heap   SARA Heap   Video Heap
  Total: 51310992   716800   16777216
  Free: 39922032   447256   2727168
  Largest: 38554772   447220   2727164
  Chunks: InUse=11925, Free=50
RF PARAMETERS
  Tuner 1: 555.000 MHz   -2 dBmV   0/Sec (avg)
  FDC: 73.250 MHz       1 dBmV   0/Sec (avg)
  RDC: 20.000 MHz       49 dBmV   0 uSec
CLOCKS
  Booted: Mon May 7 2007, 2:57:54 PM EDT (0x463F7682)
  Current: Mon May 7 2007, 3:01:27 PM EDT (0x463F7787)
15:01:27, Ref:5 - Pg 1/55 - [Exit] or [Diamond]
    
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Initialization

Field Name	Description	Possible Values
Status	The status of the overall boot process	<ul style="list-style-type: none"> ■ In Progress—The DHCT is in the process of initializing. If In Progress displays more than 10 minutes, the boot process is incomplete and the DHCT is not properly booting. ■ Ready—The DHCT has completed the boot process and is in two-way mode. ■ Ready-B'cast Only—The DHCT booted in one-way mode and has not received an individual UN-Config message. This is the final state in a one-way system. <p>Important!</p> <ul style="list-style-type: none"> • Once the status displays Ready, it will not revert back to Ready-B'cast Only if the reverse path is lost. • Once the status displays Ready, it will not revert back to In Progress if the forward signal is lost. • If either signal is lost, contact Cisco Services.
CPU/Bus	The speed, in megahertz (MHz), at which the microprocessor and data bus are running	■ Hardware-dependent value
Ev Pool (Event Pool)	The number events available in the event pool of the OS	■ [Integer > 0]

Memory

Field Name	Description	Possible Values
Total	The total amount of memory assigned to the DHCT, SARA, and the video	■ [Integer ≥ 0]
Free	The amount of free memory available for the DHCT, SARA, and the video	■ [Integer ≥ 0]
Largest	The largest contiguous, free block of memory for the DHCT, SARA, and video	■ [Integer ≥ 0]
Chunks	The number of in use and free chunks of available memory	■ [Integer ≥ 0], [Integer ≥ 0]

RF Parameters

Field Name	Description	Possible Values
Tuner or Tuner 1	<p>Describes the following frequency data at the center of the channel of the inband tuner</p> <ul style="list-style-type: none"> ■ If tuned to a <i>digital</i> channel, this field displays the frequency, the current <i>approximate</i> signal level, and the average errors per second ■ If tuned to an <i>analog</i> channel, this field displays the frequency and the analog channel 	<ul style="list-style-type: none"> ■ Frequency—Dependent upon setting (MHz) ■ Signal Level <ul style="list-style-type: none"> • Acceptable Range¹: -16 – +15 dBmV • Recommended Range: -8 – +8 dBmV ■ Average Errors per Second—Integer close to 0 that is not changing
FDC	Provides information about the forward data channel (FDC)	<ul style="list-style-type: none"> ■ Frequency—Dependent upon the setting in which out-of-band receiver is tuned (MHz) ■ Signal Level (approximate) <ul style="list-style-type: none"> • Acceptable Range¹: -16 – +15 dBmV • Recommended Range: -10 – +10 dBmV ■ Average Errors per Second—Integer close to 0 that is not changing

¹ If the dBmV falls outside of the specified ranges, the system and DHCTs may continue to operate, but plant or system maintenance may be required. Perform an analysis using a spectrum analyzer on the incoming signal.

Field Name	Description	Possible Values
RDC	The information about the reverse data channel (RDC)	<ul style="list-style-type: none"> ■ Frequency—Dependent upon the setting to which RDC transmitter is broadcasting (MHz) ■ Signal Level of Transmitter <ul style="list-style-type: none"> • Acceptable Range²: +25 – +55 dBmV • Recommended Range: +27 – +53 dBmV ■ Round Trip Delay—delay between the DHCT and QPSK modem at the headend or hub (µsec)

Clocks

Field Name	Description	Possible Values
Booted	The date and time that the Explorer DHCT last booted Note: The hexadecimal format for the date and time is shown in parenthesis.	■ [Date, Time]
Current	The current date and time Note: The hexadecimal format for the date and time is shown in parenthesis.	■ [Date, Time]

² A setting greater than +55 dBmV may indicate a problem. If the dBmV falls outside of the specified ranges, perform an analysis using a spectrum analyzer on the incoming signal.

Post and Boot Status Diagnostic Screen

Information

This section provides an overview of the Power On Self Test (POST) and Boot Status diagnostic screen.

The Boot Status section includes the results of the boot process performed by the Explorer DHCT. You can view the Boot Status section to confirm whether or not the Explorer DHCT is ready to receive data.

Note: The POST results section is not applicable to these DHCTs.

Performing Tasks

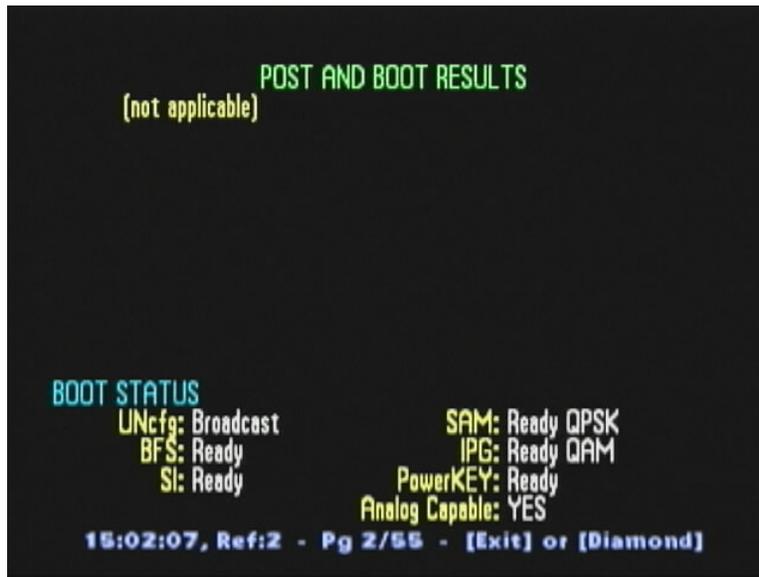
By accessing this diagnostic screen, you can perform the following tasks:

- Ensure that all hardware is present on the system
- Ensure that all hardware components are functioning properly
- Check the boot status of the Explorer DHCT
- Determine if the Explorer DHCT is ready to receive data

Screen Components

- **Post Results:** Not Applicable
- **Boot Status**

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Boot Status

The Explorer DHCT must access information from various sources in order to boot. The Boot Status section includes the results of the DHCT's attempt to access the sources that the DHCT must receive in order to boot. These results are updated in the order shown as the DHCT boots up. The indicators within this screen are updated as the DHCT moves through the possible states; however, they are never updated in reverse because this information only indicates the status during boot up.

Field Name	Description	Possible Values
UNcfg	The boot process for the User-to-Network (UNcfg) configuration	<ul style="list-style-type: none"> ■ Broadcast—Global broadcast message received ■ Ready—An individually addressed configuration message received ■ Searching—No UNcfg message received
BFS	The boot process for the Broadcast File System (BFS)	<ul style="list-style-type: none"> ■ Ready—BFS directory has been found and loaded ■ Searching—Looking for the BFS directory
SI	The boot process for the System Information (SI)	<ul style="list-style-type: none"> ■ Ready—SI tables are loaded ■ Searching—SI tables are not loaded

Field Name	Description	Possible Values
SAM	The boot process for the Service Application Manager (SAM)	<ul style="list-style-type: none"> ■ Ready QAM—SAM has completed loading inband data ■ Ready QPSK—SAM has completed loading out-of-band data ■ Trying QAM—SAM is attempting to load data inband ■ Trying QPSK—SAM is attempting to load data out-of-band ■ Waiting—SAM is waiting for other required boot operations to finish before attempting to load its tables
IPG	The boot process for the IPG and indicates if the IPG title data for the current and next day is loaded	<ul style="list-style-type: none"> ■ Ready QPSK—IPG has completed loading out-of-band data ■ Trying QPSK—IPG is attempting to load data out-of-band ■ Waiting—IPG is waiting for other required boot operations to complete before attempting to load data ■ N/A
PowerKEY	The boot process for a PowerKEY CableCARD	<ul style="list-style-type: none"> ■ Ready—PowerKEY components are ready ■ Waiting EMM—Waiting for Entitlement Management Messages (EMMs) to load ■ Waiting EUT—Waiting for the Entitlement Unit Table (EUT) to load ■ Waiting Time—Waiting for the Time GBAM (message sending the time of day to the PowerKEY components)
Analog Capable	Indicates whether or not the DHCT is capable of streaming analog programs	<ul style="list-style-type: none"> ■ YES ■ NO

Software Versions and Serial Numbers Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the Software Versions and Serial Numbers diagnostic screen. You can view this screen to verify the version numbers and serial numbers for all applicable hardware and software modules.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Confirm the software version
- Confirm the hardware modules
- Verify that the RF-MAC matches the MAC address on the DNCS

Screen Components

- Software Versions
- Hardware Modules
- Serial Numbers

Example:

```

SOFTWARE VERSIONS
PTV OS: OS, Home Server CableCARD Edition 1.2
FLASH: DVR1.5.3_8300HDC_LR_F.p.0902
App(s): SARA v1.90.5.a103

HARDWARE MODULES
HWConfig: 66
BIP: 1024883974
AC3: n/a
BGATE: n/a
BCM: n/a
TVP: n/a
RFModem: n/a
MAC: n/a
QPSKRX: n/a
QPSKTX: n/a
ISE: See CableCard Pages
ESE: See CableCard Pages
DDS: n/a

SERIAL NUMBERS
E-MAC: 00:19:47:3D:18:55
RF-MAC: 00:0F:21:FF:18:A3
ISE: See CableCard Pages
ESE: See CableCard Pages

15:02:19, Ref:Play - Pg 3/55 - [Exit] or [Diamond]

```

Chapter 2 System-Related Diagnostic Screens

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Software Versions

The Software Versions section includes the current firmware versions of the software in Read Only Memory (ROM).

Field Name	Description	Possible Values
PTV OS	The version for the PowerTV operating system (OS)	■ [Software-dependent]
FLASH	The version for the resident application	■ [Software-dependent]
App(s)	The names and version numbers of the applications available for execution	■ [Software-dependent]

Hardware Modules

The Hardware Modules section includes the version numbers of all applicable hardware modules.

Field Name	Description	Possible Values
HWConfig	The version of the hardware configuration (HWConfig) module	■ [Hardware module-dependent] Note: This value should match the revision number (without decimals, for example 5.9 will appear as 59) printed on the bottom of the DHCT
BIP	The version of the broadband interface processor (BIP) modules	■ [BIP module-dependent] ■ n/a —not a standalone part
AC3	The version of the digital AC-3 module	■ [AC3 module-dependent] ■ n/a —not a standalone part
BGATE	The version of the QPSK transceiver (encoding and decoding) module	■ [QPSK transceiver module-dependent] ■ n/a —not a standalone part
BCM	The version of the ASIC for demodulating the QAM signal module	■ [ASIC-dependent] ■ n/a —not a standalone part
TVP	The state of the TV tuner resource in the resident application according to the TV Program Manager (TVP) component of the PowerTV OS	■ [TVP component-dependent] ■ n/a —not a standalone part

Field Name	Description	Possible Values
RFModem	The version of the transmitter and receiver for QPSK	<ul style="list-style-type: none"> ■ [Hardware-dependent] ■ n/a—not a standalone part
MAC	The ASIC version that includes: <ul style="list-style-type: none"> ■ MPEG decoding ■ Graphics ■ AC-3 decoding ■ NTSC encoding 	<ul style="list-style-type: none"> ■ [Hardware-dependent] ■ n/a—not a standalone part
QPSKRX	The QPSK Receiver (QPSKRX) version	<ul style="list-style-type: none"> ■ [Hardware-dependent] ■ n/a—not a standalone part
QPSKTX	The QPSK Transmitter (QPSKTX) version	<ul style="list-style-type: none"> ■ [Hardware-dependent] ■ n/a—not a standalone part
ISE	The Internal Secure Element (ISE) and PowerKEY component serial number	See CableCARD diagnostic pages
ESE	The External Security Element (ESE) smart card (optional component) serial number	See CableCARD diagnostic pages
DDS	The analog descrambling ASIC module version	<ul style="list-style-type: none"> ■ [Hardware-dependent] ■ n/a—ASIC module is not available

Serial Numbers

The Serial Numbers section includes the MAC addresses for specific hardware modules.

Note: If the MAC address is not available, the field displays Unavailable.

Field Name	Description	Possible Values
E-MAC	The Ethernet media access control (E-MAC) adapter MAC address, if installed	<ul style="list-style-type: none"> ■ [Unique per DHCT] <p>Example: 00:18:68:BF:46:32</p>
RF-MAC	The RF network adapter MAC address that is used by the DNCS	<ul style="list-style-type: none"> ■ [Hardware-dependent] <p>Example: 00:26:A4:BF:64:2F</p>
ISE	The ISE and PowerKEY component serial number	See CableCARD diagnostic pages
ESE	The serial number of the ESE smart card (optional component)	See CableCARD diagnostic pages

Status and Network Parameters Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the Statuses and Network Parameters diagnostic screen. You can view this screen to identify real-time status information and network parameters.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

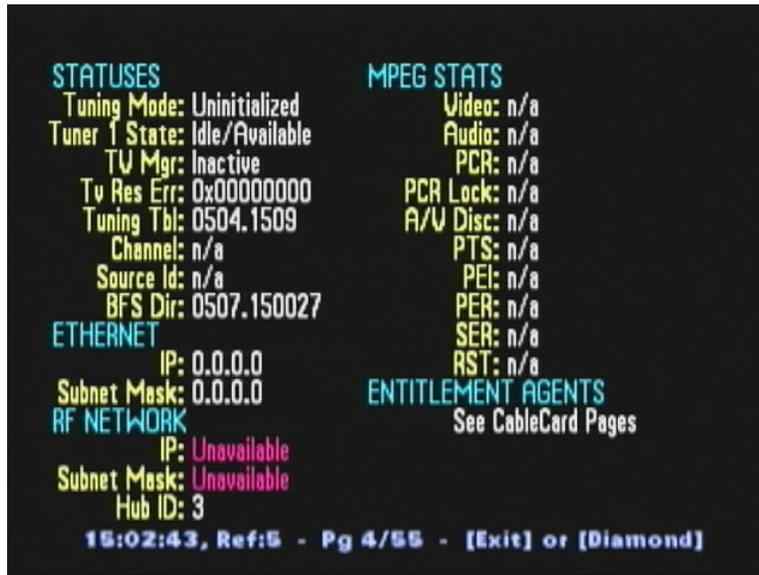
- Confirm the tuning mode
- Verify MPEG information for the current stream
- Confirm that the DHCT displays an RF network Internet protocol (IP) address, a subnet mask, and a hub ID

Screen Components

- Statuses
- Ethernet
- RF Network
- MPEG Stats
- Entitlement Agents

Example:

Note: In the Statuses area of the screen, 8300C/HDC and 8240C/HDC DHCTs display the Tuner 1 State field while 4250C/HDC and 4240C/HDC DHCTs display the Tuner State field. This is because 8300C/HDC and 8240C/HDC DHCTs contain two tuners.



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Statuses

The Statuses section includes the status information related to the channel that the subscriber is viewing.

Field Name	Description	Possible Values
Tuning Mode	The current mode of the inband tuner	<ul style="list-style-type: none"> ■ Analog—if sap or stereo are detected on the current analog channel, one of the following modes appear: <ul style="list-style-type: none"> • Analog (sap) • Analog (sap, stereo) • Analog (stereo) ■ QAM-64 ■ QAM-128 ■ QAM-256

Field Name	Description	Possible Values
Tuner State or Tuner 1 State	The state of the tuner according to the TV manager component of the PowerTV OS	<ul style="list-style-type: none"> ■ Found QAM—Tuner successfully tuned to a digital channel ■ Found Sync—Tuner successfully tuned to an analog channel ■ Idle/Available—Tuner is not in use by an application; tuner is available for use ■ Waiting QAM—TV Manager is waiting for the tuner to tune to the desired QAM frequency and lock onto valid data ■ Waiting Sync—TV Manager is waiting for the tuner to find the signal on an analog channel
TV Mgr	<p>The state of the TV tuner resource in the resident application according to the TV Manager component of the PowerTV OS</p> <p>Note: If the resident application is not using the tuner, the TV Manager displays the state of the active resource using the tuner (if any).</p>	<ul style="list-style-type: none"> ■ Active—the resource of the resident application is currently active (in use/tuned) ■ Denied—the tuning request for the resource was denied ■ Inactive—TV Manager is not in use and is available to process requests ■ Notified—TV Manager has instructed the resident application to release the resource not the tuner so the TV Manager can use the tuner for a different request ■ Suspended—the tuner resource for the resident application is suspended ■ Suspending—TV Manager has notified the owner of the currently active resource to suspend so that it can use the tuner for another request ■ Unknown—TV Manager received an unknown state ■ Waiting PAT—TV Manager is waiting for the Program Association Table (PAT) to arrive on a QAM channel before the tuning request can complete ■ Waiting PMT—TV Manager is waiting for the program Map Table (PMT) to arrive on a QAM channel before the tuning request can complete

Field Name	Description	Possible Values
TV Res Err	The last resource denied error code received by the ResApp from the TV manager when trying to tune (if any)	<ul style="list-style-type: none"> ■ 0x00000000—no resource errors ■ 0x[non-zero hexagonal number]—indicates an error was received
Tuning Table	The most recent tuning table activation date and time (MMDD.hhmm) received by the DHCT	<ul style="list-style-type: none"> ■ [Time]
Channel	The channel number and the status for the tuned channel	<ul style="list-style-type: none"> ■ Clear to Air (unencrypted) ■ Free Preview ■ Purchased (for pay-per-view) ■ Subscription ■ Unauthorized <p>Note: An unauthorized channel may display unauthorized for a few seconds and then it changes to n/a when the unauthorized barker appears.</p>
Source ID	The source identification number for the tuned channel	<ul style="list-style-type: none"> ■ [Channel-dependent] (hexadecimal format)
BFS Dir	The date and time (MMDD.hhmmss) that the BFS directory was last read	<ul style="list-style-type: none"> ■ [Time] <p>Example: 0507.150027</p>

Ethernet

Note: The values are only valid if the DHCT has an Ethernet adapter installed.

Field Name	Description	Possible Values
IP	The IP address assigned to the Ethernet adapter	<ul style="list-style-type: none"> ■ [Network-dependent] <p>Example: 10.1.0.1</p>
Subnet Mask	The IP subnet mask assigned to the Ethernet adapter	<ul style="list-style-type: none"> ■ [Network-dependent] <p>Example: 255.255.255.0</p>

RF Network

The RF Network section includes a description of the RF network adapter.

Field Name	Description	Possible Values
IP	The IP address that the DNCS assigned to the RF network	<ul style="list-style-type: none"> ■ [Network/DHCT configuration-dependent] ■ Unavailable—DHCT is not authorized for two-way communications or is unable to establish a two-way connection with the DBDS
Subnet Mask	The IP subnet mask that is assigned to the RF network adapter by the DNCS	<ul style="list-style-type: none"> ■ [Network-dependent]
Hub ID	The hub number to which the DHCT is connected when booted	<ul style="list-style-type: none"> ■ [Network-dependent]

MPEG Stats

The Motion Pictures Expert Group Statistics (MPEG) Stats section includes information about the DHCT when it is tuned to a digital channel and when an MPEG stream is being decoded. This information changes each time the DHCT changes channels on the TV.

Some errors, such as PER (number of Pipeline Errors reported by the MPEG decoder chip) and SER (number of Severe Errors reported by the MPEG decoder chip) are expected to occur.

Note: If the channel is tuned to an unauthorized channel, then **n/a** appears as the field text within the field name.

Field Name	Description	Possible Values
Video	The program identifier (PID) number within the MPEG stream that contains the video information being decoded	<ul style="list-style-type: none"> ■ [Channel-dependent] ■ n/a—tuned to an analog channel
Audio	The PID number within the MPEG stream that contains the audio information being decoded	<ul style="list-style-type: none"> ■ [Channel-dependent] ■ n/a—tuned to an analog channel
PCR	The PID number that is used to decode the program clock reference (PCR) information Note: The PCR PID is typically the same as the video PID.	<ul style="list-style-type: none"> ■ [Channel-dependent] ■ n/a—tuned to an analog channel

Field Name	Description	Possible Values
PCR Lock	The time stamp of the last PCR synchronization lock	<ul style="list-style-type: none"> ■ [Integer > 0]—number should change each time the screen refreshes; otherwise video may be lost ■ n/a—tuned to an analog channel
A/V Disc	<p>The sum of the discontinuity errors encountered on either the audio or video streams (A/V Disc) that have occurred since the current stream was tuned</p> <p>Note: Discontinuity errors indicate that packets were transmitted out of order or with a gap between them, which indicates data loss.</p>	<ul style="list-style-type: none"> ■ 0—no discontinuity errors ■ [Integer > 0]—could indicate a problem <p>Note: If A/V Disc is high, an issue such as macroblocking may be present.</p> <ul style="list-style-type: none"> ■ n/a—tuned to an analog channel
PTS	A presentation time stamp (PTS) that changes each time the screen refreshes	<ul style="list-style-type: none"> ■ UNIX format—number should change each time the screen refreshes; otherwise video may be lost <p>Important! If this number does not change each time the screen refreshes, then video may have been lost.</p> <ul style="list-style-type: none"> ■ n/a—tuned to an analog channel
PEI	The number of errors (packet error indication [PEI]) in the MPEG stream before reaching the broadband interface processor (BIP)	<ul style="list-style-type: none"> ■ 0—no errors in MPEG stream ■ [Integer greater than 0]—errors exist and may cause an issue ■ n/a—tuned to an analog channel
PER	The pipeline errors (PERs) reported by the MPEG decoder chip	<ul style="list-style-type: none"> ■ 0—no errors in pipeline stream ■ [Integer > 0]—errors exist and may cause an issue <p>Note: Some errors may be normal depending on the MPEG stream being decoded.</p> <ul style="list-style-type: none"> ■ n/a—tuned to an analog channel

Field Name	Description	Possible Values
SER	Displays the number of severe errors (SERs) reported by the MPEG decoder chip	<ul style="list-style-type: none"> ■ 0—no server errors ■ [Integer > 0]—errors exist and may cause an issue <p>Note: Some errors may be normal depending on the MPEG stream being decoded.</p> <ul style="list-style-type: none"> ■ n/a—tuned to an analog channel
RST	Displays the number of times the software driver has restarted (RST) the MPEG decoding process	<ul style="list-style-type: none"> ■ 0—no errors in MPEG stream ■ [Integer > 0]—errors exist and may cause an issue ■ n/a—tuned to an analog channel

Entitlement Agents

Information concerning entitlement agents is displayed on diagnostic screens in the *M-Card-Related Diagnostic Screens* (on page 119) chapter.

RF Status Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the RF Status diagnostic screen. You can view this screen to obtain statistical information about the three RF channels on your system in real-time.

Important! On the Explorer 8300C/HDC and 8240C/HDC DHCTs, the descriptions in the Current QAM section of the RF Status diagnostic screen always refer to the first tuner. Also, the information displayed in the Current QAM section field descriptions is not necessarily related to what is displayed on the main TV screen or the PIP. To view the status of the Second Tuner, go to the *Second Tuner Status Diagnostic Screen* (on page 68).

Performing Tasks

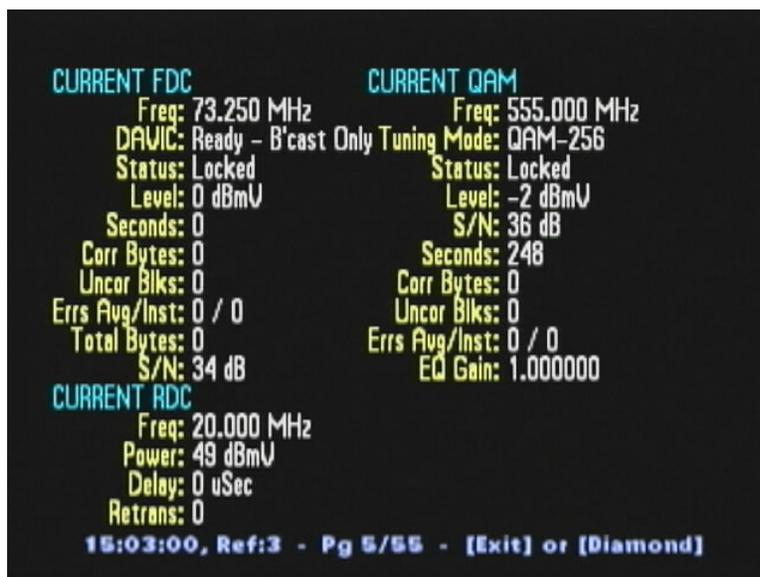
By accessing this diagnostic screen, you can perform the following tasks:

- Confirm the power levels and frequencies of the FDC and the RDC
- Confirm the power levels and frequencies of the quadrature amplitude modulation (QAM) modulator
- Monitor the average and instantaneous errors of the FDC and the QAM

Screen Components

- Current FDC
- Current RDC
- Current QAM

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Current FDC

Field Name	Description	Possible Values
Freq	The frequency (Freq) of the tuned QPSK receiver	■ [Network-dependent] Range: 70 MHz–130 MHz

Field Name	Description	Possible Values
DAVIC	The status of the current Digital Audio Visual Council (DAVIC) connection	<ul style="list-style-type: none"> ■ Booting—DHCT is attempting to initiate a DAVIC connection ■ Calib Power—DHCT is calibrating the power level of the QPSK transmitter for optimal performance ■ Completion—DHCT received sign on request; waiting for DAVIC initialization to complete or for DAVIC ranging/ power calibration message ■ Conn Confirm—DHCT received a DAVIC connect message for a connection set up by an active session, sent a DAVIC connect response message, and is waiting for a DAVIC connect confirm message to acknowledge the session connection is ready to use ■ Connected—connection exists; typically two-way ■ Data Lock Lost—DHCT stopped receiving valid data; must re-establish a DAVIC connection when it finds valid data ■ Dflt Cfg—DHCT is waiting for DAVIC default configuration message ■ DNCS Conn—DHCT adjusted its power, received initialization completion message, and is waiting for DNCS to send a DAVIC connect message to establish default DNCS connection

Field Name	Description	Possible Values
		<ul style="list-style-type: none"> ■ DNCS Conf—DHCT received DAVIC connect message from DNCS, responded with a DAVIC connect response message, and is waiting for a connect confirm message ■ Provisioning—DHCT is waiting for a DAVIC provision message ■ Ready-B'cast Only—DHCT failed to sign on and is operating in one-way mode. A background timer continues attempting to sign on periodically ■ Resp—DHCT received sign-on request and is waiting for randomized timeout before sending the DAVIC sign-on response to the DNCS ■ Searching Chnls—DHCT is searching for QPSK frequency for valid DAVIC data ■ Sign-On—DHCT is waiting for the DAVIC sign on message from DNCS ■ Slow-Boot Wait—DHCT is waiting for the slow boot timeout period ■ Unauthorized—DHCT is not authorized to sign on with DNCS ■ Unknown—DHCT in an unknown state
Status	The status of the receiver in regards to receiving valid data	<ul style="list-style-type: none"> ■ Locked—Receiver is locked onto a frequency with valid QPSK data ■ Unlocked—Receiver is not locked onto a frequency with valid QPSK data
Level	The approximate received signal level	<ul style="list-style-type: none"> ■ Refer to specific hardware specifications <ul style="list-style-type: none"> ● value displayed in white—signal level is nominal ● value displayed in amber—signal level is marginally too high or too low ● value displayed in red—signal level is unacceptably too high or too low

Field Name	Description	Possible Values
Seconds	The number of seconds that the frequency has been locked	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Corr Bytes	The number of bytes received in error that have been successfully corrected by the forward error correction (FEC) code	<ul style="list-style-type: none"> ■ [Integer ≥ 0] <p>Important! If incrementing rapidly, picture freezing or macroblocking may be present.</p>
Uncor Blks	The number of data blocks received in error that were not successfully corrected by the FEC code	<ul style="list-style-type: none"> ■ [Integer ≥ 0] <p>Important! If incrementing rapidly, picture freezing or macroblocking may be present</p>
Errs Avg/Inst	<p>Two unique numbers that describe data errors</p> <ul style="list-style-type: none"> ■ First Number—the average number of errors during the time the frequency was locked ■ Second Number—the number of errors since the last time the screen was refreshed 	<ul style="list-style-type: none"> ■ [Integer ≥ 0 / Integer ≥ 0]
Total Bytes	The total number of data bytes successfully read since the frequency was locked	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
S/N	The signal-to-noise ratio	<ul style="list-style-type: none"> ■ Refer to specific hardware specifications <ul style="list-style-type: none"> ● value displayed in white—signal level is nominal ● value displayed in amber—signal level is marginally too high or too low ● value displayed in red—signal level is unacceptably too high or too low ■ n/a—not applicable for this DHCT

Current RDC

Field Name	Description	Possible Values
Freq	The frequency, in MHz, to which the QPSK transmitter is tuned (MHz)	<ul style="list-style-type: none"> ■ [Dependent upon setting] Range: 8 MHz–26.5 MHz
Power	The output level of the QPSK transmitter	<ul style="list-style-type: none"> ■ Refer to specific hardware specifications <ul style="list-style-type: none"> ● value displayed in white—signal level is nominal ● value displayed in amber—signal level is marginally too high or too low ● value displayed in red—signal level is unacceptably too high or too low
Delay	<p>The round-trip delay, in microseconds, between the DHCT and the modem at the headend or hub that is used to determine when to transmit the slotted-aloha packets</p> <p>Note: Slotted-aloha packets are used to assign periods of time or slots when the DHCT can transmit without interfering with other DHCTs on the same hub</p>	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Retrans	The number of retransmissions (likely due to noise or collisions) of the same data since the DHCT was last booted	<ul style="list-style-type: none"> ■ 0—desired value ■ non-0—indicates a potential issue with a reserve plant

Current QAM

Important! On the Explorer 8300C/HDC and 8240C/HDC DHCTs, the descriptions in the Current QAM section of the RF Status diagnostic screen always refer to the first tuner. Also, the information displayed in the Current QAM descriptions is not necessarily related to what is displayed on the main TV screen or the PIP. The only way to verify which tuner is tied to an output is to change channels on that output (main or PIP) and observe the frequency and modulation changes that occur in the RF Status diagnostic screen and the Second Tuner Status diagnostic screen. To view the status of the Second Tuner, go to *Second Tuner Status Diagnostic Screen* (on page 67).

Field Name	Description	Possible Values
Freq	The frequency (Freq) of the tuned QPSK receiver (MHz)	■ [Dependent upon setting]
Tuning Mode	The current mode of the inband tuner	<ul style="list-style-type: none"> ■ QAM-64 ■ QAM-128 ■ QAM-256 ■ Analog The following is a list of conditions for the possible modes that are placed after the specific tuner mode: <ul style="list-style-type: none"> • A: inband tuner is in the A mode • B: inband tuner is in the B mode • s: inband tuner is scrambled <p style="text-align: center;">Example: QAM-256Bs</p>
Status	The status of the receiver in regards to receiving valid data	<ul style="list-style-type: none"> ■ Locked—tuner is locked ■ Unlocked—tuner is not locked
Level ³	The approximate received signal level	<ul style="list-style-type: none"> ■ -8 – +8 dBmV (value displayed in white)—signal level is nominal ■ >+8 – <-8 dBmV (value displayed in amber)—signal level is marginally too high or too low ■ <Range or >Range (value displayed in red)—signal level is unacceptably too high or too low

³ The level and signal-to-noise data is provided for your convenience. These measurement results are not a substitute for measurements taken with signal level meters or spectrum analyzers.

Field Name	Description	Possible Values
S/N ⁴	The approximate signal noise ratio (dB) Note: The S/N ratio only applies for QAM data channels.	<ul style="list-style-type: none"> ■ QAM-64—28 dB – 34 dB (minimum: 25 dB) ■ QAM-256—32 dB – 34 dB (minimum: 30 dB) ■ n/a—not applicable on this DHCT
Seconds ⁵	The number of seconds that the frequency has been locked	■ [Integer ≥ 0]
Corr Bytes ⁵	The number of bytes received in error that have been successfully corrected by the forward error correction (FEC) code	<ul style="list-style-type: none"> ■ [Integer ≥ 0] <p>Important! If incrementing rapidly, picture freezing or Macroblocking may be present.</p>
Uncor Blks ⁵	The number of data blocks received in error that were not successfully corrected by the FEC code	<ul style="list-style-type: none"> ■ [Integer ≥ 0] <p>Important! If incrementing rapidly, picture freezing or Macroblocking may be present</p>
Errs Avg/Inst ⁵	Two unique numbers that describe data errors First Number —the average number of errors during the time the frequency was locked Second Number —the number of errors since the last time the screen was refreshed	■ [Integer ≥ 0 / Integer ≥ 0]
EQ Gain	The QAM equalizer gain (EQ Gain) on QAM data channel Note: The EQ Gain parameter is only applicable on QAM data channels.	<ul style="list-style-type: none"> ■ 0.9 – 1.0 (value displayed in white)—signal level is nominal ■ 0.8 and 1.1 (value displayed in amber)—signal level is marginally too high or too low and required you to correct the signal problem ■ <0.8 or >1.1 (value displayed in red)—serious signal problem that needs immediate attention

⁴ The level and signal-to-noise data is provided for your convenience. These measurement results are not a substitute for measurements taken with signal level meters or spectrum analyzers.

⁵ This field applies to QAM Data Channels only. It does not apply to analog channels.

QPSK SIL Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the QPSK SIL (Signaling Interface Layer) Information diagnostic screen. You can view this screen to verify various forward and reverse path statistics for the QPSK receiver of the DHCT.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the number of individual data packets received
- Determine if transport packets were aborted
- Verify if there is a packet present in the receive buffer
- Determine if a channel is enabled

Screen Components

- Receive Statistics
- Transmitted Packets

Example:

```

QPSK SIL INFORMATION
RECEIVE STATISTICS
  Ctrl  VPI  VCI   Off      Ovfl   Packets
  CA: 0x30 0x00 0x0FA0 0x00      0      0
  Broadcast: 0x30 0xFF 0xFFFF 0x00      0      0
  DNCS: 0x30 0x00 0x0024 0x00      0      0
  DAVIC: 0x30 0x00 0x0021 0x00      0      0
  Pass Thru: 0x30 0x00 0x0FA1 0x00      0      0
  OOB SI: 0x30 0x00 0x0FA2 0x00      0      0
TRANSMITTED PACKETS
  DAVIC
  Slotted Aloha: 0          0          -
  TDMA: -          -          0
  Reservation: 0          0          -
  Ranging: 0          -          -
  Errors 0          0          0
15:03:16, Ref:5 - Pg 6/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Receive Statistics

The Receive Statistics section displays the QPSK forward path data statistics for the following data channels that are included within the screen.

- **CA**—the channel containing conditional access data
- **Broadcast**— the channel containing data that is broadcast to multiple DHCTs
- **DNCS**—the channel that the DNCS uses to communicate with the DHCT
- **DAVIC**—the channel used for the DAVIC connection
- **Pass Thru**—the channel on which the DHCT receives one-way pass-through messages
- **OOB SI**—the channel containing out-of-band (OOB) SI

Field Name	Description	Possible Values
Ctrl	The value of the "channel" control register	■ [Bit 0 set] —indicates channel is enabled (hexadecimal value)
VPI	The value of the "channel" asynchronous transfer mode (ATM) hardware filter	■ [Hexadecimal number]
VCI	The value of the "channel" ATM hardware filter	■ [Hexadecimal number]
Off	The channel "hardware filter" offset into the data stream	■ [Hexadecimal number]
Ovfl	The number of DMA overflows that occurred on the channel	<ul style="list-style-type: none"> ■ 0 ■ [Very low number] <p>Note: A higher number indicates a problem.</p>
Packets	The number of individual data packets received; typically represents a single Ethernet frame	■ [Integer ≥ 0]

Transmitted Packets

The Transmitted Packets section displays the QPSK reverse path data statistics for the following transmission types that are included in the diagnostic screen:

- **Slotted Aloha** – slotted-alooha style transmission values and are typically DAVIC command and control messages or small reservations App messages
- **TDMA** (Time Division Multiple Access) – TDMA values that are used by a constant bandwidth connection
- **Reservation** – reserved slot transmissions; most applications and some DAVIC messages are sent this way
- **Ranging** – number of calibration transmissions between the QPSK modem and the DHCT performed during DAVIC sign-on that achieves the RDC power level
- **Errors** – number of transmit packets for each of the three channel types that have been aborted with a hardware error or time out error

The following table describes the field names and values within the Transmitted Packets section.

Note: When the status of the transmitted packets field is not available, a dash (-) appears.

Field Name	Description	Possible Values
DAVIC	The number of transmit packets across a DAVIC connection	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ (dash)—status is unavailable
SA/RES	The number of transmit packets for slotted-alooha style transmissions	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ (dash)—status is unavailable
TDMA	The number of transmit packets for TDMA transmissions	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ (dash)—status is unavailable

PPV Service Summary Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the PPV Service Summary diagnostic screen. You can view this screen to verify the status of the PPV service and the PPV event for the currently tuned channel.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

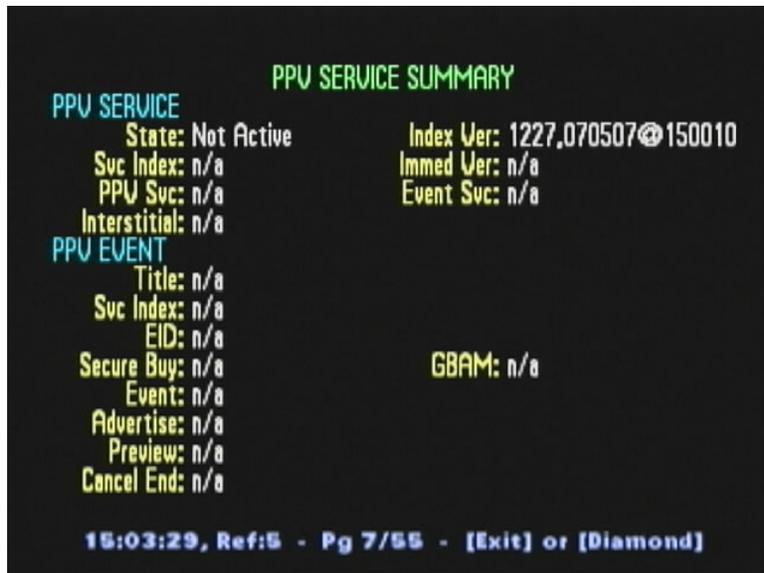
- Identify if a PPV has been purchased
- Determine if a PPV event is expired
- Identify the status of a barker
- Verify the purchase attempt for a PPV event

Screen Components

- PPV Service
- PPV Event

Example:

Note: The DHCT must be tuned to a PPV channel for information to display on this diagnostic screen.



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

PPV Service

The PPV Service section displays information about the PPV service on the currently tuned PPV channel.

Note: If the status of the State field is **Not Active**, then **n/a** appears in all of the fields within the PPV Service Summary diagnostic screen.

Field Name	Description	Possible Values
State	The present state of the PPV service on the tuned channel	<ul style="list-style-type: none"> ■ Countdown—an event has been purchased and is about to start, and countdown barker is displayed ■ Expired Event—event purchase window has closed ■ Interstitial—no advertised event and interstitial event is displaying ■ Invalid Event—current event definition is invalid (for example, DNCS DHCT error) ■ No Event Barker—no event advertised, no interstitial service defined, and no barker displayed ■ Not Active—inactive PPV service ■ Preview Barker—event has not been purchased and the free preview period is in effect ■ Preview Ended—no event purchased; free preview period has ended ■ Problem Barker—problem with the PPV service (problem number displayed on the barker) ■ Purchase Barker—event can be purchased and barker for that event is displayed ■ Subscription—program is a subscription PPV service ■ Thank You—event has been purchased and the Thank You for Purchasing barker appears ■ Waiting for Data—DHCT is waiting for data about the PPV service to arrive from DNCS ■ Watching Event—current event is purchased and active

Field Name	Description	Possible Values
Svc Index	A representation of the service internally as an index number Note: This field should match the Svc Index in the PPV Event section.	<ul style="list-style-type: none"> ■ [Hexadecimal value] ■ n/a—PPV event not showing Note: This value is used for Cisco troubleshooting purposes.
PPV Service	The service associated with the PPV channel	<ul style="list-style-type: none"> ■ [Channel-dependent] ■ n/a
Interstitial	The service that is shown when no event can be advertised	<ul style="list-style-type: none"> ■ None ■ n/a—not applicable
Index Ver ⁶	The version of the PPV index file that the DHCT has in memory	<ul style="list-style-type: none"> ■ [Dependent on index version] Note: All DHCTs should display the same version of the PPV index file.
Immed Ver ⁶	The version of the PPV immediate file that the DHCT has in memory	<ul style="list-style-type: none"> ■ [Dependent on PPV immediate file] Note: All DHCTs should display the same version of the PPV index file.
Event Svc	The service associated with the PPV event	<ul style="list-style-type: none"> ■ [Dependent on PPV channel] ■ n/a—not tuned to PPV event

PPV Event

The PPV Event section includes information about the PPV event on the currently tuned PPV channel.

Field Name	Description	Possible Values
Title	The title of the PPV event	<ul style="list-style-type: none"> ■ [Dependent on PPV channel] ■ n/a—PPV event not showing
Svc Index	A representation of the service internally as an index number Note: This field should match the Svc Index in the PPV Service section.	<ul style="list-style-type: none"> ■ [Hexadecimal value] ■ n/a—PPV event not showing
EID	The EID associated with the purchase of an event	<ul style="list-style-type: none"> ■ [Hexadecimal value] ■ n/a—PPV event not showing

⁶ There may be a short period of time (only a few seconds) when the Index Ver and the Immed Ver fields do not match as new versions are loaded. However, both versions must match or PPV will not operate properly.

Field Name	Description	Possible Values
Secure Buy	The purchase state for the PPV event	<ul style="list-style-type: none"> ■ n/a—PPV event not showing ■ Pending—purchase is not allowed because buy window is not yet opened ■ Problem PPV#—problem occurred when attempting to purchase event; # is the error number associated with the error ■ Processing—purchase attempt is being processed ■ Ready—purchase is accepted and event is viewable
Event	The window of time the PPV event is shown (hh:mm-hh:mm am/pm)	<ul style="list-style-type: none"> ■ [Time] Example: (1:00-3:30pm) ■ n/a—PPV event not showing
Advertise	The window of time the PPV event is advertised to those who have not yet purchased the event (hh:mm-hh:mm)	<ul style="list-style-type: none"> ■ [Time] Example: 1:00-3:30pm ■ n/a—PPV event not showing
Preview	The window of time the PPV event is appearing free (hh:mm-hh:mm)	<ul style="list-style-type: none"> ■ [Time] Example: 1:00-3:30pm ■ n/a—PPV event not showing
Cancel End	The time after which PPV event cancellations are no longer accepted (hh:mm am/pm)	<ul style="list-style-type: none"> ■ [Time] (12-hour time format) ■ n/a—PPV event not showing
GBAM	The time that GBAMs for the PPV event appear on the network (hh:mm am/pm)	<ul style="list-style-type: none"> ■ [Time] (12-hour time format) ■ n/a—PPV event not showing

VOD Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the VOD Information diagnostic screen. You can view this screen to verify status information applicable to VOD services and sessions.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Confirm the status of the internal and external VOD services
- Verify the status of the VOD sessions
- Determine if SI data is inband or out-of-band
- Verify that there is an EID associated with the VOD session

Screen Components

- Service Group
- SI Received
- Internal and External Secure Micro-configuration
- VOD Statistics

Example:

```

VOD INFORMATION

Service Group: Unavailable      SI Received: DOB

Int: dms ana dis ippv eaid:
     IPPU cells: 00000000     VOD cells: 00000000
Ext: dms ana dis ippv eaid:
     IPPU cells: 00000000     VOD cells: 00000000

State  Session  Entitlement  Stat  Activated
Inactive 0x00000000 | 0 0x00000000 0x00 960102@-290000
Inactive 0x00000001 | 0 0x00000000 0x00 960102@-290000
Inactive 0x00000002 | 0 0x00000000 0x00 960102@-290000
Inactive 0x00000003 | 0 0x00000000 0x00 960102@-290000
Inactive 0x00000004 | 0 0x00000000 0x00 960102@-290000
Inactive 0x00000005 | 0 0x00000000 0x00 960102@-290000

15:03:42, Ref:30 - Pg 8/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Service Group and SI Received

This section displays the service group information and the status of the SI received. The service group and SI received are detected by the DHCT.

Field Name	Description	Possible Values
Service Group	The service group and mapfile version from the BFS	<ul style="list-style-type: none"> ■ [Unavailable]—service group ID is not available <p>Note: The OS is not responsible for reporting service group data.</p>
SI Received	The indicator that describes how SI data is received	<ul style="list-style-type: none"> ■ OOB—out-of-band (QPSK)

Internal and External Secure Micro Configuration

This section displays the service group information and the status of the SI received. The service group and SI received are detected by the DHCT.

Field Name	Description	Possible Values
DMS	The status of the digital multicast services (DMS) enabled flag from the DNCS	<ul style="list-style-type: none"> ■ DMS—enabled ■ dms—not enabled <p>Note: Enable "dms" to view secure digital services.</p>
ANA	The status of the analog service (ANA) enabled flag	<ul style="list-style-type: none"> ■ ANA—enabled ■ ana—not enabled <p>Note: Enable "ana" to descramble analog services on DHCTs with a descrambler.</p>
DIS	The status of the digital interactive services (DIS) enabled flag (VOD)	<ul style="list-style-type: none"> ■ DIS—enabled ■ dis—not enabled <p>Note: Enable "dis" for VOD and xOD to function.</p>
IPPV	The status of the IPPV purchase enabled flag	<ul style="list-style-type: none"> ■ IPPV—enabled ■ ippv—not enabled
EAID	The Entitlement Agent IDs (EIADs) that have been installed for the ISE or ESE into the DHCT	<ul style="list-style-type: none"> ■ EAID <ID number of agent>—EAID received ■ eaid—EAID not received

Field Name	Description	Possible Values
IPPV cells	A bit map representation of the number of non-volatile storage cells available for PPV events	<ul style="list-style-type: none"> ■ FFFFFF00—desired value <p>Note: If FFFFFFF00 does not appear, restage the DHCT.</p>
VOD cells	The bit map representation of the number of non-volatile storage cells available for VOD events	<ul style="list-style-type: none"> ■ FC000000—has type 8 EMMs needed for encryption ■ 00000000—does not have type 8 EMMs needed for encryption

VOD Statistics

Field Name	Description	Possible Values
State	The status of the VOD session	<ul style="list-style-type: none"> ■ Active ■ Failed ■ Inactive ■ Terminated
Session	The OS session ID number	<ul style="list-style-type: none"> ■ [Session ID] (hexadecimal format)
Entitlement	The corresponding EAID and EID pair for the active VOD session	<ul style="list-style-type: none"> ■ [Entitlement ID] (hexadecimal format)
Stat	The response code from the secure micro when it processes the authorization	<ul style="list-style-type: none"> ■ 0x45—active VOD session (hexadecimal format) ■ 0x00—inactive VOD session (hexadecimal format)
Activated	The date and time when the session became active (YYMMDD@hhmmss or yymmdd@50000)	<ul style="list-style-type: none"> ■ [Time] Example: 211230@190000 ■ [Time, Inactive] Example: 960101@-50000

Bootloader Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the Bootloader Information diagnostic screen. Bootloader is a factory program loaded into the DHCTs to ensure reliable upgrades. You can view this screen to confirm the status of the Bootloader.

Important! Data will only appear in this screen when third party applications are implemented.

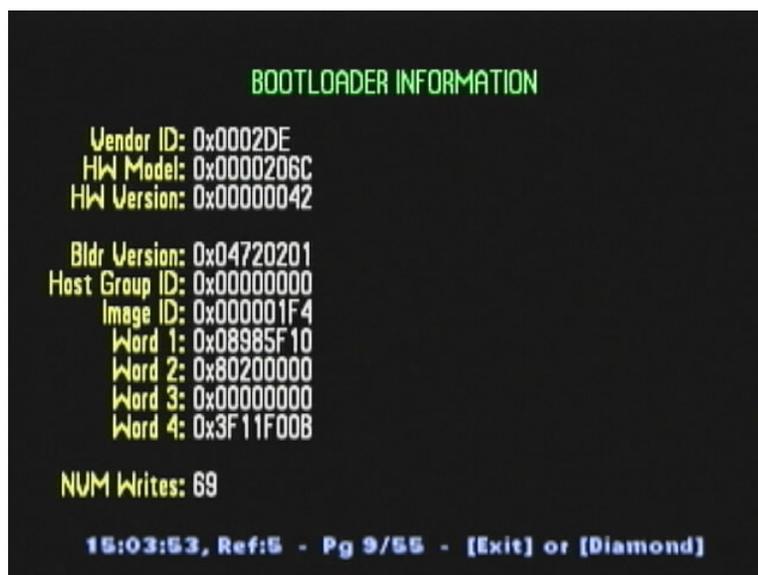
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the version number of the PowerTV Bootloader
- Verify the vendor ID for the manufacturer of the DHCT
- Determine the identification number of the FLASH ROM image
- Determine which CVT download group the DHCT belongs to

Screen Components

Example:



```
BOOTLOADER INFORMATION

Vendor ID: 0x0002DE
HW Model: 0x0000206C
HW Version: 0x00000042

Bldr Version: 0x04720201
Host Group ID: 0x00000000
Image ID: 0x000001F4
Word 1: 0x08985F10
Word 2: 0x80200000
Word 3: 0x00000000
Word 4: 0x3F11F00B

NUM Writes: 69

15:03:53, Ref:5 - Pg 9/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Notes:

- If **na** appears in all of the fields, then the Bootloader application has not been loaded on that DHCT.
- The Bldr Version Group ID, Image ID, Word, and NVM Writes fields are CVT-only fields.
- In the Word fields, resource descriptors are used to validate that new software can be used by the DHCT and, therefore, help prevent bad code from being loaded onto the DHCT.

Field Name	Description	Possible Values
Vendor ID	The vendor number defined by the manufacturer for the DHCT (hexadecimal format)	<ul style="list-style-type: none"> ■ [Manufacturer-dependent]—last 6 digits are first 6 digits of MAC address for DHCT ■ na—Bootloader not loaded
HW Model	The hardware model for the DHCT (hexadecimal format)	<ul style="list-style-type: none"> ■ [Hardware model-dependent] ■ na—Bootloader not loaded
HW Version	The version number of the hardware model	<ul style="list-style-type: none"> ■ [Hardware model-dependent]—in hexadecimal format ■ na—Bootloader not loaded
Bldr Version	The software version for the PowerTV Bootloader (hexadecimal format)	<ul style="list-style-type: none"> ■ [Software-dependent] ■ na—Bootloader not loaded
Group ID	The logical group that the DHCT has been assigned to	<ul style="list-style-type: none"> ■ 0x00000000—default group ID ■ 0x000000xx—"xx" are two numeric values ■ na—DHCT does not support CVT download
Image ID	<p>The image number currently loaded in FLASH ROM</p> <p>Note: The Image ID is determined by the DNCS. The same ROM image may display differently on different system hardware.</p>	<ul style="list-style-type: none"> ■ [Hexadecimal Image ID]—ID is created by the DNCS ■ 0x000000xx—"xx" are two numeric values ■ na—Bootloader not loaded
Word 1	The first word of the resource descriptor	<ul style="list-style-type: none"> ■ [Text]—hexadecimal format
Word 2	The second word of the resource descriptor	<ul style="list-style-type: none"> ■ [Text]—hexadecimal format

Chapter 2 System-Related Diagnostic Screens

Field Name	Description	Possible Values
Word 3	The third word of the resource descriptor	■ [Text] —hexadecimal format
Word 4	The fourth word of the resource descriptor	■ [Text] —hexadecimal format
NVM Writes	The number of writes to the non-volatile memory (NVM) since the DHCT last booted	■ [Integer > 0] ■ n/a —Bootloader not loaded

SAM Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the SAM Information diagnostic screen. You can view this screen to determine which downloaded applications are present in memory and currently active.

Important! Data will only appear in this screen when third party applications are implemented.

Performing Tasks

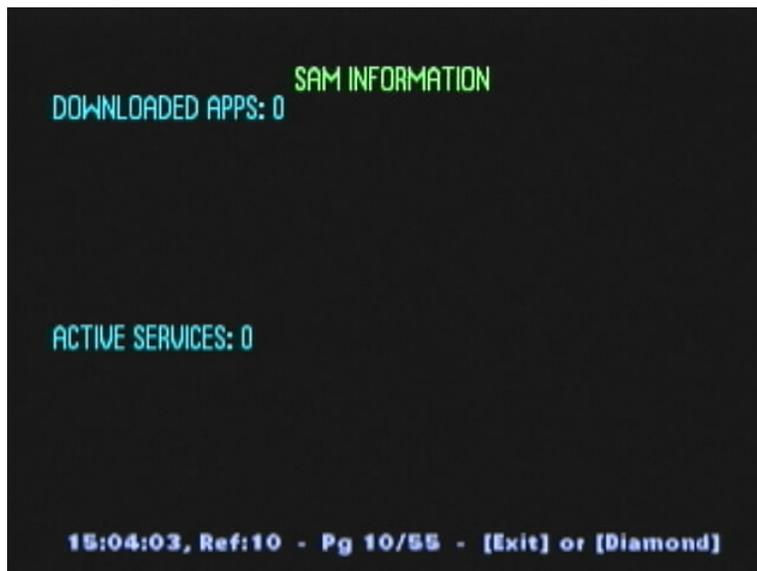
By accessing this diagnostic screen, you can perform the following tasks:

- Verify the name of downloaded applications
- Determine what services are currently running
- Verify the EID required to run an application

Screen Components

- Downloaded Apps
- Active Services

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Downloaded Apps

This section provides information about applications that have been downloaded from the network and are currently present in memory.

Note: This section will not include data if a third party application is not present.

Field Name	Description	Possible Values
Name	The name of the application	■ [Application-dependent]
Ver	The version of the application	■ [Application-dependent]
AppId	The ID number for the application	■ [Assigned by OS]
EID	The entitlement ID number required to run the application	■ [Hexadecimal value]
ActCount	The number of times the application has been activated since it was downloaded	■ 0 —application has not run ■ > 0 —application has been run
Ev	An indication of whether or not an application uses SAM events	■ F (false) —does not use SAM events ■ T (true) —uses SAM events
Size	The file size of the application (K)	■ [Application-dependent]

Active Services

This section provides information about services that are currently running.

Field Name	Description	Possible Values
ShortDesc	A short description of the service	■ [Alphanumeric text string] —alphabetical text saved on the system
ServiceId	The ID associated with the service used by the SAM	■ [Numeric ID] —ID of service saved on the system
AppName	The full uniform resource locator (URL) of the application	■ [HTML address]

SARA Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the SARA Information diagnostic screen. You can view this screen to obtain information about SARA. If SARA detects any unusual or failure conditions, the screen displays these conditions on the bottom half of the screen under the heading of **Software Anomalies**.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine when the global configuration data was sent to the DHCT
- Determine when the DHCT-specific configuration data was created and sent to the DHCT
- Verify when the most recent IPG data was received by the DHCT

Screen Components

- SARA Information
- Software Anomalies

Example:

```

SARA INFORMATION
Global Cfg: Thu Apr 26 2007, 3:08:23 PM EDT (0x4630F8A7)
Addressed Cfg: Unavailable
IPG Daemon: Idle/Waiting c:00003F80; 0507.0204(initial load)
EAS: Total: 0
WAI: Default

SOFTWARE ANOMALIES
WARNING! 070507.14:59 [CONFIG] ☉ config.c:1241 (Exception -0x10
700 cfg owner 3, parameter 33)
WARNING! 070507.14:59 [CONFIG] ☉ config.c:1241 (Exception -0x10
700 cfg owner 3, parameter 33)
WARNING! 070507.14:58 [CHDDCacheF] ☉ lpgdCommonUtil.c:1501 (IP
G used before daemon initialized! (Desired language = %.3s, will use
WARNING! 070507.14:58 [CHDDCacheF] ☉ lpgdCommonUtil.c:1501 (IP
G used before daemon initialized! (Trying %s))
15:04:14, Ref:5 - Pg 11/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Software Information

Field Name	Description	Possible Values
Global Cfg	The date and time that the global configuration data was created	<ul style="list-style-type: none"> ■ [Date, Time]—ASCII and hexadecimal format ■ Unavailable—DHCT has not received any individually addressed configuration data
Addressed Cfg	Displays the date and time that the DHCT-specific configuration data was created and sent to the DHCT	<ul style="list-style-type: none"> ■ [Date, Time]—ASCII and hexadecimal format ■ Unavailable—DHCT has not received any individually addressed configuration data
IPG Daemon	Displays information about the collection of IPG data from the network in the following format: Status Cache State Indicator Timestamp Update Status	
	Status —a description of the current status for the IPG daemon	<ul style="list-style-type: none"> ■ Awaiting Update—update notification received but updated data has not yet been read from BFS ■ Filling Cache—daemon attempting to cache 7 days of IPG data ■ Freed Resources—purged data by request ■ Getting Data—reading title and program data ■ Getting Desc—reading a file containing program text descriptions ■ Getting Update—reading updated data ■ Idle/Waiting—idle
	Cache State Indicator —displays bits that represent days of month that are currently cached into DHCT memory	<ul style="list-style-type: none"> ■ Idle/Waiting (never loaded) ■ 0—zero is never used ■ Bit 1—first day of month ■ Bit 2—second day of month <p>Example: 0000C000 means the data was cached into DHCT memory for the 14th and 15th of the month</p>

Field Name	Description	Possible Values
	Timestamp —(1st timestamp) the time when the most recently updated file was loaded into cache (MMDD.hhmm)	<ul style="list-style-type: none"> ■ [Time]
	Timestamp —(2nd timestamp) the most recently updated file was read and displays initial load if no update notifications exists since the previous boot of the DHCT (MMDD.hhmm)	<ul style="list-style-type: none"> ■ initial load—no updates have been read since the DHCT was rebooted ■ @ [followed by the timestamp]—the creation timestamp for the file most recently updated <p>Example: 0000C000 means the data was cached into DHCT memory on the 14th and 15th of the month.</p>
EAS	Information about the Emergency Alert System (EAS)	<ul style="list-style-type: none"> ■ Total—total number of EAS messages received ■ Last Load/Start—load and start times for the last EAS message received by the DHCT (MMDD.hhmm)
WAI	Provides the current status location information within SARA Note: This field is controlled by third party applications.	<ul style="list-style-type: none"> ■ Default ■ Enabled

Software Anomalies

This section *only* includes messages when SARA detects unusual or failure conditions. The following messages may appear when SARA detects software anomalies.

Important! The presence of an anomaly does not necessarily indicate a problem with the DHCT. The DHCT may have detected an anomaly within the network or at the headend. If any anomalies appear, record the entire message, and then contact your system administrator or Cisco Services for further assistance.

QAM Channel Status Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the QAM Channel Status Information diagnostic screen. You can view this screen to review the status of various QAM channels for the Explorer DHCTs.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

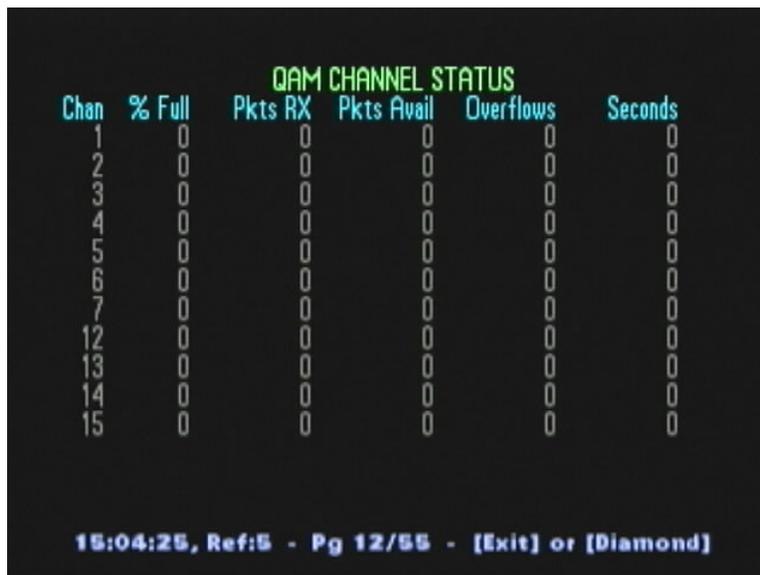
- Check the integrity of the QAM signal
- Determine the current capacity of QAM buffer
- Verify the total number of packets received since the QAM channel became active
- Determine the status of a QAM channel

Screen Components

The color of each row on the QAM Channel Status diagnostic screen represents one of the following status types for the channel:

- **Gray** – indicates an inactive channel
- **White** – indicates an active channel with a nominal current condition and no previous errors
- **Amber** – indicates an active channel with a nominal current condition, but previously had overflow errors
- **Red** – indicates an active channel that is presently in an overflow condition

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Name	Description	Possible Values
Chan	The QAM channel number	■ [Integer > 0]
% Full	The percentage of the current QAM buffer that has already been filled	■ [Integer ≥ 0] —expressed as a percentage
Pkts RX	The total number of packets received since the channel became active	■ [Integer ≥ 0]
Pkts Avail	The total number of packets that passed all filtering and were made available to the consumer since the channel became active	■ [Integer ≥ 0]
Overflows	The total number of QAM buffer overflows that have occurred since the channel became active	■ 0 [or a very low value] —desired value ■ [Large value] —contact Cisco Services
Seconds	The number of seconds that the channel has been active	■ [Integer ≥ 0]

DMA Channel Status Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the DMA Channel Status diagnostic screen. You can view this screen to review the status of various Direct Memory Access (DMA) channels for these set-tops.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Check the integrity of the signals
- Determine the current capacity of the DMA buffer
- Verify the total number of packets received since a DMA channel became active
- Determine the status of a DMA channel

Screen Components

The color of each row on the DMA Channel Status diagnostic screen represents one of the following status types for the channel:

- **Gray** – indicates an inactive channel
- **White** – indicates an active channel with a nominal current condition and no previous errors
- **Amber** – indicates an active channel with a nominal current condition, but previously had overflow errors
- **Red** – indicates an active channel that is presently in an overflow condition

Example:

```

DMA CHANNEL STATUS
Chan  % Full  Pkts RX  Pkts Avail  Overflows  Seconds
  8      0        0        0          0          0
  9      0        0        0          0          0
 10      0        0        0          0          0
 11      0        0        0          0          0
 16      0        0        0          0          0
 17      0        0        0          0          0
 18      0        0        0          0          0
 19      0        0        0          0          0

15:04:39, Ref:5 - Pg 13/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Name	Description	Possible Values
Chan	The DMA channel number	■ [Integer > 0]
% Full	The percentage of the current DMA buffer that has already been filled	■ [Integer ≥ 0] —expressed as a percentage
Pkts RX	The total number of packets received since the channel became active	■ [Integer ≥ 0]
Pkts Avail	The total number of packets that passed all filtering and were made available to the consumer since the channel became active	■ [Integer ≥ 0]
Overflows	The total number of DMA buffer overflows that have occurred since the channel became active	■ 0 [or a very low value] —desired value ■ [Large value] —contact Cisco Services
Seconds	The number of seconds that the channel has been active	■ [Integer ≥ 0]

Component Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions of the Component Information diagnostic screen. You can view this screen to verify the software and driver versions installed on the DHCT.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the software and software version for components installed on the DHCT
- Verify release status for software and driver components installed on the DHCT
- Determine when a component was created

Screen Components

- Name
- Version
- Q (Quality)
- Date

Example:

COMPONENT INFORMATION			
Name	Version	Q	Date
ROM Image	1.5.3.902	F	04/05/07 3:06:38 PM EDT
OS	6.20.29.1		04/02/07 11:47:00 AM PDT
SARA	1.90.5.103	a	04/05/07 3:06:33 PM EDT
PowerKEY LIB	3.9.7.13	R	03/21/07 4:55:35 PM EDT
HAL Driver	1.3.25.1	R	04/04/07 10:53:16 AM EDT
CpProt LIB	4.1.1.1	R	03/15/07 2:00:44 PM EDT
firebus	1.9.12.1		06/06/05 5:25:37 PM PDT
fbdtcp	1.3.4.1		05/03/05 5:33:30 PM PDT
PHAL3 Driver	3.5.18.4	R	03/21/07 5:34:32 PM EDT

15:04:50, Ref:Play - Pg 14/55 - [Exit] or [Diamond]

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Name

Lists the name of the component installed on the DHCT.

Version

The Version section includes information about the versions of the various software components that are installed on the DHCT (for example, 1.0.0.18).

Quality

The Q (Quality) section includes information about the development or release status of the various software and driver components that are installed on the DHCT.

Field Name	Description	Possible Values
Q	The release status of the various software and driver components	a (alpha) —Indicates the software is in an alpha version
		b (beta) —Indicates the software is in a beta version
		d, D —Indicates the software is in a development version
		R —Indicates the software is in an officially released version

Date

The Date section includes the date that the component was created.

DVR HDD Information Diagnostic Screen

Information

Important! This diagnostic screen *only* exists on 8300C/HDC and 8240C/HDC DHCTs.

This section provides an overview of the DVR Hard Disk Drive (HDD) Information diagnostic screen, including the fields and parameters that are included in the screen. Access this screen to retrieve information regarding the hard disk drive on the DHCT that is used to store digitally recorded video programs.

Note: The SARA product name is SARA DVR 1.5.3_8300HDC_HR_F.p.0302 and the operating system (OS) is Home Server CableCARD Edition 1.2. The diagnostic screens display the SARA code version that the Cisco engineering department uses for code maintenance purposes.

Performing Tasks

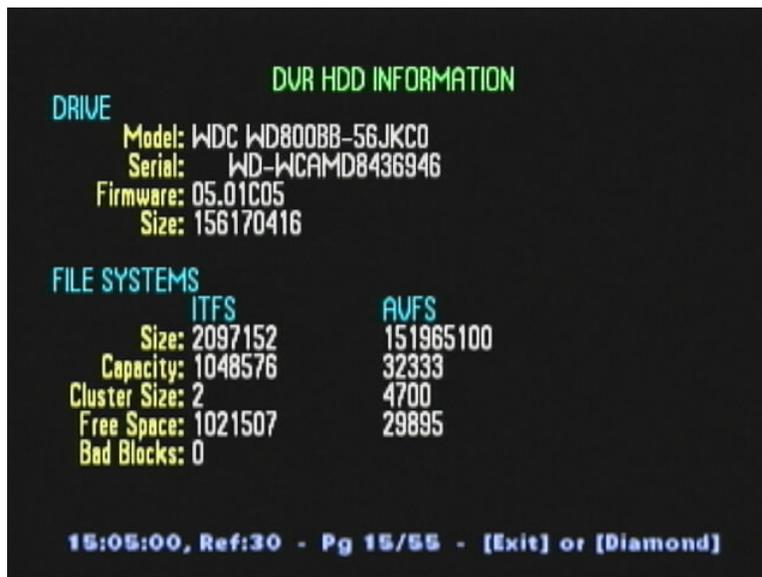
By accessing this diagnostic screen, you can perform the following tasks:

- Determine the model and serial number of the hard drive
- Verify the amount of available free space
- Determine the size and capacity of the ITFS (Information Technology File System) and the AVFS (Audio/Video File System) file systems
- Verify statistical information about the DVR hard disk in the DHCT

Screen Components

- Drive
- File Systems

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Drive

Field Name	Description	Possible Values
Model	The model type for the DVR HDD	■ [Model-dependent]
Serial	The serial number for the DVR HDD	■ [Model-dependent]
Firmware	The firmware identification number	■ [Software-dependent]
Size	The size of the sectors for the HDD	■ [Hard drive-dependent]

File Systems

Field Name	Description	Possible Values
Size	The amount of space allocated to the ITFS and AVFS partitions in sectors	■ [Integer > 0]
Capacity	The amount of space available to the ITFS and AVFS partitions in clusters	■ [Integer > 0]
Cluster Size	The number of sectors in one ITFS or AVFS cluster	■ [Integer > 0]
Free Space	The amount of unused ITFS or AVFS space in clusters	■ [Integer > 0]
Bad Blocks	The number of bad ITFS clusters	■ 0 —desired value Note: An integer > 0 could indicate an issue.

MPEG Encoder Status Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides the current status and detailed specifications for each MPEG encoder on the DHCT, including the fields and parameters that are included in the diagnostic screen. You can access this screen to verify the MPEG encoding of the two MPEG tuners in the Home Entertainment Server.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify if encoding is active
- Determine the horizontal and vertical resolution of each MPEG encoder
- Verify the audio and video bit rates
- Verify the frequency of the audio that is sampled

Screen Components

- Encoder 1
- Encoder 2

Example:

```

MPEG ENCODER STATUS

Encoder 1      Encoder 2
Encoding: OFF  OFF
Horiz Res: 720 0
Vert Res: 480 480
Rate Control: VBR VBR
Video BitRate: 4850000 4850000
Video Pid: 0x21 0x31
Audio BitRate: Mpeg_128 Mpeg_128
Audio Pid: 0x22 0x32
Audio Fmt: MpegLayer2 MpegLayer2
Audio Mode: Stereo Stereo
Audio Freq: 48000 48000

15:05:11, Ref:5 - Pg 16/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Name	Description	Possible Values
Encoding	The encoding status condition Note: The encoder is in use when the analog channel is being recorded.	<ul style="list-style-type: none"> ■ OFF—encoder is not in use ■ ON—encoder is in use
Horiz Res	The horizontal resolution of the encoded video	■ [Stream-dependent]
Vert Res	The vertical resolution of the encoded video	■ [Stream-dependent]
Rate Control	A rate control code that Indicates if the source is encoded at a constant or variable rate	<ul style="list-style-type: none"> ■ CBR—constant bit rate ■ VBR—variable bit rate
Video BitRate	The bit rate at which the source is encoded	■ [Integer > 0]
Video Pid	The packet identifier (PID) in which the video is encoded	<ul style="list-style-type: none"> ■ [Hexadecimal number > 0]—streaming ■ [Hexadecimal number = 0]—not streaming
Audio BitRate	The bit rate at which the audio is encoded	<ul style="list-style-type: none"> ■ Mpeg_128 ■ Mpeg_64
Audio Pid	The PID in which the audio is encoded	<ul style="list-style-type: none"> ■ [Hexadecimal number > 0]—streaming ■ [Hexadecimal number = 0]—not streaming
Audio Fmt	The type of audio encoding format	<ul style="list-style-type: none"> ■ MpegLayer1 ■ MpegLayer2 ■ MpegLayer3 ■ Dolby AC3 ■ PCM
Audio Mode	The type of audio mode	<ul style="list-style-type: none"> ■ Mono ■ Stereo
Audio Freq	The audio encoding sampling rate (MHz)	■ [Integer > 0]

Second Tuner Status Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides the current status and detailed specifications for the additional tuner included with your DHCT, including the fields and parameters that are included in the diagnostic screen. This screen allows you to verify the status of the second QAM tuner and MPEG decoder that exist in the Home Entertainment Server.

Important!

- The information displayed in the Second QAM section of the Second Tuner Status diagnostic screen always refers to the Second Tuner.
- The information displayed in the Second MPEG Decoder section of the Second Tuner Status diagnostic screen always displays PIP video data.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the working status of the second QAM and second MPEG decoder
- Determine if the second tuner is picking up sufficient frequency
- Verify the tuning mode of the second QAM

Screen Components

- Second QAM
- Second MPEG Decoder

Example:

```
SECOND TUNER STATUS
Second QAM          Second MPEG Decoder
  Status: Locked    A/V Disc: 0
   S/N: 32 dB       PCR Lock: 0
  EQ Gain: 1.000000 Video: 0
   Seconds: 412     Audio: 0
   Freq: 555.000 MHz PCR: 0
Tuning Mode: QAM-256 PTS: 0
   Level: -12 dBmV  PEI: Unavailable
  Corr Bytes: 46    PER: Unavailable
  Uncor Blks: 0     SER: Unavailable
Errs Avg/Inst: 0 / 0 RST: Unavailable
                0/Sec (avg)

15:05:26, Ref:5 - Pg 17/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Second QAM

The following table provides a description of the current status of the QAM. For more information, go to Current QAM Parameters in the *RF Status Diagnostic Screen* (on page 29).

Important! The only way to verify which tuner is tied to an output is to change channels on that output (Main or PIP), and observe the frequency and modulation changes that occur in the *RF Status Diagnostic Screen* (on page 29) and the *Second Tuner Status Diagnostic Screen* (on page 67).

Field Name	Description	Possible Values
Status	The status of the second QAM	<ul style="list-style-type: none"> ■ Locked—receiver is locked onto a valid analog or QAM channel ■ Unlocked—valid data is not being received
S/N ⁷	The approximate signal-to-noise ratio (dB)	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ n/a
EQ Gain	The QAM equalizer gain on the QAM data channel	<ul style="list-style-type: none"> ■ Amber—marginal signal problem that needs corrected ■ Red—serious signal problem exists and needs corrected ■ White—no signal problems exist
Seconds ⁸	The number of seconds the tuner has been locked on current frequency	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Freq	The frequency to which the inband tuner is tuned (MHz)	<ul style="list-style-type: none"> ■ [Dependent upon tuned frequency]
Tuning Mode	The tuning mode of the inband tuner	<ul style="list-style-type: none"> ■ Analog ■ QAM-64 ■ QAM-128 ■ QAM-256
Level ⁷	The approximate signal level	<ul style="list-style-type: none"> ■ Amber—level is marginally too high or too low ■ Red—level is too high or too low ■ White—level is normal
Corr Bytes ⁷	The number of bites received in error that were successfully corrected by the FEC code	<ul style="list-style-type: none"> ■ [Integer ≥ 0]

⁷ The level and signal-to-noise data is provided for your convenience. These measurement results are not a substitute for measurements taken with signal level meters or spectrum analyzers.

⁸ This field applies to QAM Data Channels only. It does not apply to analog channels.

Field Name	Description	Possible Values
Uncor Blks ⁹	The number of data blocks received in error that were not successfully corrected by FEC code	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Errs Avg/Inst ⁹	<p>Two unique numbers that describe data errors</p> <p>First Number—the average number of errors during the time the frequency was locked</p> <p>Second Number—the number of errors since the last time the screen was refreshed</p>	<ul style="list-style-type: none"> ■ [Integer ≥ 0]/[Integer ≥ 0]

Second MPEG Decoder

The second MPEG Decoder section includes information about the DHCT when it is tuned to a digital channel and when an MPEG stream is being detected. For more information, go to MPEG Stats in the *Status and Network Parameters Diagnostic Screen* (on page 22) section.

Field Name	Description	Possible Values
A/V Disc	<p>The sum of the discontinuity errors encountered on either the audio or video streams that have occurred since the current stream was tuned</p> <p>Note: Discontinuity errors indicate that packets were transmitted out of order or with a gap between them. This indicates data loss.</p>	<ul style="list-style-type: none"> ■ 0—desired value ■ [Integer > 0]—indicates an issue
PCR Lock	The time stamp of the last PCR synchronization lock	<ul style="list-style-type: none"> ■ [UNIX format]—number should change each time the screen refreshes; otherwise video may be lost.
Video	The video PID number in the MPEG stream that contains the video information being decoded	<ul style="list-style-type: none"> ■ [Hexadecimal value > 0]—streaming ■ [Hexadecimal value =0]—not streaming
Audio	The audio PID number in the MPEG stream that contains the audio information being decoded	<ul style="list-style-type: none"> ■ [Hexadecimal value > 0]—streaming ■ [Hexadecimal value =0]—not streaming

⁹ This field applies to QAM Data Channels only. It does not apply to analog channels.

Field Name	Description	Possible Values
PCR	The PID number that is used to decode the program clock reference (PCR) information Note: The PCR PID is typically the same as the Video PID.	<ul style="list-style-type: none"> ■ [Channel-dependent]
PTS	A presentation time stamp that changes each time the screen refreshes	<ul style="list-style-type: none"> ■ [UNIX format]—number should change each time the screen refreshes <p>Important! If this number does <i>not</i> change each time the screen refreshes, then video may have been lost.</p>
PEI	The number of errors in the MPEG stream before reaching the Broadband Interface Processor	<ul style="list-style-type: none"> ■ 0—desired value ■ [Integer > 0]—indicates an issue
PER ¹⁰	The PERs reported by the MPEG decoder chip	<ul style="list-style-type: none"> ■ Digital—0 ■ Analog—0
SER ¹⁰	The number of SERs reported by the MPEG decoder chip	<ul style="list-style-type: none"> ■ Digital—0 ■ Analog—n/a
RST ¹⁰	The number of times the software driver has restarted the MPEG decoding process	<ul style="list-style-type: none"> ■ 0—desired value ■ [Integer > 0] <p>Note: If the RST value is incrementing, a source issue could exist. Please contact Cisco Services.</p>

¹⁰ This field is only valid for the standard-definition (SD) set-tops.

DVR Status Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides the current status information for the DVR function included with your DHCT, including the fields and parameters that are included in the diagnostic screen. You can access this screen to verify the status of the DVR.

Performing Tasks

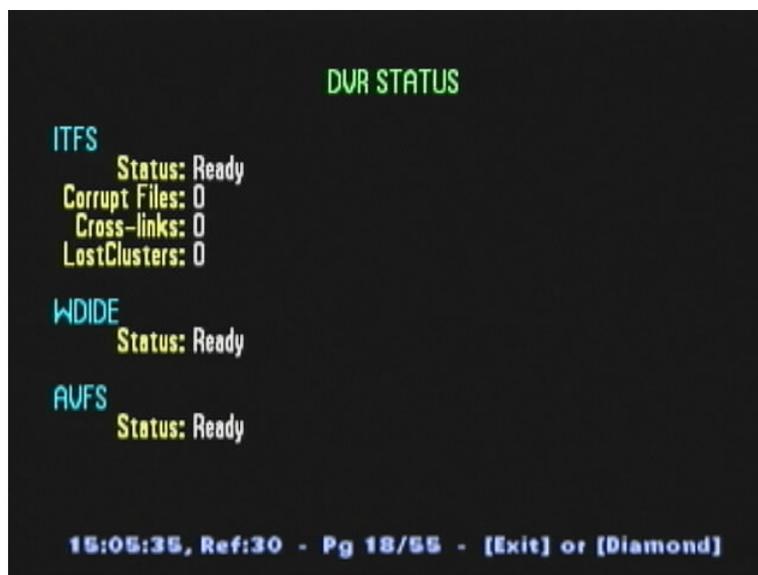
By accessing this diagnostic screen, you can perform the following tasks:

- Determine the current status of the ITFS, WDIDE, and AVFS
- Determine the status of cross links
- Verify whether or not any files are corrupt

Screen Components

- ITFS
- WDIDE
- AVFS

Example:



```
DVR STATUS

ITFS
  Status: Ready
  Corrupt Files: 0
  Cross-links: 0
  LostClusters: 0

WDIDE
  Status: Ready

AVFS
  Status: Ready

15:05:35, Ref:30 - Pg 18/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

ITFS

Important! The fields within the ITFS section should only change after a loss of power or after a reboot.

Note: After a loss of power or a reboot, it would not be unusual that the "LostClusters" field display number(s) other than 0 (zero). That condition is expected. It indicates that a recording was in progress when the DHCT rebooted, and open files were not closed. The last few seconds of the recording might be lost and would be indicated here as "lost clusters." It is possible for the other fields to display number(s) other than 0 as well, but that would indicate more serious issues.

Field Name	Description	Possible Values
Status	The current working status of the ITFS	<ul style="list-style-type: none"> ■ Ready—this value should always appear Note: If Ready does not appear, contact Cisco Services.
Corrupt Files	The number of corrupt or impaired files within the ITFS	<ul style="list-style-type: none"> ■ 0—desired value ■ [non-0]— contact Cisco Services
Cross-links	The number of cross-links clusters	<ul style="list-style-type: none"> ■ 0—desired value ■ [non-0]— contact Cisco Services
LostClusters	The number of allocated clusters not associated with any file	<ul style="list-style-type: none"> ■ 0—desired value ■ [non-0]— contact Cisco Services

WDIDE

Field Name	Description	Possible Values
Status	The current working status of the IDE device driver	<ul style="list-style-type: none"> ■ Ready—desired value Note: If Ready does not appear, contact Cisco Services.

AVFS

Field Name	Description	Possible Values
Status	The current working status of the AVFS device driver	<ul style="list-style-type: none"> ■ Drive Asleep—may appear when the DHCT is powered off ■ Not Ready ■ Ready—desirable value

Audio, HDMI, HDCP, and Closed Captioning Status Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides a diagram and field descriptions of the Audio, HDMI™, HDCP, and Closed Captioning diagnostic screen. You can view this screen to obtain information about the audio channel, the High-Definition Multimedia Interface (HDMI), the High-bandwidth Digital Copy Protection (HDCP) status, and the digital closed caption status.

Performing Tasks

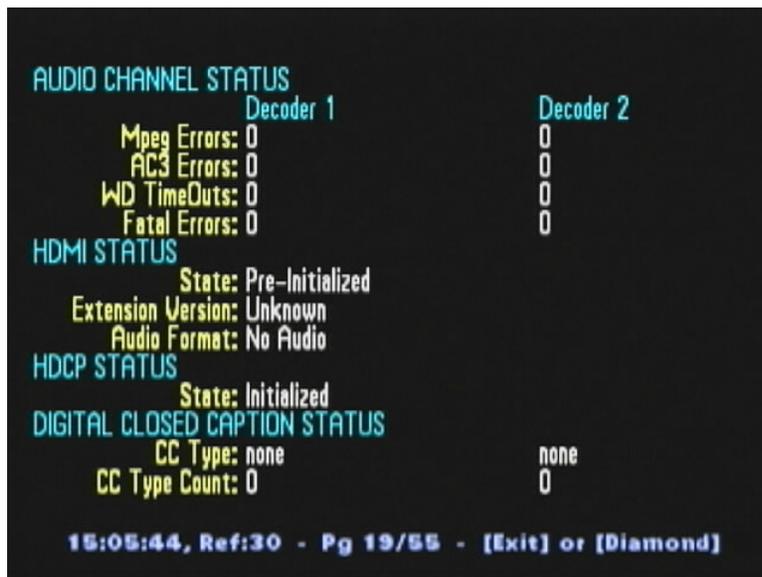
By accessing this diagnostic screen, you can perform the following tasks:

- Identify if any errors have occurred that relate to MPEG or AC3 decoding (during playback)
- Determine the type of audio format being sent through the HDMI port
- Verify the type of closed captioning being decoded

Screen Components

- Audio Channel Status
- HDMI Status
- HDCP Status
- Digital Closed Caption Status

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Audio Channel Status

Note: There are two possible decoder entries.

Field Name	Description	Possible Values
Mpeg Errors	The number of MPEG decoding errors detected by the audio DSP since the playback began	■ [Integer ≥ 0]
AC3 Errors	The number of AC3 decoding errors detected by the audio DSP since the playback began	■ [Integer ≥ 0]
WD TimeOuts	The number of times the audio DSP has reset because a Watch Dog timeout	■ [Integer ≥ 0]
Fatal Errors	The number of times the audio DSP has reset count because of a fatal error	■ [Integer ≥ 0]

HDMI Status

Field Name	Description	Possible Values
State	The current state of the HDMI port	<ul style="list-style-type: none"> ■ Compatible Monitor connected ■ Incompatible Monitor connected ■ Initialized ■ Pre-Initialized ■ Revoked Monitor connected
Extension Version	The Electronic Industries Alliance (EIA) standard to which this television complies	<ul style="list-style-type: none"> ■ EDID ■ EIA-861 ■ EIA-861A ■ EIA-861B ■ Unknown
Audio Format	The type of audio being sent out through the HDMI port	<ul style="list-style-type: none"> ■ AC3 (compressed) ■ Linear Pulse Code Modulation (LCPM; uncompressed) ■ No Audio

HDCP Status

Field Name	Description	Possible Values
State	The current state of the HDCP process	<ul style="list-style-type: none"> ■ Initialized ■ Authenticated ■ In process/Incompatible ■ Initialized Key Exchange ■ Pre-initialized

Digital Closed Caption Status

Field Name	Description	Possible Values
CC Type	The type of closed captioning being decoded	<ul style="list-style-type: none"> ■ DVS-157 (Digicypher) ■ EIA-708 w/ DTVCC (EIA-708 with Digital Television Closed Captioning) ■ EIA-708 w/o DTVCC (EIA-708 without Digital Television Closed Captioning) ■ None ■ SA type 0
CC Type Count	The number of Closed Captioning formats currently available in the stream	<ul style="list-style-type: none"> ■ [Integer ≥ 0]

MPEG Decoder Status Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides a diagram and field descriptions of the MPEG Decoder Status diagnostic screen. You can view this screen to obtain information about the MPEG stream.

Performing Tasks

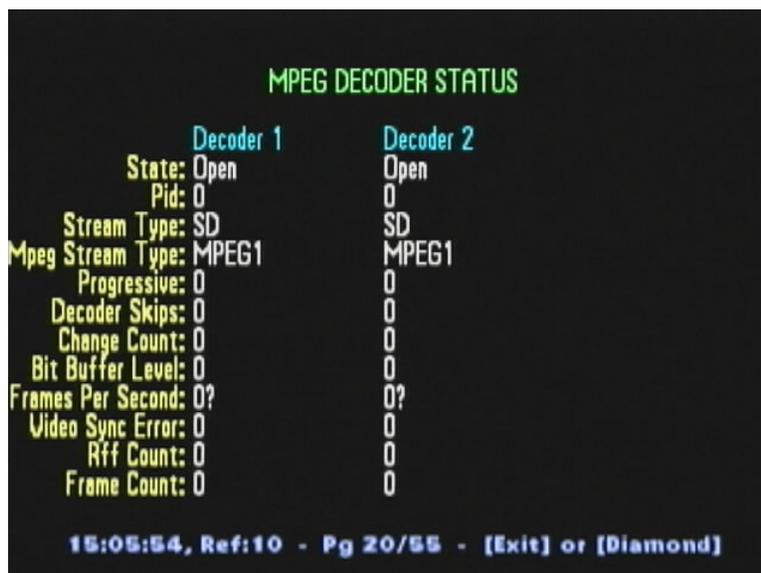
By accessing this diagnostic screen, you can perform the following tasks:

- Determine the MPEG Transport PID for each decoder
- Verify whether the MPEG stream is progressive or interlaced for each decoder
- Determine the number of frames that have been decoded on the current channel

Screen Components

- Decoder 1
- Decoder 2

Example:



```
MPEG DECODER STATUS
Decoder 1      Decoder 2
State: Open    Open
Pid: 0         0
Stream Type: SD SD
Mpeg Stream Type: MPEG1 MPEG1
Progressive: 0 0
Decoder Skips: 0 0
Change Count: 0 0
Bit Buffer Level: 0 0
Frames Per Second: 0? 0?
Video Sync Error: 0 0
Rff Count: 0   0
Frame Count: 0 0
15:05:54, Ref:10 - Pg 20/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Decoder 1 and Decoder 2 Parameters

Field Name	Description	Possible Values
State	The current state of the MPEG channel	<ul style="list-style-type: none"> ■ Connected ■ Initialized ■ Open ■ Pre-initialized ■ Started
Pid	The MPEG transport PID used to encapsulate IHP PDUs within MPEG-PS sections in order to transmit them to the client	<ul style="list-style-type: none"> ■ 0—no PID is assigned or it is not known ■ [Integer > 0]
Stream Type	The type of stream being sent	<ul style="list-style-type: none"> ■ HD—high definition ■ SD—standard definition
Mpeg Stream Type	The type of stream being decoded	<ul style="list-style-type: none"> ■ MPEG1 ■ MPEG2
Progressive	An indication of whether the stream is progressive or interlaced	<ul style="list-style-type: none"> ■ 0—interlaced stream ■ 1—progressive stream
Decoder Skips	The number of times the decoder has <i>skipped</i> since tuning to this channel	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Change Count	The number of times that the stream has changed since tuning to this channel	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Bit Buffer Level	The number of bits that are being held in the buffer	<ul style="list-style-type: none"> ■ [Integer ≥ 120,000]—desired value ■ [Integer < 120,000]— contact Cisco Services
Frames Per Second	The frame rate of the stream	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Video Sync Error	The difference between the PTS value and the PCR value	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Rff Count	The number of times that the Repeat First Field flag has occurred	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Frame Count	The number of frames that have been decoded since the DHCT was booted	<ul style="list-style-type: none"> ■ [Integer ≥ 0]

MPEG Display Status Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides a diagram and field descriptions of the MPEG Display Status diagnostic screen. You can view this screen to obtain information about the MPEG configuration.

Performing Tasks

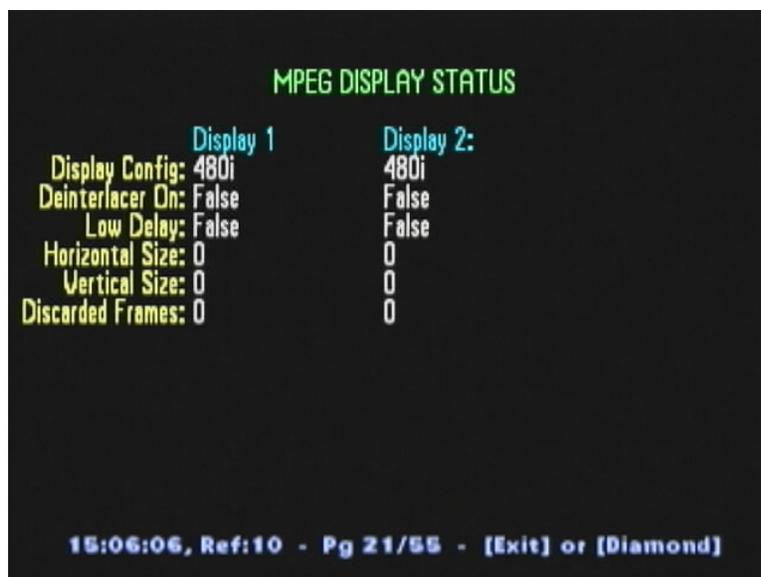
By accessing this diagnostic screen, you can perform the following tasks:

- Determine the current resolution of each stream that is being displayed
- Identify the horizontal and vertical size of the frame
- Determine if any frames were discarded
- Identify if the deinterlacer is activated for either stream

Screen Components

- Display 1
- Display 2

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Display 1 and Display 2 Parameters

Field Name	Description	Possible Values
Display Config	The current output configuration of the display	<ul style="list-style-type: none"> ■ 480i ■ 480p ■ 720p ■ 1080i
Deinterlacer On	An indication of whether the Deinterlacer is turned on or off	<ul style="list-style-type: none"> ■ False ■ True
Low Delay	Indicates whether or not the stream is low delay video encoding capable	<ul style="list-style-type: none"> ■ False ■ True
Horizontal Size	The horizontal size of the frame	■ [Frame-dependent integer value]
Vertical Size	The vertical size of the frame	■ [Frame-dependent integer value]
Discarded Frames	The number of late frames that were discarded	■ [Integer \geq 0]

SRM Sessions Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 4250C/HDC and 4240C/HDC DHCTs.

This section provides a diagram and field descriptions of the Session Resource Manager (SRM) Sessions diagnostic screen. The SRM informs the connection manager of streaming client needs or issues, and a protocol is used to carry control messages between the DHCT and the server. You can view this screen to obtain information related to this connection.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the current status of DHCT-to-server connection
- Verify that the connection IP address is valid and is being read by the system
- Determine the identification number of the current session on the DHCT

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Display 1 and Display 2 Parameters

Field Name	Description	Possible Values
Session ID	The ID of the session in the current connection	■ [Network-dependent]
Server ID	The ID of the server in the current connection	■ [Network-dependent]
Connection IP Address	The IP address defined for the current connection	■ [Network-dependent]
Status	The current status of the connection	<ul style="list-style-type: none"> ■ Connected ■ Connecting ■ Early Release ■ Network Releasing ■ Not Connected ■ Releasing ■ Timeout

1394 Information Diagnostic Screen

Information

This section provides an overview of the 1394 Information diagnostic screen, and includes information that reports copy protection data about the 1394 port and for any device connected to the 1394 port.

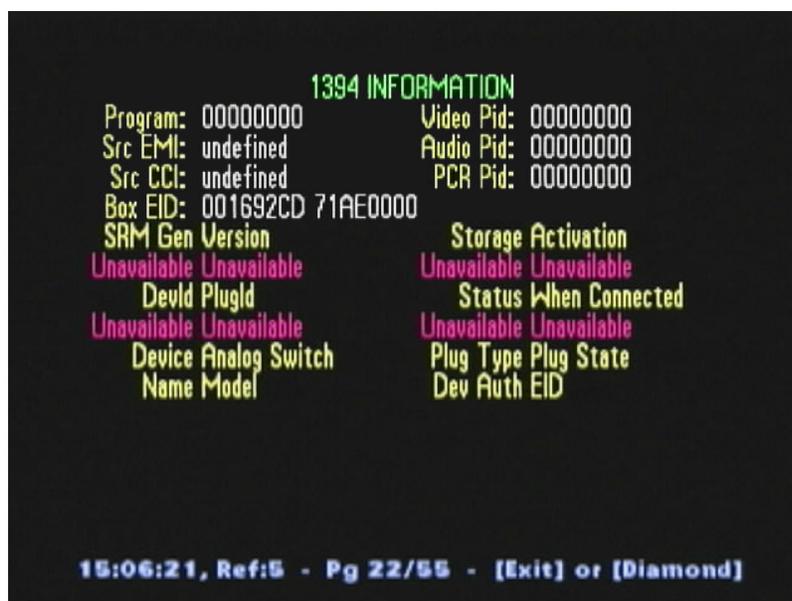
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Identify devices connected to the 1394 port
- Verifies the status of the port
- Verify the level of copy protection for devices connected to the 1394 port
- Verify encryption mode indicator (EMI) and copy control information (CCI) values

Screen Components

Example:



```
1394 INFORMATION
Program: 00000000      Video Pid: 00000000
Src EMI: undefined    Audio Pid: 00000000
Src CCI: undefined    PCR Pid: 00000000
Box EID: 001692CD 71AE0000
SRM Gen Version      Storage Activation
Unavailable Unavailable  Unavailable Unavailable
DevId PlugId        Status When Connected
Unavailable Unavailable  Unavailable Unavailable
Device Analog Switch Plug Type Plug State
Name Model          Dev Auth EID

15:06:21, Ref:5 - Pg 22/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Important! If a DHCT does not support a specific field or the data is not currently applicable, **Unavailable** appears as the value.

Field Name	Description	Possible Values
Program	The MPEG program number assigned to the video stream	<ul style="list-style-type: none"> ■ [Hexadecimal number] (dependent on current video stream)
SRC EMI	If streaming, the current source encryption mode setting (SRC EMI) being encoded into the 1394 stream will appear	<ul style="list-style-type: none"> ■ free—unlimited copying of content ■ never—content cannot be copied ■ no more—content cannot be copied ■ once—content can be copied once ■ undefined—no EMI value
SRC CCI	If streaming, the source copy control information (SRC CCI) value being encoded into the program map table (PMT) will appear	<ul style="list-style-type: none"> ■ free—unlimited copying of content ■ never—content cannot be copied ■ no more—content cannot be copied ■ once—content can be copied once ■ undefined—no CCI value
Box EID	The serial number of the DHCT	<ul style="list-style-type: none"> ■ [Dependent upon version]
Video Pid	The video PID number in the MPEG stream that contains the video information being decoded	<ul style="list-style-type: none"> ■ [Hexadecimal number > 0]—streaming ■ [Hexadecimal number = 0]—not streaming
Audio Pid	The audio PID number in the MPEG stream that contains the audio information being decoded	<ul style="list-style-type: none"> ■ [Hexadecimal number > 0]—streaming ■ [Hexadecimal number = 0]—not streaming
PCR Pid	The PID number in the stream that refers to the PCR time stamp	<ul style="list-style-type: none"> ■ [Hexadecimal number > 0]—streaming ■ [Hexadecimal number = 0]—not streaming
SRM Gen	A system renewability message that lists devices that are no longer authorized to play copy protected content	<ul style="list-style-type: none"> ■ [List of devices] ■ Unavailable

Field Name	Description	Possible Values
Version	The version number of the SRM	<ul style="list-style-type: none"> ■ [Dependent upon version] ■ Unavailable
Storage	The location of where the SRM data is stored	<ul style="list-style-type: none"> ■ local—stored on local hard drive ■ network—stored on the network ■ Unavailable
Activation	The activation time when the device began using the SRM data (MMDD.hhmmss)	<ul style="list-style-type: none"> ■ [Date.Time] ■ Unavailable
DevId	An eight-digit number that identifies the connected device	<ul style="list-style-type: none"> ■ [Hexadecimal number > 0]—(dependent upon connected device)
PlugId	The unique plug identification of the 1394 port	<ul style="list-style-type: none"> ■ [Hexadecimal number > 0]—(dependent upon 1394 device)
Status	The status of the port when it is connected	<ul style="list-style-type: none"> ■ not compliant—connected port not compliant with 1394 ■ supported—connected port supported by 1394
When Connected	The date and time when a device was connected to the 1394 port (YYMMDD.hhmmss)	<ul style="list-style-type: none"> ■ [Time]
Device	The device number for the connected device	<ul style="list-style-type: none"> ■ [Integer > 0] (dependent on number of none connected devices)
Analog Switch	Indication of whether or not analog switching is supported for the video plug	<ul style="list-style-type: none"> ■ none ■ supported
Plug Type	The plug type associated with the connection device	<ul style="list-style-type: none"> ■ input ■ output
Plug State	The current state of the 1394 port	<ul style="list-style-type: none"> ■ active ■ idle ■ ready ■ suspended
Name	<p>The brand name of the connected device</p> <p>Note: There may be more than one connected device.</p>	<ul style="list-style-type: none"> ■ [Device-dependent]

Field Name	Description	Possible Values
Model	<p>The model number for the connected device</p> <p>Note: There may be more than one connected device.</p>	<ul style="list-style-type: none"> ■ [Device-dependent]
Dev Auth	<p>The current authorization level of the connected device</p>	<ul style="list-style-type: none"> ■ full-can access all content protected programs after successful authentication ■ none-can access <i>copy freely</i> protected content ■ restricted-can access <i>once</i> and <i>no more</i> copy protected programs after successful authentication
EID	<p>The unique number for the connected device</p>	<ul style="list-style-type: none"> ■ [Device-dependent]

Copy Protection Diagnostic Screen

Information

This section provides an overview of the Copy Protection diagnostic screen, and includes information related to the copy protection settings for the current video stream, as well as for output ports.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine copy protection settings associated with the content stream that is currently playing
- Determine the copy protection schemes and policies that are currently applied to particular output ports

Screen Components

- Outputs
- Policies
- CCI Events

Example:

```

COPY PROTECTION

Outputs
Protection Type  Enabled  Constrained
DVI/HDMI: HDCP      no       no
YPrPb: none      yes      no
1394: Unavailable  Unavailable
Composite: none / none

Policies
HDMI: 0x0000000C v1  Composite: 0x00000000 v1
YPrPb: 0x00000002 v1  VOD: 0x00000000 v1
1394: 0x00000000 v1

CCI Events
Source Destination  CIT EPN  EMI BF  APS

15:06:38, Ref:5 - Pg 23/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Outputs

The Outputs section of the Copy Protection diagnostic screen describes the following output parameters for the DVI/HDMI, YPrPb, 1394, and composite output ports.

- **Protection Type**—describes the copy protection scheme being applied to an output port
- **Enabled**—indicates whether the output port is currently enabled (displaying video)
- **Constrained**—indicates whether the image displayed on the output is constrained (effective resolution of an image is limited)

Field Name	Possible Values		
	Protection Type	Enabled	Constrained
DVI/HDMI	<ul style="list-style-type: none"> ■ HDCP—high bandwidth digital content protection ■ none 	<ul style="list-style-type: none"> ■ no ■ yes 	<ul style="list-style-type: none"> ■ no ■ yes
YPrPb	<ul style="list-style-type: none"> ■ none 	<ul style="list-style-type: none"> ■ no ■ yes 	<ul style="list-style-type: none"> ■ no ■ yes
1394	<ul style="list-style-type: none"> ■ disabled—not supported by hardware ■ DTCP—digital transmission content protection ■ none 	<ul style="list-style-type: none"> ■ disabled—not supported by hardware ■ no ■ yes 	N/A
Composite	<ul style="list-style-type: none"> ■ Macrovision ■ none 	N/A	N/A

Policies

The Policies section of the Copy Protection diagnostic screen indicates what copy protection policies are currently applied to a particular output port. It also indicates the version of the policy format that is currently used. Policies can affect output and output ports in the following ways:

- Define the copy protection scheme applied to an output
- Define whether an output port is enabled or disabled
- Determine whether the image on an output port is constrained
- Provide the version number regarding the copy protection policies that are currently being used

Field Name	Description	Possible Values
HDMI	<p>The group and version number for the copy control policy relating to HDMI ports</p> <p>Note: The possible values for the policy bits only apply to version 1 of the policy format.</p>	<p>Format:8-bit value [HDMI policy] [policy format version]</p> <ul style="list-style-type: none"> ■ [Bit 0] 1: Disable (block) HDMI port at all times ■ [Bit 1] 1: Output a constrained image to HDMI port when HDCP authentication fails ■ [Bit 2] 1: Block output to HDMI port when HDCP authentication fails ■ [Bit 3-4] 00: Use HDCP if EMI is NOT 'copy freely', or if CIT bit is set; 01: Always use HDCP 10: Never use HDCP ■ [Bits 5-7]—Reserved ■ [v1]—version number of policy format

Field Name	Description	Possible Values
YPrPb	<p>The group and version number for the copy control policy relating to YPrPb ports</p> <p>Note: The possible values for the policy bits only apply to version 1 of the policy format.</p>	<p>Format:8-bit value [YPrPb policy] [policy format version]</p> <ul style="list-style-type: none"> ■ [Bit 0] 1: Disable (block) YPrPb port at all times ■ [Bit 1] 1: Output a constrained image to YPrPb port when CIT bit is set ■ [Bit 2] 1: Block output to YPrPb port when CIT bit is set ■ [Bit 3] 1: Enable Macrovision for YPrPb port when enabled on composite outputs <p>Note: This is not currently supported.</p> <p>[Bits 4-7]—Reserved</p> <ul style="list-style-type: none"> ■ [v1]—version number of policy format
1394	<p>The group and version number for the copy control policy relating to 1394 ports</p> <p>Note: The possible values for the policy bits only apply to version 1 of the policy format.</p>	<p>Format:8-bit value [1394 policy] [policy format version]</p> <ul style="list-style-type: none"> ■ [Bit 0] 1: Disable (block) 1394 port at all times ■ [Bit 1-7] 1: Reserved ■ [v1]—version number of policy format
Composite	<p>The group and version number for the copy control policy relating to composite outputs</p> <p>Note: The possible values for the policy bits only apply to version 1 of the policy format.</p>	<p>[Format:8-bit value [Composite policy] [policy format version]</p> <ul style="list-style-type: none"> ■ [Bit 0-7]: Reserved ■ [v1]—version number of policy format

Field Name	Description	Possible Values
VOD	<p>The group and version number for the copy control policy relating to VOD</p> <p>Note: The possible values for the policy bits only apply to version 1 of the policy format.</p>	<p>Format:8-bit value [1VOD policy] [policy format version]</p> <ul style="list-style-type: none"> ■ [Bit 0] 0: Do not override CCI settings for VOD content 1: Override CCI settings for VOD content ■ [Bit 1-7]: Reserved ■ [v1]—version number of policy format

CCI Events

The Copy Control Information (CCI) Events section of the Copy Protection diagnostic screen provides information about the CCI events for a video stream.

Field Name	Description	Possible Values
Source	The type of source that is carrying the input video stream	<ul style="list-style-type: none"> ■ Disk ■ Ext Video ■ Memory ■ RF
Destination	The type of destination of the output stream	<ul style="list-style-type: none"> ■ Aux Video Out ■ Disk ■ In Home Net ■ Memory ■ Video Output
CIT	<p>The indicator that identifies whether the constrained image trigger was set for the input content</p> <p>Note: This bit does not necessarily cause the output to be constrained or blocked (policy-dependent).</p>	<ul style="list-style-type: none"> ■ no—CIT is not set ■ yes—CIT is set

Field Name	Description	Possible Values
EPN	<p>An indicator that identifies if encryption plus non-assertion (EPN) exists for the 1394 port</p> <p>Note: The EPN copy control bit is directly related to controlling content delivered via the IEEE 1394 port. Currently the default state of the EPN is set to "no" in accordance to FCC en-coding rules.</p>	<ul style="list-style-type: none"> ■ no—does not exist (default) ■ yes—exists
EMI	The copy protection mode	<ul style="list-style-type: none"> ■ freely—unlimited copying of content ■ never—content cannot be copied ■ no more—content cannot be copied ■ once—content can be copied once
BF	An indicator that is embedded in programs that identifies the restriction rules for content	<ul style="list-style-type: none"> ■ yes—content distribution is restricted ■ no—content distribution is not restricted (copy freely)
APS	A descriptor that identifies how the analog protection system (APS) is defined. APS will control how the Macrovision circuit is driven	<ul style="list-style-type: none"> ■ 2 line—Macrovision circuit enabled with AGC Process On, 2 Line Split Burst On ■ disabled—no analog protection system (Macrovision is disabled)

HDD Info Diagnostic Screen

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides a diagram and field descriptions of the HDD Info diagnostic screen, including the fields and parameters that are included in the screen. This screen contains information about the hard drive included within your DHCT.

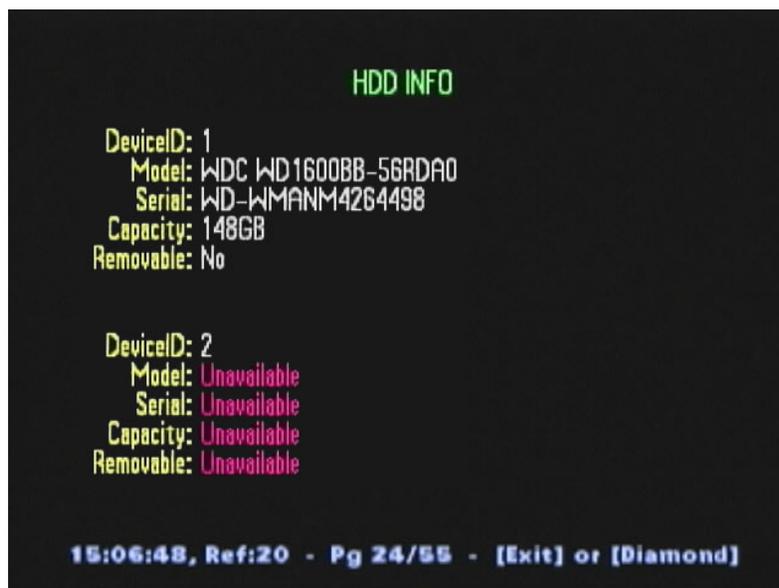
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the storage capacity of the hard drive
- Determine if the hard drive is removable

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Name	Description	Possible Values
DeviceID	The ID of the hardware device	<ul style="list-style-type: none"> ■ 1 ■ 2
Model	The model type for the hard drive	<ul style="list-style-type: none"> ■ [Model-dependent] ■ Unavailable
Serial	The serial number associated with the hard drive	<ul style="list-style-type: none"> ■ [Model-dependent] ■ Unavailable
Capacity	The total amount of disk space available on the hard drive	<ul style="list-style-type: none"> ■ [Model-dependent] ■ Unavailable
Removable	A confirmation that indicates if the hard disk is removable	<ul style="list-style-type: none"> ■ No ■ Yes ■ Unavailable

Partition Info Diagnostic Screen HDC

Information

Important! This diagnostic screen only exists on the 8300C/HDC and 8240C/HDC DHCTs.

This section provides information about the hard drive included within your DHCT, including the fields and parameters that are included in the diagnostic screen.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the capacity for the partition
- Verify the amount of available space that remains in the partition
- Determine if any lost or bad clusters exist in the partition

Screen Components

Example:

Important! A second Partition Info diagnostic screen exists in the diagnostic screen sequence. Both Partition Info screens contain the same parameters; however, the data reflects a different device.

```

PARTITION INFO
DeviceID: 1          1          1
FS Type: ITFS       AVFS       APP
Partitn Size: 1GB   146GB     1023MB
Free Space: 939MB   94GB      1003MB
Del.Files: 0        0          0
X-Linked: 0         0          0
LostClusters: 0     0          0
BadClusters: 0      0          0

15:07:00, Ref:20 - Pg 25/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Name	Description	Possible Values
DeviceID	The ID hardware device	<ul style="list-style-type: none"> ■ 1 ■ 2
FSType	The type of file system present within the partition	<ul style="list-style-type: none"> ■ AVFS ■ ITFS ■ Reserved
Partitn Size	The total size of this partition within the hard drive	<ul style="list-style-type: none"> ■ [Integer > 0]
Free Space	The amount of available space within this partition	<ul style="list-style-type: none"> ■ [Integer > 0]
Del.Files	The number of files deleted from this partition	<ul style="list-style-type: none"> ■ [Integer > 0]
X-Linked	The number of crosslinked files that exist within the partition.	<ul style="list-style-type: none"> ■ 0—desired value <p>Note: If this is a large value, contact Cisco Services.</p>
LostClusters	The number of lost clusters (data fragment that does not associate with any files) within the partition	<ul style="list-style-type: none"> ■ 0—desired value <p>Note: If this is a large value, contact Cisco Services e.</p>
BadClusters	The number of bad clusters (clusters having a physical flaw) on the hard disk.	<ul style="list-style-type: none"> ■ 0—desired value <p>Note: If this is a large value, contact Cisco Services e.</p>

SAM EDCT Information Diagnostic Screen

Information

This section provides an overview diagram and field descriptions for the SAM EDCT Information diagnostic screen. When the EDCT feature is installed, the channel lineup can be customized for individual DHCTs. The SAM EDCT Information diagnostic screen provides information about the EDCT feature.

Performing Tasks

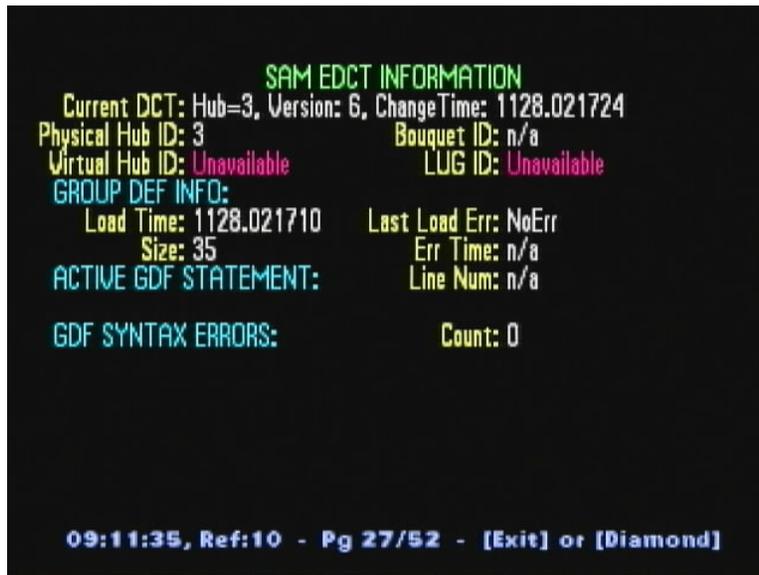
By accessing this diagnostic screen, you can perform the following tasks:

- Identify information about the currently loaded and currently assigned display channel table (DCT)
- Determine the physical hub or bouquet ID assignment for the DHCT
- Evaluate possible errors that the DHCT experienced while attempting to load the Group Definitions File (GDF) from BFS.

Screen Components

- General Fields
- Group Def Info
- Active GDF Statement
- GDF Syntax Errors

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

General Fields

The first section of the SAM EDCT Information diagnostic screen includes general information about the DCT, as well as various identification data associated with the DHCT.

Field Name	Description	Possible Values
Current DCT	The display channel table information including the channel table selection mode and identifier (hub, virtual hub, bouquet, or lineup group) Format: <selection mode>=<id>, Version: <DCT version>, Change Time: <MMDD.hhmmss>	<ul style="list-style-type: none"> ■ [Selection mode=Integer > 0], [Version: Integer > 0], [Time] ■ Unavailable—DCT is not loaded
Physical Hub ID	The unique ID of the physical hub that the DHCT belongs to	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ Unavailable—DHCT is in a DVB-SI system environment using NDS conditional access
Virtual Hub ID	The unique identifier for the virtual hub that the DHCT belongs to	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ Unavailable—DHCT is in a DVB-SI system environment using NDS conditional access

Field Name	Description	Possible Values
Bouquet ID	The unique identifier assigned to the DHCT that is used when applying the default channel table selection strategy	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ Unavailable—DHCT is not in a DVB-SI system environment. The physical hub ID should be used for the default channel table selection
LUG ID	<p>The unique identifier of the lineup group (LUG) that is assigned to the DHCT</p> <p>Notes:</p> <ul style="list-style-type: none"> ■ The LUG ID will override the Hub ID if it is defined. ■ The LUG is a group of hubs that use the same DCT. 	<ul style="list-style-type: none"> ■ [Integer ≥ 0] ■ Unavailable—no lineup ID is assigned

Group Def Info

The Group Def Info section includes information related to the loading of the group definition file (GDF). The GDF is loaded out-of-band via the BFS.

Field Name	Description	Possible Values
Load Time	The date and time that the GDF was loaded on the DHCT (MMDD.hhmmss)	<ul style="list-style-type: none"> ■ [Time] ■ Not Loaded—no GDF is currently loaded
Size	The size of the currently loaded, uncompressed GDF (bytes)	<ul style="list-style-type: none"> ■ [Integer > 1] ■ 0—no GDF file is currently loaded
Last Load Err	The last error experienced by the DHCT when the DHCT attempted to load the GDF from BFS	<ul style="list-style-type: none"> ■ NoErr—no load errors occurred ■ PathNotFound—the GDF does not exist on BFS ■ OutOfMemory—not enough memory to load the GDF ■ ReadErr—failed to read the file from BFS ■ ExceededMaxLength—the GDF exceeded the maximum allowable length ■ FileChanged—the GDF was modified on BFS while attempting to load on the DHCT ■ UnknownErr—unknown error
Err Time	The date and time when the last error occurred when the DHCT attempted to load GDF from BFS (MMDD.hhmmss)	<ul style="list-style-type: none"> ■ [Time]

Field Name	Description	Possible Values
Line Num	The line number of the active GDF statement in the currently loaded GDF	<ul style="list-style-type: none"> ■ [Integer > 1] ■ n/a—no active GDF statement exists

Active GDF Statement

The Active GDF Statement section includes status information about the active GDF statement.

Field Name	Description	Possible Values
Active GDF Statement	The actual statement from the currently loaded GDF in which the current DCT assignment is based on	<ul style="list-style-type: none"> ■ [Correlates with Assigned DCT value] <p>Note: If there is no active GDF statement, then the line below the Line Num field is blank and the Assigned DCT field will reflect the default channel table selection mode and identifier.</p>

GDF Syntax Errors

The Active GDF Statement section includes status information about the active GDF statement.

Field Name	Description	Possible Values
Count	The total number of lines with syntax errors in the currently loaded GDF	<ul style="list-style-type: none"> ■ [Integer ≥ 0] <p>Note: A count of zero indicates that there are no syntax errors.</p>

Field Name	Description	Possible Values
<Warning Statements>	<p>The error type, line number, and offset for each syntax error</p> <p>Note: The offset is the number of characters from the beginning of the GDF statement minus any non-delimiting white space where the syntax error was detected.</p>	<p>Type of syntax errors include:</p> <ul style="list-style-type: none"> ■ ParseErr—token, delimiter, or keyword is out of sequence ■ IllegalTokenChar—illegal character was found while reading the token ■ UnrecognizedCondition—condition did not match one of the valid condition ■ UnrecognizedActionType—action type did not match the valid actions ■ InvalidConditionValue—the condition value is invalid ■ InvalidActionValue—the action value is invalid ■ IncompleteStatement—the end of line was encountered prematurely

Switched Digital Video Diagnostic Screen

Introduction

This section provides an overview of the Switched Digital Video diagnostic screen, and includes information that describes the SDV client and server, including the number of SDV channels that have been authorized for this service. Detailed statistics about the SDV protocol are also included in this diagnostic screen.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine if the client (DHCT) is authorized for SDV services
- Identify the status of the SDV server
- Verify details about the transmission of data for the SDV service

Screen Components

- Client
- Server
- SDV Protocol Statistics

Example:

```

          SWITCHED DIGITAL VIDEO
CLIENT   SERVER
Authorized: No      Status: Pending
Service Gp: n/a    Time: n/a
RF Ip Addr: 10.2.65.168  Pri Ip-Port: 0.0.0.0-n/a
SDV Channels: 54    Sec Ip-Port: 0.0.0.0-n/a

SDV PROTOCOL STATISTICS
SelInd Rx: 0      Total Tx/Rx: 0/0
SelResp Tx: 0    InitReq Tx: 0
QryReq Rx: 0     InitConf Rx: 0
QryConf Tx: 0   InitConfFails Rx: 0
EvInd Rx: 0     SelReq Tx: 0
EvResp Tx: 0    SDV SelReq Tx: 0
EvInd Tx: 0     SelConf Rx: 0
LUA Rep Tx: 0   SelConfFails Rx: 0

15:07:25, Ref:5 - Pg 28/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Client

Field Name	Description	Possible Values
Authorized	Indicates whether or not the client is authorized for SDV service (_SASD service) or the _SASD service does not exist	<ul style="list-style-type: none"> ■ Yes: service is authorized ■ No: service is not authorized ■ n/a: service does not exist
Service Gp	The ID of the service group to which this client belongs	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ n/a: service does not exist
RF Ip Address	The IP address for the RF network	<ul style="list-style-type: none"> ■ [Network-dependent]
SDV Channels	The number of SDV channels (WatchSDV services) in the channel lineup	<ul style="list-style-type: none"> ■ [Integer ≥ 0]

Server

Field Name	Description	Possible Values
Status	The current status of the client communications with the SDV server (init request and receiving a response)	<ul style="list-style-type: none"> ■ Ready: (desired value) init request is successfully confirmed and accepted by the SDV server ■ Pending: the set-top is in the process of establishing communications with the SDV server ■ Unavailable: init request failed ■ Unknown: init request not yet initiated
Time	The time of the last successful initial request confirmed by the server	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec]
Pri Ip-Port	The IP address and port number (IP address-Port number) for the primary SDV server	<ul style="list-style-type: none"> ■ [Network-dependent] Example: 192.168.99.5-2300 ■ 0.0.0.0-n/a: primary SDV server is not available
Sec Ip-Port	The IP address and port number (IP address-Port number) for the secondary SDV server	<ul style="list-style-type: none"> ■ [Network-dependent] Example: 192.168.99.5-23000 ■ 0.0.0.0-n/a: secondary SDV server is not available

SDV Protocol Statistics

The SDV Protocol section displays statistics for the external protocol messages used for SDV. These statistics are combined for all sessions and protocols.

Field Name	Description	Possible Values
SelInd Rx	The number of Select Indications received	■ [Integer ≥ 0]
SelResp Tx	The number of Select Responses sent	■ [Integer ≥ 0]
QryReq Rx	The number of Query Requests received	■ [Integer ≥ 0]
QryConf Tx	The number of confirmed Query Responses sent	■ [Integer ≥ 0]
EvInd Rx	The number of Event Indications received	■ [Integer ≥ 0]
EvResp Tx	The number of Event Responses sent	■ [Integer ≥ 0]
EvInd Tx	The number of Event Indications sent	■ [Integer ≥ 0]
LUA Rep Tx	The number of LUA (Last User Activity) reports sent	■ [Integer ≥ 0]
Total Tx/Rx	The total number of requests sent and received	■ [Integer ≥ 0]/[Integer ≥ 0]
InitReq Tx	The total number of init requests sent, excluding retransmissions	■ [Integer ≥ 0]
InitConf Rx	Total number of initial confirm messages received from SDV server that indicate success or failure	■ [Integer ≥ 0]
InitConfFails Rx	Total number of initial confirms received from the SDV server that indicate failure	■ [Integer ≥ 0]
SelReq Tx	The total number of select requests sent for SDV and non-SDV services, excluding retransmissions	■ [Integer ≥ 0]
SDV SelReq Tx	The total number of select requests sent for SDV, excluding retransmissions	■ [Integer ≥ 0]
SelConf Rx	The total number of select confirm messages received from SDV server that indicate success or failure	■ [Integer ≥ 0]

Chapter 2 System-Related Diagnostic Screens

Field Name	Description	Possible Values
SelConfFails Rx	The total number of select confirms received from the SDV server that indicate failure	■ [Integer ≥ 0]

SDV Mini Carousel Diagnostic Screen

Introduction

This section provides an overview of the SDV Mini Carousel diagnostic screen, and includes information that describes the Mini Carousel (MC) Discovery Files, as well as details about the MC data. The MC Discovery Files are generated by the DNCS and placed on BFS to support the inband MC discovery process for an SDV client. Only one SDV MC Discovery file exists per service group. It is located in the bfs:///sgm/sdv/ib directory. MC data is generated by the SDV server for each service group and placed in the transport stream as Private MPEG packets.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the date and time that the mini-carousel was last loaded in cache
- Determine the current status for the mini-carousel
- Identify the version for the mini-carousel

Screen Components

- Mini Carousel Info
- MC Discovery File Info

Example:

```

SDV MINI CAROUSEL
MINI CAROUSEL INFO
  Status: Init
  Def Freq: 0 MHz
  Twp/Tv Id: n/a
  Load Time: n/a
  Version: 0
  Size: 0 bytes
  Num Entries: 0
  Cache Hits: 0
  Cache Misses: 0
  Cache Overrides: 0
  Load Count: 0
  Load Failures: 0
  Last Load Err: NoErr
  Err Time: n/a
  Last Load Attempt: n/a

MC DISCOVERY FILE INFO
  Load Time: n/a
  Version: n/a
  Size: 0 bytes
  Num Entries: 0
  Service Gp: n/a
  Parent Svc Gp: n/a
  Last Load Err: NoErr
  Err Time: n/a

15:07:39, Ref:5 - Pg 29/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Mini Carousel Info

Field Name	Description	Possible Values
Status	The current status of the information from the mini-carousel	<ul style="list-style-type: none"> ■ Init: initial state at boot time prior to loading mini-carousel data. Also the state reported when the set-top is not authorized for SDV ■ SgDiscovery: client is performing or waiting to perform the service group discovery process ■ McpDiscFileRead: client is reading or waiting to read the BFS file to obtain a list of SDV QAM frequencies to scan for mini-carousel data ■ McpDiscovery: client is scanning or waiting to scan SDV QAM frequencies in search of mini-carousel data ■ CacheReady: (desired value) mini-carousel loaded and data acquired to allow viewing of SDV channels
Def Freq	The default or home SDV frequency in MHz. The client will tune to this frequency to read the mini-carousel data if not already tuned to another SDV frequency	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Tvp/Tv Id	The internal identifier of the logical hardware resource assigned or allocated for loading inband mini-carousel data	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ n/a: no logical tuner resource is currently assigned or allocated for loading the inband mini-carousel
Load Time	The time when the mini-carousel information was loaded into cache	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec]
Version	The version number for the mini-carousel cached file	<ul style="list-style-type: none"> ■ [0 to 31]
Size	The size of the mini-carousel data (bytes)	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Num Entries	The number of programs (channels) in the mini-carousel data	<ul style="list-style-type: none"> ■ [Integer ≥ 0]

Field Name	Description	Possible Values
Cache Hits	<p>The number of times requested tuning parameters were successfully received from the mini-carousel cache</p> <p>Notes:</p> <ul style="list-style-type: none"> ■ This includes cache hits after forcing a reload of the mini-carousel. ■ This value is only reset to zero when it rolls over or the agent is reset. 	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Cache Misses	<p>The number of times requested tuning parameters were not found in the mini-carousel cache even after reloading mini-carousel data</p> <p>Note: This value is only reset to zero when it rolls over or the agent is reset.</p>	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Cache Overrides	<p>The number of times the cached tuning parameters from the mini-carousel have been overridden by fresh tuning parameters received from the SDV server via CCP (Channel Change Protocol)</p> <p>Note: This value is only reset to zero when it rolls over or the agent is reset.</p>	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Load Count	<p>The number of times the mini-carousel data has successfully been read (or loaded) by the client</p> <p>Note: This value is only reset to zero when it rolls over or the agent is reset.</p>	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Load Failures	<p>The number of times the client has failed to read the mini-carousel data</p> <p>Note: This value is only reset to zero when it rolls over or the agent is reset.</p>	<ul style="list-style-type: none"> ■ [Integer ≥ 0]

Field Name	Description	Possible Values
Last Load Err	The type of error for the last load (read) of the mini-carousel	<ul style="list-style-type: none"> ■ NoErr: last load was successful ■ ReadErr: read of last load failed ■ MemFull: not enough memory for last load ■ Aborted: last load attempt was aborted ■ TuningErr: tuning failure during last load ■ SGMismatch: service group identified in the mini-carousel data does not match the set-top's service group found during service group discovery ■ UnknownErr: an unknown error occurred during load
Err Time	The time when the last error occurred in loading	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec] ■ n/a: no load errors have occurred since reset
Last Load Attempt	The time when the last load was attempted on the DHCT	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec] ■ 00/00@00:00:00: no load since reset

MC Discovery File Info

Field Name	Description	Possible Values
Load Time	The time when the MC Discovery file was loaded on the DHCT during discovery	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec] ■ n/a: file is not loaded
Version	The current version of the MC Discovery File, expressed as a timestamp of when the file contents were generated by the DNCS	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec]
Size	The size of the MC Discovery File in bytes	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Child Svc Gp	<p>The service group of the currently loaded MC Discovery File</p> <p>Note: In systems with no parent/child service groups, this should match the service group identified on the VOD Information and the Switched Digital Video diagnostic pages</p>	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ n/a: MC Discovery file not loaded
Parent Svc Gp	The next higher level parent service group in the hierarchy above the child service group	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ n/a: MC Discovery File not loaded or there is no parent service group above the child service group
Num Entries	The total number of tuning parameter entries in the MC Discovery File	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ 0: no entries

Field Name	Description	Possible Values
Last Load Err	The error status from the last load of the mini-carousel data (MCD) in discovery. The status reflects the last error type after a successful load of the MCD	<ul style="list-style-type: none"> ■ NoErr: successful load ■ BadParamErr: bad parameters specified ■ OutOfStateErr: load request denied due to inappropriate state ■ FileNotFoundErr: MCD file does not exist on BFS for this service group ■ OutOfMemoryErr: insufficient memory to process request ■ ReadErr: failed to read MCD file from BFS ■ TunerConflictErr: could not load MCD file due to higher priority tuner request ■ FileChangedErr: MCD file changed on BFS during read ■ TimeoutErr: request timed out ■ AbortedErr: request was intentionally aborted ■ BadDataErr: the data was loaded successfully but is invalid ■ UnknownErr: unknown error occurred during load attempt
Err Time	The time at which the last discovery file load error was reported	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec] ■ n/a: no file load has occurred

SDV Session Info Diagnostic Screen

Introduction

This section provides an overview of the SDV Session Info diagnostic screen, and includes information that describe the details of SDV-related sessions, including the current SDV and tuner status.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the current status of an SDV session
- Determine the current status of the tuner
- Verify the name of the current SDV session

Screen Components

- Session-1
- Session-2

Example:

```

SDV SESSION INFO
SESSION-1      SESSION-2
Name-Status:  n/a      n/a
Session Id:   n/a      n/a
SamSvcId/Type: n/a     n/a
Source Id:    n/a      n/a
Act Time:     n/a      n/a
Retries/Resends: n/a   n/a
Retunes:      n/a      n/a
Tuner Status: n/a      n/a
Tuner Use:    n/a      n/a
Tv/Rec Rsrc:  n/a      n/a
SDV Freq:     n/a      n/a
LUA Tx Time:  n/a      n/a
Last CCP Err: n/a      n/a
Err Time:     n/a      n/a
15:07:53, Ref:5 - Pg 30/55 - [Exit] or [Diamond]

```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Name	Description	Possible Values
Name – Status	The name and current status of the session	<ul style="list-style-type: none"> ■ [Name of Session] and one of the following: <ul style="list-style-type: none"> • Ready: tuning parameters have been acquired • Idle: no service is selected for this session • Pending: Session Manager is waiting for tuning parameters from either the cache manager or the SDV server • Unavailable: failed to acquire tuning parameters for the selected SDV service
Session Id	The 10-byte session ID for the that uniquely identifies the SDV client/server session within the system	<ul style="list-style-type: none"> ■ [Session-dependent]
SamSvcId/Type	The SAM service ID identifying the program and type of service defined for that session	<ul style="list-style-type: none"> ■ [Integer ≥ 0] and one of the following: <ul style="list-style-type: none"> • Switched: switched digital service • Broadcast: broadcast service • n/a
Source Id	The ATSC source ID	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Act Time	The time of activation for the session	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec]
Retries/Resends	The number of times a select request has been resent due to timeout or user initiated retry, or due to a resend request for the currently selected service	<ul style="list-style-type: none"> ■ [Integer ≥ 0]/[Integer ≥ 0]
Retunes	The number of times the client has received updated tuning parameters for currently selected service requiring a retune	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Tuner Status	The tuner status from an SDV perspective	<ul style="list-style-type: none"> ■ Active: successfully tuned ■ Inactive: not using a tuner ■ n/a: session has not yet requested a tuner

Field Name	Description	Possible Values
Tuner Use	An indication of how the tuner is being used	<ul style="list-style-type: none"> ■ Main: tuner is being used for main TV display ■ Rec: tuner is being used for a scheduled recording ■ PPV: tuner is being used for pay-per-view (PPV) content ■ PIP: tuner is being used for picture-in-picture (PIP) ■ n/a: no tuner is in use for this session
Tv/Rec Rsrc	The internal identifiers for the logical hardware resources allocated for presenting and recording the SDV service	<ul style="list-style-type: none"> ■ [Integer ≥ 0]: current service to viewer is either on main TV, PIP, or AUX OUT ■ 0: current service to viewer is not on main TV, PIP, or AUX OUT
SDV Freq	The frequency (MHz) used by the agent to tune to the currently selected SDV service	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
LUA Tx Time	The time when the last user action was reported to the SDV server	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec] ■ n/a

Field Name	Description	Possible Values
Last CCP Err	The last error from the CCP (Channel Change Protocol) for this session	<ul style="list-style-type: none"> ■ NoErr: no error was reported ■ Timeout: timeout waiting on response from server ■ OutOfService: program is no longer available ■ FormatErr: invalid format in CCP sent to server ■ Redirect: force tune indication from server ■ InvalidSG: server cannot identify service group from its topology ■ UnknownClient: agent has not registered with server ■ NoResource: session resource is unavailable ■ BWNotAvail: bandwidth bind on edge device failed ■ ExceedsCapacity: server capacity of agents has exceeded ■ VerNotSupported: agent version is not supported ■ unknownErr: unknown error ■ n/a: CCP was not initiated
Err Time	The time that the last error was reported from the CCP for this session	<ul style="list-style-type: none"> ■ [month/day@hh:mm:sec] ■ n/a: no errors reported

CARD Information Diagnostic Screen

Introduction

This section provides an overview of the CARD Information diagnostic screen, and includes information about the M-Card hardware, as well as supported applications.

Performing Tasks

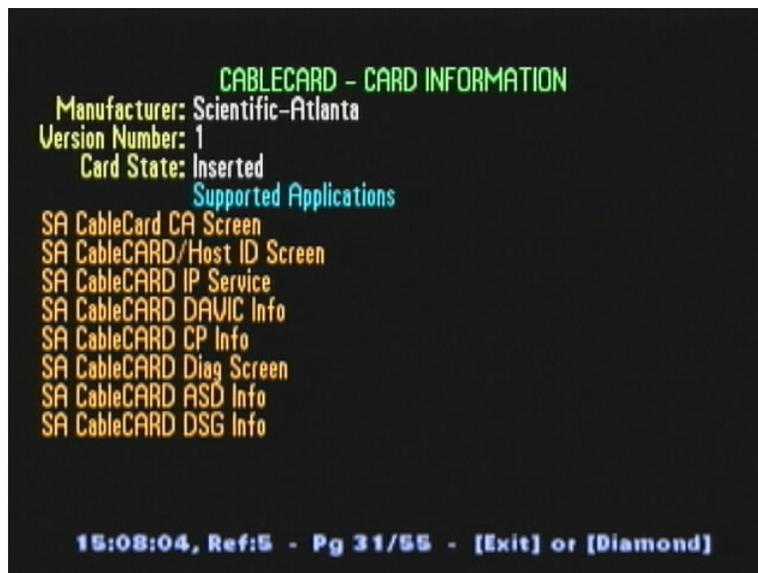
By accessing this diagnostic screen, you can perform the following tasks:

- Verify the manufacturer of the M-Card module
- Verify the current status of the M-Card module
- Determine the applications supported by the M-Card module

Screen Components

Important! If the M-Card is properly inserted, a Supported Applications section appears. The list includes the diagnostic screens related to the M-Card module. If an M-Card is not inserted, the Card State value will display "Removed".

Example:



```
CABLECARD - CARD INFORMATION
Manufacturer: Scientific-Atlanta
Version Number: 1
Card State: Inserted
Supported Applications
SA CableCard CA Screen
SA CableCARD/Host ID Screen
SA CableCARD IP Service
SA CableCARD DAVIC Info
SA CableCARD CP Info
SA CableCARD Diag Screen
SA CableCARD ASD Info
SA CableCARD DSG Info

15:08:04, Ref:5 - Pg 31/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Name	Description	Possible Values
Manufacturer	Displays the manufacturer of the M-Card module	<ul style="list-style-type: none"> ■ [Manufacturer-dependent] Example: Cisco Systems ■ N/A—M-Card is not inserted into the set-top
Version Number	Displays the version number for the actual M-Card hardware	<ul style="list-style-type: none"> ■ [Version-dependent] ■ N/A—M-Card is not inserted into the set-top
Card State	Indicates whether or not the M-Card is inserted into the set-top device	<ul style="list-style-type: none"> ■ Inserted—M-Card is successfully mounted in set-top box ■ Removed—M-Card is not mounted in set-top box ■ Reset— contact Cisco Services
Supported Applications	Lists the applications supported by the M-Card module	<ul style="list-style-type: none"> ■ [Application-dependent]

3

M-Card-Related Diagnostic Screens

This chapter includes the M-Card-related diagnostic screens and also includes the fields and parameters that are included within these screens. These screens accumulate data that describe the current state of the M-Card module, as well as copy protection, Digital Audio-Visual Council (DAVIC), and DSG-related information.

Note: These screens appear only when an M-Card module is inserted into the set-top box.

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CA Screen

Introduction

This section provides an overview diagram and field descriptions of the CA Screen diagnostics page. You can view this screen to identify conditional access (CA) information related to the M-Card.

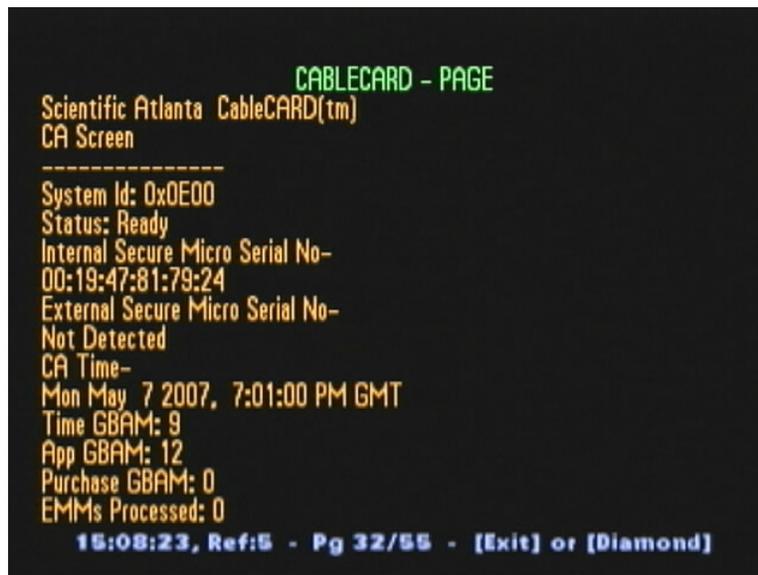
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the current PowerKEY operating status
- Verify the number of EMM messages received and validated by the M-Card module
- Determine the number of successful IPPV event purchases (based on the Purchase GBAM field)

Screen Components

Examples:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
CA Screen
-----
System Id: 0x0E00
Status: Ready
Internal Secure Micro Serial No-
00:19:47:81:79:24
External Secure Micro Serial No-
Not Detected
CA Time-
Mon May 7 2007, 7:01:00 PM GMT
Time GBAM: 9
App GBAM: 12
Purchase GBAM: 0
EMMs Processed: 0
15:08:23, Ref:5 - Pg 32/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
System Id	An ID that describes the type of CA system that is supported by the M-Card module Note: This field is a PowerKEY parameter.	<ul style="list-style-type: none"> ■ [0x0E00]—required value
Status	The current operating status for the PowerKEY CA supported by the M-Card module	<ul style="list-style-type: none"> ■ Ready—desired value; PowerKEY CA launched successfully ■ Not Ready-No CA Strm—CA stream is not available ■ Not Ready-No Time GBAM—CA stream is available but waiting for Time GBAMs ■ Not Staged—CableCARD module is not provisioned in the DNCS ■ N/A—initialization or an internal problem while attempting to receive the status
Internal Secure Micro Serial No-	The 6-byte MAC address for the Internal Secure Micro Element (for PowerKEY)	<ul style="list-style-type: none"> ■ Unique per M-Card Example: 00:14:F8:F1:0A:5D ■ N/A
External Secure Micro Serial No-	The 6-byte MAC address for the External Secure Micro Element	<ul style="list-style-type: none"> ■ Unique per M-Card Example: 00:14:F8:F1:0A:5D ■ Not Detected—external Secure Micro is not present
CA Time	Conditional access time received through the global broadcast authenticated message (GBAM)	<ul style="list-style-type: none"> ■ [Time] Example: Tue Jun 12, 2007, 10:08:00 PM GMT Note: This value matches the current time to the nearest minute. ■ Waiting For Update—time not yet received

Field and Link Names	Description	Possible Values
Time GBAM	Counter for the number of Time GBAM messages processed	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ 0—time GBAMs not yet processed
App GBAM	Counter for the number of Application GBAM messages processed	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ 0—application GBAMs not yet processed
Purchase GBAM	Counter for the number of purchase GBAMs processed	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ 0—none
EMMs Processed	A counter indicating the number of entitlement management messages successfully processed since the last power-up.	<ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ 0—EMMs not yet processed

CA Screen - Page 2 Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions of the CA Screen - Page 2 diagnostics page. You can view this screen to identify conditional access (CA) information related to the M-Card.

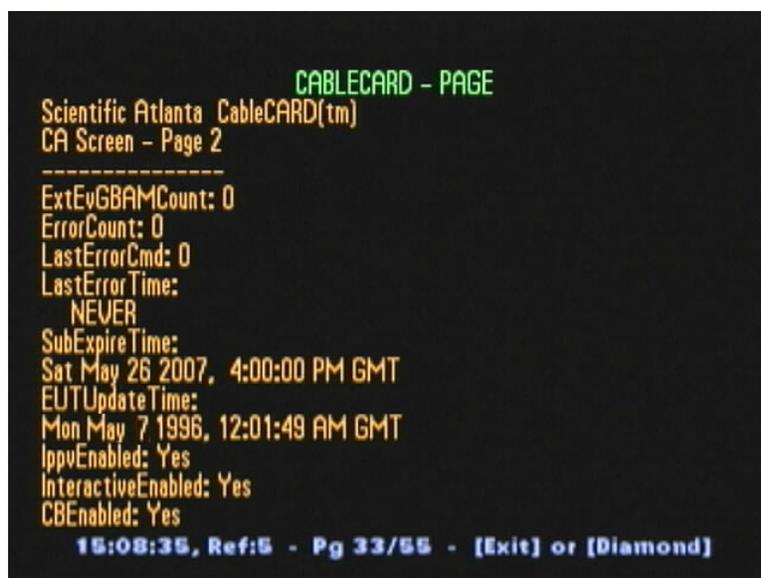
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the number of errors that have occurred for the secure microcomputer
- Verify that the Sub Expire date is at least 30 days ahead of the current date
- Determine whether or not impulse PPV (IPPV) is enabled for the M-Card
- Determine whether or not interactive services (for example, *anything-On-Demand* [xOD]) is enabled for the M-Card

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
CA Screen - Page 2
-----
ExtEvGBAMCount: 0
ErrorCount: 0
LastErrorCmd: 0
LastErrorTime:
  NEVER
SubExpireTime:
  Sat May 26 2007, 4:00:00 PM GMT
EUTUpdateTime:
  Mon May 7 1996, 12:01:49 AM GMT
IppvEnabled: Yes
InteractiveEnabled: Yes
CBEnabled: Yes
15:08:35, Ref:5 - Pg 33/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
ExtEvGBAMCount	Number of Extend Event GBAM's received and validated since last program change	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
ErrorCount	Number of errors that have occurred for the secure microcomputer Note: Not all errors indicate a problem; some are expected under normal operation.	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
LastErrorCmd	Last command for which an error occurred	<ul style="list-style-type: none"> ■ [Integer ≥ 0]—integer identifies the error
LastErrorTime	Time when the last error occurred	<ul style="list-style-type: none"> ■ [Date, Time] ■ Never—desired value; no errors have occurred
SubExpireTime	The date and time when the subscription authorizations expire	<ul style="list-style-type: none"> ■ [Date, Time]
EUTUpdateTime	The last time that an entitlement unit table (EUT) was received from the DNCS	<ul style="list-style-type: none"> ■ [Date, Time]
IppvEnabled	Indicates whether interactive pay-per-view (iPPV) is enabled for the M-Card	<ul style="list-style-type: none"> ■ Yes ■ No
InteractiveEnabled	Indicates whether xOD services are enabled for the M-Card	<ul style="list-style-type: none"> ■ Yes ■ No
CBEnabled	Indicates whether cryptobridge is enabled or not	<ul style="list-style-type: none"> ■ Yes ■ No

CA Screen - Active Program Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions of the CA Screen - Active Program diagnostics page. You can view this screen to identify information about the active digital programs that are currently running on the set-top.

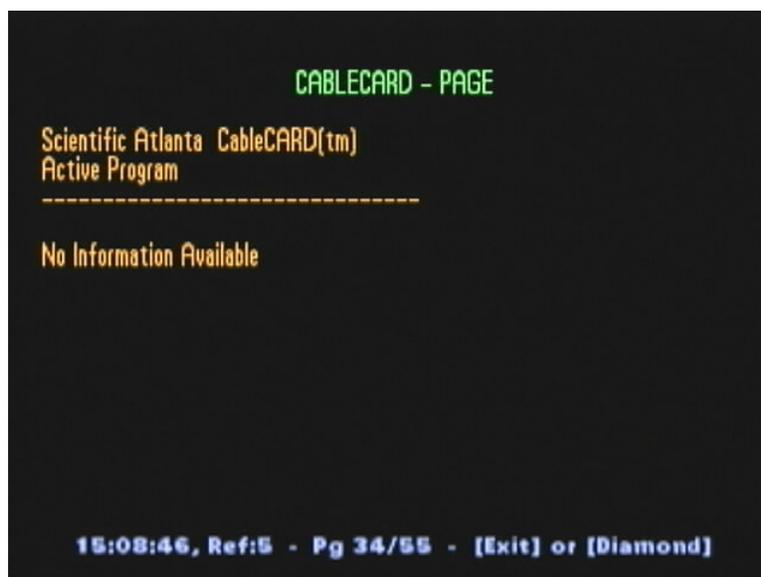
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the local transport stream assigned by the host
- Determine the program number currently running on a particular stream
- Determine the current status for an active program

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Notes:

- If the M-Card module is operating in SMODE, only one row of data is displayed.
- Up to six active programs are supported by the M-Card module.

Field and Link Names	Description	Possible Values
LTSID	The local transport stream ID assigned by the host	<ul style="list-style-type: none"> ■ [Integer > 0] ■ N/A—M-Card module is functioning in SMODE
PrgNo	The program number running on a particular stream identified in the LTSID	<ul style="list-style-type: none"> ■ [Integer > 0]
Status	The current status for an active program	<ul style="list-style-type: none"> ■ Clear—free to air ■ Ent—encrypted program is entitled ■ Not Ent—encrypted program is not entitled
ECM	A counter for processed entitlement control messages (ECMs)	<ul style="list-style-type: none"> ■ [Integer > 0] ■ N/A—clear program
CCI	An indicator identifying whether or not copy rights are restricted	<ul style="list-style-type: none"> ■ 0—copying not restricted ■ 1—reserved (not used) ■ 2—one generation copy is permitted ■ 3—copying is prohibited ■ N/A—clear program
EID	The entitlement identification (EID) of the program	<ul style="list-style-type: none"> ■ [Entitlement ID] ■ N/A—clear program
Elementary Streams	Stream Type: A indicator that displays the type of elementary stream	<ul style="list-style-type: none"> ■ [Stream Type] Example: Video PID
	PID Number: The PID number that identifies the stream	<ul style="list-style-type: none"> ■ [Hexadecimal value] ■ No Information Available

Decryption Fail Time Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions of the Decryption Fail Time diagnostics page. You can view this screen to see the status of the CA Descriptor process for the encrypted programs in their respective streams.

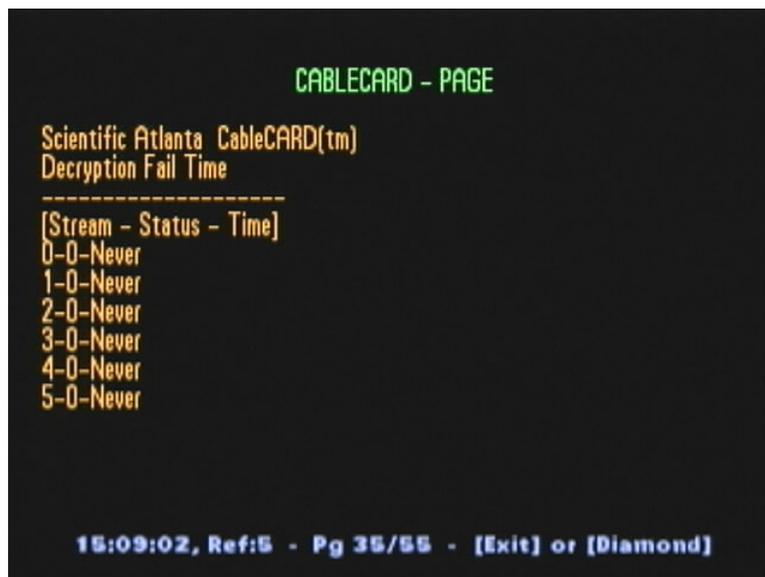
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine whether or not any failures occurred in the CA decryption process for the program of a specific stream
- Determine the time at which the decryption process for a specific stream last failed

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
Stream	Identifies the program stream	<ul style="list-style-type: none"> ■ Integer ≥ 0
Status	Displays the current status for content decryption	<ul style="list-style-type: none"> ■ 0—desired value; no failures ■ 1—decryption failure due to blackout ■ 2—decryption failure due to lack of authorization ■ 3—decryption failure due to time outs while waiting for ECMs
Time	Displays the time at which the last decryption failure occurred	<ul style="list-style-type: none"> ■ Never—desired value; secure micro has not failed ■ [date, time]

Decrypt Fail Status Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions of the Decrypt Fail Status diagnostics page. You can view this screen to detect any instances of delay in the decryption process for the encrypted (in process) program for a certain stream.

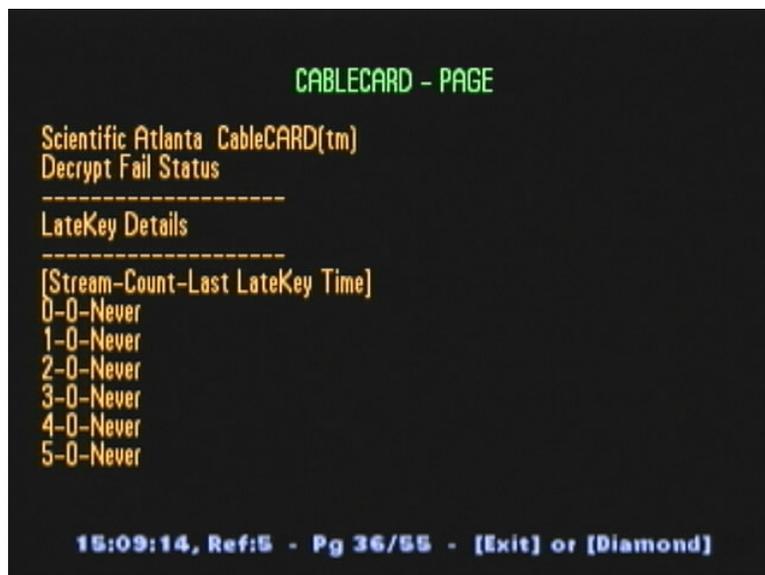
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the number of times the key decryption operation for a program has been delayed
- Determine the time of the last delayed decryption on a certain stream

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
Decrypt Fail Status
-----
LateKey Details
-----
[Stream-Count-Last LateKey Time]
0-0-Never
1-0-Never
2-0-Never
3-0-Never
4-0-Never
5-0-Never
15:09:14, Ref:5 - Pg 36/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

CA Screen - Decrypt Fail Status - LateKey Details

Note: Late keys indicate the number of times that the decryption for the current program has encountered delays..

Field and Link Names	Description	Possible Values
Stream	Identifies the program stream	<ul style="list-style-type: none"> ■ 0 to 5
Count	The number of times the content decryption experienced delays	<ul style="list-style-type: none"> ■ 0—desired value; no delayed content decryption ■ [Integer > 0]—content decryption was delayed
Last LateKey Time	The time of the last delayed content decryption	<ul style="list-style-type: none"> ■ [Time] ■ Never

POD Handler Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the POD Handler Diagnostics page. You can view this screen to identify the number of requests received from the host device, as well as the response from the M-Card (success/fail counts).

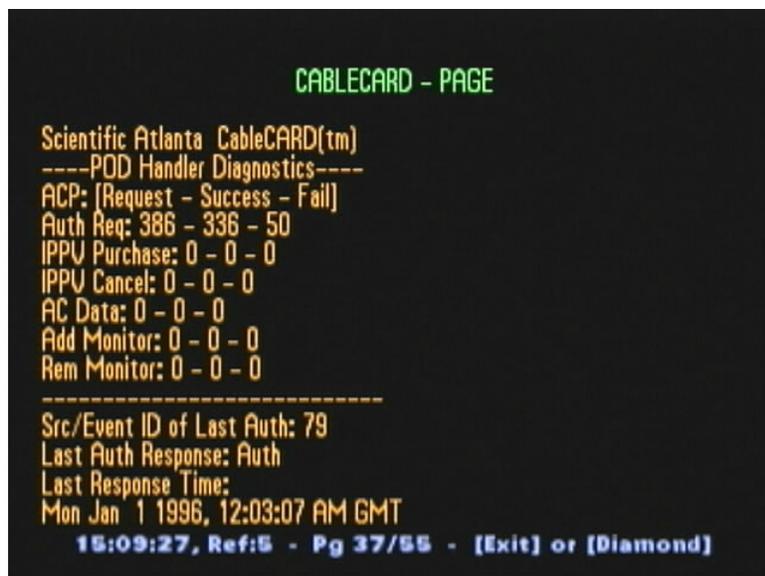
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the number of requests received by the M-Card from the host device for various access criteria packages (ACPs)
- Determine the number of successful responses from the M-Card
- Determine the time at which the last authorization response was provided by the M-Card

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
----POD Handler Diagnostics----
ACP: (Request - Success - Fail)
Auth Req: 386 - 336 - 50
IPPV Purchase: 0 - 0 - 0
IPPV Cancel: 0 - 0 - 0
AC Data: 0 - 0 - 0
Add Monitor: 0 - 0 - 0
Rem Monitor: 0 - 0 - 0
-----
Src/Event ID of Last Auth: 79
Last Auth Response: Auth
Last Response Time:
Mon Jan 1 1996, 12:03:07 AM GMT
15:09:27, Ref:5 - Pg 37/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

POD Handler Diagnostics

Field Names	Description	Possible Values
ACP	Identifies the type of access criteria package (ACP)	<ul style="list-style-type: none"> ■ Auth Req ■ IPPV Purchase ■ IPPV Cancel ■ AC Data ■ Add Monitor ■ Rem Monitor
Request	Identifies the number of requests received from the host	■ [0 ≤ Integer ≤ 65535]
Success	Identifies the number of successful responses received from the M-Card module	■ [0 ≤ Integer ≤ 65535]
Fail	Identifies the number of negative results received from the M-Card module	■ [0 ≤ Integer ≤ 65535]
Src/Event ID of Last Auth	Identifies the source and the event identifier for the last authorized request received from the POD handler authorization ACP	■ [0 ≤ Integer ≤ 65535]
Last Auth Response	Indicates the last authorization response received from the M-Card module	<ul style="list-style-type: none"> ■ Auth (authorized) ■ Not Auth (not authorized) ■ N/A
Last Response Time	Identifies the time in which the last authorization response occurred	<ul style="list-style-type: none"> ■ [Time] ■ N/A
Passthru #	Indicates the number of unsolicited Passthru events sent to the host from the M-Card via the Pod Handler	■ [0 ≤ Integer ≤ 65535]
Slots Cleared	Identifies the number of VOD slots purged upon reboot	■ [0 ≤ Integer ≤ 255]

Host ID Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the CableCARD/Host ID diagnostic screen. You can view this screen to identify the customer service information and hardware identification numbers.

Note: The information that displays in this window is dependent upon how the MMI information was set up. Because this information can be customized, the content in your diagnostic screen may vary.

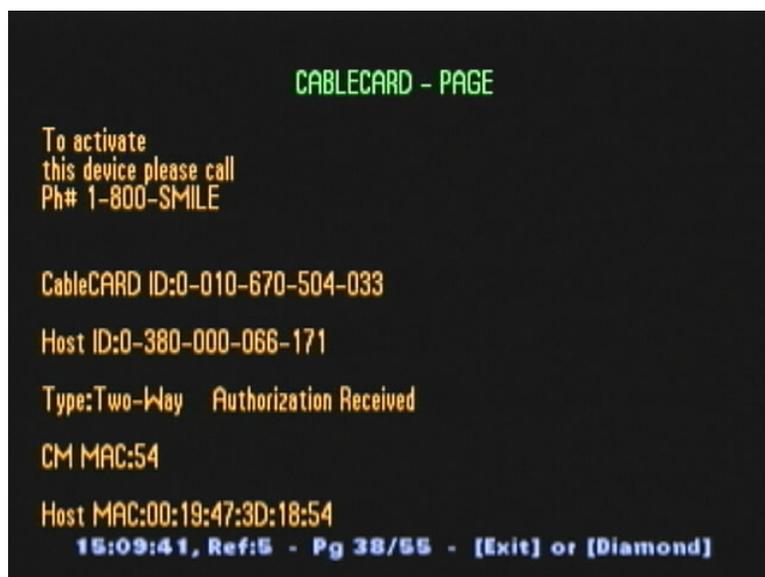
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the customer service number you need to start service for an M-Card module
- Verify the host and the M-Card ID
- Verify if the M-Card module has been authorized for service

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Note: Additional fields may display and are dependent upon the content within the cpdefinition.tblo file (for example, CM MAC, Host MAC, or Host Code).

Field Names	Description	Possible Values
CableCARD ID	Indicates the unique identification number for the M-Card module that is inserted into the host	<ul style="list-style-type: none"> ■ [Card-dependent]
Host ID	Indicates the unique identification number for the host device certificate ID	<ul style="list-style-type: none"> ■ [Host-dependent]
Host Type	Indicates whether the host is capable of two-way or only one-way communication	<ul style="list-style-type: none"> ■ Two-way—indicates that the host is capable of downstream and upstream communications between the headend and DHCTs ■ One-way—indicates that the host is capable only of downstream communication from the headend to DHCTs
Authorization Important! This field will not appear if the M-Card module is not authorized.	Indicates the authorization status of the M-Card module	<ul style="list-style-type: none"> ■ Received

IP Service Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the IP Service diagnostic screen. You can view this screen to identify network information.

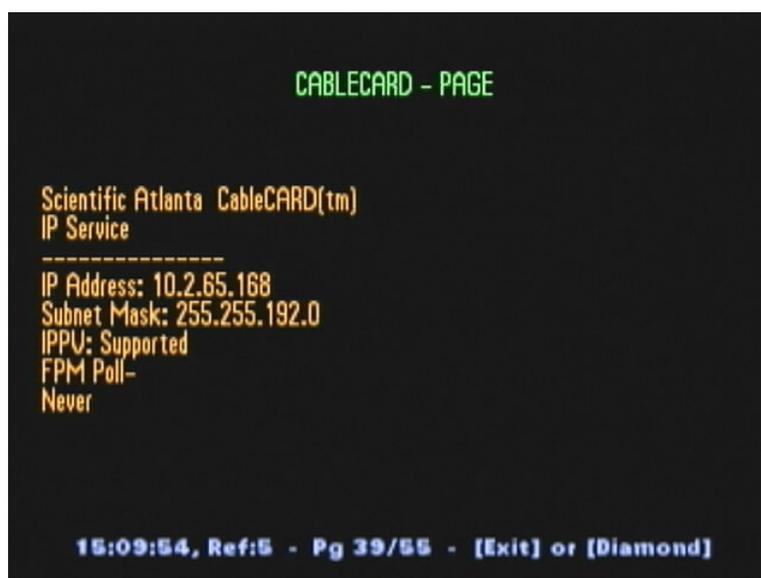
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the IP address for the M-Card that was assigned by the DNCS
- Determine when the last forward purchase message poll occurred

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Names	Description	Possible Values
IP Address	The IP address assigned by the DNCS to the M-Card module	<ul style="list-style-type: none"> ■ [Network-dependent] ■ N/A—one-way host
Subnet Mask	The IP subnet mask address assigned to the M-Card module by the DNCS	<ul style="list-style-type: none"> ■ [Network-dependent] ■ N/A—one-way host
IPPV	Indicator for IPPV support	<ul style="list-style-type: none"> ■ Supported—two-way host supports IPPV ■ N/A—one-way host does not support IPPV
FPM Poll	The date and time of the last forward purchase message (FPM) poll request (MMDD.hhmmss)	<ul style="list-style-type: none"> ■ [Time] ■ N/A—no poll request received or is a 1-way host

Network Interface - DAVIC Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Network Interface - DAVIC diagnostic screen. You can view this screen to identify network information that is specific to the DAVIC interface.

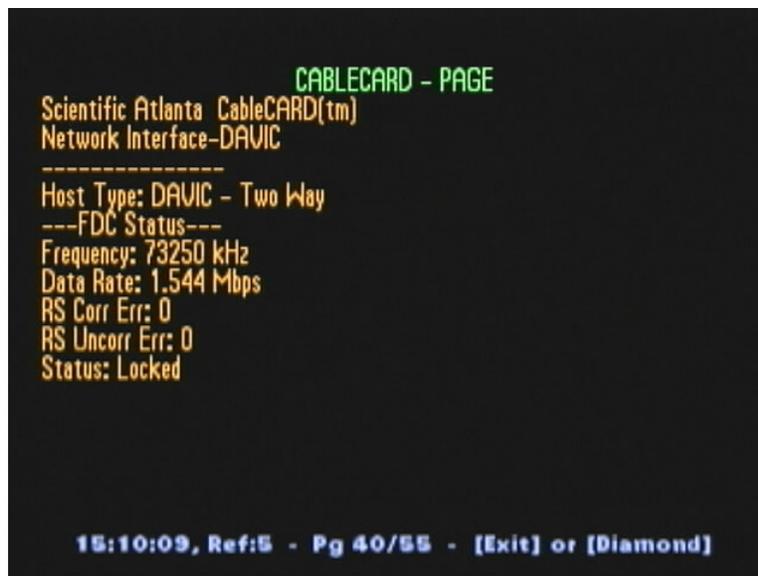
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine if the host is capable of two-way DAVIC
- Verify the current parameters for the Forward Data Channel (FDC)

Screen Components

Example:



```
                                CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
Network Interface-DAVIC
-----
Host Type: DAVIC - Two Way
---FDC Status---
Frequency: 73250 kHz
Data Rate: 1.544 Mbps
RS Corr Err: 0
RS Uncorr Err: 0
Status: Locked

15:10:09, Ref:5 - Pg 40/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
Host Type	Indicates whether the host is capable of two-way DAVIC or only one-way communication or one-way DSG mode	<ul style="list-style-type: none"> ■ DAVIC – Two-way—indicates that the host is capable of downstream and upstream communications between the headend and DHCTs ■ DAVIC – One-way—indicates that the host is capable only of downstream communication from the headend to DHCTs ■ DSG—indicates that the host is capable of DOCSIS Set-Top Gateway (DSG) capabilities
FDC Status	Frequency —displays the frequency of the tuned QPSK receiver (kHz)	<ul style="list-style-type: none"> ■ Dependent upon setting Range: 70000 – 130000
	Data Rate —displays the data rate of the QPSK forward path (Mbps)	<ul style="list-style-type: none"> ■ Dependent upon setting Range: 1.544 – 3.088
	RS Corr Error —displays the number of Reed Solomon correctable errors for the QPSK forward path	<ul style="list-style-type: none"> ■ 0 – 0xFFFFFFFF
	RS Uncorr Error — displays the number of Reed Solomon uncorrected errors for the QPSK forward path Note: Uncorrected errors can result in packet loss.	<ul style="list-style-type: none"> ■ 0 – 0xFFFFFFFF
	Status —displays the QPSK receiver (Rx) tuner lock status	<ul style="list-style-type: none"> ■ Locked—desired value ■ Not Locked

Network Interface - DAVIC RDC Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Network Interface - DAVIC RDC diagnostic screen. You can view this screen to identify network information that is specific to the DAVIC Reverse Data Channel (RDC) interface.

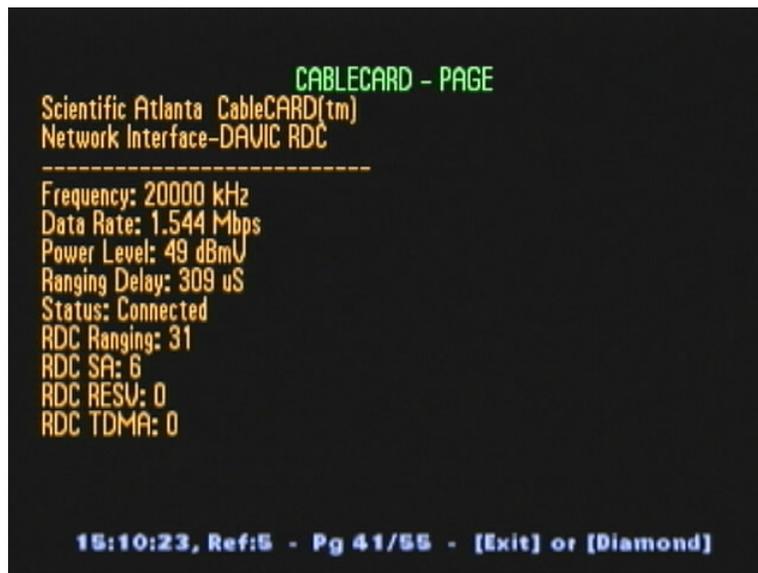
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the frequency at which the RDC transmitter is broadcasting
- Verify the output level of the QPSK transmitter
- Determine the number of transmit packets across a DAVIC connection

Screen Components

Example:



```
                                CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
Network Interface-DAVIC RDC
-----
Frequency: 20000 kHz
Data Rate: 1.544 Mbps
Power Level: 49 dBmV
Ranging Delay: 309 uS
Status: Connected
RDC Ranging: 31
RDC SA: 6
RDC RESU: 0
RDC TDMA: 0

15:10:23, Ref:5 - Pg 41/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
Frequency	Frequency for the QPSK transmitter (kHz)	<ul style="list-style-type: none"> ■ 8000 – 26500 ■ N/A
Data Rate	Data rate of the QPSK reverse path (Mbps)	<ul style="list-style-type: none"> ■ 0.256 ■ 1.544 ■ 3.088 ■ N/A
Power Level	Power level set at the QPSK transmitter (dBmV)	<ul style="list-style-type: none"> ■ 24 – 60
Ranging Delay	Ranging delay to adjust the clock timing for reverse transmission on the QPSK (μ S)	<ul style="list-style-type: none"> ■ 0 – 0xFFFF
Status	Current operating status for the QPSK transmit tune	<ul style="list-style-type: none"> ■ Connected—desired value ■ Not Connected ■ N/A
RDC Ranging	Number of calibration transmissions between the QPSK modem and the DHCT that are performed during DAVIC sign-on. This value achieves the RDC power level	<ul style="list-style-type: none"> ■ [Integer > 0]
RDC SA	Number of SA packets transmitted Note: If the packet size fits in the maximum allocated slots for Slotted-Aloha, the packets are using Slotted-Aloha; otherwise, they are sent using Reservation slots.	<ul style="list-style-type: none"> ■ [Integer > 0]
RDC RESV	Number of reserved slot transmission packets transmitted on the RDC Note: This data is typically used for large sized messages.	<ul style="list-style-type: none"> ■ [Integer > 0]

Chapter 3 M-Card-Related Diagnostic Screens

Field and Link Names	Description	Possible Values
RDC TDMA	The number of TDMA (time division multiple access) packets transmitted on the RDC; these slots are used for reverse transmission	■ [Integer > 0]

DAVIC - Rx Statistics Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the DAVIC - Rx Statistics diagnostic screen. You can view this screen to display the QPSK forward path data statistics for the DAVIC connection.

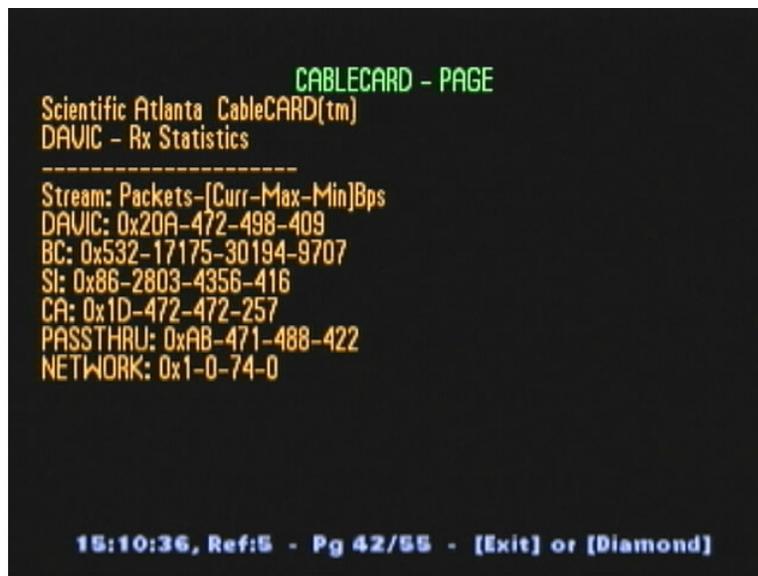
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the number of individual data packets received
- Verify the stream type for each forward data path

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
DAVIC - Rx Statistics
-----
Stream: Packets-[Curr-Max-Min]Bps
DAVIC: 0x20A-472-498-409
BC: 0x532-17175-30194-9707
SI: 0x86-2803-4356-416
CA: 0x1D-472-472-257
PASSTHRU: 0xAB-471-488-422
NETWORK: 0x1-0-74-0

15:10:36, Ref:5 - Pg 42/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
Stream	Defines the type of packets received Important! The BROADCAST and SI entries are links to more information.	<ul style="list-style-type: none"> ■ DAVIC ■ BC ■ SI (System Information) ■ CA (Conditional Access) ■ PASSTHRU ■ NETWORK
Packets	Lists the number of packets for each packet type	<ul style="list-style-type: none"> ■ 0 – 0xFFFFFFFF
[Curr-Max-Min]	Current (actual) data rate (Bps)	<ul style="list-style-type: none"> ■ 0 ≤ Integer ≤ 143165576
	Maximum data rate (Bps)	<ul style="list-style-type: none"> ■ 0 ≤ Integer ≤ 143165576
	Minimum data rate (Bps)	<ul style="list-style-type: none"> ■ 0 ≤ Integer ≤ 143165576

Davic Buffer OverRun Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Davic Buffer OverRun diagnostic screen. You can view this screen to determine whether or not packet loss for specific stream types have occurred in the DAVIC buffer.

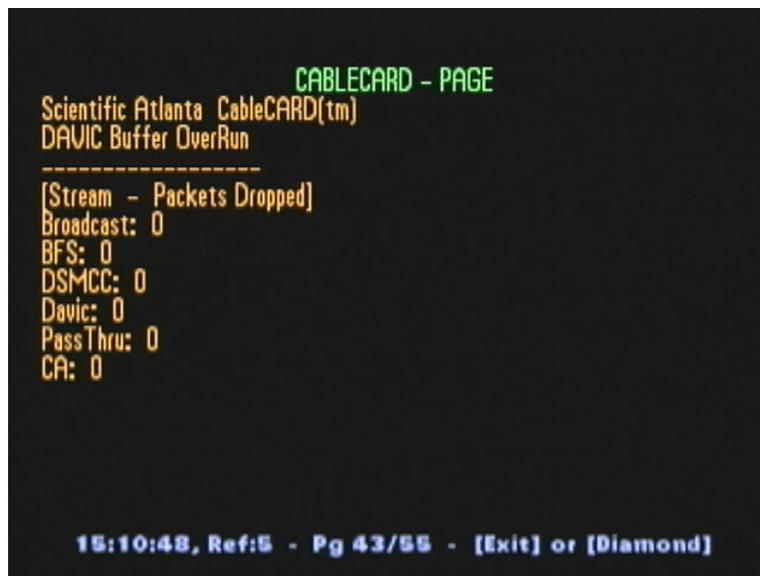
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the number packets that were not accommodated by the buffer
- Verify if a buffer overflow exists

Screen Components

Example:



```
                                CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
DAVIC Buffer OverRun
-----
[Stream - Packets Dropped]
Broadcast: 0
BFS: 0
DSMCC: 0
Davic: 0
PassThru: 0
CA: 0

15:10:48, Ref:5 - Pg 43/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
Stream	Lists the specific incoming stream type	<ul style="list-style-type: none"> ■ Broadcast ■ BFS ■ SI ■ DSMCC ■ Davic ■ PassThru ■ CA
Packets Dropped	The packet drop count for each stream type	<ul style="list-style-type: none"> ■ $0 \leq \text{Integer} \leq 4294967295$

System Information Tables Status Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the System Information Tables Status diagnostic screen. You can view this screen to see if system information about various applications have been received or forwarded.

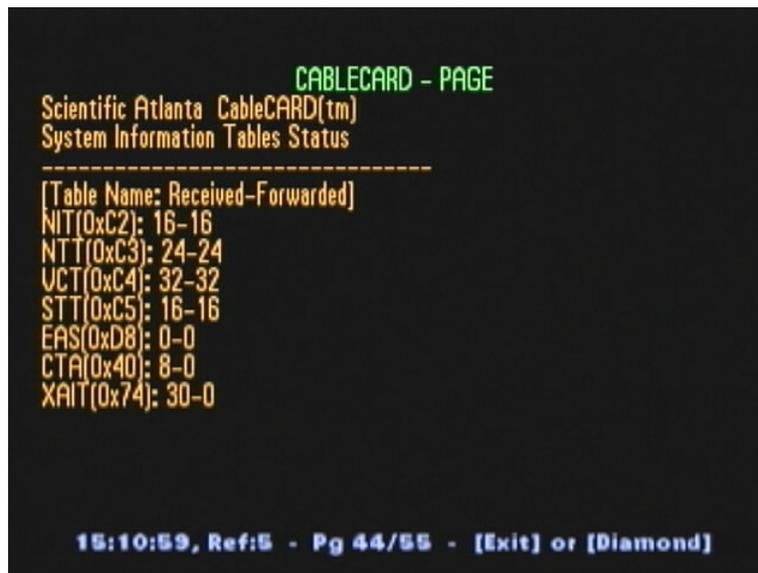
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify what applications currently have system information available
- Verify number of packets received by the M-Card
- Verify number of packets forwarded to the host from the M-Card

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
System Information Tables Status
-----
[Table Name: Received-Forwarded]
NIT(0xC2): 16-16
NTT(0xC3): 24-24
VCT(0xC4): 32-32
STT(0xC5): 16-16
EAS(0xD8): 0-0
CTA(0x40): 8-0
XAIT(0x74): 30-0

15:10:59, Ref:5 - Pg 44/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field and Link Names	Description	Possible Values
Table Name	Identifies the SI table	<ul style="list-style-type: none"> ■ NIT ■ NTT ■ VCT ■ STT ■ EAS ■ CTA ■ XAIT
Received	The number of packets received by the M-Card	■ $0 \leq \text{Integer} \leq 4294967295$
Forwarded	The number of packets forwarded to the host from the M-Card	■ $0 \leq \text{Integer} \leq 4294967295$

SI Tables Last Sent Time Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the SI Tables Last Sent Time diagnostic screen. You can view this screen to identify the various SI tables and the time in which each table was last sent to the M-Card.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the SI tables that are available
- Verify when specific SI tables were last sent to the M-Card

Screen Components

Example:

```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
SI Tables Last Sent Time
-----
[Table Name: Time]
NIT: May 7 2007, 7:12:28 PM GMT
NTT: May 7 2007, 7:12:33 PM GMT
UCT: May 7 2007, 7:12:37 PM GMT
STT: May 7 2007, 7:12:38 PM GMT
EAS: Never
CTA: Never
XAIT: Never

15:11:09, Ref:5 - Pg 45/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

SI Tables Last Sent Time

Field and Link Names	Description	Possible Values
Table Name	Identifies the SI table	<ul style="list-style-type: none"> ■ NIT ■ NTT ■ VCT ■ STT ■ EAS ■ CTA ■ XAIT
Time	Time in which each respective SI table was last sent	<ul style="list-style-type: none"> ■ [Date, Time] Example: Jan 25 2007, 4:05:08 PM GMT ■ Never

Enhanced Channel Map Details

Introduction

This section provides an overview diagram and field descriptions for the Enhanced Channel Map Details diagnostic screen. You can view this screen to identify information about customized channel maps.

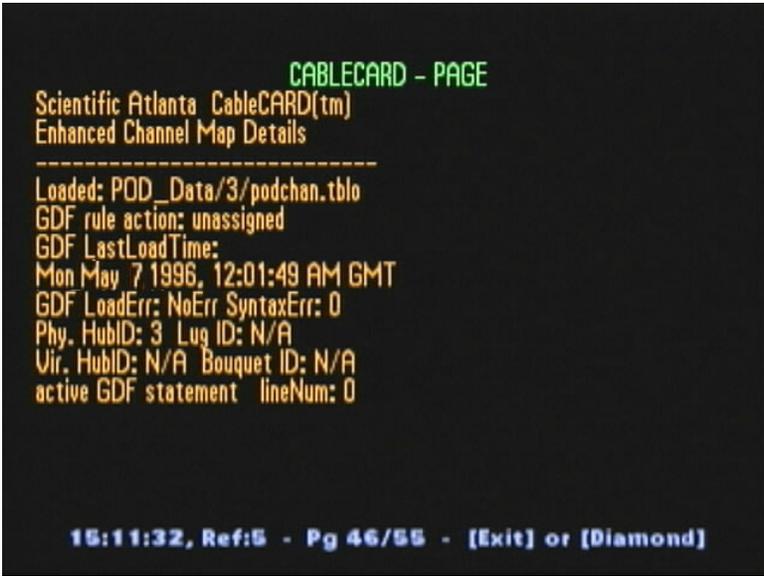
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Identify the identification number of the Lineup Group (LUG) that is associated with channel maps
- Determine the location of the podchan.tblo file that is loaded for the channel map

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
Enhanced Channel Map Details
-----
Loaded: POD_Data/3/podchan.tblo
GDF rule action: unassigned
GDF LastLoadTime:
Mon May 7 1996, 12:01:49 AM GMT
GDF LoadErr: NoErr SyntaxErr: 0
Phy. HubID: 3 LUG ID: N/A
Vir. HubID: N/A Bouquet ID: N/A
active GDF statement lineNum: 0

15:11:32, Ref:5 - Pg 46/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Names	Description	Possible Values
Loaded	The location of the podchan.tblo file that is loaded for the channel map	<ul style="list-style-type: none"> ■ [Directory-dependent] Example: POD-Data/2/podchan.tblo
GDF rule action	Displays the action that was taken in reference to the matching rule in the group definition file	<ul style="list-style-type: none"> ■ Read ■ Not Read ■ Unassigned ■ NA
GDF LastLoad Time	Displays the time at which the GDF file was last read	<ul style="list-style-type: none"> ■ [Date, Time]
GDF LoadErr	Indicates if any errors occurred when the GDF was loading	<ul style="list-style-type: none"> ■ NoErr ■ Path Not Found ■ Out of Memory ■ ReadErr ■ Exceeded Max Length ■ File Changed ■ UnknownErr
SyntaxErr	Displays the number of syntax errors present in the group definition file	<ul style="list-style-type: none"> ■ [Integer > 0] ■ N/A
Phy. HubID	Defines the ID for the physical hub associated with the M-Card module	<ul style="list-style-type: none"> ■ [Hub-dependent] ■ N/A
Lug ID	Defines the lineup group identifier (LUG ID) associated with the channel map for this M-Card module	<ul style="list-style-type: none"> ■ [Integer > 0]—dependent upon group number assigned to LUG by the system ■ N/A
Vir. HubID	Defines the ID for the virtual hub associated with the M-Card module	<ul style="list-style-type: none"> ■ [Integer > 0] ■ N/A
Bouquet ID	Defines the ID for the bouquet associated with the LUG for this M-Card module	<ul style="list-style-type: none"> ■ [Integer > 0] ■ N/A
active GDF statement lineNum	Indicates the line number within the GDF file at which the GDF rule is located	<ul style="list-style-type: none"> ■ [Integer > 0] ■ N/A

Bfs Files Read Status Page-1 Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Bfs Files Read Status Page-1 diagnostic screen. You can view this screen to verify which files are stored on BFS, as well as the current status of each file.

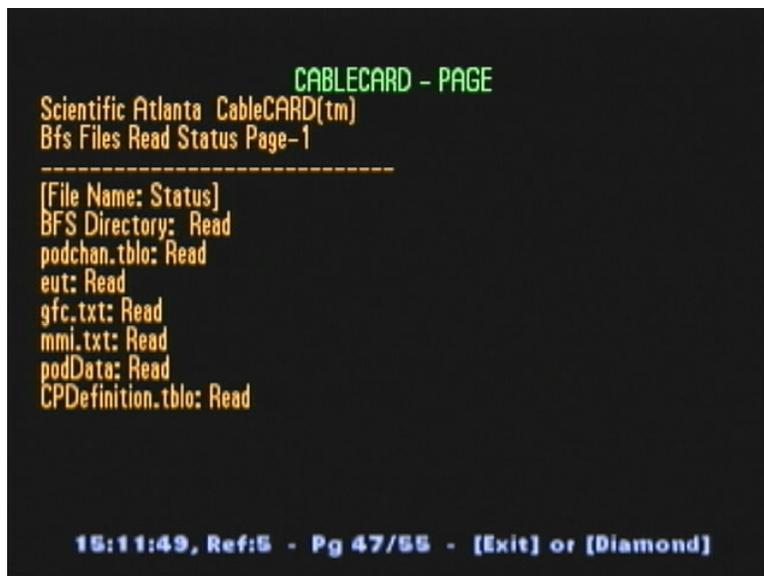
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the types of files stored on BFS
- Verify the current status of each file stored on BFS

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
Bfs Files Read Status Page-1
-----
[File Name: Status]
BFS Directory: Read
podchan.tblo: Read
eut: Read
gfc.txt: Read
mmi.txt: Read
podData: Read
CPDefinition.tblo: Read

15:11:49, Ref:5 - Pg 47/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Names	Description	Possible Values
File Name	Lists the type of file stored on BFS	<ul style="list-style-type: none">■ [File-dependent] Example: BFS Directory, podchan.tblo, mmi.txt
Status	Displays the current status of the file	<ul style="list-style-type: none">■ Read■ Not Read■ NA

CP Information Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the CP Information diagnostic screen. You can view this screen to identify information about copy protection (CP) for the current video stream.

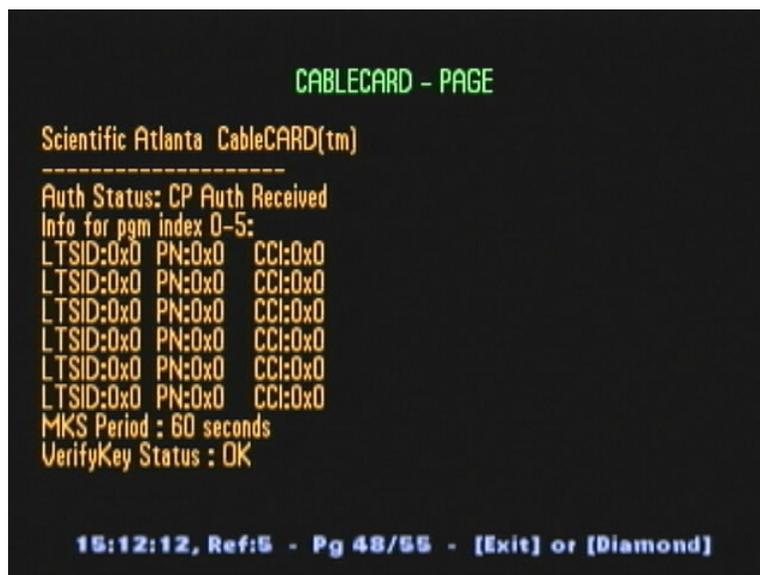
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the current copy protection authorization status for the CableCARD module
- Verify the program number for the content that is being streamed
- Verify the level of copy protection

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
-----
Auth Status: CP Auth Received
Info for pgm index 0-5:
LTSID:0x0 PN:0x0 CCI:0x0
MKS Period : 60 seconds
VerifyKey Status : OK

15:12:12, Ref:5 - Pg 48/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Names	Description	Possible Values
Auth Status	The current status of the M-Card/host authentication (binding)	<ul style="list-style-type: none"> ■ CP Auth Received—authorization has been received from the headend by the card/Host pair and the authentication and binding are complete ■ Waiting for CP Auth—waiting for CP authorization from the headend ■ Waiting for Host Cert—waiting for certificates from the host ■ CP Failure—CP session failure or authorization keys do not match; all decryption is disabled ■ Invalid Host Cert—certificate is invalid; binding has failed ■ Info not available—unknown state
Info for pgm index 0-5	The program number running on a specific stream that is identified by the LTSID	<ul style="list-style-type: none"> ■ [Hexadecimal value]—valid program number ■ 0—not used
LTSID	The Local Transport Stream ID assigned by the host	<ul style="list-style-type: none"> ■ [Hexadecimal number] ■ 0—LTSID not used
PN	The PN (program number) running on a specific stream that is identified by the LTSID	<ul style="list-style-type: none"> ■ [Integer ≥ 1]—valid program number ■ 0—not used
CCI	The level of copy protection passed from the card to the host	<ul style="list-style-type: none"> ■ 0x00—Copying is not restricted ■ 0x01—No further copying is permitted ■ 0x02—One copy is permitted ■ 0x03—Copying is not permitted
MKS period	The rate (seconds) that copy protection keys are refreshed	<ul style="list-style-type: none"> ■ [Integer > 0] <p>Default: 60 seconds</p>

Field Names	Description	Possible Values
VerifyKey Status	Indicates whether the CP keys were successfully verified Note: This field only appears when the M-Card module is running in an MMODE.	<ul style="list-style-type: none">■ OK■ Not OK

Diagnostics Screen

Introduction

This section provides an overview diagram and field descriptions for the Diagnostics diagnostic screen. You can view this screen to identify information specific to the M-Card module hardware.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the hardware model and version number for the M-Card module
- Determine the MAC address for the M-Card module
- Determine the time and date of the last successful boot of the M-Card module

Screen Components

Example:

```
                                CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
---Diagnostics---
H/W Model: 0802, Ver: 0011
MAC Address: 00:0F:21:FF:1B:A3
SL. No: PKBBBZCRJ, Mode: MMODE
Boot Time
Mon Jan 1 1996, 12:00:26 AM GMT
Current Time
Mon May 7 2007, 7:12:28 PM GMT
Free Memory: 594 KB
Bldr Ver: 120
OS Ver: 01.01.10P2
Build Time: Apr 16 2007,11:34:17
Current Resource Status: C5F5FFF
BFS: Received, Hub ID: 3
15:12:33, Ref:5 - Pg 49/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Diagnostics

Field and Link Names	Description	Possible Values
H/W Model	The hardware model number associated with the M-Card module	<ul style="list-style-type: none"> ■ 800—M-Card module in one-way mode ■ 802—M-Card module in two-way mode
Ver	The hardware version associated with the M-Card module	■ [Hardware-dependent]
MAC Address	The RF MAC address that is used by the DNCS	■ [M-Card-dependent]
SL. No.	The serial number associated with the M-Card module	■ [M-Card-dependent]
Mode	The operations mode that the M-Card module is operating in	<ul style="list-style-type: none"> ■ MMODE—multi-stream capable mode ■ SMODE—single stream capable mode
Boot Time	The date and time that the system was last booted	■ [Date, Time]
Current Time	The current date and time	■ [Date, Time]
Free Memory	The amount of memory not currently in use	■ [Size varies dynamically]
Bldr Ver	The bootloader version loaded on the M-Card module	■ [Software-dependent]
OS Ver	The current operating system (OS) version for the M-Card module	<ul style="list-style-type: none"> ■ [OS-dependent] Example: 01.01:10
Build Time	Date and time in which the software was last built	■ [Date, Time]
Current Resource Status	Status of resources received (present) and established (opened)	■ [Hexadecimal value]

Field and Link Names	Description	Possible Values
BFS	An indication of whether or not the card receives the root directory from the DNCS	<ul style="list-style-type: none"> ■ Received—desired value; the M-Card module received the root directory from the DNCS ■ Not Received—M-Card module has not received the root directory from the DNCS
Hub ID	The hub number to which the M-Card module is associated with when booted	<ul style="list-style-type: none"> ■ [Integer > 0]

CPU Channel Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the CPU Channel diagnostic screen. You can view this screen to identify information specific to the M-Card module hardware.

Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the type of service for specific data flows
- Determine the number of dropped packets from the buffer

Screen Components

Example:

```
                                CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
CPU Channel
-----
---Data Flow Analysis---
[CPU.Chan: Pkts-(Curr-Max-Min)Bps]
DC.Pkts(Tx): 0x6D3-1085-4169-149
DC.Pkts(Rx): 0x6B4-107-3315-0
EC.Pkts(Tx): 0x1A3C1-624126-644470-407993
EC.Pkts(Rx): 0x0-0-0-0
-----
---Buffer OverRun---
[Interface : Packets Dropped]
Extended Channel Tx: 0
Extended Channel Rx: 0
Data Channel Rx: 0
15:12:53, Ref:5 - Pg 50/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

CPU Channel Data and Buffer OverRun

Field and Link Names	Description	Possible Values
Data Flow Analysis	CPU.Chan —identifies the CPU channel type	<ul style="list-style-type: none"> ■ DC.Pkts(Tx)—data Channel TX ■ DC.Pkts(Rx)—data Channel RX ■ EC.Pkts(Tx)—extended Channel TX ■ EC.Pkts(Rx)—extended Channel TX
	Pkts —lists the packet count for each channel type	■ 0x0 to 0xFFFFFFFF
	[Curr-Max-Min] —displays the current, maximum, and minimum data rate (Bps)	■ [0 ≤ Integer ≤ 4294967295]
Buffer OverRun	Interface —displays the CPU interface channel names	<ul style="list-style-type: none"> ■ Extended Channel Tx ■ Extended Channel Rx ■ Data Channel Rx
	Packets Dropped —number of packets dropped across extended or data channel	■ [0 ≤ Integer ≤ 4294967295]

Firmware Download Details Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Firmware Download Details diagnostic screen. You can view this screen to identify information about the latest download of software.

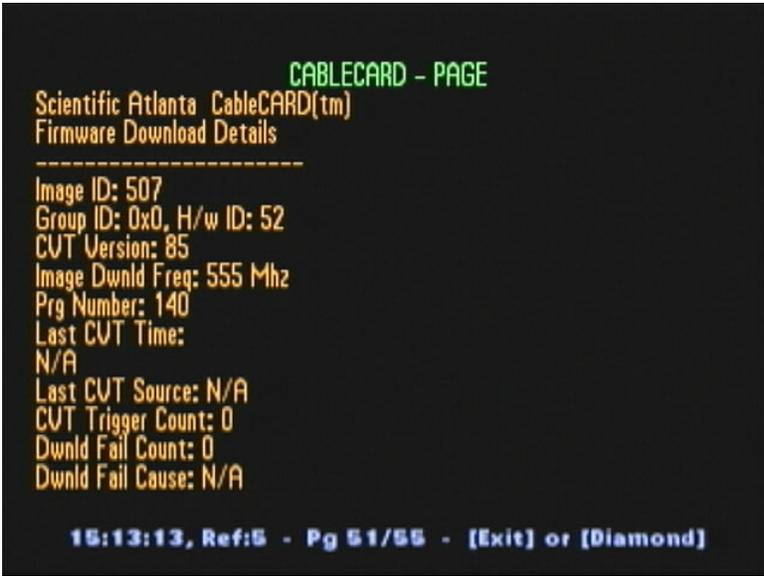
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the image ID of the last downloaded image obtained from NVM (non-volatile memory)
- Determine the last known good CVT download frequency obtained from NVM

Screen Components

Example:



```
CABLECARD - PAGE
Scientific Atlanta CableCARD(tm)
Firmware Download Details
-----
Image ID: 507
Group ID: 0x0, H/w ID: 52
CVT Version: 85
Image Dwnld Freq: 555 Mhz
Prg Number: 140
Last CVT Time:
N/A
Last CVT Source: N/A
CVT Trigger Count: 0
Dwnld Fail Count: 0
Dwnld Fail Cause: N/A

15:13:13, Ref:5 - Pg 51/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Firmware Download Details

Field and Link Names	Description	Possible Values
Image ID	Displays the image ID of the last downloaded image obtained from NVM (non-volatile memory)	<ul style="list-style-type: none"> ■ [Image-dependent] Example: 65461
Group ID	Displays the group ID assigned to the card and obtained from NVM	<ul style="list-style-type: none"> ■ [Group-dependent] Example: 0x1885
H/w ID	Displays the identification number for the card	<ul style="list-style-type: none"> ■ [Hardware-dependent]
CVT Version	Displays the version number for the CVT table obtained from NVM	<ul style="list-style-type: none"> ■ [CVT version-dependent] Example: 10
Image Dwnld Freq	Displays the previous image download frequency obtained from NVM (MHz)	<ul style="list-style-type: none"> ■ [Integer ≥ 0]
Prg Number	The MPEG program number assigned to stream	<ul style="list-style-type: none"> ■ [Integer > 0]
Last CVT Time	The time in which the last CVT trigger was received	<ul style="list-style-type: none"> ■ [Time] ■ N/A
Last CVT Source	The source from which the last CVT trigger was received	<ul style="list-style-type: none"> ■ Inband ■ Out of Band ■ N/A
CVT Trigger Count	The total number of CVT triggers that have been received	<ul style="list-style-type: none"> ■ [0 ≤ Integer ≤ 255]
Dwnld Fail Count	The total number of CVT downloads that have failed	<ul style="list-style-type: none"> ■ [0 ≤ Integer ≤ 255]
Dwnld Fail Cause	Describes the reason for the last CVT download failure	<ul style="list-style-type: none"> ■ CVT not received ■ No OS Blocks ■ No record in CVT ■ N/A

Extended Channel Flows Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Extended Channel Flows diagnostic screen. You can view this screen to identify information about channel flows, as well as the service type associated with each flow.

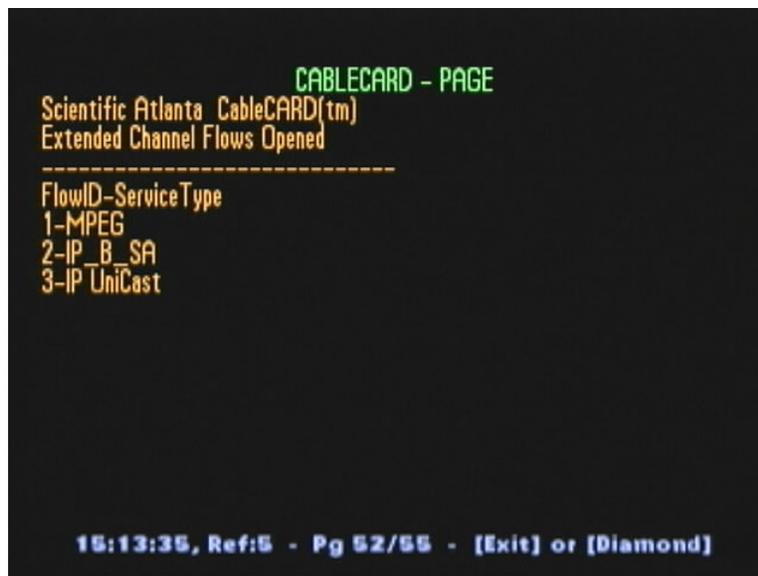
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Determine the various types of channel flows
- Determine the service type associated with each channel flow

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Extended Channel Flows Opened

Note: The number and order of the flows may vary.

Field and Link Names	Description	Possible Values
FlowID	The identification number for the flows that are open	<ul style="list-style-type: none"> ■ 1 to 5
Service Type	Describes the service type for the extended channel flows	<ul style="list-style-type: none"> ■ MPEG ■ IP UniCast ■ DSG ■ IP MultiCast ■ IP_B_SA

Generic Host Diags Report Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Generic Hosts Diags Report diagnostic screen. You can view this screen to request specific reports concerning components of the system.

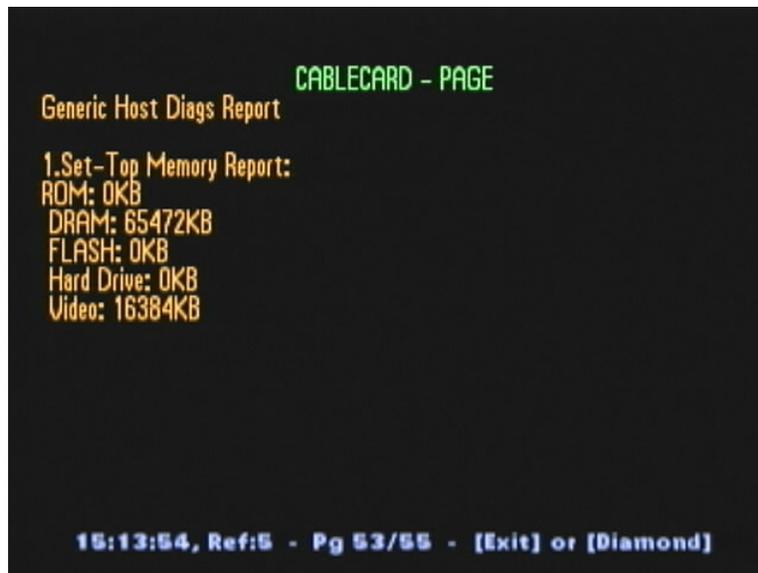
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the current status of components associated with the M-Card and set-top box
- Determine the status of specific reports

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Generic Host Diags Report

Note: When accessing generic host reports, the actual diagnostic screens do not display Generic Host Reports as the screen title. Instead, the diagnostic page is titled by the type of report that is currently being viewed (for example, Set-Top Memory Report).

Field Names	Description	Possible Values
[Report Type]	Defines the type of diagnostic report that the M-Card module is requesting from the Host	<ul style="list-style-type: none"> ■ Set-Top Memory Report ■ S/W Version Report ■ F/W Version Report ■ MAC Address Report ■ FAT Status Report ■ FDC Status Report ■ Current Channel Report ■ 1394 Port Report ■ DVI Status Report ■ eCM Status Report ■ HDMI Port Status Report ■ RDC Status Report ■ OCHD2 Net Addr Report ■ Home NetWorking ■ HOST Information
[Response]	The response and status of the report (provided by the Host)	<ul style="list-style-type: none"> ■ Diagnostics Granted: 0 ■ Diagnostics Denied: 1 ■ Diagnostic Denied - Feature not Implemented ■ Diagnostic Denied - Device Busy ■ Diagnostic Denied - Other reasons ■ Reserved for future use

ASD Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the ASD Application diagnostic screen. You can view this screen to identify information about the authorized service domain (ASD). ASD is a feature that allows you to record content and share it within a trusted domain.

Performing Tasks

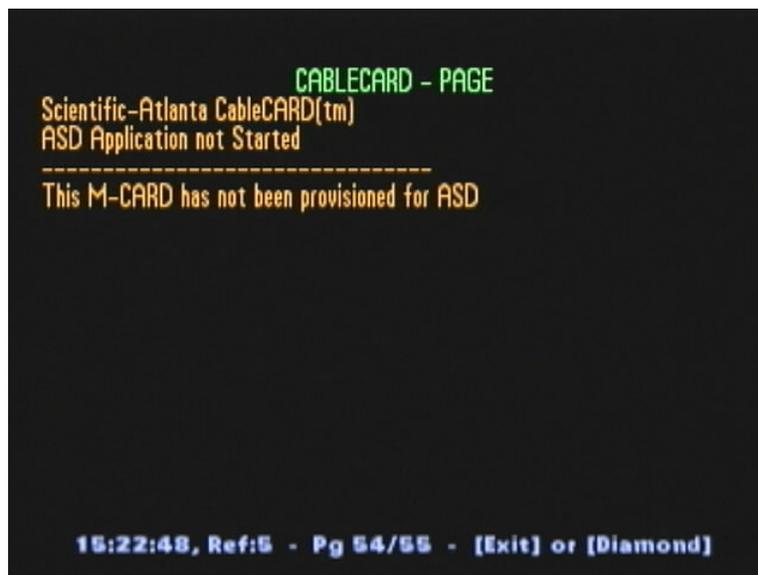
By accessing this diagnostic screen, you can perform the following tasks:

- Determine if the ASD keys were successfully verified
- Verify which M-Card is provisioned for ASD
- Verify if ASD authentication was successful

Note: If the ASD keys and certificates were not installed, the ASD application will not start. The **M-CARD has not been provisioned for ASD** message will display when accessing this diagnostic screen.

Screen Components

Example:



Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

ASD-TDL

Field Names	Description	Possible Values
Network ID	Provides the identity of your network	■ [Network-dependent]
TDL Mac Address	Identifies the MAC addresses of the M-Cards on the trusted domain list (TDL)	■ [M-Card-dependent]
TDL Timestamp	Displays the date at which the TDL was obtained	■ [Date] Example: Mon Jan 1 2007, 12:08:00 AM GMT
TDL Expiry Time	Displays the date at which the TDL expires	■ [Date] Example: Mon Jan 1 2007, 12:08:08 AM GMT

Network Interface - DSG Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the Network Interface-DSG diagnostic screen. You can view this screen to identify information about the DOCSIS Set-Top Gateway (DSG) network-related information.

Important! Data is only available if the host is a two-way host with DSG capability via a DOCSIS modem. If the host is a one-way host, N/A (not available) is displayed for all fields within the diagnostic screen.

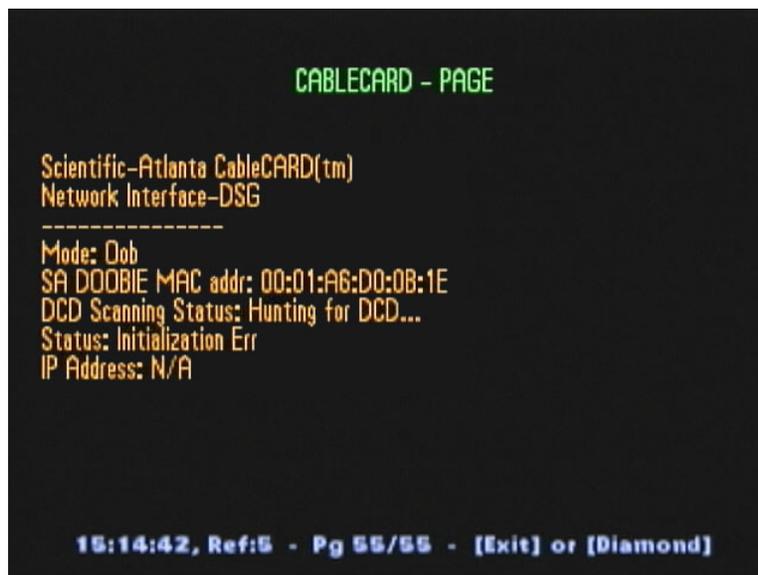
Performing Tasks

By accessing this diagnostic screen, you can perform the following tasks:

- Verify the DSG operating mode
- Determine the MAC address for the DSG tunnel
- Determine if the Downstream Channel Descriptor (DCD) file was found and received by the card

Screen Components

Example:



```
CABLECARD - PAGE

Scientific-Atlanta CableCARD(tm)
Network Interface-DSG
-----
Mode: Dob
SA DOOBIE MAC addr: 00:01:A6:D0:08:1E
DCD Scanning Status: Hunting for DCD...
Status: Initialization Err
IP Address: N/A

15:14:42, Ref:5 - Pg 55/55 - [Exit] or [Diamond]
```

Screen Fields and Values

This section describes the fields and possible values that can appear in this diagnostic screen.

Field Names	Description	Possible Values
Mode	For DHCTs using DSG, this field indicates the type of communication that the DHCT operates in relation to the headend	<ul style="list-style-type: none"> ■ OOB—the M-Card module is operating in out-of-band mode ■ Basic—the M-Card module is operating in Basic DSG mode ■ One-way—the M-Card module is operating in Basic DSG, one-way mode (only receives data downstream from the network to the DHCT with no return path [upstream] to the network) ■ Advanced—M-Card module is operating in Advanced DSG mode ■ Advanced One-Way—the M-Card module is operating Advanced DSG, one-way mode ■ N/A—the operation of the M-Card module is unknown to the network
SA DOOBIE MAC addr	The MAC address for the DSG tunnel	<ul style="list-style-type: none"> ■ [MAC Address]—dependent on well known MAC address for cards
DCD Scanning Status	An indication of whether the card received a valid DCD from the host	<ul style="list-style-type: none"> ■ DCD Found—M-Card module has received a valid DCD from host ■ Hunting for DCD ■ N/A—status is unknown
Status	The operating status of the DCD initialization process	<ul style="list-style-type: none"> ■ Started—switching from DAVIC to DSG; DSG initialization is not yet complete ■ Initialization Err—DSG initialization error has occurred; therefore, continuing in DAVIC mode ■ Initialized—DSG initialization is complete and successful ■ N/A—status is unknown
IP Address	The IP address if the card has received a new flow in DSG mode	<ul style="list-style-type: none"> ■ [IP Address] ■ Acquiring—in the process of receiving the IP address ■ N/A

4

Customer Information

If You Have Questions

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

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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