M-Card and S-Card Diagnostic Screens on a TV Host

A Reference Guide

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

The diagnostic screens for the single-stream CableCARD™ (S-Card) and Multi-Stream CableCARD (M-Card™) modules are described in this reference guide. The diagnostic screen data provide a detailed profile of CableCARD performance that can be used to monitor and troubleshoot CableCARD operation.

Purpose

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

- Determine the hardware model and version number of the S-Card or M-Card module
- Determine the MAC address of the S-Card or M-Card module
- Determine the IP address of the S-Card or M-Card module
- 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
- Determine the operating status of the DCD initialization process (M-Card module only)

Audience

This guide is written for network operators and Cisco personnel who have experience with accessing the diagnostic screens for S-Card and M-Card modules.

Document Version

This is the fourth formal release of this document. In addition to minor text and graphic changes, the following table provides the technical changes to this document.

Description	See Topic
Updated screen names, screen shots, and screen information tables to comply with the latest M-Card module software.	***M-CARD-Related Diagnostic Screens*** (on page 5).

1

Understanding Diagnostic Screens

The diagnostic screens allow you to quickly confirm the current operating system (OS), bootloader, and hardware versions; examine network-related data; and view details about conditional access (CA) information. For example, if subscribers call in because they are not receiving the full channel lineup, you can use the diagnostic screens to check the PowerKEY® and authorization status.

This section lists the supported applications and provides instructions to help you access and navigate the diagnostic screens.

In This Chapter

View Diagnostic Screens

Accessing Diagnostic Screens

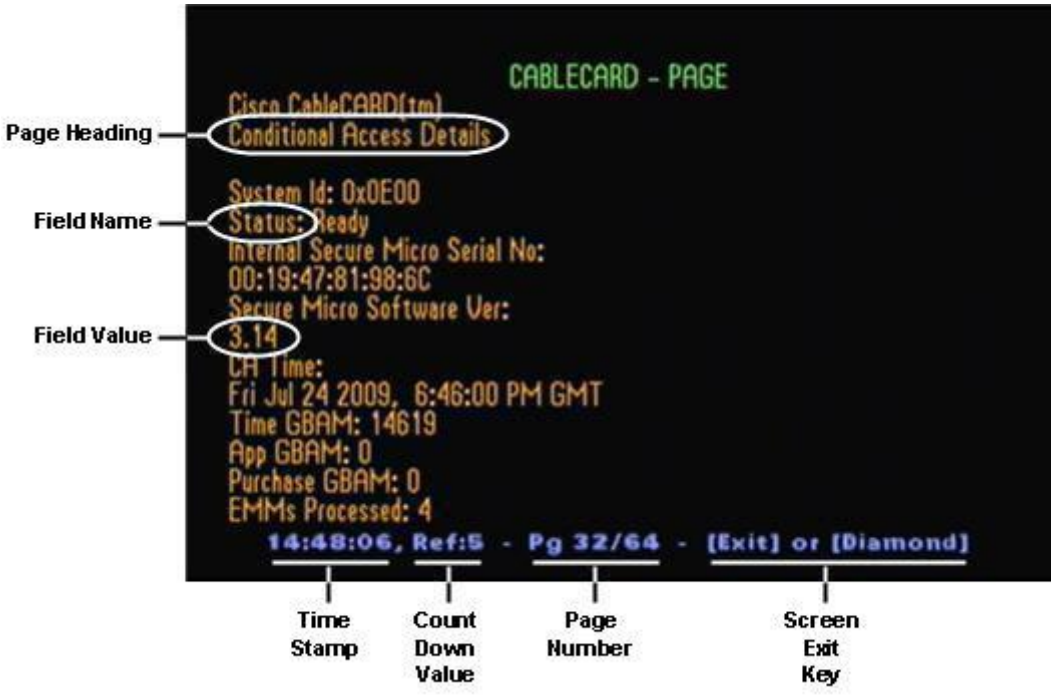
Each host device has specific methods (for example, remote control key combinations) for accessing the diagnostic screens. Refer to the documentation that came with your TV host for details.

Identifying Information Within Diagnostic Screens

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 text
- Descriptions of the status line content

The following example shows the components of a diagnostic screen.

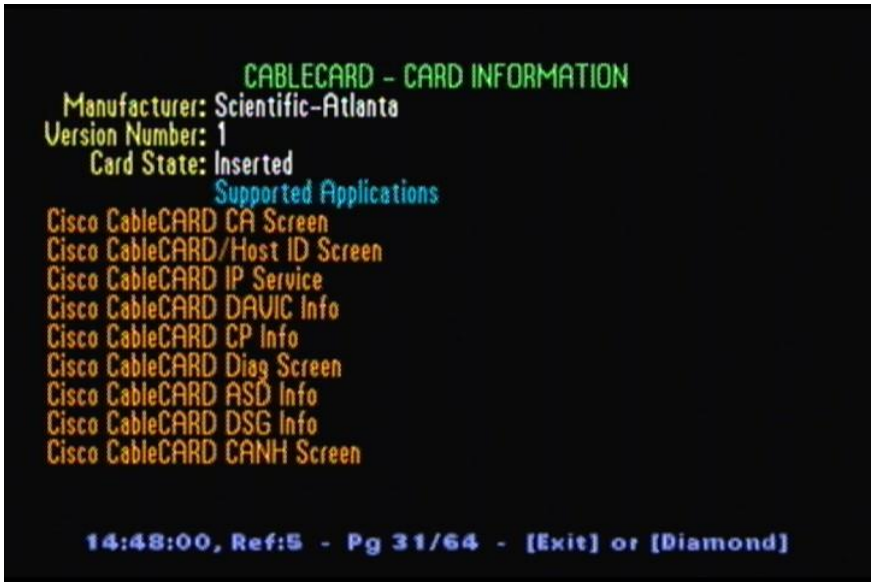


The table below describes the diagnostic screen labels.

Screen Labels	Description
Page Heading	The name of the diagnostic screen
Field Name	Diagnostic parameter label
Field Value	Diagnostic parameter value that corresponds to the adjacent Field Name
Time Stamp	Collection time for the displayed data
Count Down Value	Count down value in seconds till the next data refresh
Page Number	Diagnostic screen number
Screen Exit Key	Host key that exits diagnostic screens **Note:** Each host device has specific methods for exiting the diagnostic screens (for example, pressing **Exit** on the remote control). Refer to the documentation that came with your host for details.

Supported Applications

The first diagnostic screen (Pg 31) lists the supported applications on the M-Card module.



Each of these applications is described in the following chapter.

2

M-Card-Related Diagnostic Screens

This chapter includes the diagnostic screens specific to the current state of the M-Card module and also includes information about the fields and parameters shown in each screen. Each diagnostic screen accumulates data that describes the current state of the M-Card module, as well as copy protection, Digital Audio-Visual Council (DAVIC), and DSG-related information.

In This Chapter

CA Diagnostic Screen

Introduction

This section provides an overview of the diagrams and field descriptions for the following diagnostic screens:

- Conditional Access Details Screen - Page 1
- Conditional Access Details Screen - Page 2
- Active Program
- Decryption Fail Time
- Decrypt Fail Status - LateKey Details
- CID Table
- Dec and Enc Settings (decryption and encryption settings)
- Xport Driver Stats

You can view these screens to identify CA information related to the current video stream.

Important: The data for CA diagnostics is shown on several pages.

Performing Tasks

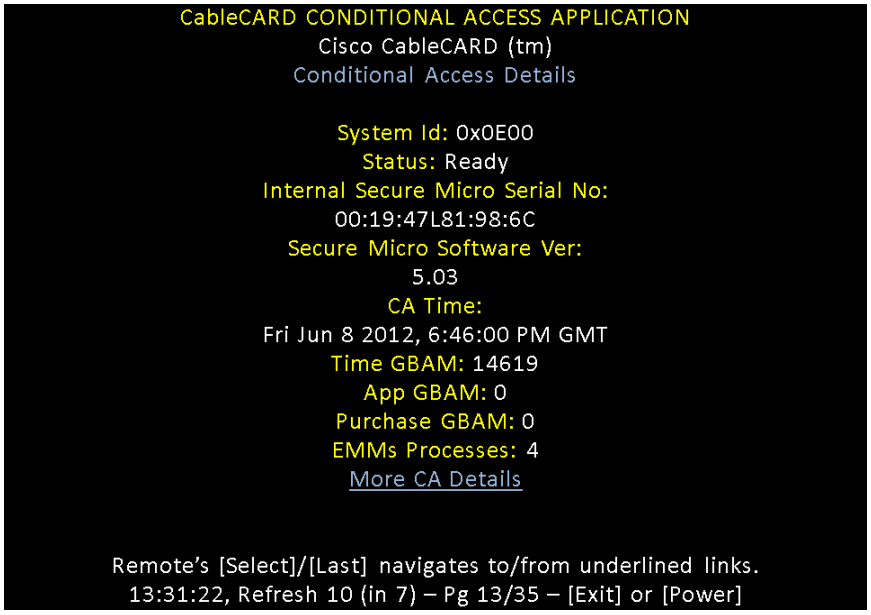
By accessing this diagnostic screen, you can perform the following tasks:

- 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)
- Determine the number of decryption failure/late keys that occurred after tuning to the program

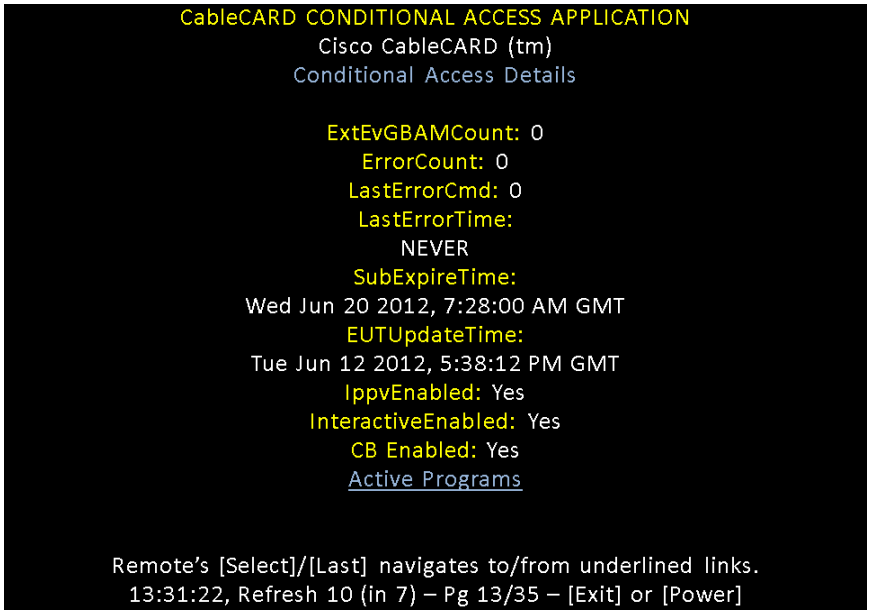
Screen Components

Examples:

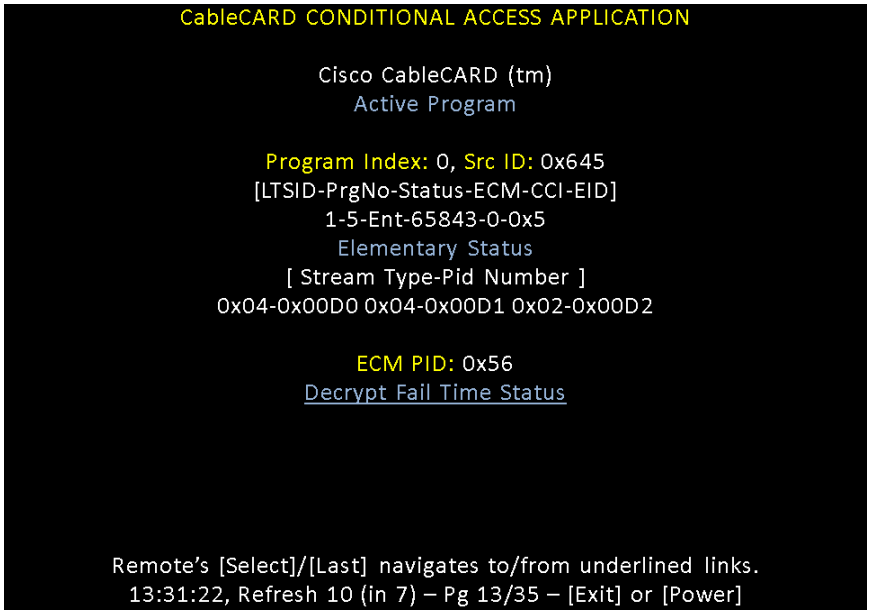
Conditional Access Details Screen - Page 1



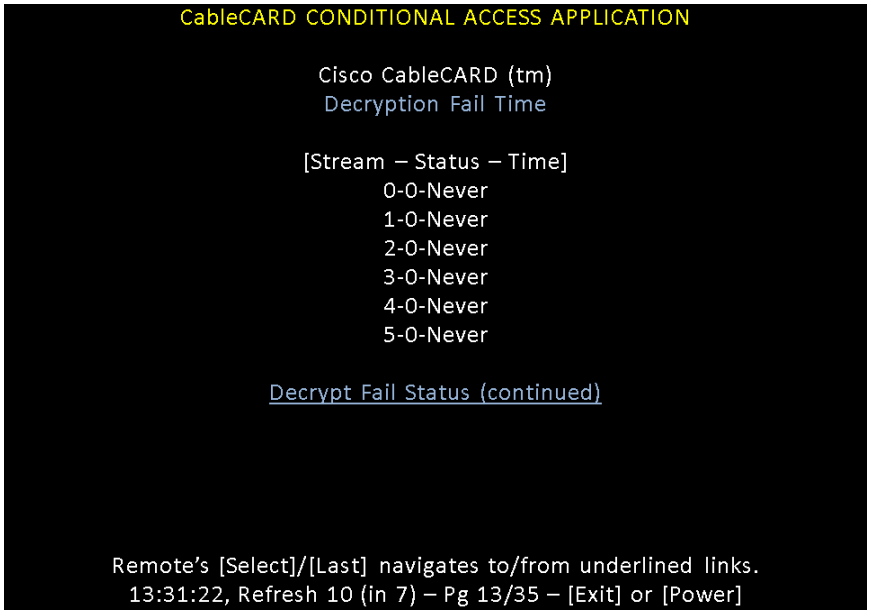
Conditional Access Details Screen - Page 2



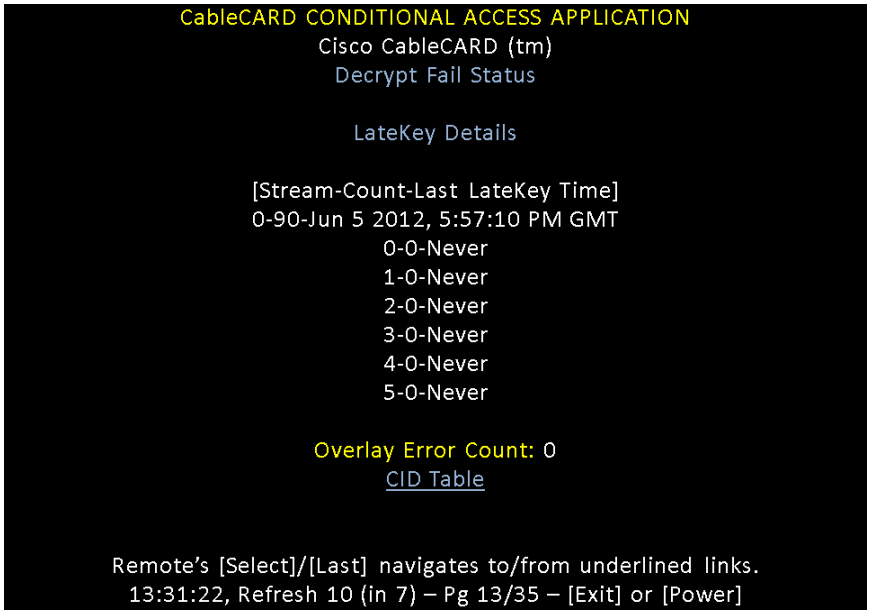
Active Program



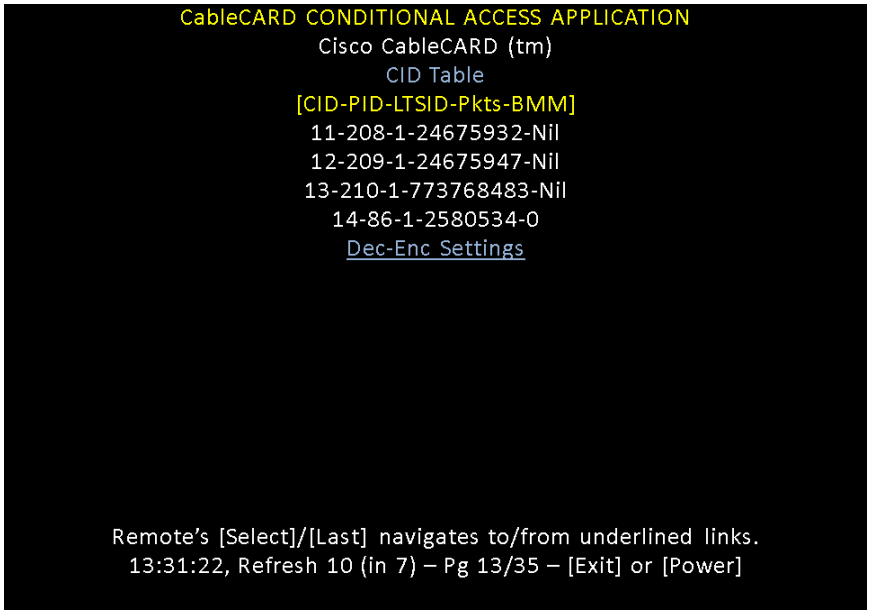
Decryption Fail Time



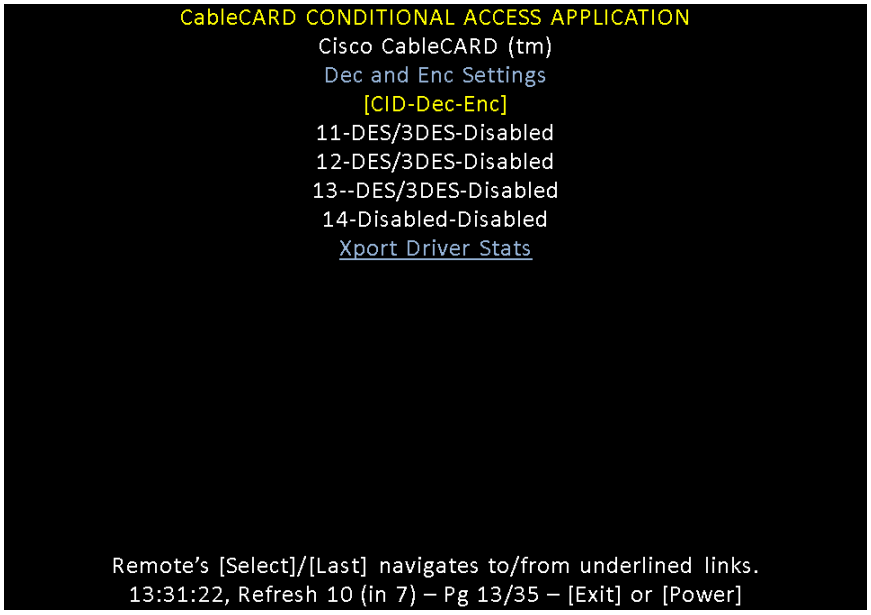
Decrypt Fail Status and LateKey Details



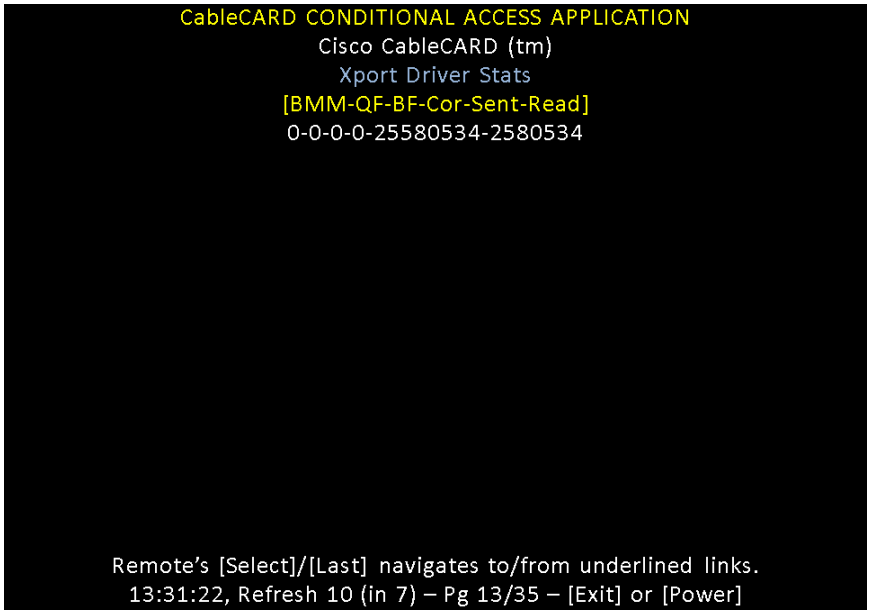
CID Table



Dec and Enc Settings



Xport Driver Stats



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

CA 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.	■ **[0x0E00]**—required value
Status	The current operating status for the PowerKEY CA supported by the M-Card module	■ **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**—M-Card 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)	■ **Unique per M-Card** **Example:** 00:14:F8:F1:0A:5D ■ **N/A**
Secure Micro Software Ver.-	The software version loaded on the Secure Micro Element	■ **[Software-dependent]** **Example:** 3.14
CA Time	Conditional access (CA) time received through the global broadcast authenticated message (GBAM)	■ **[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
Time GBAM	Indicates the number of Time GBAM messages processed	■ **[Integer ≥ 1]** ■ **0**—time GBAMs not yet processed
App GBAM	Indicates the number of Application GBAM messages received	■ **[Integer ≥ 1]** ■ **0**—application GBAMs not yet processed
Purchase GBAM	Indicates the number of purchase GBAMs processed	■ **[Integer ≥ 1]**

Field and Link Names	Description	Possible Values
EMMs Processed	Indicates the number of entitlement management messages successfully processed since the last power-up	■ **[Integer ≥ 1]** ■ **0**—EMMs not yet processed

CA Screen - Page 2

Field and Link Names	Description	Possible Values
ExtEvGBAMCount	Indicates the number of Extend Event GBAMs processed since last power up	■ **[Integer ≥ 0]**
ErrorCount	Indicates the number of errors that have occurred for the secure microcomputer **Note:** Not all errors indicate a problem; some are expected under normal operation.	■ **[Integer ≥ 0]**
LastErrorCmd	Last command for which an error occurred	■ **[Integer ≥ 0]**—integer identifies the error
LastErrorTime	Time when the last error occurred	■ **[Date, Time]** ■ **Never**—desired value; no errors have occurred
SubExpireTime	The date and time when the subscription authorizations expire	■ **[Date, Time]** ■ **N/A**
EUTUpdateTime	The last time that an entitlement unit table (EUT) was received from the DNCS	■ **[Date, Time]** ■ **N/A**
IppvEnabled	Indicates whether impulse pay-per-view (iPPV) is enabled for the M-Card	■ **Yes** ■ **No**
InteractiveEnabled	Indicates whether xOD services are enabled for the M-Card	■ **Yes** ■ **No**
CBEnabled	Indicates whether cryptobridge is enabled or not	■ **Yes** ■ **No**

Active Program

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
Active Program	Active program list	■ SMODE M-Card module—1 line displays (supports one active program) ■ MMODE M-Card module—up to 6 lines displayed (supports up to 6 active programs); can also be on separate screens, based on host capability
Program Index	Program index of this active program	■ **[Integer from 0 to 5]** ■ **N/A**—M-Card module is functioning in SMODE
Src ID	The source ID of this active program	■ **0x0000** to **0xFFFF** ■ **N/A**—M-Card module is functioning in SMODE
LTSID	The local transport stream ID assigned by the host	■ **[Integer ≥ 0]** ■ **N/A**—M-Card module is functioning in SMODE
PrgNo	The program number running on a particular stream identified in the LTSID	■ **[Integer > 0]**
Status	The current status for an active program	■ **Clear**—free to air ■ **ENT**—encrypted program is entitled ■ **NOT ENT**—encrypted program is not entitled ■ **No ECM**—No ECMs received for the encrypted program
ECM	Indicates the number of processed entitlement control messages (ECMs)	■ **[Integer > 0]** ■ **N/A**—clear program

Field and Link Names	Description	Possible Values
CCI	Indicates whether or not copy rights are restricted	■ **0**—copying not restricted ■ **1**—no further copying is permitted ■ **2**—one generation copy is permitted ■ **3**—copying is prohibited ■ **N/A**—clear program
EID	The entitlement identification (EID) of the program	■ **[Entitlement ID]** ■ **N/A**—clear program
Elementary Streams	**Stream Type:** Indicates the type of elementary stream	■ **[Hexadecimal value]**
	PID Number: The PID number that identifies the elementary stream	■ **[Hexadecimal value]** ■ **No Information Available**
	ECM PID: The ECM PID value for the encrypted program	■ **[Hexadecimal value]**

Decryption Fail Time

Field and Link Names	Description	Possible Values
Stream	Identifies the program stream	■ **Integer ≥ 0**
Status	Displays the current status for content decryption	■ **0**—desired value; no content decryption failures ■ **1**—decryption failure due to blackout ■ **2**—decryption failure due to lack of authorization ■ **3**—decryption failure due to time outs while waiting to receive ECMs ■ **4**—decryption failure due to CP binding failure
Time	Displays the time at which the last decryption failure occurred	■ **Never**—desired value; no content decryption failure ■ **[date, time]**

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	The program stream ID	■ **0 to 5**
Count	The number of times the content decryption experienced delays	■ **0**—desired value; no delayed content decryption ■ **[Integer > 0]**—exact number of times content decryption had delays
Last LateKey Time	The time of the last delayed content decryption	■ **[Time]** ■ **Never**
Overlay Error Count	The number of times the PID remapper has gone out of synchronization	■ **0**—desired value; no synchronization errors ■ **[Integer > 0]**—exact number of times PID remapper has gone out of synchronization

CID Table

Field and Link Names	Description	Possible Values
CID	The Channel ID of the selected stream	■ **[Integer ≥ 1]**
PID	The PID number of the selected stream	■ **[Integer ≥ 1]**—decimal number
LTSID	Local Transport Stream ID assigned by the host	■ **[Integer ≥ 1]**
Pkts	Number of MPEG transport stream packets received by the hardware	■ **[Integer ≥ 0]**
BMM	The BMM (Broadcast Management Module) channel number	■ **[Integer ≥ 0]**—BMM channel number if the packet has been extracted ■ **Nil**—if packet has not been extracted

Dec and Enc Settings

Field and Link Names	Description	Possible Values
CID	Channel ID of the selected stream	■ **[Integer ≥ 1]**
Dec	Displays the decryption settings present in the decrypt control register	■ **Decryption settings** **Example:** DES/3DES ■ **Disabled**—no decryption settings
Enc	Displays the encryption settings present in the encrypt control register	■ **Encryption settings** **Example:** DES/3DES ■ **Disabled**—no encryption settings

Xport Driver Stats

Field and Link Names	Description	Possible Values
BMM	The BMM channel number	■ **[Integer ≥ 0]**
QF	The number of packets dropped because the application queue is full	■ **[Integer ≥ 0]**
BF	The number of packets dropped because the circular buffer is full	■ **[Integer ≥ 0]**
Cor	The number of corrupted packets detected by the Xport ISR (Interrupt Service Routine)	■ **[Integer ≥ 0]**
Sent	The number of events sent to the application	■ **[Integer ≥ 0]**
Read	The number of reads performed by the application	■ **[Integer ≥ 0]**

Host ID Diagnostic Screen

Introduction

This section provides an overview diagram and field descriptions for the CableCARD/Binding Information 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.

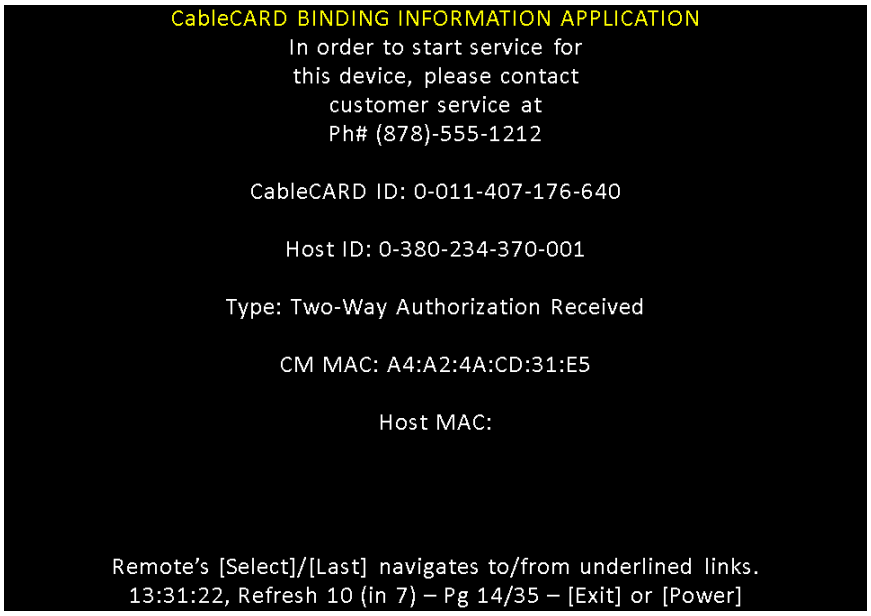
Performing Tasks

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

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

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(tm)	Indicates the unique identification number for the M-Card module that is inserted into the host	■ **[Card-dependent]**
Host ID	Indicates the unique identification number for the host device certificate ID	■ **[Host-dependent]**
Host Type	Indicates whether the host is capable of two-way or only one-way communication	■ **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	■ **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.

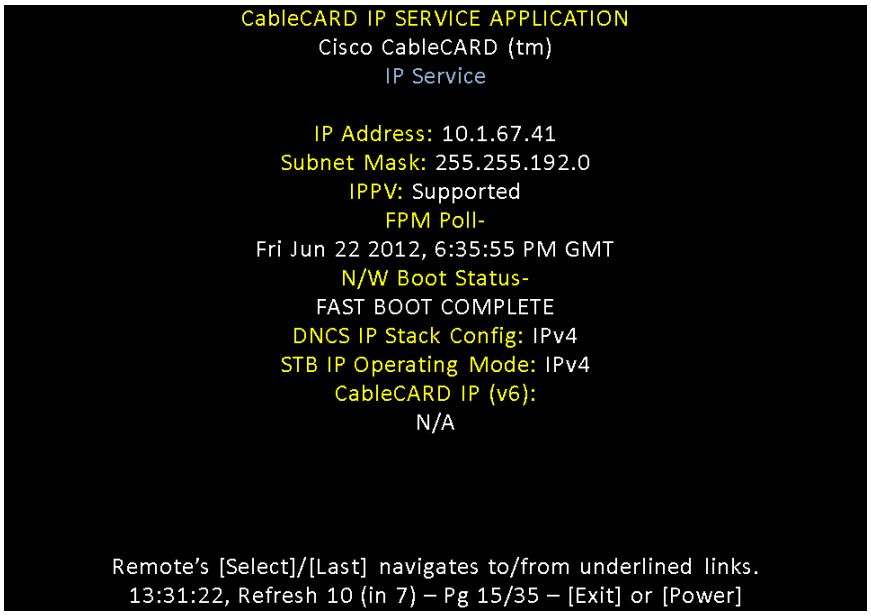
Performing Tasks

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

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

Field Names	Description	Possible Values
IP Address	The IP address assigned by the DNCS to the M-Card module	■ **[Network-dependent]** ■ **N/A**—one-way host
Subnet Mask	The IP subnet mask address assigned to the M-Card module by the DNCS	■ **[Network-dependent]** ■ **N/A**—one-way host
IPPV	Indicator for IPPV support	■ **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 response	■ **[Time]** ■ **Never**—no poll request received yet or is a 1-way host

N/W Boot Status	Current status of an M-Card boot process initiated over the network	■ **Initializing**—initial state on boot up. ■ **Slow Boot Mode**—Card is in slow boot mode. ■ **Notification Rcvd**—Fast boot request is received from Host. ■ **SA Ctrl Ver < 3**—Ready to perform fast boot as the sa control resource version is less than 3. ■ **Slow Boot Timer**—Slow boot timer is expired. Ready to perform UNCR if other parameters are ready. ■ **No IP Received**—The IP is not yet assigned to the box by the DHCP. ■ **FB Sent UNCR**—UNCR request is sent in fast boot mode. ■ **FB UNCR Timed Out**—UNCC is not received yet. Card will retry with a back off algorithm. ■ **SB Sent UNCR**—UNCR request is sent in slow boot mode. ■ **SB UNCR Timed Out** —UNCC is not received yet. Card will retry with a back off algorithm. ■ **Fast Boot Complete**—UNCC received in fast boot mode. ■ **Slow Boot Complete**—UNCC received in slow boot mode. ■ **BCAST Only**—Card failed to go 2-way and operating in broadcast only mode. ■ **Invalid UNCC.Retrying UNCR**—The UNCC received is invalid.

DAVIC Info Diagnostic Screen

Introduction

This section provides overview diagrams and field descriptions for the following DAVIC Info diagnostic screens:

- Network Interface – DAVIC
- Network Interface – DAVIC RDC
- DAVIC – Rx Statistics
- DAVIC Buffer OverRun
- System Information Tables Status
- SI Tables Last Sent Time
- Enhanced Channel Map Details
- BFS Files Read Status Page-1

You can view these screens to identify data in relation to the DAVIC network interface.

Performing Tasks

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

- Determine if the host device is capable of one- or two-way communication
- Determine various data specific to the forward data channel (FDC)
- Link to related Reverse Data Channel (RDC) data

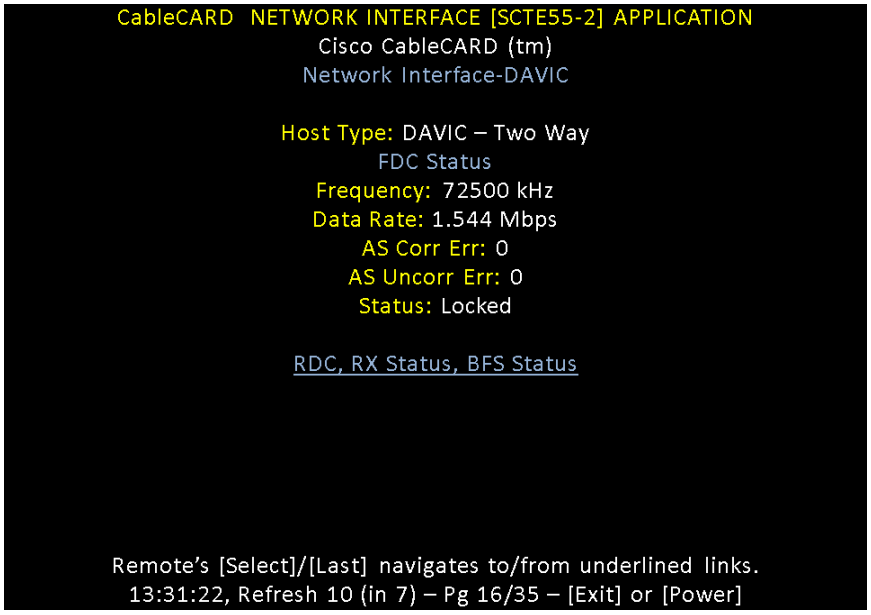
Screen Components

DAVIC information for the M-Card module is available on several pages. Links will appear in red. Click OK on the remote control to access another page of information.

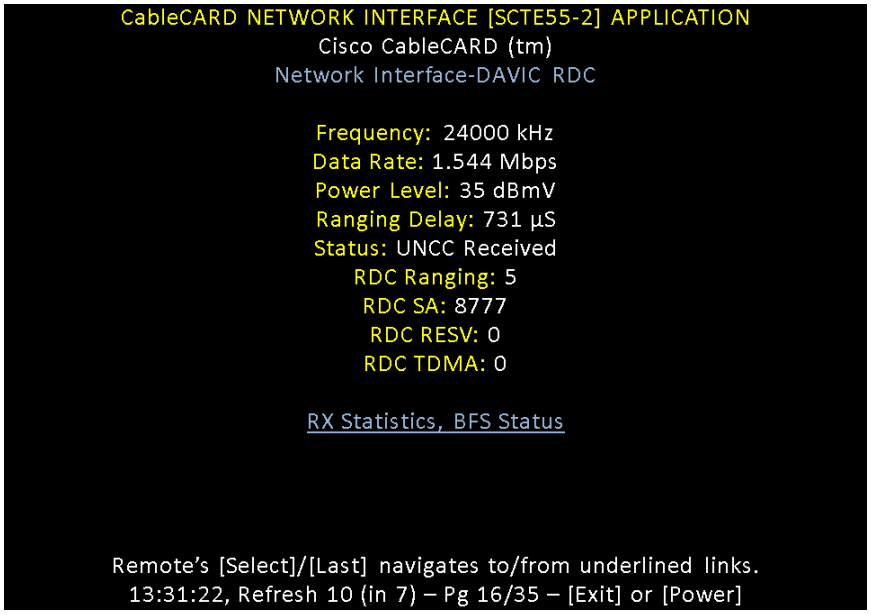
Note: Some TV hosts and remotes may differ. Consult the documentation that came with your TV host or remote control to determine how to move to linked pages.

Examples:

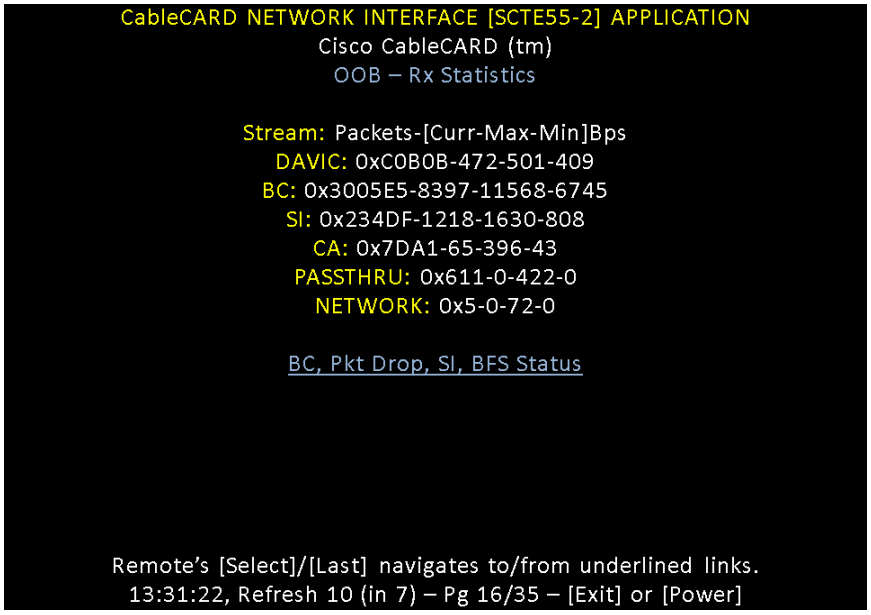
Network Interface - DAVIC



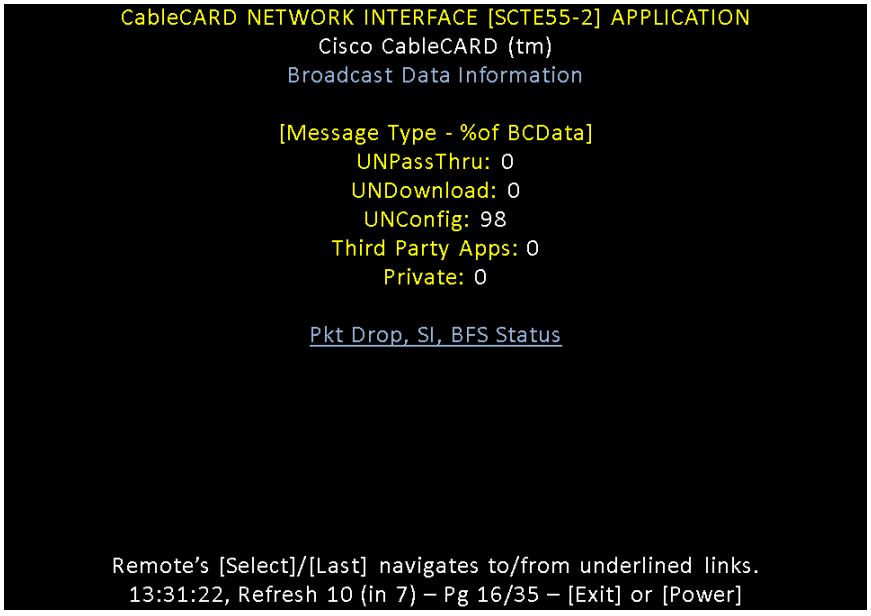
Network Interface – DAVIC RDC



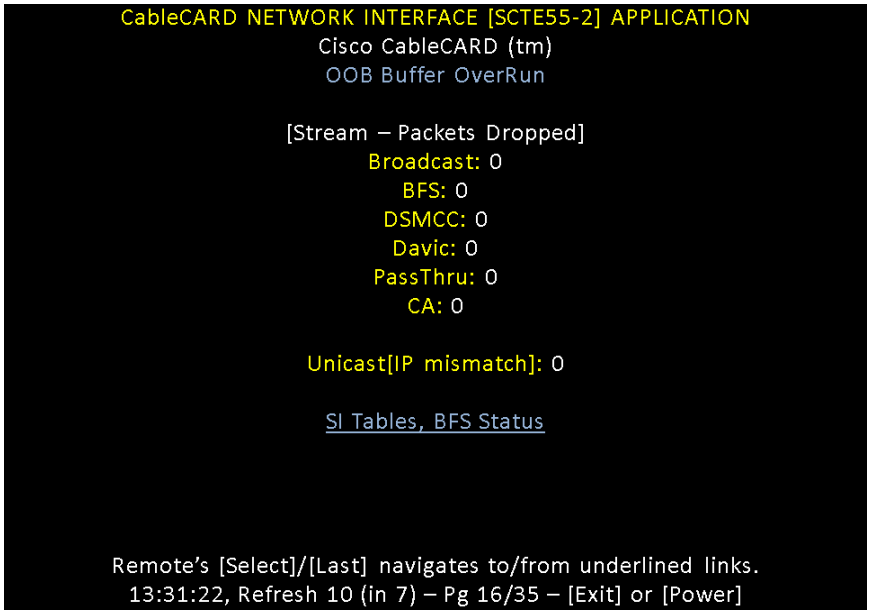
OOB – Rx Statistics



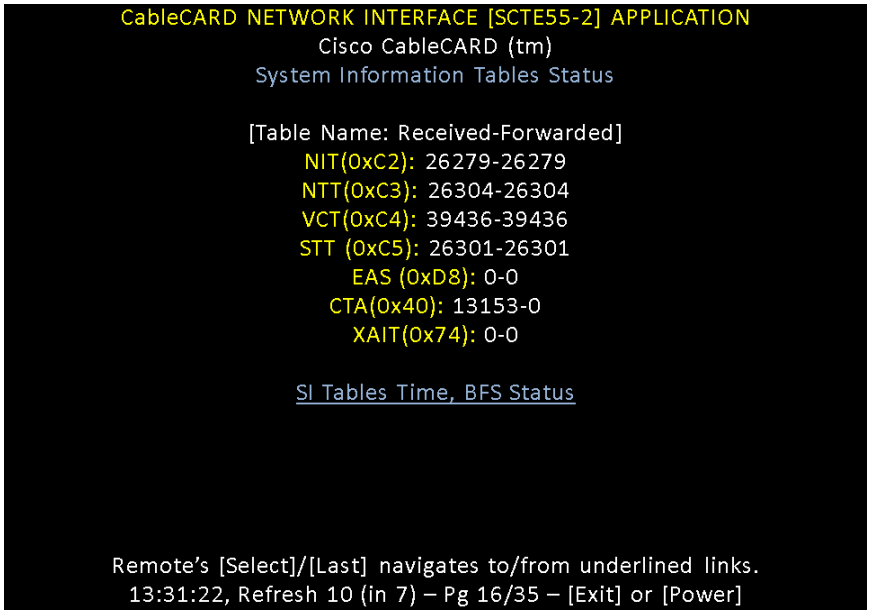
Broadcast Data Information



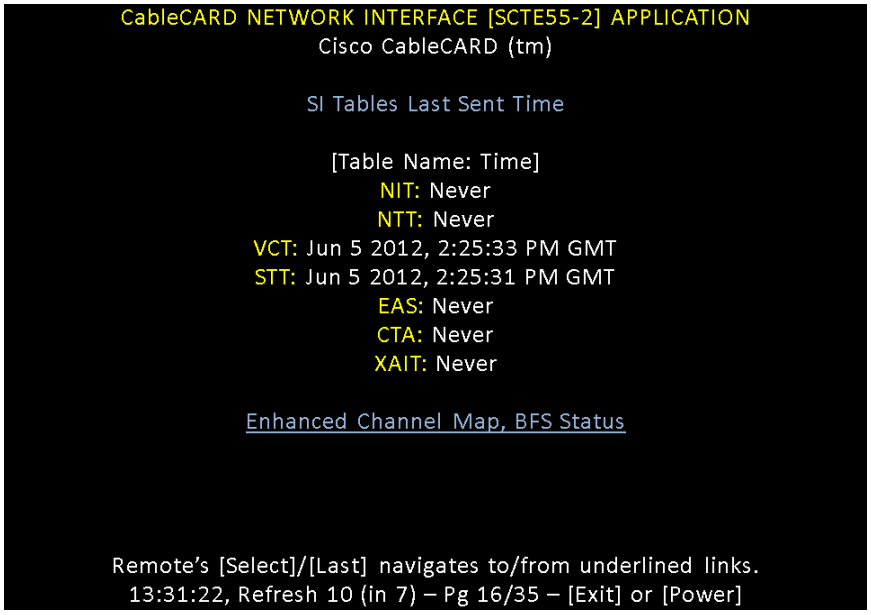
OOB Buffer OverRun



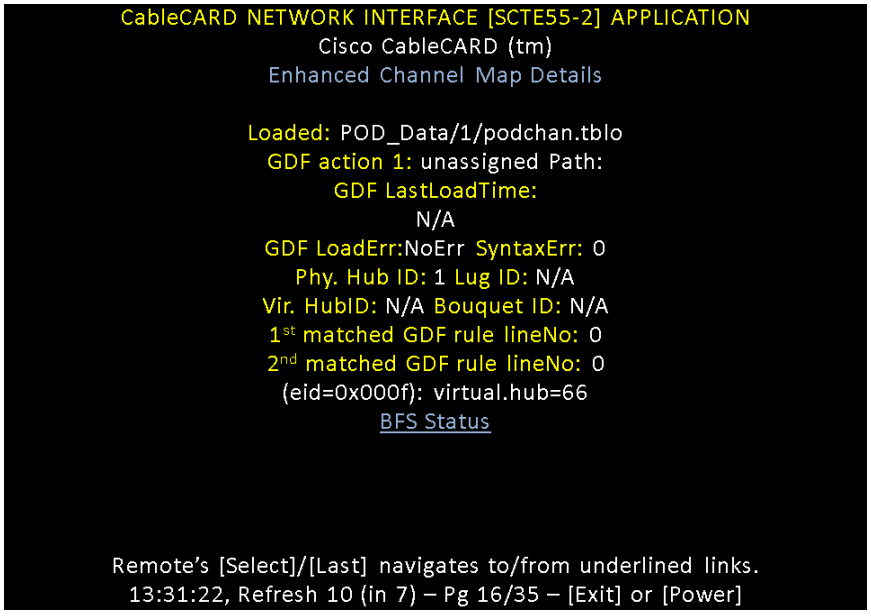
System Information Tables Status



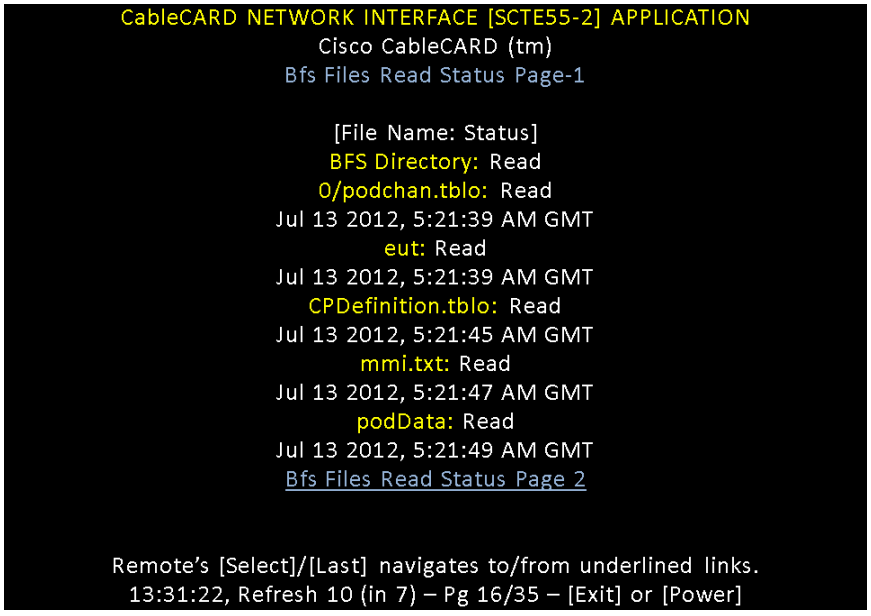
SI Tables Last Sent Time



Enhanced Channel Map Details



Bfs Files Read Status Page-1



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

Network Interface - DAVIC

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	■ **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)	■ **[Dependent upon setting]** **Range:** 70000 – 130000
	Data Rate—displays the data rate of the QPSK forward path (Mbps)	■ **[Dependent upon setting]** **Range:** 1.544 – 3.088

Field and Link Names	Description	Possible Values
	RS Corr Error—displays the number of Reed Solomon correctable errors for the QPSK forward path	■ **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.	■ **0 – 0xFFFFFFFF**
	Status—displays the QPSK receiver (Rx) tuner lock status	■ **Locked**—desired value ■ **Not Locked**

Network Interface - DAVIC RDC

Field and Link Names	Description	Possible Values
Frequency	Frequency for the QPSK transmitter (kHz)	■ **8000 – 26500** ■ **N/A**
Data Rate	Data rate of the QPSK reverse path (Mbps)	■ **0.256** ■ **1.544** ■ **3.088** ■ **N/A**
Power Level	Power level set at the QPSK transmitter (dBmV)	■ **24 – 60** ■ **N/A**
Ranging Delay	Ranging delay to adjust the clock timing for reverse transmission on the QPSK (µS)	■ **0 – 0xFFFF** ■ **N/A**

Field and Link Names	Description	Possible Values
Status	Current operating status for the QPSK transmit tune	■ **Slow Boot Mode**—host has not sent IPU new_flow_req ■ **Fast Boot (Calib Cycle)**—Fastboot process (Calibration Cycle) started ■ **Init Complete Success**—Calibration Cycle is complete; ready to go into Two-Way mode ■ **Init Fail (Rng Pwr Err)**—Calibration Cycle failed; check RF power levels ■ **Init Fail (Invalid Card)**—M-Card is not provisioned, or provisioned as One-Way or Out of Service ■ **Waiting for UNCC**—DAVIC connection is complete; UNConfig Request sent, waiting for UNConfig Confirm; check to see if DHCT Type is correct ■ **UNCC Received**—UNConfig Confirm received; M-Card module should have an IP address ■ **Fwd path Lock Lost**—FDC lock lost; check RF connection ■ **Locked**—desired value ■ **Connected**—connection exists; probably two-way ■ **N/A**—M-Card is in DSG mode or host is one-way host
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	■ **0 – 0xFFFFFFFF**
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.	■ **0 – 0xFFFFFFFF**

Field and Link Names	Description	Possible Values
RDC RESV	Number of reserved slot transmission packets transmitted on the RDC **Note:** This data is typically used for large sized messages.	■ **0 – 0xFFFFFFFF**
RDC TDMA	The number of TDMA (time division multiple access) packets transmitted on the RDC; these slots are used for reverse transmission	■ **0 – 0xFFFFFFFF**

Network Interface: OOB - Rx Statistics

Field and Link Names	Description	Possible Values
Stream	Defines the type of packets received	■ **DAVIC**—DAVIC packets received ■ **BC**—broadcast packets received ■ **SI**—system information (BFS) packets received ■ **CA**—conditional access packets received ■ **PASSTHRU**—packets received ■ **NETWORK**—packets received
Packets	Lists the number of packets for each packet type	■ **0 – 0xFFFFFFFF**
[Curr-Max-Min]	Current (actual) data rate (Bps)	■ **0 ≤ Integer ≤ 143165576**
	Maximum data rate (Bps)	■ **0 ≤ Integer ≤ 143165576**
	Minimum data rate (Bps)	■ **0 ≤ Integer ≤ 143165576**

Network Interface: Broadcast Data Information

Field and Link Names	Description	Possible Values
UNPassThru	Percentage of UNPassThru message contributed to the total BC Data	■ **0 – 100**
UNDownload	Percentage of UNDownload message contributed to the total BC Data	■ **0 – 100**
UNConfig	Percentage of UNConfig message contributed to the total BC Data	■ **0 – 100**

Field and Link Names	Description	Possible Values
Third Party Apps	Percentage of Third Party Apps message contributed to the total BC Data	■ 0 – 100
Private	Percentage of Private message contributed to the total BC Data	■ 0 – 100

OOB Buffer OverRun

Field and Link Names	Description	Possible Values
Stream	Lists the specific incoming stream type	■ **Broadcast** ■ **BFS** ■ **DSMCC** ■ **Davic** ■ **PassThru** ■ **CA**
Packets Dropped	The packet drop count for each stream type	■ **0 ≤ Integer ≤ 4294967295**
Unicast (IP mismatch)	The count of unicast packets received with an invalid IP destination IP address in the IP header.	■ **[Integer > 0]** Ideally, this count should be 0 in a valid network

System Information Tables Status

Field and Link Names	Description	Possible Values
Table Name	Identifies the SI table	■ **NIT** ■ **NTT** ■ **VCT** ■ **STT** ■ **EAS** ■ **CTA** ■ **XAIT**
Received	The number of packets received by the M-Card	■ **0 ≤ Integer ≤ 4294967295**
Forwarded	The number of packets forwarded to the host from the M-Card	■ **0 ≤ Integer ≤ 4294967295**

SI Tables Last Sent Time

Field and Link Names	Description	Possible Values
Table Name	Identifies the SI table	■ **NIT** ■ **NTT** ■ **VCT** ■ **STT** ■ **EAS** ■ **CTA** ■ **XAIT**
Time	Time in which each respective SI table was last sent	■ **[Date, Time]** **Example:** Jan 25 2007, 4:05:08 PM GMT ■ **Never**

Enhanced Channel Map Details

Field and Link Names	Description	Possible Values
Loaded	The location of the podchan.tblo file that is loaded for the channel map	■ **[Directory-dependent]** **Example:** POD-Data/2/podchan.tblo
GDF action	Displays the action that was taken in reference to the matching rule in the group definition file	■ **Read** ■ **Not Read** ■ **Unassigned** ■ **NA**
GDF LastLoadTime	Displays the time at which the GDF file was last read	■ **[Date, Time]**
GDF LoadErr	Indicates if any errors occurred when the GDF was loading	■ **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	■ **[Integer ≥ 0]** ■ **N/A**
Phy.HubID	Defines the ID for the physical hub associated with the M-Card module	■ **[Hub-dependent]** ■ **N/A**

Field and Link Names	Description	Possible Values
Lug ID	Defines the lineup group identifier (LUG ID) associated with the channel map for this M-Card module	■ **[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	■ **[Integer > 0]** ■ **N/A**
Bouquet ID	Defines the ID for the bouquet associated with the LUG for this M-Card module	■ **[Integer > 0]** ■ **N/A**
active GDF statement lineNum	Indicates the line number within the GDF file at which the GDF rule is located	■ **[Integer ≥ 0]** ■ **N/A**

Bfs Files Read Status Page-1

Field Names	Description	Possible Values
File Name	Lists the type of file stored on BFS	■ **BFS Directory** ■ **eut** ■ **podchan.tblo** ■ **gfc.txt** ■ **mmi.txt** ■ **podData** ■ **CPDefinition.tblo** ■ **CvtXXXX.tblo** ■ **service.tblo** ■ **DispChan.tblo** ■ **group_defs.txt** ■ **gdl.tblo**
Status	Displays the current status of the file	■ **Read** ■ **Not Read** ■ **NA**

CP Info 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 stream.

Performing Tasks

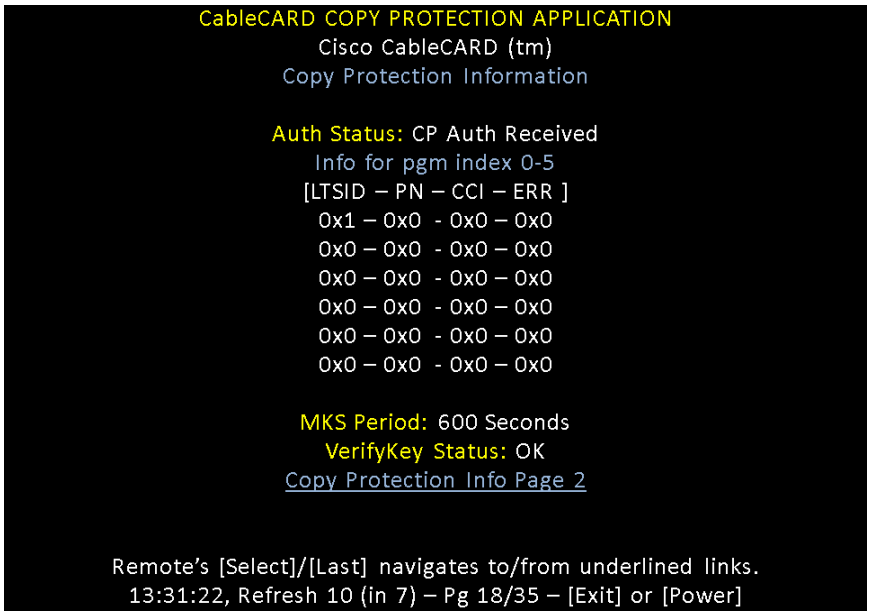
By accessing this diagnostic screen, you can perform the following tasks:

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

Screen Components

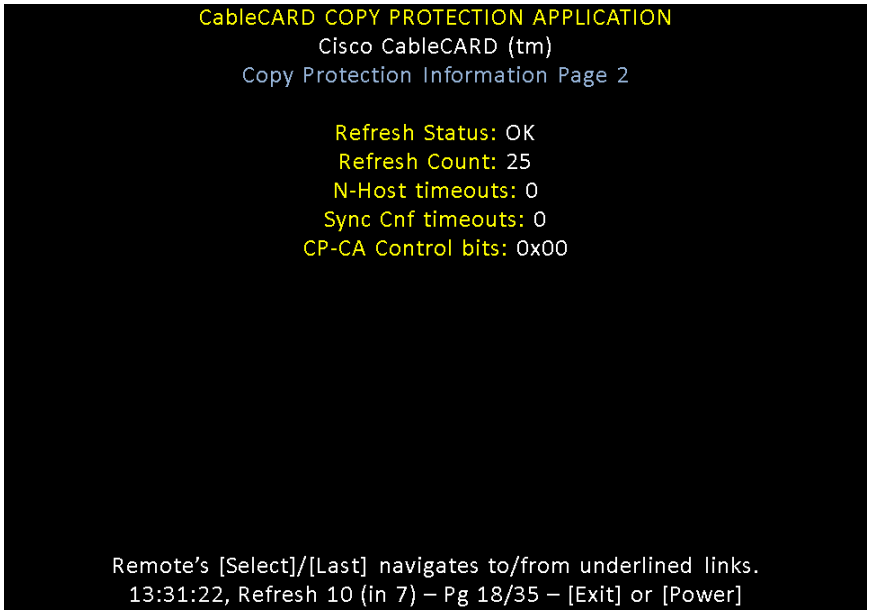
Examples:

Copy Protection Information Page 1



Screen Components

Copy Protection Information Page 2



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

Copy Protection Information - Page 1

Field Names	Description	Possible Values
Auth Status	The current status of the M-Card/host authentication (binding)	■ **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
LTSID	The local transport stream ID assigned by the host	■ **0 – 0xFFFFFFFF** ■ **N/A**—M-Card module is functioning in SMODE
PN	The program number running on a specific stream that is identified by the LTSID	■ **0 – 0xFFFFFFFF**—valid program number ■ **0**—not used
CCI	The level of copy protection passed from the card to the host	■ **0x00**—copying not restricted ■ **0x01**—no further copying is permitted ■ **0x02**—one generation copy is permitted ■ **0x03**—copying is prohibited
ERR	The number of times a CCI timeout has occurred for this program	■ **[Integer > 0]**
MKS period	The rate (seconds) that copy protection keys are refreshed	■ **[Integer > 0]** **Default:** 60 seconds
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.	■ **OK** ■ **Not OK**

Copy Protection Information - Page 2

Field Names	Description	Possible Values
Refresh Status	The current status of the CP key refresh cycle. This field normally shows either **OK** or **No CP Auth**, if the card is not bound to the host.	■ **No CP Auth** ■ **OK** ■ **Started** ■ **N_Host T/O** ■ **generating** ■ **syncing** ■ **Snc T/O** ■ **Host Sync Err** ■ **Invalid Host_ID**
Refresh Count	The number of key refresh cycles since boot. Normally, this value increments at a rate corresponding to the max_key_session_period timer value set in the podData file/DNCS, CableCARD GUI/CableCARD server config page.	■ **0 — 2^32-1**
N-Host timeouts	The number of timeouts that occurred while waiting for the Host nonce APDU, since the boot time.	■ **0 — 2^32-1**
Sync Cnf timeouts	The number of timeouts that occurred while waiting for the Host CP_sync_cnf() APDU, since the boot time.	■ **0 — 2^32-1**
CP-CA Control bits	Indicates whether any o the available stream indexes (0-5) have CA decryption disabled by the CP due to a CP failure of some kind. This is a hex value representing a six-bit field, with the bit position corresponding to stream index. A one in any bit position 0 to 5 indicates that CA decryption is disabled for the corresponding stream index (0-5).	■ **0x00 — 0x3F**

Diagnostics Screen

Introduction

This section provides overview diagrams and field descriptions for the following diagnostic screens:

- Diagnostics
- CPU Channel/Buffer OverRun
- Firmware Download Details
- Extended Channel Flows Opened
- Common Download Info
- Generic Host Diagnostic Reports

  Note: You can view this screen to retrieve status reports about specific components of the host/M-Card binding.

Performing Tasks

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

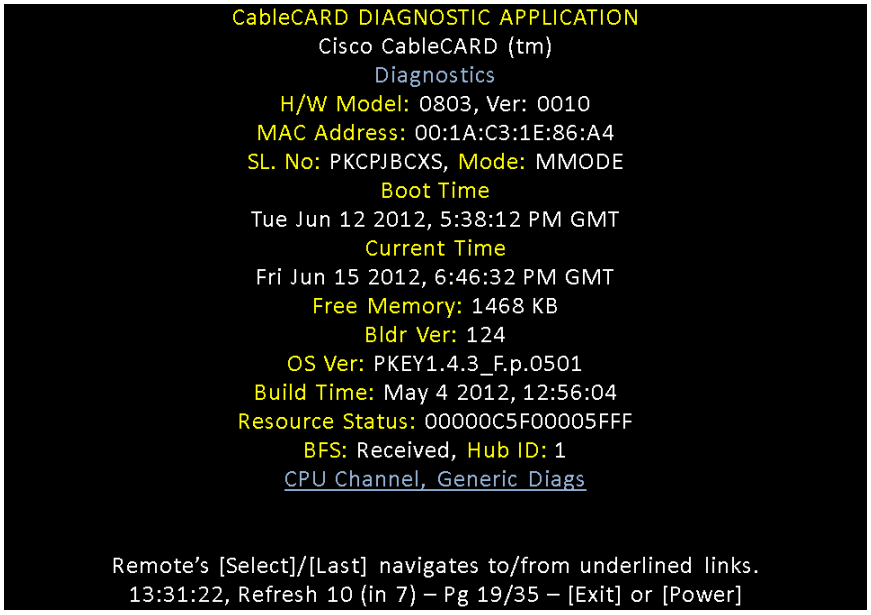
- Determine the hardware model and version number for the M-Card module
- Determine the MAC address for the M-Card module
- Link to generic diagnostic information that includes a report for various aspects related to the M-Card module (for example, Set-Top Memory Allocation Report, FDC Status Reports)

Screen Components

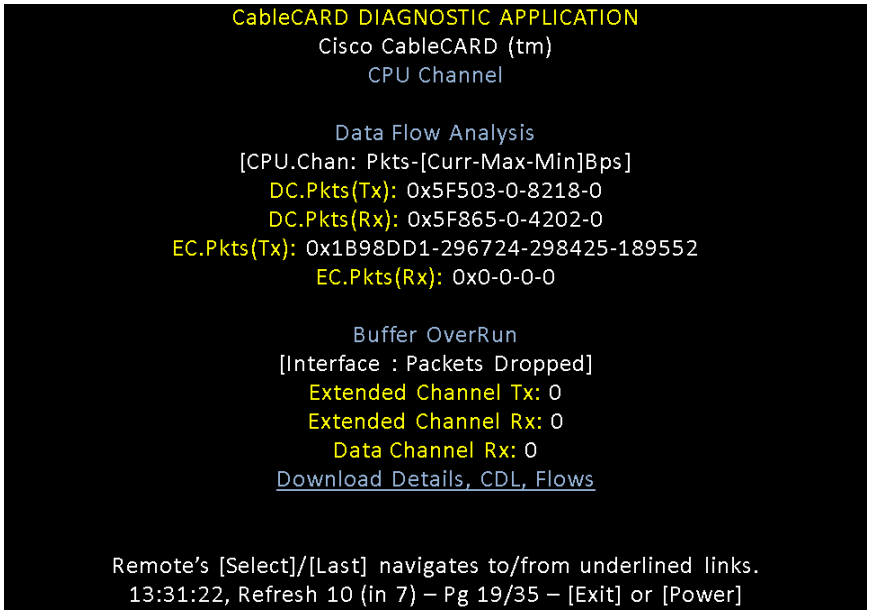
This diagnostic information is available on several hyperlinked pages. Links will appear in red. Select and then click a link (using your remote control) to access another page of information.

Examples:

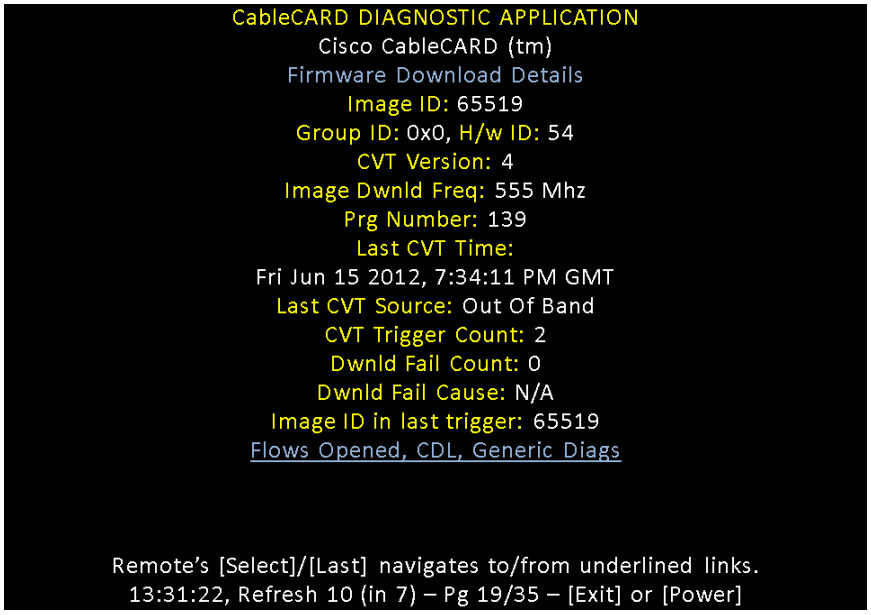
Diagnostics



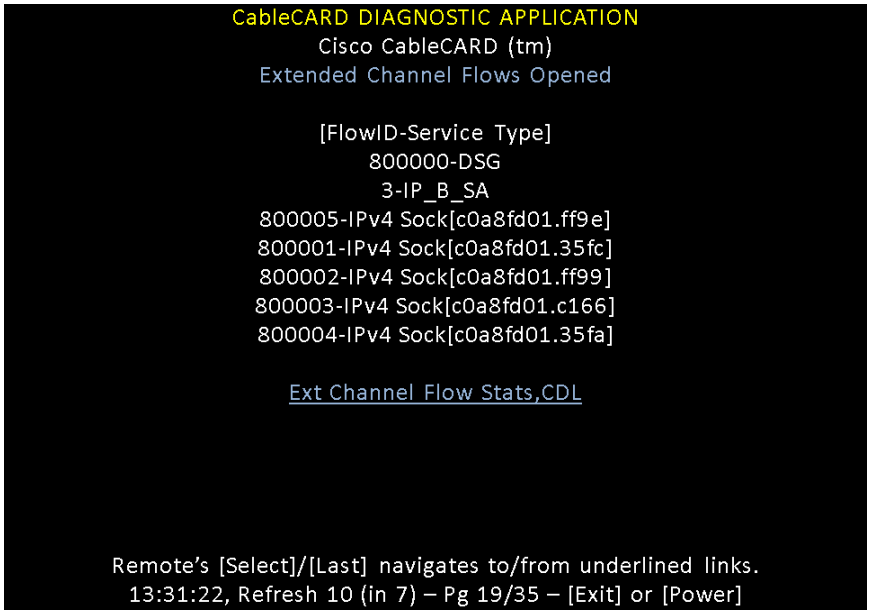
CPU Channel Data and Buffer OverRun



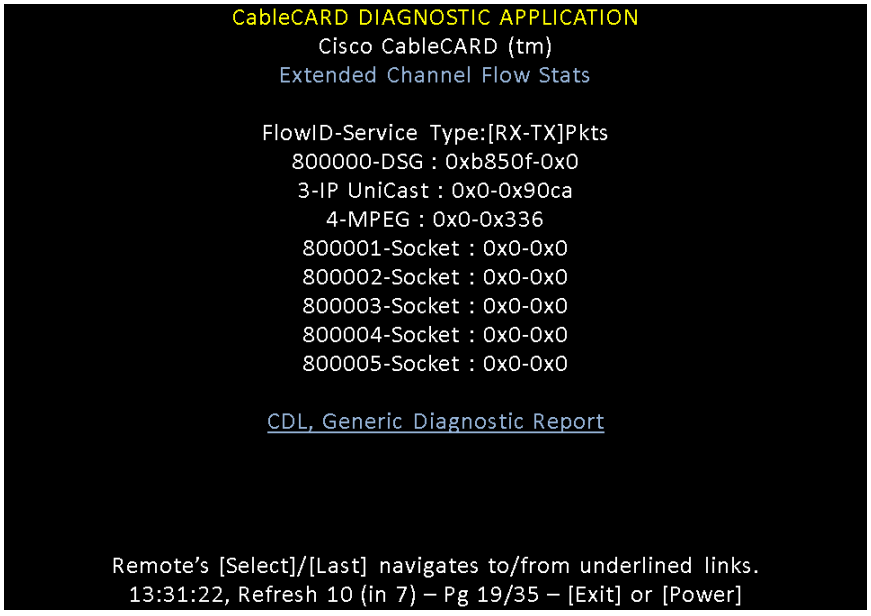
Firmware Download Details



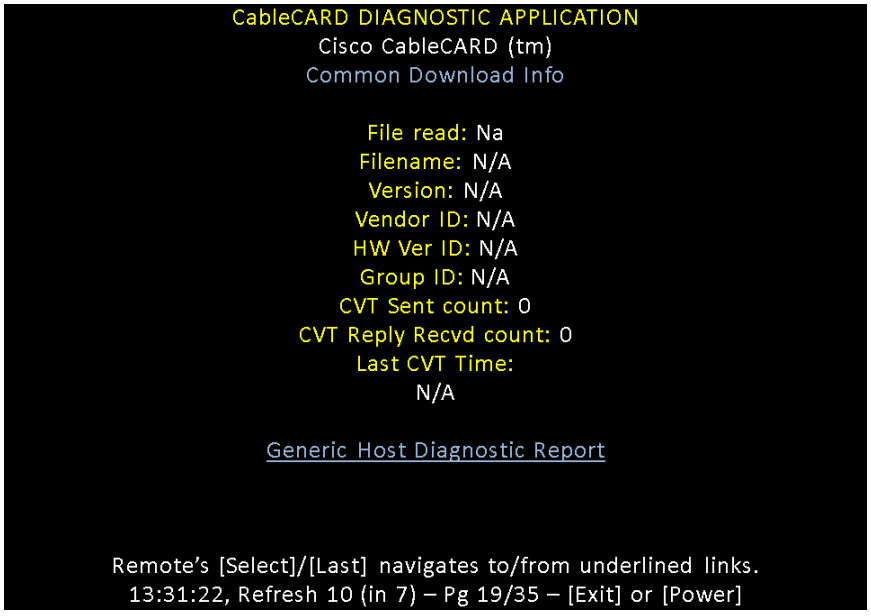
Extended Channel Flows Opened



Extended Channel Flow Stats

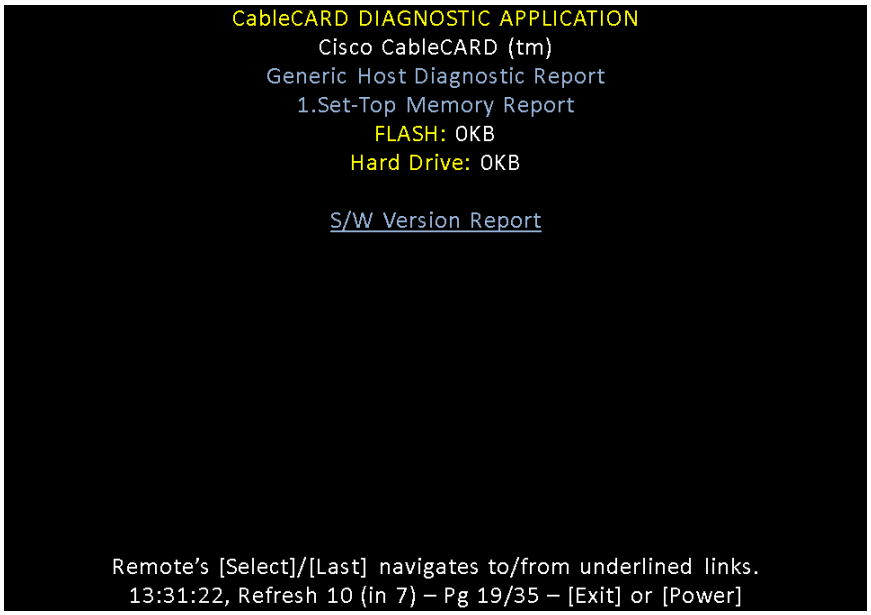


Common Download Info



Generic Host Diags Report

Note: Using your remote control, click Next Page to view the next diagnostic report in the sequence of reports. There are a total of 15 reports.



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

Diagnostics

Field and Link Names	Description	Possible Values
HW Model	The hardware model number associated with the M-Card module	■ **800**—M-Card module in one-way mode ■ **802**—M-Card module in two-way mode ■ **803**—M-Card module in two-way mode
Ver	The hardware version associated with the M-Card module	■ **[Hardware-dependent]**
MAC addr	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]**

Field and Link Names	Description	Possible Values
Mode	The operations mode that the M-Card module is operating in	■ **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	■ **[OS-dependent]** **Example:** 01.01:10
Build Time	Date and time in which the software was last built	■ **[Date, Time]**
Resource Status	Status of resources received (present) and established (opened)	■ **[Hexadecimal value]**
BFS	An indication of whether or not the card receives the root directory from the DNCS	■ **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	■ **[Integer > 0]**

CPU Channel Data and Buffer OverRun

Field and Link Names	Description	Possible Values
Data Flow Analysis	**CPU.Chan**—identifies the CPU channel type	■ **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 – 0xFFFFFFFF**

Field and Link Names	Description	Possible Values
	[Curr-Max-Min]—displays the current, maximum, and minimum data rate (Bps)	■ **[0 ≤ Integer ≤ 4294967295]**
Buffer OverRun	**Interface**—displays the CPU interface channel names	■ **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

Field and Link Names	Description	Possible Values
Image ID	Displays the image ID of the last downloaded image obtained from NVM (non-volatile memory)	■ **[Image-dependent]** **Example:** 65461
Group ID	Displays the group ID assigned to the card and obtained from NVM	■ **[Group-dependent]** **Example:** 0x1885
H/w ID	Displays the identification number for the card	■ **[Hardware-dependent]**
CVT Version	Displays the version number for the CVT table obtained from NVM	■ **[CVT version-dependent]** **Example:** 10
Image Dwnld Freq	Displays the previous image download frequency obtained from NVM (MHz)	■ **[Integer ≥ 0]**
Prg Number	The MPEG program number assigned to stream	■ **[Integer > 0]**
Last CVT Time	The time in which the last CVT trigger was received	■ **[Time]** ■ **N/A**
Last CVT Source	The source from which the last CVT trigger was received	■ **Inband** ■ **Out of Band** ■ **N/A**
CVT Trigger Count	The total number of CVT triggers that have been received	■ **[0 ≤ Integer ≤ 255]**
Dwnld Fail Count	The total number of CVT downloads that have failed	■ **[0 ≤ Integer ≤ 255]**

Field and Link Names	Description	Possible Values
Dwnld Fail Cause	Describes the reason for the last CVT download failure	■ **CVT not received** ■ **No OS Blocks** ■ **No record in CVT** ■ **N/A**
Image ID in last trigger	Displays the image ID of the last downloaded image obtained from the last trigger	■ **[Integer ≥ 0]**

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	■ **[Integer ≥ 0]**
Service Type	Describes the service type for the extended channel flows **Note:** The number of flows and their order may vary	■ **MPEG** ■ **IP UniCast** ■ **DSG** ■ **IP MultiCast** ■ **IP_B_SA**

Extended Channel Flow Stats

Field and Link Names	Description	Possible Values
FlowID	The identification number for the flows that are open	■ **[Integer ≥ 0]**
Service Type	Describes the service type for the extended channel flows **Note:** The number of flows and their order may vary	■ **MPEG** ■ **IP UniCast** ■ **DSG** ■ **IP MultiCast** ■ **IP_B_SA**
RX	Packets received in this flow	■ **0x0 – 0xFFFFFFFF**
TX	Packets sent in this flow	■ **0x0 – 0xFFFFFFFF**

Common Download Info

Note: If there has been no common download and no file read since boot, the default value for all fields is **N/A** except for the following:

- File Read: No
- CVT Sent Count: 0
- CVT Reply Recvd Count: 0

Field and Link Names	Description	Possible Values
File Read	File read since boot	■ **Yes** ■ **No**
Filename	The common download file. The common download file directory is bfs:///POD_Data. The file name determines which protocol is used in the CDL tables.	■ **cvtxxxxxx.tblo** (CDL 1.0) ■ **cdl_v2xxxxxx.tblo** or **cvt_v2xxxxxx.tblo** (CDL 2.0) **Note: xxxxxx** is the 6-digit vendor ID.
Version	CVT version of the named file	■ **1 - 0xFFFF** **Note:** The value increases each time the file is changed.
Vendor ID	Organizationally Unique Identifier (OUI) assigned to the host set-top	■ **0x1 - 0xFFFFFF** **Note:** A value of **0x0** is not valid.
HW Ver ID	Unique identifier assigned to each type of hardware from a particular vendor	■ **0x1 - 0xFFFFFFFF** **Note:** A value of **0x0** is not valid.
Group ID	Unique identifier for a group of similar hosts (optional unless group download intended)	■ **gdl.tblo** (group file name) ■ **bfs:///POD_Data/** (group file directory)
CVT Sent Count	Number of CVT (Code Version Tables) APDUs sent to the Host	■ **[0 < Integer < 4294967295]**
CVT Reply Recvd Count	Number of replies to the CVT APDU sent by the M-Card module **Note:** This value should be the same as the CVT Sent Count	■ **[0 < Integer < 4294967295]**
Last CVT Time	System time when the last CVT APDU was sent to the Host	■ **[Date, Time]**

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	■ **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)	■ **Diagnostics Granted: 0** ■ **Diagnostics Denied: 1** ■ **Diagnostic Denied - Feature not Implemented** ■ **Diagnostic Denied - Device Busy** ■ **Diagnostic Denied - Other reasons** ■ **Reserved for future use**

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.

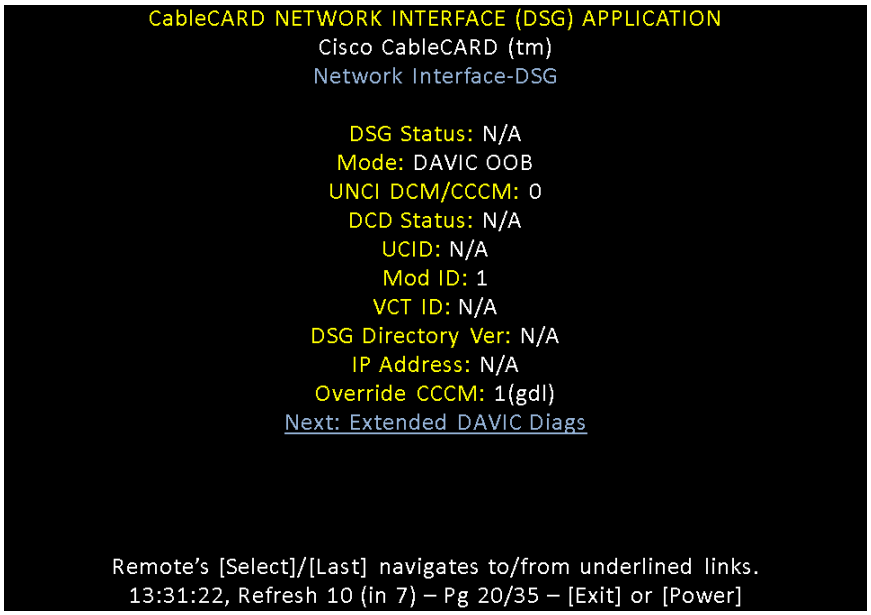
Performing Tasks

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

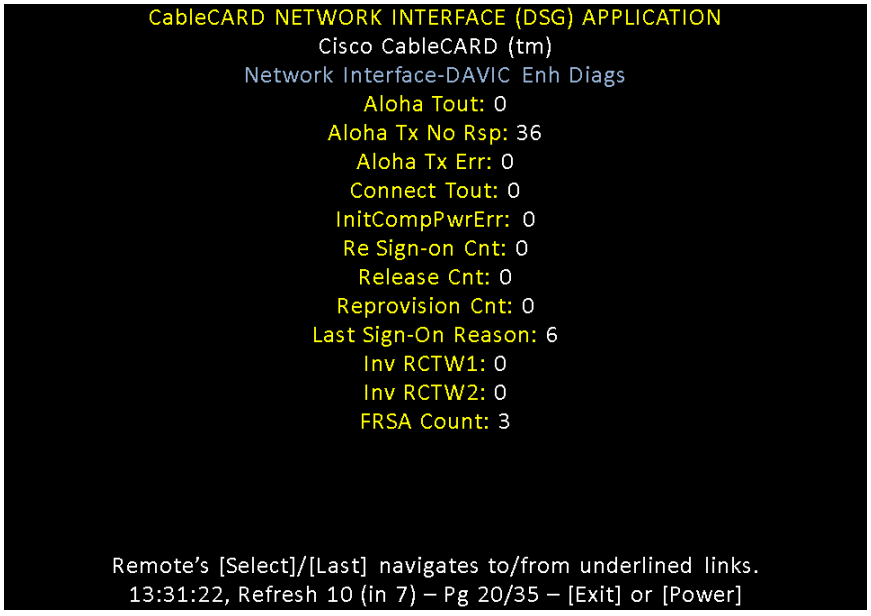
- Verify the DSG operating mode
- Determine the MAC address for the DSG tunnel
- Determine if the Downstream Channel Descriptor (DCD) file was found and received by the card

Screen Components

DSG Information



DAVIC Enhanced Diagnostics



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

DSG Information

Field Names	Description	Possible Values
DSG Status	Displays the status of the DSG initialization	■ **1-Way Operational**—the M-Card module is operational in DSG mode, but has not established 2-way communications ■ **2-Way Operational**—the M-Card is operational and 2-way communication has been established ■ **Not Operational**—the DSG initialization failed; if the M-Card stays in this state, contact Cisco Services ■ **N/A**

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	■ **DAVIC OOB**—the M-Card module is operating in out-of-band mode (DAVIC or DAVIC-LITE) ■ **Indirect No-Socket**—the M-Card module is operating in Indirect No-Socket mode ■ **Direct No-Socket**—the M-Card module is operating in Direct No-Socket mode ■ **Indirect Socket**—the M-Card module is operating in Indirect Socket mode ■ **Direct Socket**—the M-Card module is operating in Direct Socket mode ■ **Basic DSG**—the M-Card module is operating in Basic DSG mode ■ **N/A**—the operation of the M-Card module is unknown to the network
UNCI DCM/CCCM	Indicates whether the card received the cccm value in UNConfig ■ If received, displays the value of the cccm ■ If not received, displays the DCM value	**CCCM values** ■ **0x00**—Reserved ■ **0x01**—QPSK ■ **0x02–0x07**—Reserved ■ **0x08**—ADSG Direct Mode, no socket proxy ■ **0x09**—ADSG Indirect Mode, no socket proxy ■ **0x0A**—ADSG Direct Mode, socket proxy mode ■ **0x0B**—ADSG Indirect Mode, socket proxy mode ■ **0x0C–0xFF**—Reserved **DCM values, if CCCM is not present** ■ **0**—DOCSIS ■ **1**—DAVIC ■ **2**—Unused ■ **3**—DOCSIS ■ **4**—DAVIC light

Field Names	Description	Possible Values
DCD Status	Indicates the status of the DOCSIS downstream channel descriptor	■ **N/A**—the M-Card is operating in DAVIC mode ■ **Hunting for DCD**—M-Card has switched to DSG mode and is trying to acquire the DOCSIS downstream ■ **DCD Found**—M-Card has found the DOCSIS downstream
UCID	Indicates whether the card received the ucid value in the DSG_Message; if received, displays the value of the ucid	■ **1 ≤ Integer ≤ 4294967295** ■ **0**—the M-Card has not received the DSG_Message ■ **N/A**—the M-Card module is operating in out-of-band mode (DAVIC or DAVIC-LITE)
Mod ID	Displays the Mod ID received by the UNConfig	■ **0 ≤ Integer ≤ 4294967295** ■ **N/A**
VCT ID	Displays the VCT ID sent to the host in the DSG_Directory	■ **0 ≤ Integer ≤ 65536** ■ **N/A**
DSG Directory Ver	Displays the version of the DSG_Directory APDU; this indicates the number of times this APDU has been sent	■ **0 ≤ Integer ≤ 4294967295** ■ **N/A**
IP Address	The IP address if the card has received a new flow in DSG mode	The IP address is now shown on the ***IP Service Diagnostic Screen*** (on page 19).
Override CCCM	Indicates whether the card is authorized for a service	■ **[M-Card-dependent]**—either the cccm value (if present) or the value of the nvm override cccm (if nvm override cccm flag is set) in gdl.tblo ■ **N/A**—either no value is present in gdl.tblo or gdl.tblo is not present on BFS

DAVIC Enhanced Diagnostics

Field Names	Description	Possible Values
Aloha Tout	Number of Aloha timeout interrupts	■ **0 ≤ Integer ≤ 4294967295**
Aloha Tx No Rsp	Number of transmissions that received no Tx interrupt	■ **0 ≤ Integer ≤ 4294967295**
Aloha Tx Err	Number of Aloha Tx error interrupts	■ **0 ≤ Integer ≤ 4294967295**

Field Names	Description	Possible Values
Connect Tout	Number of times a connect timeout has occurred	■ **0 ≥ Integer ≥ 4294967295**
InitCompPwrErr	Number of times Davic Init Complete is received with status errors	■ **0 ≥ Integer ≥ 4294967295**
Re Sign-on Cnt	Number of DAVIC re-sign-ons after boot up	■ **0 ≥ Integer ≥ 4294967295**
Release Cnt	Number of davic_release messages received and processed	■ **0 ≥ Integer ≥ 4294967295**
Reprovision Cnt	Number of davic_reprovision messages received and processed	■ **0 ≥ Integer ≥ 4294967295**
Last Sign-On Reason	Reason for the last sign-on	■ **1**—reprovision ■ **2**—release ■ **3**—lock lost for more than 10 minutes ■ **4**—lock re-acquired ■ **5**—Aloha Nack timeout for longer than 10 minutes ■ **6**—Normal sign-on that occurs during boot-up
Inv RCTW1	Number of times the davic_RandomNumberGenerator() is called with both parameters set to zero **Note:** This is typically only useful for developers	■ **0 ≥ Integer ≥ 4294967295**
Inv RCTW2	Number of times the davic_RandomNumberGenerator() is called with both parameters set to zero (another instance in the code) **Note:** This is typically only useful for developers	■ **0 ≥ Integer ≥ 4294967295**
FRSA Count	Number of re sign-ons that are avoided after the 0x41 fix	■ **0 ≥ Integer ≥ 4294967295**

CANH Diagnostic Screen

Introduction

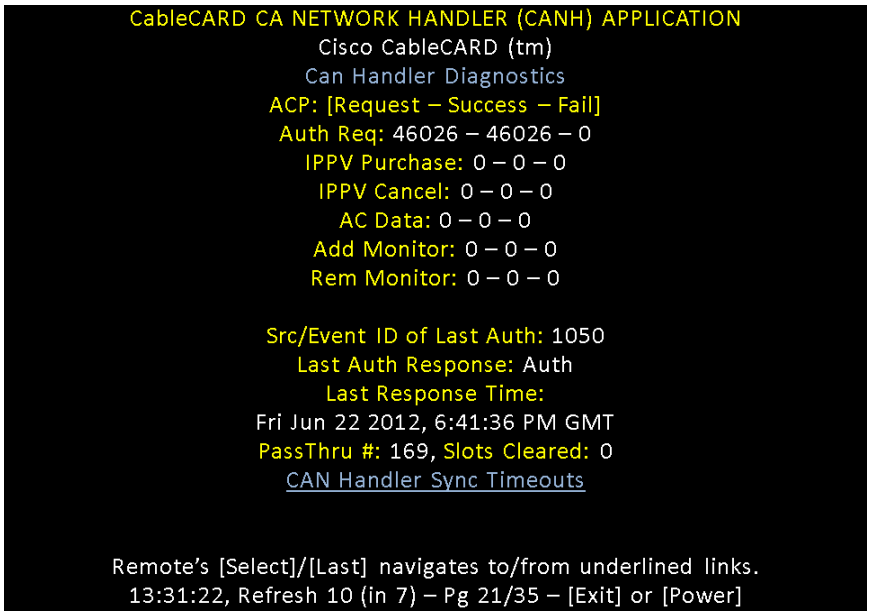
This section provides an overview diagram and field descriptions for the Conditional Access Network (CAN) diagnostic screen. You can view this screen to find diagnostic and statistical information about the conditional access network connected to this host device.

Performing Tasks

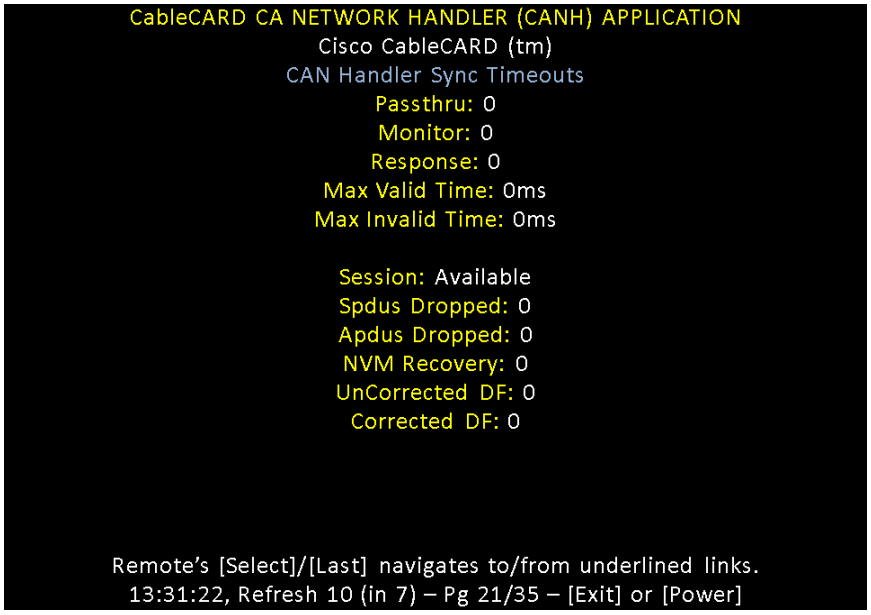
By accessing this diagnostic screen, you can perform the following tasks:

- View the PPV purchase and cancellation activity
- View sync timeout counters for Passthru, Monitor, and Response
- View dropped packet counters for SPDUs and APDUs

CAN Handler Diagnostics



CAN Handler Sync Timeouts



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

CAN Handler Diagnostics

Field Names	Description	Possible Values
ACP	Identifies the type of access criteria package (ACP)	■ **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]**

Field Names	Description	Possible Values
Src/Event ID of Last Auth	Identifies the source and the event identifier for the last authorized request received from the CAN Handler authorization ACP	■ **[0 ≤ Integer ≤ 65535]**
Last Auth Response	Indicates the last authorization response received from the M-Card module	■ **Auth** (authorized) ■ **Not Auth** (not authorized) ■ **N/A**
Last Response Time	Identifies the time in which the last authorization response occurred	■ **[Time]** ■ **N/A**
Passthru #	Indicates the number of unsolicited Passthru events sent to the host from the M-Card via the CAN Handler	■ **[0 ≤ Integer ≤ 65535]**
Slots Cleared	Identifies the number of VOD slots purged upon reboot	■ **[0 ≤ Integer ≤ 255]**

CAN Handler Sync Timeouts

Field Names	Description	Possible Values
Passthru	Identifies the number of Passthru messages dropped by the M-Card module because of timeouts in the SAS sync protocol	■ **[0 ≤ Integer ≤ 65535]**
Monitor	Identifies the number of Monitor messages dropped by the M-Card module because of timeouts in the SAS sync protocol	■ **[0 ≤ Integer ≤ 65535]**
Response	Identifies the number of CAN Handler responses dropped by the M-Card module because of timeouts in the SAS sync protocol	■ **[0 ≤ Integer ≤ 65535]**
Max Valid Time	Indicates the maximum time (in milliseconds) the host took to respond to a server_query within the expiry period	■ **Integer < 7000**—desired value; responses are within the expiry period ■ **[7001 ≤ Integer ≤ 65535]**

Field Names	Description	Possible Values
Max Invalid Time	Indicates the time (in milliseconds) the host took to respond to a server_query after the expiry period (this time includes the expiry period)	■ **0**—desired value; responses did not go beyond the expiry period ■ **[1 ≤ Integer ≤ 65535]**—indicates that one or more of the above counters (Passthru, Monitor, or Response) have incremented
Session	CAN Handler SAS session status	■ **Available**—desired value ■ **Not Established**—contact Cisco® Services ■ **Not Available**—contact Cisco Services
Spdus Dropped	Identifies the number of command channel packets dropped at the session layer due to an abnormal or corrupted header value	■ **0**—desired value; no packets dropped ■ **[1 ≤ Integer ≤ 4294967295]**—contact Cisco Services with the bytes (time, reason, and header data) that display below this line
Apdus Dropped	Identifies the number of command channel packets dropped at the application layer due to an abnormal or corrupted header value	■ **0**—desired value; no packets dropped ■ **[1 ≤ Integer ≤ 4294967295]**—contact Cisco Services with the bytes (time, reason, and header data) that display below this line
NVM Recovery	Identifies the number of errors between NVM cache and NVM RAM while reading or writing data to NVM	■ **0**—desired value; no errors ■ **[1 ≤ Integer ≤ 65535]**—indicates the number of NVM read/write errors
UnCorrected DF	Number of times the same pointer was freed (possible double free errors) because of an unknown reason	■ **0**—desired value; no errors ■ **[1 ≤ Integer ≤ 65535]**—indicates the number of times the pointer was freed
Corrected DF	Number of times the same pointer was freed (possible double free errors) because of a QPSK release or QPSK re-provisioning	■ **0**—desired value; no errors ■ **[1 ≤ Integer ≤ 65535]**—indicates the number of times the pointer was freed

3

S-Card-Specific Diagnostic Screens

This chapter includes the diagnostic screens specific to the S-Card module and also includes the fields and parameters shown in each screen. Each diagnostic screen accumulates data that describes the current state of the S-Card module, as well as copy protection information.

In This Chapter

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 obtain information about content protection.

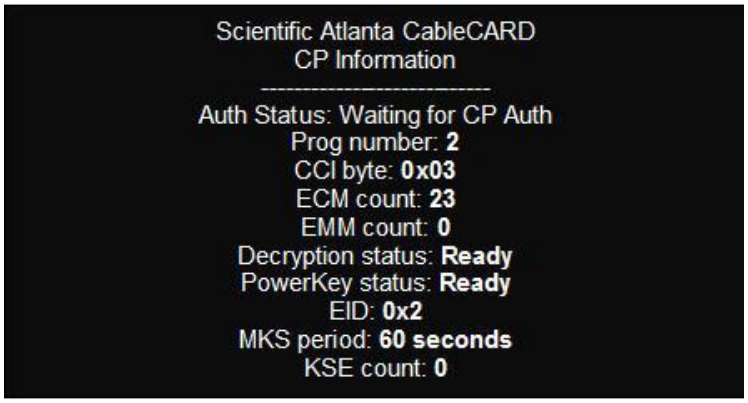
Performing Tasks

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

- Verify the current copy protection authorization status for the S-Card module
- Verify the ECM and EMM counts
- Determine the current status of the PowerKEY CA system

Screen Components

Example:



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

Field Names	Description	Possible Values
Auth Status	The current status of the S-Card module host authentication (binding)	■ **CP Auth Received**—authorization has been received by the S-Card/Host pair and the authentication and binding is complete ■ **Waiting for CP Auth**—binding is complete except for the headend authorization ■ **CP Failure**—copy protection failure; all decryption is disabled ■ **Invalid Host Certificate**—certificate is invalid and the binding has failed
Prog number	The program number of the currently tuned program **Note:** Program numbers are assigned on the channel map at the headend.	■ **[Integer > 0]**
CCI byte	The level of copy protection passed from the S-Card module to the host	■ **0x00**—copying not restricted ■ **0x01**—no further copying is permitted ■ **0x02**—one generation copy is permitted ■ **0x03**—copying is prohibited
ECM count	The number of entitlement control messages (ECMs) received by the S-Card module	■ **[Integer ≥ 0]** **Note:** This value will increment when ECMs are received.
EMM count	The number of entitlement management message (EMM) packets that have been received by the S-Card module	■ **[Integer ≥ 0]**
Decryption status	The current status for the decryption of an encrypted program	■ **OK** ■ **No longer authorized** ■ **ECM stream error** ■ **Blacked out**

Field Names	Description	Possible Values
PowerKey status	The current status of the PowerKEY CA system	■ **Ready** ■ **Not Ready**—waiting for EMMs ■ **Not Ready**—waiting for Time ■ **Not Ready**—waiting for EUT
EID	The entitlement identification (EID) for the attempted purchase	■ **[Hexadecimal number]**
MKS period	The maximum rate (seconds) that copy protection keys are refreshed	**This field does not provide diagnostic information**
KSE count	The total count for key synchronization exceptions (KSEs)	**This field does not provide diagnostic information**

CableCARD Diagnostics Screen

Introduction

This section provides an overview diagram and field descriptions for the CableCARD diagnostic screen. You can view this screen to obtain information concerning the S-Card hardware, as well as bootloader and software version information.

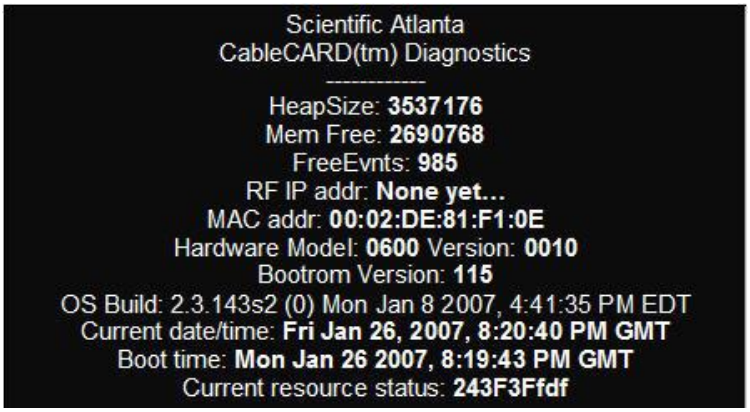
Performing Tasks

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

- Determine the hardware model and version number for the S-Card module
- Determine the MAC address for the S-Card module
- Verify the version for the operating system that is currently loaded on the S-Card module

Screen Components

Example:



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

Field Names	Description	Possible Values

Field Names	Description	Possible Values
HeapSize	This is a PowerTV® parameter	**This field does not provide diagnostic information**
Mem Size	This is a PowerTV parameter	**This field does not provide diagnostic information**
FreeEvnts	This is a PowerTV parameter	**This field does not provide diagnostic information**
RF IP addr	The client IP address assigned by the DNCS to the S-Card module	■ **[Network/DNCS configuration-dependent]** ■ **None yet**—the S-Card module has not completed sign on at the headend
MAC addr	The unique physical address associated with the S-Card module	■ **[S-Card-dependent]**
Hardware Model	The model associated with the S-Card module	■ **[S-Card-dependent]**
Version	The version number associated with the S-Card module	■ **[S-Card-dependent]**
Bootrom Version	The bootloader version for the S-Card module	■ **[S-Card-dependent]**
OS Build	The current operating system version for the S-Card module	■ **[S-Card-dependent]** **Example:** 2.3.143s2 (0)
Current date/time	The current date and time	■ **[Date, Time]**
Boot time	The current date and time that the system was last booted	■ **[Date, Time]**
Current resource status	This is a Cisco parameter	**This field does not provide diagnostic information**

CableCARD/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.

Important:

- This screen is sometimes referred to as the MMI (man-machine interface information) screen.
- 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.

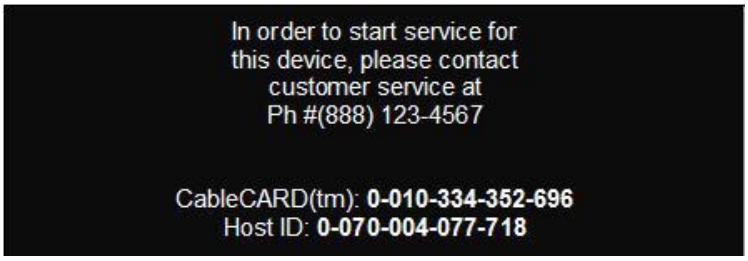
Performing Tasks

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

- Determine the customer service number you need to start service for an S-Card module
- Verify whether or not the host is one- or two-way capable

Screen Components

Example:



Screen Fields and Values

The following table describes the fields and possible values that can appear on the TV screen when you are reviewing the diagnostic screens. They can be useful for troubleshooting.

Field Names	Description	Possible Values

Field Names	Description	Possible Values
CableCARD(tm)	Indicates the unique identification number for the S-Card module that is inserted into the host	■ **[S-Card-dependent]**
Host ID	Indicates the unique identification number for the host device certificate ID	■ **[Host-dependent]**

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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