



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. | <i>M-CARD-Related Diagnostic Screens</i> (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..... 2

View Diagnostic Screens

Accessing Diagnostic Screens

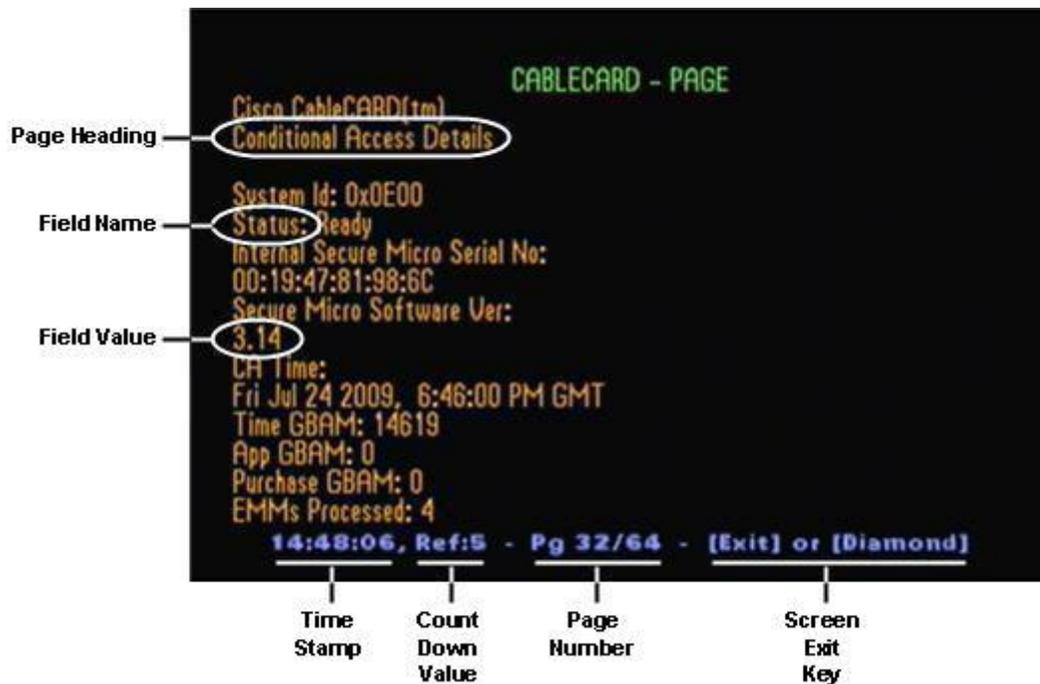
Each host device has specific methods (for example, remote control key combinations) for accessing the diagnostic screens. Refer to the documentation that came with your TV host for details.

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.

```

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

14:48:00, Ref:5 - Pg 31/64 - [Exit] or [Diamond]

```

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

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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

```

CableCARD CONDITIONAL ACCESS APPLICATION
Cisco CableCARD (tm)
Conditional Access Details

System Id: 0x0E00
Status: Ready
Internal Secure Micro Serial No:
00:19:47L81:98:6C
Secure Micro Software Ver:
5.03
CA Time:
Fri Jun 8 2012, 6:46:00 PM GMT
Time GBAM: 14619
App GBAM: 0
Purchase GBAM: 0
EMMs Processes: 4
More CA Details

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 13/35 - [Exit] or [Power]

```

Conditional Access Details Screen - Page 2

```

CableCARD CONDITIONAL ACCESS APPLICATION
Cisco CableCARD (tm)
Conditional Access Details

ExtEvGBAMCount: 0
ErrorCount: 0
LastErrorCmd: 0
LastErrorTime:
NEVER
SubExpireTime:
Wed Jun 20 2012, 7:28:00 AM GMT
EUTUpdateTime:
Tue Jun 12 2012, 5:38:12 PM GMT
IppvEnabled: Yes
InteractiveEnabled: Yes
CB Enabled: Yes
Active Programs

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 13/35 - [Exit] or [Power]

```

Chapter 2 M-Card-Related Diagnostic Screens

Active Program

```
CableCARD CONDITIONAL ACCESS APPLICATION

Cisco CableCARD (tm)
Active Program

Program Index: 0, Src ID: 0x645
[LTSID-PrgNo-Status-ECM-CCI-EID]
1-5-Ent-65843-0-0x5
Elementary Status
[ Stream Type-Pid Number ]
0x04-0x00D0 0x04-0x00D1 0x02-0x00D2

ECM PID: 0x56
Decrypt Fail Time Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) – Pg 13/35 – [Exit] or [Power]
```

Decryption Fail Time

```
CableCARD CONDITIONAL ACCESS APPLICATION

Cisco CableCARD (tm)
Decryption Fail Time

[Stream – Status – Time]
0-0-Never
1-0-Never
2-0-Never
3-0-Never
4-0-Never
5-0-Never

Decrypt Fail Status (continued)

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) – Pg 13/35 – [Exit] or [Power]
```

Decrypt Fail Status and LateKey Details

```
CableCARD CONDITIONAL ACCESS APPLICATION
Cisco CableCARD (tm)
Decrypt Fail Status

LateKey Details

[Stream-Count-Last LateKey Time]
0-90-Jun 5 2012, 5:57:10 PM GMT
0-0-Never
1-0-Never
2-0-Never
3-0-Never
4-0-Never
5-0-Never

Overlay Error Count: 0
CID Table

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 13/35 - [Exit] or [Power]
```

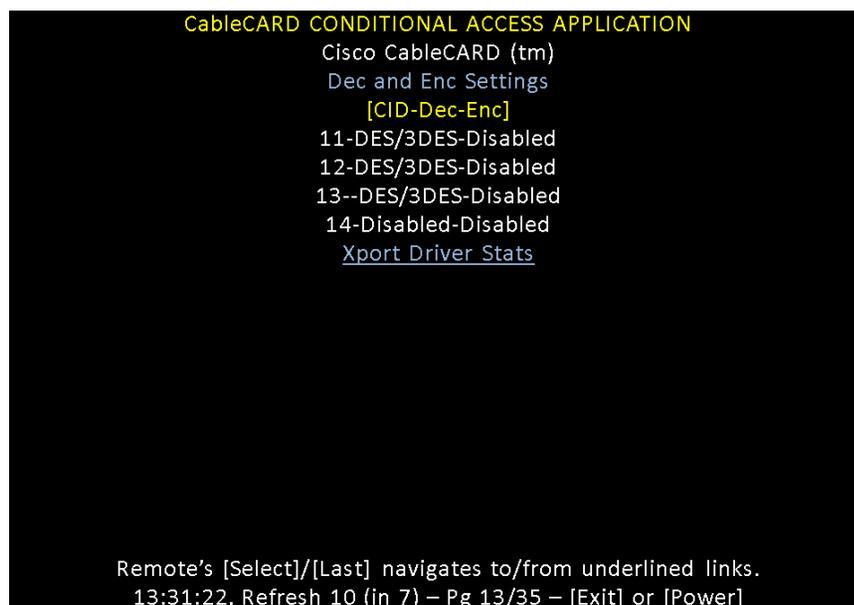
CID Table

```
CableCARD CONDITIONAL ACCESS APPLICATION
Cisco CableCARD (tm)
CID Table
[CID-PID-LTSID-Pkts-BMM]
11-208-1-24675932-Nil
12-209-1-24675947-Nil
13-210-1-773768483-Nil
14-86-1-2580534-0
Dec-Enc Settings

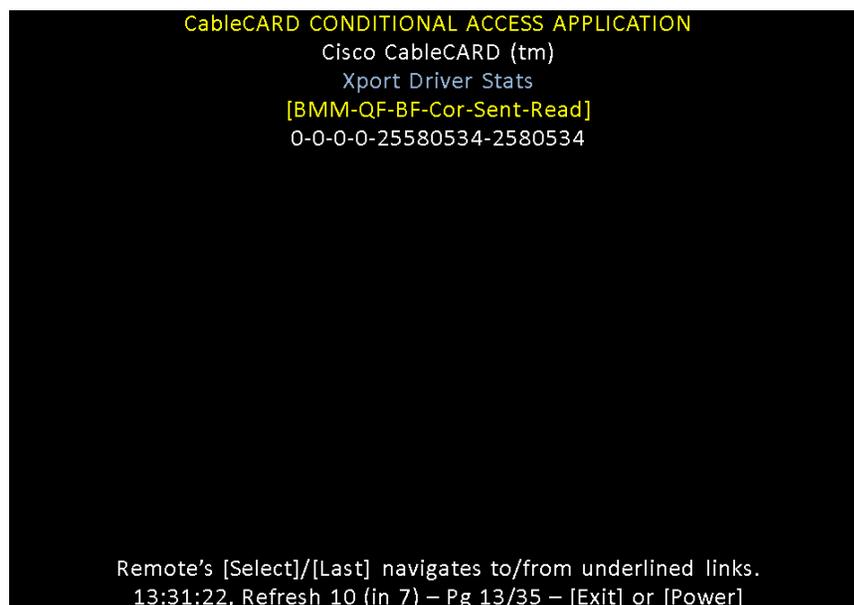
Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 13/35 - [Exit] or [Power]
```

Chapter 2 M-Card-Related Diagnostic Screens

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. | <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—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) | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [Software-dependent] Example: 3.14 |
| CA Time | Conditional access (CA) 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 |
| Time GBAM | Indicates the number of Time GBAM messages processed | <ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ 0—time GBAMs not yet processed |
| App GBAM | Indicates the number of Application GBAM messages received | <ul style="list-style-type: none"> ■ [Integer ≥ 1] ■ 0—application GBAMs not yet processed |
| Purchase GBAM | Indicates the number of purchase GBAMs processed | <ul style="list-style-type: none"> ■ [Integer ≥ 1] |

Chapter 2 M-Card-Related Diagnostic Screens

| Field and Link Names | Description | Possible Values |
|----------------------|--|---|
| EMMs Processed | Indicates 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

| Field and Link Names | Description | Possible Values |
|----------------------|--|--|
| ExtEvGBAMCount | Indicates the number of Extend Event GBAMs processed since last power up | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| ErrorCount | <p>Indicates the number of errors that have occurred for the secure microcomputer</p> <p>Note: Not all errors indicate a problem; some are expected under normal operation.</p> | <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] ■ N/A |
| EUTUpdateTime | The last time that an entitlement unit table (EUT) was received from the DNCS | <ul style="list-style-type: none"> ■ [Date, Time] ■ N/A |
| IppvEnabled | Indicates whether impulse 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 |

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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [Integer from 0 to 5] ■ N/A—M-Card module is functioning in SMODE |
| Src ID | The source ID of this active program | <ul style="list-style-type: none"> ■ 0x0000 to 0xFFFF ■ N/A—M-Card module is functioning in SMODE |
| 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 ■ No ECM—No ECMs received for the encrypted program |
| ECM | Indicates the number of processed entitlement control messages (ECMs) | <ul style="list-style-type: none"> ■ [Integer > 0] ■ N/A—clear program |

Chapter 2 M-Card-Related Diagnostic Screens

| Field and Link Names | Description | Possible Values |
|----------------------|---|--|
| CCI | Indicates whether or not copy rights are restricted | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [Entitlement ID] ■ N/A—clear program |
| Elementary Streams | Stream Type: Indicates the type of elementary stream | <ul style="list-style-type: none"> ■ [Hexadecimal value] |
| | PID Number: The PID number that identifies the elementary stream | <ul style="list-style-type: none"> ■ [Hexadecimal value] ■ No Information Available |
| | ECM PID: The ECM PID value for the encrypted program | <ul style="list-style-type: none"> ■ [Hexadecimal value] |

Decryption Fail Time

| 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 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 | <ul style="list-style-type: none"> ■ 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 | <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]—exact number of times content decryption had delays |
| Last LateKey Time | The time of the last delayed content decryption | <ul style="list-style-type: none"> ■ [Time] ■ Never |
| Overlay Error Count | The number of times the PID remapper has gone out of synchronization | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [Integer ≥ 1] |
| PID | The PID number of the selected stream | <ul style="list-style-type: none"> ■ [Integer ≥ 1]—decimal number |
| LTSID | Local Transport Stream ID assigned by the host | <ul style="list-style-type: none"> ■ [Integer ≥ 1] |
| Pkts | Number of MPEG transport stream packets received by the hardware | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| BMM | The BMM (Broadcast Management Module) channel number | <ul style="list-style-type: none"> ■ [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 | <ul style="list-style-type: none"> ■ [Integer ≥ 1] |
| Dec | Displays the decryption settings present in the decrypt control register | <ul style="list-style-type: none"> ■ Decryption settings Example: DES/3DES ■ Disabled—no decryption settings |
| Enc | Displays the encryption settings present in the encrypt control register | <ul style="list-style-type: none"> ■ Encryption settings Example: DES/3DES ■ Disabled—no encryption settings |

Xport Driver Stats

| Field and Link Names | Description | Possible Values |
|----------------------|---|--|
| BMM | The BMM channel number | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| QF | The number of packets dropped because the application queue is full | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| BF | The number of packets dropped because the circular buffer is full | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| Cor | The number of corrupted packets detected by the Xport ISR (Interrupt Service Routine) | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| Sent | The number of events sent to the application | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| Read | The number of reads performed by the application | <ul style="list-style-type: none"> ■ [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.

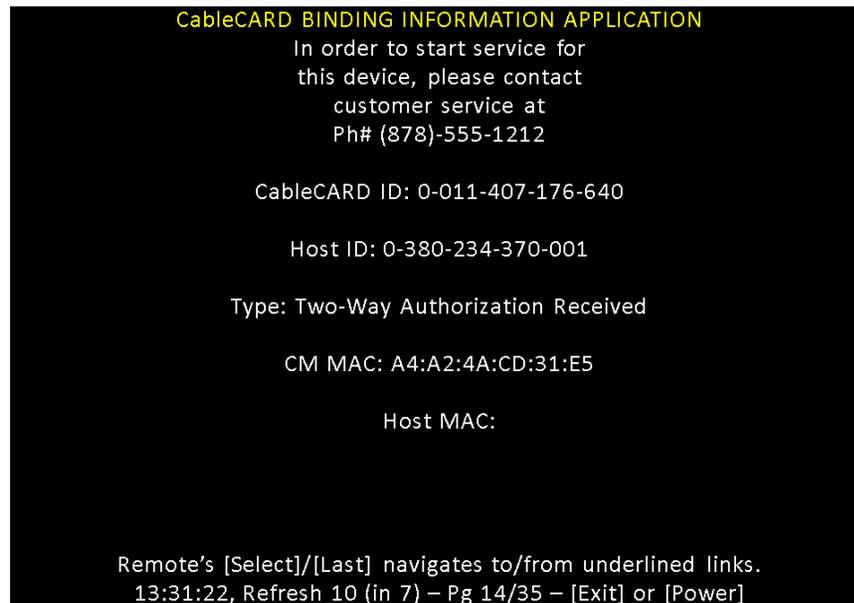
Performing Tasks

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 | <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:

```

CableCARD IP SERVICE APPLICATION
Cisco CableCARD (tm)
IP Service

IP Address: 10.1.67.41
Subnet Mask: 255.255.192.0
IPPV: Supported
FPM Poll-
Fri Jun 22 2012, 6:35:55 PM GMT
N/W Boot Status-
FAST BOOT COMPLETE
DNCS IP Stack Config: IPv4
STB IP Operating Mode: IPv4
CableCARD IP (v6):
N/A

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 15/35 - [Exit] or [Power]

```

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 | <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 response | <ul style="list-style-type: none"> ■ [Time] ■ Never—no poll request received yet or is a 1-way host |

| | | |
|------------------------|--|---|
| <p>N/W Boot Status</p> | <p>Current status of an M-Card boot process initiated over the network</p> | <ul style="list-style-type: none"> ■ 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

```

CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)
Network Interface-DAVIC

Host Type: DAVIC – Two Way
FDC Status
Frequency: 72500 kHz
Data Rate: 1.544 Mbps
AS Corr Err: 0
AS Uncorr Err: 0
Status: Locked

RDC, RX Status, BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) – Pg 16/35 – [Exit] or [Power]
    
```

Network Interface – DAVIC RDC

```

CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)
Network Interface-DAVIC RDC

Frequency: 24000 kHz
Data Rate: 1.544 Mbps
Power Level: 35 dBmV
Ranging Delay: 731 μS
Status: UNCC Received
RDC Ranging: 5
RDC SA: 8777
RDC RESV: 0
RDC TDMA: 0

RX Statistics, BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) – Pg 16/35 – [Exit] or [Power]
    
```

Chapter 2 M-Card-Related Diagnostic Screens

OOB – Rx Statistics

```
CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)
OOB – Rx Statistics

Stream: Packets-[Curr-Max-Min]Bps
DAVIC: 0xCOB0B-472-501-409
BC: 0x3005E5-8397-11568-6745
SI: 0x234DF-1218-1630-808
CA: 0x7DA1-65-396-43
PASSTHRU: 0x611-0-422-0
NETWORK: 0x5-0-72-0

BC, Pkt Drop, SI, BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) – Pg 16/35 – [Exit] or [Power]
```

Broadcast Data Information

```
CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)
Broadcast Data Information

[Message Type - %of BCData]
UNPassThru: 0
UNDownload: 0
UNConfig: 98
Third Party Apps: 0
Private: 0

Pkt Drop, SI, BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) – Pg 16/35 – [Exit] or [Power]
```

OOB Buffer OverRun

```

CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)
OOB Buffer OverRun

[Stream - Packets Dropped]
Broadcast: 0
BFS: 0
DSMCC: 0
Davic: 0
PassThru: 0
CA: 0

Unicast[IP mismatch]: 0

SI Tables, BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 16/35 - [Exit] or [Power]
    
```

System Information Tables Status

```

CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)
System Information Tables Status

[Table Name: Received-Forwarded]
NIT(0xC2): 26279-26279
NTT(0xC3): 26304-26304
VCT(0xC4): 39436-39436
STT (0xC5): 26301-26301
EAS (0xD8): 0-0
CTA(0x40): 13153-0
XAIT(0x74): 0-0

SI Tables Time, BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 16/35 - [Exit] or [Power]
    
```

Chapter 2 M-Card-Related Diagnostic Screens

SI Tables Last Sent Time

```
CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)

SI Tables Last Sent Time

[Table Name: Time]
  NIT: Never
  NTT: Never
  VCT: Jun 5 2012, 2:25:33 PM GMT
  STT: Jun 5 2012, 2:25:31 PM GMT
  EAS: Never
  CTA: Never
  XAIT: Never

Enhanced Channel Map, BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 16/35 - [Exit] or [Power]
```

Enhanced Channel Map Details

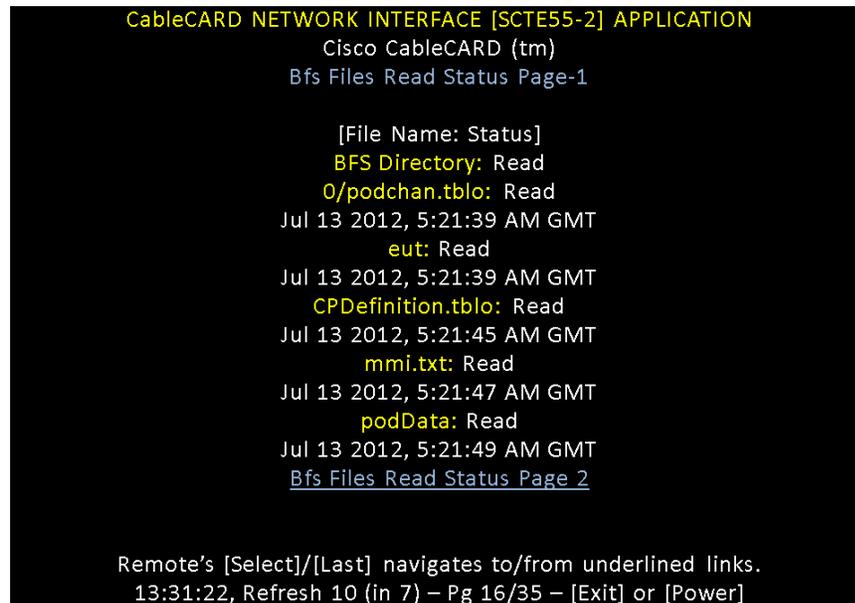
```
CableCARD NETWORK INTERFACE [SCTE55-2] APPLICATION
Cisco CableCARD (tm)

Enhanced Channel Map Details

Loaded: POD_Data/1/podchan.tblo
GDF action 1: unassigned Path:
  GDF LastLoadTime:
    N/A
  GDF LoadErr:NoErr SyntaxErr: 0
  Phy. Hub ID: 1 Lug ID: N/A
  Vir. HubID: N/A Bouquet ID: N/A
  1st matched GDF rule lineNo: 0
  2nd matched GDF rule lineNo: 0
  (eid=0x000f): virtual.hub=66
  BFS Status

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 16/35 - [Exit] or [Power]
```

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 | <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 |

Chapter 2 M-Card-Related Diagnostic Screens

| Field and Link Names | Description | Possible Values |
|----------------------|---|--|
| | 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

| 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 ■ N/A |
| 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 ■ N/A |

| Field and Link Names | Description | Possible Values |
|----------------------|---|---|
| Status | Current operating status for the QPSK transmit tune | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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. | <ul style="list-style-type: none"> ■ 0 – 0xFFFFFFFF |

Chapter 2 M-Card-Related Diagnostic Screens

| 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Broadcast ■ BFS ■ DSMCC ■ Davic ■ PassThru ■ CA |
| Packets Dropped | The packet drop count for each stream type | ■ $0 \leq \text{Integer} \leq 4294967295$ |
| 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 | <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

| 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

| Field and Link 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 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 LastLoadTime | 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 |

| 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 | <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

| Field Names | Description | Possible Values |
|-------------|---|---|
| File Name | Lists the type of file stored on BFS | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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

```
CableCARD COPY PROTECTION APPLICATION
Cisco CableCARD (tm)
Copy Protection Information

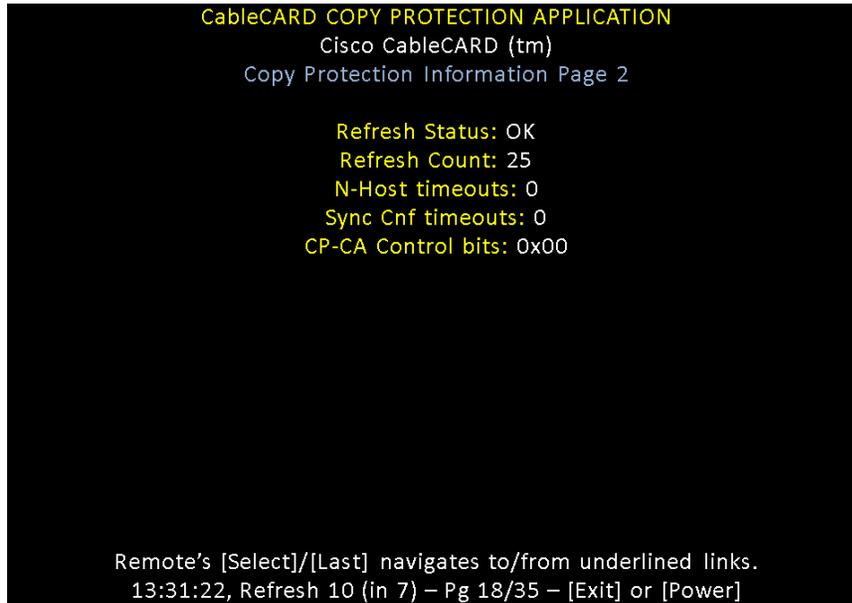
Auth Status: CP Auth Received
Info for pgm index 0-5
[LTSID - PN - CCI - ERR ]
0x1 - 0x0 - 0x0 - 0x0
0x0 - 0x0 - 0x0 - 0x0

MKS Period: 600 Seconds
VerifyKey Status: OK
Copy Protection Info Page 2

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 18/35 - [Exit] or [Power]
```

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) | <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 |
| LTSID | The local transport stream ID assigned by the host | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 0 – 0xFFFFFFFF—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 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 | <ul style="list-style-type: none"> ■ [Integer > 0] |
| MKS period | The rate (seconds) that copy protection keys are refreshed | <ul style="list-style-type: none"> ■ [Integer > 0] <p>Default: 60 seconds</p> |
| 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 |

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. | <ul style="list-style-type: none"> ■ 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. | <ul style="list-style-type: none"> ■ 0 — 2³²-1 |
| N-Host timeouts | The number of timeouts that occurred while waiting for the Host nonce APDU, since the boot time. | <ul style="list-style-type: none"> ■ 0 — 2³²-1 |
| Sync Cnf timeouts | The number of timeouts that occurred while waiting for the Host CP_sync_cnf() APDU, since the boot time. | <ul style="list-style-type: none"> ■ 0 — 2³²-1 |
| CP-CA Control bits | Indicates whether any of 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). | <ul style="list-style-type: none"> ■ 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

```

CableCARD DIAGNOSTIC APPLICATION
Cisco CableCARD (tm)
Diagnostics
H/W Model: 0803, Ver: 0010
MAC Address: 00:1A:C3:1E:86:A4
SL. No: PKCPJBCXS, Mode: MMODE
Boot Time
Tue Jun 12 2012, 5:38:12 PM GMT
Current Time
Fri Jun 15 2012, 6:46:32 PM GMT
Free Memory: 1468 KB
Bldr Ver: 124
OS Ver: PKEY1.4.3_F.p.0501
Build Time: May 4 2012, 12:56:04
Resource Status: 00000C5F00005FFF
BFS: Received, Hub ID: 1
CPU Channel, Generic Diags

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 19/35 - [Exit] or [Power]

```

CPU Channel Data and Buffer OverRun

```

CableCARD DIAGNOSTIC APPLICATION
Cisco CableCARD (tm)
CPU Channel

Data Flow Analysis
[CPU.Chan: Pkts-[Curr-Max-Min]Bps]
DC.Pkts(Tx): 0x5F503-0-8218-0
DC.Pkts(Rx): 0x5F865-0-4202-0
EC.Pkts(Tx): 0x1B98DD1-296724-298425-189552
EC.Pkts(Rx): 0x0-0-0-0

Buffer OverRun
[Interface : Packets Dropped]
Extended Channel Tx: 0
Extended Channel Rx: 0
Data Channel Rx: 0
Download Details, CDL, Flows

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 19/35 - [Exit] or [Power]

```

Chapter 2 M-Card-Related Diagnostic Screens

Firmware Download Details

```
CableCARD DIAGNOSTIC APPLICATION
Cisco CableCARD (tm)
Firmware Download Details
Image ID: 65519
Group ID: 0x0, H/w ID: 54
CVT Version: 4
Image Dwnld Freq: 555 Mhz
Prg Number: 139
Last CVT Time:
Fri Jun 15 2012, 7:34:11 PM GMT
Last CVT Source: Out Of Band
CVT Trigger Count: 2
Dwnld Fail Count: 0
Dwnld Fail Cause: N/A
Image ID in last trigger: 65519
Flows Opened, CDL, Generic Diags

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 19/35 - [Exit] or [Power]
```

Extended Channel Flows Opened

```
CableCARD DIAGNOSTIC APPLICATION
Cisco CableCARD (tm)
Extended Channel Flows Opened

[FlowID-Service Type]
800000-DSG
3-IP_B_SA
800005-IPv4 Sock[c0a8fd01.ff9e]
800001-IPv4 Sock[c0a8fd01.35fc]
800002-IPv4 Sock[c0a8fd01.ff99]
800003-IPv4 Sock[c0a8fd01.c166]
800004-IPv4 Sock[c0a8fd01.35fa]

Ext Channel Flow Stats,CDL

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 19/35 - [Exit] or [Power]
```

Extended Channel Flow Stats

```
CableCARD DIAGNOSTIC APPLICATION
Cisco CableCARD (tm)
Extended Channel Flow Stats

FlowID-Service Type:[RX-TX]Pkts
800000-DSG : 0xb850f-0x0
3-IP UniCast : 0x0-0x90ca
4-MPEG : 0x0-0x336
800001-Socket : 0x0-0x0
800002-Socket : 0x0-0x0
800003-Socket : 0x0-0x0
800004-Socket : 0x0-0x0
800005-Socket : 0x0-0x0

CDL, Generic Diagnostic Report

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 19/35 - [Exit] or [Power]
```

Common Download Info

```
CableCARD DIAGNOSTIC APPLICATION
Cisco CableCARD (tm)
Common Download Info

File read: Na
Filename: N/A
Version: N/A
Vendor ID: N/A
HW Ver ID: N/A
Group ID: N/A
CVT Sent count: 0
CVT Reply Recvd count: 0
Last CVT Time:
N/A

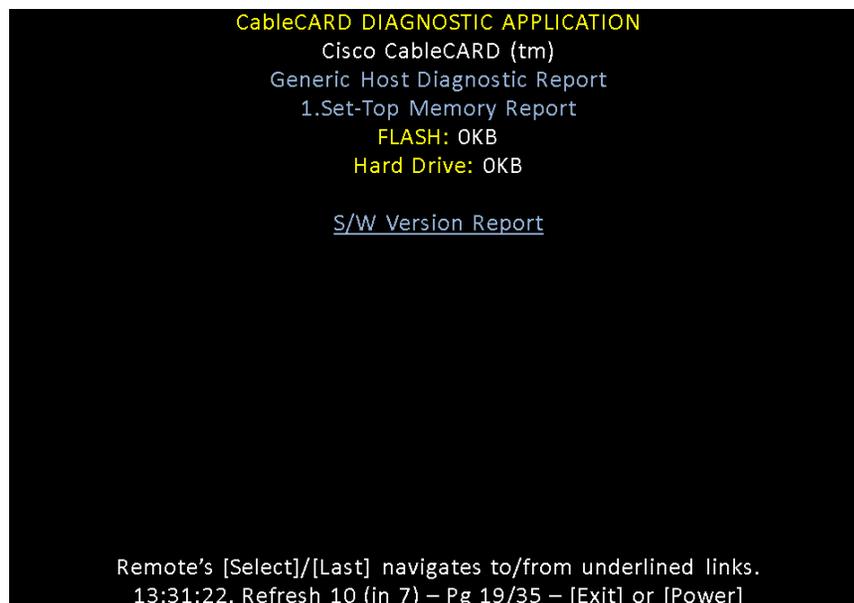
Generic Host Diagnostic Report

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 19/35 - [Exit] or [Power]
```

Chapter 2 M-Card-Related Diagnostic Screens

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 | <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none">■ [Hardware-dependent] |
| MAC addr | The RF MAC address that is used by the DNCS | <ul style="list-style-type: none">■ [M-Card-dependent] |
| SL. No. | The serial number associated with the M-Card module | <ul style="list-style-type: none">■ [M-Card-dependent] |

| Field and Link Names | Description | Possible Values |
|----------------------|--|---|
| Mode | The operations mode that the M-Card module is operating in | <ul style="list-style-type: none"> ■ MMODE—multi-stream capable mode ■ S.MODE—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] |
| 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 | <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 | ■ [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 | <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 – 0xFFFFFFFF |

Chapter 2 M-Card-Related Diagnostic Screens

| Field and Link Names | Description | Possible Values |
|----------------------|---|--|
| | [Curr-Max-Min] —displays the current, maximum, and minimum data rate (Bps) | <ul style="list-style-type: none"> ■ [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 | <ul style="list-style-type: none"> ■ [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) | <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] |

| Field and Link Names | Description | Possible Values |
|--------------------------|---|---|
| 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 |
| Image ID in last trigger | Displays the image ID of the last downloaded image obtained from the last trigger | <ul style="list-style-type: none"> ■ [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 | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| Service Type | Describes the service type for the extended channel flows Note: The number of flows and their order may vary | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| Service Type | Describes the service type for the extended channel flows Note: The number of flows and their order may vary | <ul style="list-style-type: none"> ■ MPEG ■ IP UniCast ■ DSG ■ IP MultiCast ■ IP_B_SA |
| RX | Packets received in this flow | <ul style="list-style-type: none"> ■ 0x0 – 0xFFFFFFFF |
| TX | Packets sent in this flow | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Yes ■ No |
| Filename | <p>The common download file.</p> <p>The common download file directory is bfs:///POD_Data.</p> <p>The file name determines which protocol is used in the CDL tables.</p> | <ul style="list-style-type: none"> ■ cvtxxxxxx.tblo (CDL 1.0) ■ cdl_v2xxxxxx.tblo or cvtxxxxxx.tblo (CDL 2.0) <p>Note: xxxxxx is the 6-digit vendor ID.</p> |
| Version | CVT version of the named file | <ul style="list-style-type: none"> ■ 1 - 0xFFFF <p>Note: The value increases each time the file is changed.</p> |
| Vendor ID | Organizationally Unique Identifier (OUI) assigned to the host set-top | <ul style="list-style-type: none"> ■ 0x1 - 0xFFFFFFFF <p>Note: A value of 0x0 is not valid.</p> |
| HW Ver ID | Unique identifier assigned to each type of hardware from a particular vendor | <ul style="list-style-type: none"> ■ 0x1 - 0xFFFFFFFF <p>Note: A value of 0x0 is not valid.</p> |
| Group ID | Unique identifier for a group of similar hosts (optional unless group download intended) | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [0 < Integer < 4294967295] |
| CVT Reply Recvd Count | <p>Number of replies to the CVT APDU sent by the M-Card module</p> <p>Note: This value should be the same as the CVT Sent Count</p> | <ul style="list-style-type: none"> ■ [0 < Integer < 4294967295] |
| Last CVT Time | System time when the last CVT APDU was sent to the Host | <ul style="list-style-type: none"> ■ [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 | <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 |

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

```
CableCARD NETWORK INTERFACE (DSG) APPLICATION
Cisco CableCARD (tm)
Network Interface-DSG

DSG Status: N/A
Mode: DAVIC OOB
UNCI DCM/CCCM: 0
DCD Status: N/A
UCID: N/A
Mod ID: 1
VCT ID: N/A
DSG Directory Ver: N/A
IP Address: N/A
Override CCCM: 1(gdl)
Next: Extended DAVIC Diags

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 20/35 - [Exit] or [Power]
```

DAVIC Enhanced Diagnostics

```

CableCARD NETWORK INTERFACE (DSG) APPLICATION
Cisco CableCARD (tm)
Network Interface-DAVIC Enh Diags
Aloha Tout: 0
Aloha Tx No Rsp: 36
Aloha Tx Err: 0
Connect Tout: 0
InitCompPwrErr: 0
Re Sign-on Cnt: 0
Release Cnt: 0
Reprovision Cnt: 0
Last Sign-On Reason: 6
Inv RCTW1: 0
Inv RCTW2: 0
FRSA Count: 3

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 20/35 - [Exit] or [Power]
    
```

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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <p>Indicates whether the card received the ccm value in UNConfig</p> <ul style="list-style-type: none"> ■ If received, displays the value of the ccm ■ If not received, displays the DCM value | <p>CCCM values</p> <ul style="list-style-type: none"> ■ 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 <p>DCM values, if CCCM is not present</p> <ul style="list-style-type: none"> ■ 0—DOCSIS ■ 1—DAVIC ■ 2—Unused ■ 3—DOCSIS ■ 4—DAVIC light |

Network Interface - DSG Diagnostic Screen

| Field Names | Description | Possible Values |
|-------------------|--|--|
| DCD Status | Indicates the status of the DOCSIS downstream channel descriptor | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 0 ≥ Integer ≥ 4294967295 ■ N/A |
| VCT ID | Displays the VCT ID sent to the host in the DSG_Directory | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 <i>IP Service Diagnostic Screen</i> (on page 19). |
| Override CCCM | Indicates whether the card is authorized for a service | <ul style="list-style-type: none"> ■ [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 |

Chapter 2 M-Card-Related Diagnostic Screens

| Field Names | Description | Possible Values |
|---------------------|--|--|
| Connect Tout | Number of times a connect timeout has occurred | ■ 0 ≥ Integer ≥ 4294967295 |
| InitCompPwrError | 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 | <ul style="list-style-type: none"> ■ 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

```

CableCARD CA NETWORK HANDLER (CANH) APPLICATION
Cisco CableCARD (tm)
Can Handler Diagnostics
ACP: [Request - Success - Fail]
Auth Req: 46026 - 46026 - 0
  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: 1050
Last Auth Response: Auth
Last Response Time:
Fri Jun 22 2012, 6:41:36 PM GMT
PassThru #: 169, Slots Cleared: 0
  CAN Handler Sync Timeouts

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 21/35 - [Exit] or [Power]

```

Chapter 2 M-Card-Related Diagnostic Screens

CAN Handler Sync Timeouts

```

CableCARD CA NETWORK HANDLER (CANH) APPLICATION
Cisco CableCARD (tm)
CAN Handler Sync Timeouts
Passthru: 0
Monitor: 0
Response: 0
Max Valid Time: 0ms
Max Invalid Time: 0ms

Session: Available
Spdus Dropped: 0
Apdus Dropped: 0
NVM Recovery: 0
UnCorrected DF: 0
Corrected DF: 0

Remote's [Select]/[Last] navigates to/from underlined links.
13:31:22, Refresh 10 (in 7) - Pg 21/35 - [Exit] or [Power]

```

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) | <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] |

| 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 | <ul style="list-style-type: none"> ■ [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 CAN Handler | <ul style="list-style-type: none"> ■ [0 ≤ Integer ≤ 65535] |
| Slots Cleared | Identifies the number of VOD slots purged upon reboot | <ul style="list-style-type: none"> ■ [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 | <ul style="list-style-type: none"> ■ [0 ≤ Integer ≤ 65535] |
| Monitor | Identifies the number of Monitor messages dropped by the M-Card module because of timeouts in the SAS sync protocol | <ul style="list-style-type: none"> ■ [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 | <ul style="list-style-type: none"> ■ [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 | <ul style="list-style-type: none"> ■ Integer < 7000—desired value; responses are within the expiry period ■ [7001 ≤ Integer ≤ 65535] |

Chapter 2 M-Card-Related Diagnostic Screens

| 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) | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 58
- CableCARD Diagnostics Screen 61
- CableCARD/Host ID Diagnostic Screen..... 63

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:

```
Scientific Atlanta CableCARD
CP Information
-----
Auth Status: Waiting for CP Auth
Prog number: 2
CCI byte: 0x03
ECM count: 23
EMM count: 0
Decryption status: Ready
PowerKey status: Ready
EID: 0x2
MKS period: 60 seconds
KSE count: 0
```

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) | <ul style="list-style-type: none"> ■ 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. | <ul style="list-style-type: none"> ■ [Integer > 0] |
| CCI byte | The level of copy protection passed from the S-Card module to the host | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [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 | <ul style="list-style-type: none"> ■ [Integer ≥ 0] |
| Decryption status | The current status for the decryption of an encrypted program | <ul style="list-style-type: none"> ■ OK ■ No longer authorized ■ ECM stream error ■ Blacked out |

Chapter 3 S-Card-Specific Diagnostic Screens

| Field Names | Description | Possible Values |
|-----------------|--|--|
| PowerKey status | The current status of the PowerKEY CA system | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ [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:

```

Scientific Atlanta
CableCARD(tm) Diagnostics
-----
HeapSize: 3537176
Mem Free: 2690768
FreeEvnts: 985
RF IP addr: None yet...
MAC addr: 00:02:DE:81:F1:0E
Hardware Model: 0600 Version: 0010
Bootrom Version: 115
OS Build: 2.3.143s2 (0) Mon Jan 8 2007, 4:41:35 PM EDT
Current date/time: Fri Jan 26, 2007, 8:20:40 PM GMT
Boot time: Mon Jan 26 2007, 8:19:43 PM GMT
Current resource status: 243F3Fdf

```

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 |
|-------------|-------------|-----------------|
|-------------|-------------|-----------------|

Chapter 3 S-Card-Specific Diagnostic Screens

| 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 | <ul style="list-style-type: none"> ■ [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.

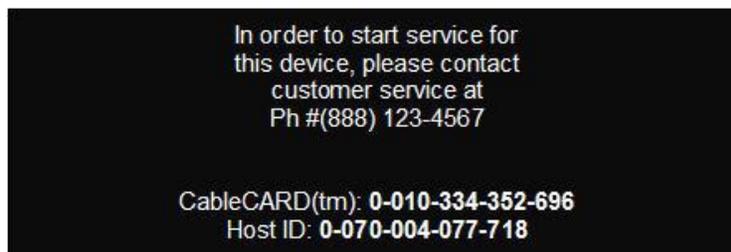
Performing Tasks

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 |
|-------------|-------------|-----------------|
|-------------|-------------|-----------------|

Chapter 3 S-Card-Specific Diagnostic Screens

| 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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September 2012 Printed in USA

Part Number 78-4015203-01 Rev D