# Diagnostics

The Administrator's Main Menu screen Diagnostics option allows you to test or view the operating status of various system components (see Figure 6-1). Use the Diagnostics menu option to perform the following functions:

- Create voice paths between ports.
- Display card, port, or conference data.
- Test control circuit and port interface port cards.
- Display virtual call generation port data.
- Monitor call progress tones during call processing.
- Configure and enable/disable system message tracing.

Figure 6-1   Diagnostics Menu Structure
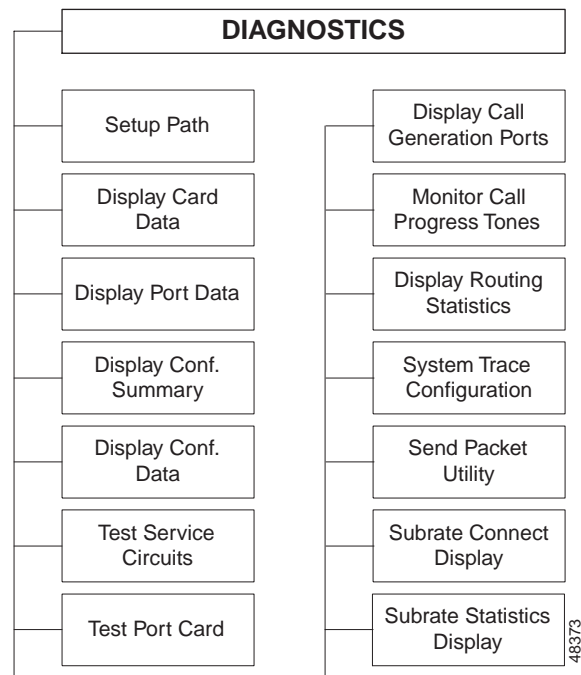
Note You can access menu selections associated with optional software packages only if the option(s) are installed on the system. For example, the TeleRouter software overlay must be installed on the system in order to access and update the Routing Statistics Display screen. Refer to the *Cisco VCO/4K TeleRouter Reference Guide* for information about TeleRouter features. ISDN features are discussed in the *Cisco VCO/4K ISDN Supplement*.

Accessing the Diagnostic Menu Screen

Complete the following steps to access the Diagnostic Menu screen:

Step 1 Access the Administrator's Main Menu.

Step 2 Type **D** and press **Enter**.

The Diagnostic Menu screen appears (see Figure 6-2). The cursor is located in the Enter Selection field.

Figure 6-2   Diagnostic Menu Screen

```
                    D I A G N O S T I C    M E N U


          A)   Set Up Path
          B)   Display Card Data
          C)   Display Port Data
          D)   Display Conference Summary
          E)   Display Conference Data
          F)   Test Service Circuits
          G)   Test Port Card
          H)   Display Call Generation Ports
          I)   Monitor Call Progress Tones
          J)   Display Routing Statistics
          K)   System Trace Configuration
          L)   Send Packet Utility
          M)   Subrate Connection Display
          N)   Subrate Statistics Display



               Enter Selection: _
```

Type the letter that precedes the option you want and press **Enter**.

The remainder of this chapter describes each option within the Diagnostic Menu screen.

Set Up Path

Use Set Up Path to create a voice path between two ports (referred to as A and B). A voice path is a physical, system-switched connection that allows the transfer of in-band signaling and/or voice energy. In-band signaling can consist of MF or DTMF digits, tones, or voice prompts. Ports can be specified by hardware or software address. Port A and Port B do not have to be linked into the same resource chain in order to create a voice path.

System resources are divided into two categories:

- Senders—The source of voice and in-band signaling information.
- Receivers—Resources which listen to voice and in-band signaling information.

When you create a voice path, you must designate one port as the sender and one port as the receiver. Table 6-1 lists the valid system senders and receivers.

Table 6-1   System Resources—Senders and Receivers

Senders	Receivers	Senders and/or Receivers
Tone channels	DRC ports	SLIC ports
DVC ports	MRC ports	DID ports
IPRC ports	CPA ports	UTC ports
—	MFCR2 ports	Single span T1 channels
—	—	Single span E1 channels
—	—	PRI B-channels
—	—	E+M ports
—	—	DCC ports
—	—	Four span T1 channels
—	—	Four span E1 channels
—	—	MVDC T1 channels

If both ports specified can send and receive, a two-way voice path is created. Otherwise, the voice path is one way. Up to eight voice paths can exist simultaneously.

When you create a voice path from the Set Up Path function, the system first checks to see if both ports are removed from service. Refer to the "Changing the Status of a Port" section on page 5-11 for more information on changing the status of a port.

You can also create paths using the Voice Path Control ($66) command. Refer to the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* for more information.

> **Note** System tones, such as those listed at the bottom of the Set Up Paths screen, can be simultaneously accessed by any port or ports in the system. Therefore, do not take the DTG out of service at any time.

Accessing the Set Up Paths Screen

Complete the following steps to access the Set Up Paths screen:

Step 1   Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **A** and press **Enter**.

The Set Up Paths screen appears (see Figure 6-3). The cursor is located in the Add or Delete Path (A or D) field.

Figure 6-3   Set Up Paths Screen

```
                      S E T   U P   P A T H S

   Add or Delete Path (A or D) _              Path Number _

     Port                          Port
     Address ____   R,L,S,P _ _ __ ___   Address ____   R,L,S,P _ _ __ ___

                         CURRENT PATH LIST

       PA   R L S P      PA   R L S P      PA   R L S P      PA  R L S P
     1 ____  _ _ _ __   ____  _ _ _ __  5 ____  _ _ _ __   ____ _ _ _ __
     2 ____  _ _ _ __   ____  _ _ _ __  6 ____  _ _ _ __   ____ _ _ _ __
     3 ____  _ _ _ __   ____  _ _ _ __  7 ____  _ _ _ __   ____ _ _ _ __
     4 ____  _ _ _ __   ____  _ _ _ __  8 ____  _ _ _ __   ____ _ _ _ __

     4C0  Quiet        4C5  480 Hz                  4CA  1004 Hz  0 dBm
     4C1  1 kHz CCITT  4C6  1400 Hz                 4CB  2804 Hz  0 dBm
     4C2  Dial Tone    4C7  1000 Hz MAX. OUTPUT     4D0  Ring Back
     4C3  380 Hz       4C8  913.8Hx SIT             4D1  Busy
     4C4  440 Hz       4C9  404 Hz  0 dBm           4D2  Reorder
```
48386

Set Up Path option consists of one screen. Use the **Print Screen** key to obtain a hard copy of this screen.

Set Up Paths Screen Field Definitions

The Set Up Paths screen consists of the following areas of information—Data Entry, Current Path List, and System Tone List.

The Data Entry area contains the following fields:

Add or Delete Path (A or D)—*Data entry via main keypad*. Specifies the function to perform and the additional data required to complete the command. Valid values are the following:

   A—Add. Set up a new voice path.

   D—Delete. Tear town an existing voice path.

Path Number—*Data entry via main keypad*. Specifies the path you want to delete. This field is only accessible if you type D in the Add or Delete Path (A or D) field.

Port Address—*Data entry via main keypad*. Specifies the software address (hexadecimal logical identifier). Use either this field or the R L S P field to specify the ports between which a path is created. There is a port address field for each port in the path (A and B).

R L S P—*Data entry via main keypad*. Specifies the physical location of the Rack-Level-Slot/Group/Span (R-L-S-P hardware address). Use either this field or the port address field to specify the ports between which a path is created. There is an R L S P field for each port in the path (A and B).

The Current Path List area of information shows the ports associated with each active path. Ports are represented by both port address and hardware address:

PA—*Display only*. Shows the software address (hexadecimal logical identifier) of the ports between which a path exists. There is a port address field for each port in the path (A and B).

R,L,S,P—*Display only*. Shows the physical location (R-L-S-P hardware address) of the ports between which a path exists. There is one rack, level, slot, port (R L S P) field for each port in the path (A and B).

The System Tone List area of information provides a quick reference to the port address of selected system tones with which paths can be created.

Adding a Voice Path

Complete the following steps to add (create) a voice path:

Step 1   Access the Set Up Paths screen (refer to the "Accessing the Set Up Paths Screen" section on page 6-4).

Step 2   Type **A** in the Add or Delete Path (A or D) field and press the **Next Field** key.

The cursor moves to the PA (port address) field for the first port in the path (A).

Step 3   Specify port A by using one of the following options—either by software or by hardware address:

- By software address: Type the port address and press the **Next Field** key until the cursor advances to the port address field for the second port in the path (B).

- By hardware address: Press the **Next Field** key to advance the cursor to the R L S P field. Type the value for each field, and press the **Next Field** key until the cursor advances to the port address field for the second port in the path (B).

Step 4   Specify port B by using one of the following options—either by software or by hardware address:

- By software address: Type the port address and press **Enter**. If a voice path is successfully created, the "Path Complete" message appears.

  The Current Path List area is updated to show the addition of the path, and the cursor returns to the Add or Delete Path (A or D) field. Proceed to Step 5.

- By hardware address: Press the **Next Field** key to advance the cursor to the R L S P field. Type the value for the Rack/Cabinet, Level, and Slot fields and press the **Next Field** key. Type the port value, and press **Enter**. The "Path Complete" message appears.

  The Current Path List area is updated to show the addition of the path, and the cursor returns to the Add or Delete Path (A or D) command field. Proceed to Step 5.

Step 5   Press the **Exit** key to return to the Diagnostic Menu screen.

To exit the Set Up Path screen without making any changes, press the **Exit**, **Prev Menu**, or **Main Menu** key. No changes are made to the system unless you press **Enter**.

Deleting a Voice Path

Complete the following steps to delete a voice path:

Step 1   Access the Set Up Paths screen (refer to the "Accessing the Set Up Paths Screen" section on page 6-4).

Step 2   Type **D** in the Add or Delete Path (A or D) field and press the **Next Field** key.

The cursor moves to the Path Number field.

Step 3   Type the number of the path you want to delete and press **Enter**. All active paths are shown in the Current Path List.

The "Path Deleted" message appears. The Current Path List is updated to show the deletion of the path and the cursor returns to the "Add or Delete Path (A or D)" field.

Step 4   Press the **Exit** key to return to the Diagnostics Menu screen.

To exit the Set Up Path screen without making any changes, press the **Exit**, **Prev Menu**, or **Main Menu** key. No changes are made to the system unless you press **Enter**.

Display Card Data

Use the Card Display option to view the current status of any card in the system database. This option also provides access to the Port Display screen described in the "Accessing the Port Display Screen from the Card Display Screen" section on page 6-10.

You can specify the card you want to display in the Card Display screen by either hardware address or base address (the card's lowest port address divided by eight). The amount of information displayed for a card depends upon the card type. Refer to the "Card Display Screen Field Definitions" section on page 6-7 for screen content information.

Accessing the Card Display Screen

Complete the following steps to access the Card Display screen:

Step 1   Access the Diagnostics Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **B** and press **Enter**.

The Card Display screen appears (see Figure 6-4). The cursor is located in the R,L,S field.

Figure 6-4   Card Display Screen

```
                    C  A  R  D        D  I  S  P  L  A  Y

R,L,S 1 1 1-2  Display Port (Y/N) N 1st Port Adr 480   Card Type TONE  FW 0.00
Card Status ( 2) Out of Srvc         Comm Errors 0    Poll Queue Dormant

                    1  --  8   9  -- 16  17 -- 24  25 -- 32    ALARM STATES
Port Available     01111111  11111111  11111111  11111111    Alarms Clear
Idle(0) / In Use(1) 00000000  00000000  00000000  00000000
Diagnostics
Voice Path Trace   00000000  00000000  00000000  00000000
NBC Msg. Trace     00000000  00000000  00000000  00000000
Host Msg. Trace    00000000  00000000  00000000  00000000

                   33 -- 40  41 -- 48  49 -- 56  57 -- 64
Port Available     11111111  11111111  11111111  11111111
Idle(0) / In Use(1) 00000000  00000000  00000000  00000000
Diagnostics
Voice Path Trace   00000000  00000000  00000000  00000000
NBC Msg. Trace     00000000  00000000  00000000  00000000
Host Msg. Trace    00000000  00000000  00000000  00000000
```

48302

Note The Card Display screen consists of one screen for all cards with the exception of the IPRC card, which has two screens. Press the **Next Screen** key to access the IPRC's second screen; to return to the first screen press the **Prev Screen** key.

Press the **Print Screen** key to obtain a hard copy of a screen.

Using the Card Data Screen

Once a card is selected for display, the information is updated every few seconds to show the current status. You can stop the updates by pressing any key except the **Print Screen** or **Hold** key. Updating resumes when you press **Enter**. Press the **Hold** key to freeze the screen display; press it again to continue the screen updates.

Card Display Screen Field Definitions

The Card Display screen fields represented on a particular screen depend upon the type of card displayed. These fields and their dependencies are described in the following list:

R,L,S—*Data entry via main keypad*. Valid for all card types. Specifies the Rack-Level-Slot/Group/ Span hardware address (physical location) of the card for which data is displayed. The card can also be specified by 1st Port Adr; in this case, this field is used to display the card's hardware address.

Display Port (Y/N)—*Data entry via main keypad*. Valid for all card types. Provides direct access to the Port Display screen. Refer to the "Accessing the Port Display Screen from the Card Display Screen" section on page 6-10.

1st Port Adr—*Data entry via main keypad*. Valid for all card types. Specifies the first port address of the card for which data is displayed. The card can also be specified by R,L,S; in this case, this field is used to display the card's first port address.

Card Type—*Display only*. Valid for all card types. Shows the type of card for which data is displayed.

FW—*Display only*. Valid for all card types. Shows the version and revision of the firmware in use. The firmware version is displayed to the left of the decimal, the revision to the right. The contents of this field are displayed only when the card is not out of service.

Card Status—*Display only*. Shows the current card status. Valid values are:

> A—Active.

> O—Out of service.

> S—Standby. Valid for one of the two NBC cards in redundant systems only, one or more DTG cards in either a redundant or nonredundant system, or one or more BRCs in a redundant BRC configuration.

> M—Maintenance. Valid for programmable trunk cards when card alarms are present; for DVC, IPRC, and CPA when download to the card is not complete; and taking a card out of service from Card Maintenance without affecting calls in progress.

> D—Diagnostics. Set from the Card Maintenance screen when diagnostic tests are to be performed.

Comm Errors—*Display only*. Valid for all card types except NBC. Shows the number of communication bus errors that have occurred between this card and the NBC since the last system boot. The maximum value for this counter is 255; when that value is reached, the counter is reset to 0. A communication bus error occurs when the NBC cannot poll a card. Possible causes include garbled data or timeouts waiting for the card to respond.

Poll Queue—*Display only*. Valid for all card types except NBC. Shows the polling queue in which this card resides. Polling queues are used by the system software to determine the frequency with which a card is polled by the NBC. Valid field entries are:

> Active—Applies to all network interface and internal service circuit cards; shows the card is on line and being polled by the NBC.

> Dormant—Applies to all network interface and internal service circuit cards; shows the card is currently awaiting further system processing action and is not being polled.

> Maintenance—Applies to all network interface and internal service circuit cards; shows the card is currently awaiting system processing action and is not being polled.

> Inactive—These cards are not polled or are not defined in the database.

Use the following port information fields to display per-port information for the card selected. The fields are displayed in clusters; a cluster is a group of eight contiguous ports. Information for up to eight clusters (64 ports) can be displayed in this area for all card types. The IPRC card is an exception—it has 16 clusters (128 ports). The IPRC card's clusters 9 through 16 are displayed on a second screen; press the **Next Screen** button to access a display of ports 65 through 128. A binary number represents each cluster, with the ports listed in increasing order. Cluster 1 contains information for ports 1 to 8, Cluster 2 represents ports 9 to 16, and so on. Not all fields are relevant to all port types. The following descriptions list the applicable port types:

> Port Available—Applies to all network interface and internal service circuit cards. Shows if this port is available for use by the system. Ports show as unavailable if you have not yet defined them using the Port Definition (P) function within the Card Maintenance screen, or become unavailable when their error thresholds are exceeded (outgoing network interface ports only). Valid values are 0 and 1:

> > 0—Port is unavailable for use.

1—Port is available for use.

Idle(0) / In Use(1)—Applies to all network interface circuits. Bytes are not displayed for all other port types. Shows whether the port is currently on- or off-hook. Valid values are 0 and 1:

0—On-hook.

1—Off-hook.

Diagnostics—Reserved for future development; bytes containing all zeros are currently displayed for network interface circuits.

Voice Path Trace—Shows whether a voice path trace task is running on this port. This task is enabled/disabled from the System Trace Configuration screen (refer to the "System Trace Configuration" section on page 6-34). Valid values are 0 and 1:

0—No tracing is in progress.

1—Voice path tracing is running on this port.

NBC Msg. Trace—Shows whether an NBC message trace task is running on this port. This task is enabled/disabled from the System Trace Configuration screen (refer to the "System Trace Configuration" section on page 6-34). Valid values are 0 and 1:

0—No tracing is in progress.

1—NBC message tracing is running on this port.

Host Msg. Trace—Shows whether a host message trace task is running on this port. This task enabled/disabled from the System Trace Configuration screen (refer to the "System Trace Configuration" section on page 6-34). Valid values are 0 and 1:

0—No tracing is in progress.

1—Host message tracing is running on this port.

ALARM STATES—*Display only.* A group of fields that display current alarm conditions for the card selected. Up to five major/minor alarms can be displayed in this field. Refer to Chapter 4, "System Configuration," for information on card alarms.

SLIPS—*Display only.* Valid for programmable trunk cards. Shows the number of slips detected for this programmable trunk card.

Out of Frames—*Display only.* Valid for programmable trunk cards. Shows the number of out of frame (OOF) conditions detected for this programmable trunk card.

Displaying Card Data

Complete the following steps to view the current status of a card:

Step 1   Access the Card Display screen (refer to the "Accessing the Card Display Screen" section on page 6-6).

The cursor is located in the R,L,S data entry field.

Step 2   Specify the card to display by using one of the following options—either by software or by hardware address:

• By software address: Press the **Next Field** key until the cursor moves to the 1st Port Address field. Type the port address and press **Enter**.

The screen displays the current status of the card entered. The system continues to update this information every few seconds.

- By hardware address: Type the value for the R (rack) field and press the **Next Field** key. Type the value for the L (level) field and press the **Next Field** key. Type the value for the S (slot/group/span) field and press **Enter**.

  The screen displays the current status of the card entered. The system continues to update this information every few seconds.

Step 3 Stop the screen updates by completing one of the following options:

- To stop the screen updates temporarily, press the **Hold** key; press it again to resume screen updates.

- To stop the screen updates entirely, press any key except the **Print Screen** or **Hold** key. Updating stops and the cursor returns to the R,L,S field.

Step 4 Press the **Exit** or **Prev Menu** key to return to the Diagnostics Menu screen.

Accessing the Port Display Screen from the Card Display Screen

You can access the Port Display screen from the Card Display screen. Complete the following steps:

Step 1 Access the Card Display screen (refer to the "Accessing the Card Display Screen" section on page 6-6).

Step 2 Stop the screen updates by pressing any key except the **Print Screen** or **Hold** key.

The cursor moves to the R,L,S field.

Step 3 Press the **Next Field** key until the cursor moves to the Display Port (Y/N) field.

Step 4 Type **Y** and press **Enter**.

The Port Display screen appears.

Display Port Data

Use the Port Display option to view current call processing activity for any port. This is a valuable debugging tool because it allows the application designer to watch a call's progress. Call processing states, rule processing, links, paths, and digit collection activity can all be monitored from the Port Display screen.

Specify the port for which information is displayed by either hardware or port address. When you access this screen via the Card Display screen, the card's physical location is already shown in the hardware address field. The majority of the fields on the Port Display screen are for display only; no actions can be performed on this port from this screen.

Information on virtual call generation ports can also be displayed from the Port Display screen. The R,L,S address for all virtual call generation ports is 0,0,0; the port numbers range from 1 to 999. Virtual call generation ports are assigned contiguous logical port addresses from $8000 to $83E6. Refer to the "Display Call Generation Ports" section on page 6-28 for more information on virtual call generation ports.

Accessing the Port Display Screen

Complete the following steps to access the Port Display screen:

Step 1   Access the Diagnostics Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **C** and press **Enter**.

The Port Display screen appears (see Figure 6-5). The cursor is located in the R L S P field.

Figure 6-5   Port Display Screen

```
                        P O R T    D I S P L A Y


RLSP:   _ _ ____ ___   PA ____   COS _____   TRACE: Host _  NBC _  Voice _
CURRENT STATE           In/Outpulse Rule ___   Token      ___      CURRENT LINKS
Major        _____   Resource Group  ___   Conference ___      R L S   P
Supplementary _____  Listening To RLSP   _ _ ____ ___  PA ___ _ _ ____ ___
ISDN IN SERV I_CONNECT  Conf/Assoc Port RLSP _ _ ____ ___  PA ___ _ _ ____ ___
Call ID      ____                                             _ _ ____ ___
Port Pointer          _____       Attempts       ____      _ _ ____ ___
Dynamic Port Pointer  _____       Completions    ____      _ _ ____ ___
Start Record Pointer  _____       Errors/Threshold  ___/___ _ _ ____ ___
End Record Pointer    _____       Rehunts/Threshold ___/___ _ _ ____ ___
                                                              _ _ ____ ___
ANI ___ _____      _ _ ____ ___
(1) ___ _____
(2) ___ _____
(3) ___ _____
(4) ___ _____
        _____
        _____
```
48305

You can access the Port Display screen in several different ways. Refer to the following sections for information on how to access the Port Display screen from various administration screens:

- "Accessing the Port Display Screen from the Card Display Screen" section on page 6-10.
- "Accessing Other Screens from the Conference Display Screen" section on page 6-21.
- "Accessing Other Screens from the Call Generation Ports Display Screen" section on page 6-30.

The Port Display consists of one screen. Use the **Print Screen** key to obtain a hard copy of this screen. Once a port is selected for display, the information is updated every few seconds to show the current status. You can stop the updates by pressing any key except **Print Screen** or **Hold**. Updating resumes when you press **Enter**. Press the **Hold** key to freeze the screen display; press it again to continue the screen updates.

Port Display Screen Field Definitions

The contents of the fields in the Port Display screen depend upon the status of the port. The fields are as follows:

R L S P—*Data entry via main keypad*. Specifies the rack-level-slot/group/span-port hardware address (physical location) of the port for which data is displayed. The port can also be specified by port address; in this case, this field displays the port's hardware address.

Note   For programmable trunk cards, you must specify a span as well as the slot or the "Interface Required" message appears.

PA—*Data entry via main keypad.* Port Address; specifies the software address (hexadecimal logical identifier) of the port for which data is displayed. The port can also be specified by hardware address; in this case, this field displays the port's software address.

COS—*Display only.* Applies to network interface circuits only. Indicates the class of service assigned to this port via the Line and Trunk Card Configuration screens (refer to the "Trunk Card Configuration" section on page 3-11). The COS assigned in the database is always displayed for the port; any internal COS is displayed in addition to the database value. Valid values are:

> O—Originating. Calls originating from the system; outgoing calls initiated by host command.

> T—Terminating. Calls terminating at the system; incoming calls initiated by actions outside the system; can also be an internal COS representation for a port with COS = 2 or that is currently in use as an incoming circuit.

> U—Internal representation for a port with COS = 2 or A2 that is currently in use as an outgoing circuit.

> C—Internal representation for any port currently involved in a conference.

> 2—2-Way. Calls originating from the system or calls terminating at the system; outgoing calls initiated by host command, incoming calls initiated by outside actions or forced by host command.

> AO—Always Off-hook and Originating. Calls originating from the system; port goes off-hook at system reset and remains off-hook; outgoing calls initiated by host command.

> AT—Always Off-hook and Terminating. Calls terminating at the system; port goes off-hook at system reset and remains off-hook; incoming calls initiated by outside actions or forced by host command.

TRACE: Host, NBC, Voice—*Data entry via main keypad.* Use these three fields to enable/disable host, NBC, or voice path tracing for the port displayed. To enable tracing, set the field(s) to 1; to disable trace, set the fields to 0. These fields function when the Port Addresses field(s) on the System Trace Configuration screen are set to SELECTED. Refer to the "System Trace Configuration" section on page 6-34 for more information on the Trace function.

CURRENT STATE—*Display only.* Two fields that show the current call processing activity for the port specified. If no activity is present, the major state is CP_IDLE. Refer to the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* for more information on major and supplementary states. Two additional fields are provided for information on ISDN port and call states, and are displayed only for ISDN channels. Refer to the *Cisco VCO/4K ISDN Supplement* for a listing of ISDN port and call states.

In/Outpulse Rule, Token—*Display only.* These two fields apply to network interface circuits only, and show the rule and token currently being processed. Rules are defined from the Inpulse and Outpulse Rules Table screens (refer to the "Outpulse Rules Table" section on page 3-55). If no rule processing is taking place, these fields are blank. When the major state is CP_INPULSE, these fields represent inpulse rule processing; otherwise, the data in these fields represents outpulse rule processing. The rule number is prefixed with I (inpulse) or O (outpulse) to also indicate which type of rule is being processed.

Resource Group—*Display only.* Shows the resource group to which the specified port belongs. Assign ports to groups from the Resource Group Configuration screens (refer to the "Resource Group Configuration" section on page 3-34). A resource group of 0 indicates that this port does not belong to a group.

Conference—*Display only*; also used to access the Conference Display screens. Shows the conference in which the specified port is participating. This field is blank if the port is not currently involved in a conference. When data is displayed in this field, use the **Tab** key to advance the cursor to the Conference number field and access the Conference Display screen.

Listening to RLSP, PA—*Display only*; also used to change port for which data is displayed. Two fields that indicate whether a voice path exists between the specified port and another port. If these fields are blank, no voice path currently exists. Ports are indicated by both hardware and software address (system tones are indicated by software address only). When data is displayed in these fields, use the **Tab** key to advance the cursor to the RLSP field and display the data for that port.

Conf/Assoc Port RLSP, PA—*Display only*; also used to change port for which data is displayed. Applies to network interface circuits and DCC circuits only. If the displayed port is actively participating in a conference, these ports identify the conference port or associated line/trunk port with which the displayed port is linked. If these fields are blank, the displayed port is not actively participating in a conference. Ports are indicated by both hardware and software address. When the port displayed is a line or trunk port, the port identified by these fields is a conference port. When a conference port is displayed, the port identified by these fields is a line or trunk port. When data is displayed in these fields, use the **Tab** key to advance the cursor to the RLSP field and display the data for that port.

Call ID—*Display only*; ISDN channels only. Shows the call ID assigned to this call attempt by the system. Refer to the *Cisco VCO/4K ISDN Supplement* for more information.

Port Pointer, Dynamic Data Pointer, Start Record Pointer, End Record Pointer—*Display only*. Four fields that display specific memory locations used by call processing. These fields are used by Cisco Systems Technical Support and Engineering personnel. Start and End Record Pointers are displayed for network interface circuits only.

Attempts—*Display only*. For network interface circuits, shows the number of attempted calls on this port for the current statistics period. For internal service circuits, shows the number of times the port was linked into a call's resource chain. Maximum value for this counter is 255. The count is reset when the host sends the command to start a new collection period. If the statistics feature is not enabled, the count does not reset (the host command is returned with an error code) and continues to increment until the maximum value is reached. Refer to the *Cisco VCO/4K TeleRouter Reference Guide* for instructions for enabling the statistics feature.

Completions—*Display only*. For network interface circuits, shows the number of completed calls on this port for the current statistics period. No value is displayed for internal service circuits. Maximum value for this counter is 255.

Errors/Threshold—*Display only*. Shows the number of supervision errors detected for this port (applies to network interface ports only) and the current error threshold value (when the ports are removed from service). Use the Resource Group Summary screen to set the error threshold. Refer to the "Resource Group Summary" section on page 3-31 for more information.

Rehunts/Threshold—*Display only*. Shows the number of times the current call has rehunted a resource group for a new outgoing port and the current threshold value (how many times the system rehunts before stopping and reporting a supervision error to the host). Displayed only when a call is active; otherwise the field remains blank. Set the rehunt threshold from the Resource Group Summary screen. Refer to the "Resource Group Summary" section on page 3-31 for more information.

CURRENT LINKS—*Display only*; also used to change port for which data is displayed. Provides a listing of the hardware address of all ports currently linked into the same resource chain or call as the specified port. If these fields are blank, no links currently exist. When data is displayed in these fields, use the **Tab** key to advance the cursor to each hardware address field and display the data for that port.

ANI—*Display only.* The first field on the line shows the format of the information contained in the field. The second field contains any digits collected due to inpulse rule processing (IP ANI token) or sent in by the host using an Outgoing Port Control ($69), Incoming Port Control ($6A), or ISDN Port Control ($49) command. Digits remain stored in this field for the duration of the call unless overwritten as a result of host command or inpulse rule processing. Valid values are:

BCD—Binary Coded Decimal; the standard system digit representation.

IA5—ASCII digits; contents stored as specified by ISDN Message Template processing of a D FLD token or a $49 command.

HEX—Hexadecimal information; contents stored as specified by ISDN Message Template processing of an I FLD or FLD token or $49 command.

(1) to (4)—*Display only.* The first field on each line shows the format of the information contained in the field. The second field contains any digits collected due to inpulse rule processing (IP Field [xx] token) or sent in by the host using an Outgoing Port Control ($69), Incoming Port Control ($6A), or ISDN Port Control ($49) command. Digits remain stored in this field for the duration of the call unless overwritten as a result of host command or inpulse rule processing. Valid values are:

BCD—Binary Coded Decimal; the standard system digit representation.

IA5—ASCII digits; contents stored as specified by ISDN Message Template processing of a D FLD token or $49 command.

HEX—Hexadecimal information; contents stored as specified by ISDN Message Template processing of an I FLD or FLD token or $49 command.

Displaying Port Data

Complete the following steps to view the current status of a port:

Step 1   Access the Port Display screen (refer to the "Accessing the Port Display Screen" section on page 6-10).

Step 2   Specify the port to display by using one of the following options—either by hardware or by software address:

- By hardware address: Type the value for the R L S P fields and press the **Next Field** key (if the Port Display screen was accessed from the Card Display, these fields are already filled in). Type the port value and press **Enter**.

  The screen is updated to show the current status of the port entered. The system continues to update this information every few seconds.

- By software address: Press the **Next Field** key until the cursor moves to the PA field. Type the port address and press **Enter**.

  The screen is updated to show the current status of the port entered. The system continues to update this information every few seconds.

Step 3   Stop the screen updates by completing one of the following options:

- To temporarily stop the screen updates, press the **Hold** key; press it again to resume screen updates.

- To stop the updates entirely, press any key except the **Print Screen** or **Hold** key. Updating stops and the cursor returns to the R,L,S,P fields.

Step 4   To display port data for any other port identified on the display, press **Tab** to move the cursor to that field and press **Enter**. The screen is updated with the current status of the new port. The system continues to update this information every few seconds.

Step 5 When no further ports are to be displayed, press the **Prev Menu** key to return to the Diagnostics Menu screen. If the Port Display screen was accessed from the Card Display or Conference Display, press the **Exit** key to return to the screen from which the Port Display was accessed. If the Port Display screen was accessed via the Diagnostics Menu screen, press the **Exit** key to return to the Diagnostics Menu screen.

Accessing Other Screens from the Port Display Screen

You can access the following screens from the Port Display screen:

- Card Display
- Conference Display
- Call Generation Ports Display

Accessing the Card Display Screen

Complete the following steps to access the Card Display screen from the Port Display screen:

Step 1 Stop the Port Display screen updates.

Step 2 Press the **Exit** key.

The Card Display screen appears.

Note This procedure is valid if the Port Display screen was accessed from the Card Display screen.

Accessing the Conference Display Screen

Complete the following steps to access the Conference Display screen from the Port Display screen:

Step 1 Stop the Port Display screen updates.

Step 2 Complete one of the following options, which is dependent upon how you accessed the Port Display screen:

- If the Port Display screen was accessed from the Conference Display screen, press the **Exit** key. The Conference Display screen appears. Do not proceed to further steps.
- If the Port Display screen was accessed from any other screen than the Port Display screen, press Tab until the cursor moves to the Conference field.

Note There must be a conference number shown in the Conference field.

Step 3 Press **Enter**.

The Conference Display screen associated with the conference number contained in Step 2.

Refer to the "Display Conference Data" section on page 6-18 for more information on the Conference Display screen.

Accessing the Call Generation Ports Display Screen

Complete the following steps to access the Card Display screen from the Port Display screen:

Step 1   Stop the Port Display screen updates.

Step 2   Press the **Exit** key.

The Call Generation Ports Display screen appears.

> **Note**   This procedure is valid if the Port Display screen was accessed from the Call Generation Ports Display screen.

Refer to the "Display Call Generation Ports" section on page 6-28 for more information on the Call Generation Ports Display screen.

Display Conference Summary

The Conference Menu option lists all conference structures in the system. A conference structure consists of all conference ports allocated to a conference and their associated line/trunk ports, if any. Up to eight conference ports can be allocated to a single conference structure. The number of line or trunk ports in a conference can vary according to the type of voice path. A conference structure exists for as long as there are conference ports allocated to it. Up to 255 conference structures can exist simultaneously.

Conferences are controlled by the host using the Conference Control ($6D) command. For more information on this command and on conferencing, refer to the *Cisco VCO/4K Standard Programming Reference*, the *Cisco VCO/4K Extended Programming Reference*, and the *Cisco VCO/4K Conferencing Guide*.

Accessing the Conference Menu Screen

Complete the following steps to access the Conference Menu screen:

Step 1   Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **D** and press **Enter**.

Step 3   The Conference Menu screen appears (see Figure 6-6). The cursor is located in the Disp field.

Figure 6-6   Conference Menu

```
                    C O N F E R E N C E    M E N U

        CONF PORTS   LINES/TRNKS                CONF PORTS   LINES/TRNKS
   No   Alloc Unused  1Way 2Way  Disp      No   Alloc Unused  1Way 2Way  Disp
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
   ──    ─    ─       ───   ─     ─        ──    ─    ─       ───   ─     ─
```

The Conference menu can consist of up to four screens, each containing listings for up to 32 conferences. Use the **Prev Screen** and **Next Screen** keys to page through the listings. Press the **Print Screen** key to obtain a hard copy of any of these screens.

Conference Menu Screen Field Definitions

The Conference menu consists of the following fields and categories:

No—*Display only.* Shows the conference structure by the number call processing has assigned to it. Conference numbers range from 1 to 255.

CONF PORTS—*Display only.* Two fields that show the number of conference ports in the corresponding conference structure and how many are associated with line/trunk ports.

Alloc—Allocated; indicates the number of conference ports allocated to this conference that are currently associated with a line/trunk (being used). Ports are allocated using the Conference Control ($6D) command. The number of allocated ports can range from 1 to 8.

Unused—Indicates the number of conference ports allocated to this conference that are not currently associated with line/trunk ports (reserved but not currently used). The number of unused ports can range from 0 to 8.

LINES/TRNKS—*Display only.* Line and trunk ports; two fields that show the number of line/trunk ports that are actively participating in the corresponding conference.

1Way—Indicates the number of listen-only parties in the conference. Each one-way party corresponds to an actively participating line or trunk port. All one-way parties are associated with a single conference port in the conference structure. An unlimited number of one-way parties can participate in a conference; however, the screen displays from 0 to 999 only.

2Way—Indicates the number of talk-and-listen parties in the conference. Each two-way party corresponds to an actively participating line or trunk port. Each two-way party is associated with its own conference port in the conference structure. The number of two-way parties in a conference can range from 0 to 8.

Disp field—Data entry via main keypad, access to another screen(s). Display Conference; provides access to the Conference Display screen. Refer to the "Accessing Other Screens from the Conference Menu Screen" section on page 6-18 for instructions.

Accessing Other Screens from the Conference Menu Screen

You can access the following screens from the Conference Menu screen:

- Port Display
- Conference Display

Accessing the Port Display Screen

Complete the following steps to access the Port Display screen from the Conference Menu screen:

Step 1   Access the Conference Menu screen from Port Display screen.

Step 2   Press the **Exit** key.

The Port Display screen appears.

> **Note**   This procedure is valid if the Conference Menu screen was accessed from the Port Display screen.

Accessing the Conference Display Screen

Complete the following steps the access the Conference Display screen from the Conference Menu screen:

Step 1   Use the **Prev Menu** or **Next Field** key and move the cursor to the Disp field that corresponds to the conference number for which you want to display information.

Step 2   Type any character and press **Enter**.

The Conference Display screen appears.

Display Conference Data

Use the Conference Display option to view the status and participating line, trunk, and conference ports for any conference structure. Conferences are controlled by the host using the Conference Control ($6D) command. For more information on this command and on conferencing, refer to the *Cisco VCO/4K Standard Programming Reference*, the *Cisco VCO/4K Extended Programming Reference*, and the *Cisco VCO/4K Conferencing Guide*.

Accessing the Conference Display Screen

Complete the following steps to access the Conference Display screen:

Step 1 Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2 Type **E** and press **Enter**.

The Conference Display screen appears (see Figure 6-7). The cursor is located in the Conference No. field.

Figure 6-7   Conference Display Screen

The Conference Display screen can consist of multiple screens, each containing listings for up to 14 conference parties. Use the **Prev Screen** and **Next Screen** keys to page through the listings. Use the **Print Screen** key to obtain a hard copy of any of these screens.

Conference Display Screen Field Definitions

The Conference Display screen consists of the following fields:

Conference No.—*Data entry via main keypad.* A single field that specifies the conference structure for which to display data. Conference numbers are assigned by call processing when the conference structure is created. Conference numbers range from 1 to 255.

Status—*Display only.* Shows the current status of the conference structure for which data is displayed. Valid values are:

Active—Lines and trunks are assigned and participating in a conference.

Reserved—Conference ports are reserved but no lines or trunks are currently active.

Avail.—*Display only.* Shows the number of conference ports that are reserved for this conference but are not currently active (in use). The number of available conference ports can range from 0 to 8.

Act.—*Display only.* Active; shows the number of conference ports in use in this conference. The number of active conference ports can range from 0 to 8.

CONFERENCE PORTS—*Display only.* Identifies the conference ports allocated to this conference structure, gain or attenuation adjustment for each conference port, the number of line/trunk ports associated with a conference port, and whether the conference port is used for a one- or two-way path. If one or more line/trunk ports are associated with a conference port, that conference port is listed only for the first. Subsequent entries for that conference port are left blank until the list for the next conference port begins. The RLSP fields can also be used to access the Port Display screen for any conference port displayed.

RLSP—Specifies the physical location (R-L-S/G/S-P hardware address) of the conference port. Also used to access the Port Display screen.

PA—Port Address; specifies the software address (hexadecimal logical identifier) of the conference port.

In Scale—*Display only.* Shows adjustment, if any, made to the input level to this conference port. There are 15 preset adjustments ranging from –15 dB to +6 dB (–15, –13.5, –12, –10.5, –9, –7.5, –6, –4.5, –3, –2, –1, +1.5, +3, +4.5, and +6).

Out Scale—*Display only.* Shows adjustment, if any, made to the output level from this conference port. Valid values are 0 (no adjustment) and –3 dB (decrease by 3 dB).

Users—*Display only.* Shows the number of line/trunk ports listening to a conference port.

Path Type—Indicates the type of voice path for this conference port. If the path type is two-way, only one user is allowed for a conference port. If the path type is one-way, valid values for this field are from 1 to 999. Valid values are:

1—One-way, listen only.

2—Two-way, talk and listen.

> **Note**   When using the Communication Assistance for Law Enforcement Act (CALEA) feature, the Path Type displays 2, which incorrectly indicates a two-way conference. CALEA conferences are one-way, talk only.

LINE/TRUNK PORT—*Display only.* Shows the line or trunk ports actively participating in this conference. If the conference status is Reserved, no line or trunk ports are listed.

RLSP—Four fields that specify the physical location (R-L-S/G/S-P hardware address) of the line/trunk port associated with the corresponding conference port. Also provides access to the Port Display screen.

PA—Port Address; specifies the software address (hexadecimal logical identifier) of the line/trunk port associated with the corresponding conference port.

Displaying a Conference

Complete the following steps to display all ports and information about a conference:

Step 1   Access the Conference Display screen (refer to the "Accessing the Conference Display Screen" section on page 6-19).

The cursor is located in the Conference No. field. If the Conference Display screen is accessed from the Conference Menu or Port Display screen, the Conference Display screen contains the conference number; otherwise this field is blank.

Step 2   Type the number of the conference for which you want to view information or leave the conference number already there unchanged (if accessed via the Conference menu or Port Display screen) and press **Enter**.

The screen displays the current status of the conference entered. The system continues to update this information every few seconds.

Step 3   Stop the screen updates by completing one of the following options:

- To stop the screen updates temporarily, press the **Hold** key; press it again to resume screen updates.
- To stop the screen updates entirely, press any key except the **Print Screen** or **Hold** key. Updating stops and the cursor returns to the Conference No. field.

Step 4   Repeat Step 2 or access the Port Display screen (refer to the "Accessing the Port Display Screen" section on page 6-10).

Step 5   To return to the Diagnostics menu, press the **Prev Menu** key. If the Conference Display screen was accessed from the Conference Menu or Port Display screen, press the **Exit** key to return to the screen from which the Conference Display screen was accessed; otherwise press the **Exit** key to return to the Diagnostics Menu screen.

Accessing Other Screens from the Conference Display Screen

You can access the following screens from the Conference Display screen:

- Conference Menu
- Port Display

Accessing the Conference Menu Screen

Complete the following steps to access the Conference Menu screen from the Conference Display screen:

Step 1   Access the Conference Display screen from the Conference Menu screen.

Step 2   Press the **Exit** key.

The Conference Menu screen appears.

Note   This procedure is valid if the Conference Display screen was accessed from the Conference Menu screen.

Accessing the Port Display Screen

Complete the following steps to access the Port Display screen from the Conference Display screen:

Step 1   Stop the Conference Display screen updates.

Step 2 Complete one of the following options, which depends upon how you accessed the Conference Display screen:

- If you accessed the Conference Display screen via the Port Display screen, press the **Exit** key.

  The Port Display screen appears.

- If you accessed the Conference Display screen from the Diagnostics Menu screen, the cursor moves to the Conference No. field. Press **Tab** until the cursor moves to the R L S P field of any line, trunk, or conference port displayed. Press **Enter**.

  The Port Display screen is displayed for that hardware address.

Test Service Circuits

Use Test Service Circuits to test individual circuits on DTMF Receiver Cards (DRCs), MF Receiver Cards (MRCs) and Call Progress Analyzer cards (CPAs). You can test any or all receiver ports on the same card with a single command. Ports are tested in sequential order from the start port you specify to the end port you specify. You can also set this test to loop continuously so that each port is tested in sequence. The cycle is repeated until you terminate it.

When testing a DRC or MRC, a path is set between the selected circuit(s) and an outpulse channel; digits are then sent to that receiver. The system compares the digits sent with the digits received. If any discrepancies are detected, an error message and the two digit strings are sent to the error log and the system printer.

When testing a CPA card, dial tone, ringback, ringback cessation, busy, and reorder tone events are presented by the Digital Tone Generator (DTG) card to the CPA port(s) for detection. Any discrepancy between the presented tone and the reported detection is pegged as a test failure for the CPA port(s). Logfile and system printer error messages specify the port's address and the type of tone it failed to detect.

A port on a line/trunk or receiver port can be used to monitor the test. This port listens to the voice path between the service circuit being tested and the resource providing test digits or tones. By monitoring the digits and tones being passed, you can determine the exact point of test failure.

From the Card Maintenance screen, place the card on which the receiver ports reside in Diagnostic mode before you test it. If the card is not in Diagnostic mode, an error message appears and the test command is aborted. Take the port out of service from the Card Maintenance screen or a Change Port Status ($90) host command (refer to the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*).

If any ports are active when the card is placed in Diagnostic mode, the card automatically goes into Camped On mode. The Service Circuit Test function can be run on a card in Camped On mode; the test skips any nonidle ports on the card.

Press any key to abort a service circuit test in progress.

Accessing the Service Circuit Test Utility Screen

Complete the following steps to access the Service Circuit Test Utility screen:

Step 1 Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **F** and press **Enter**.

The Service Circuit Test Utility screen appears (see Figure 6-8). The cursor is located in the Receiver R,L,S field.

Figure 6-8   Service Circuit Test Utility Screen

```
        S E R V I C E    C I R C U I T    T E S T    U T I L I T Y

        Receiver R,L,S    _ _ ___              Card Type ____
        DVC/IPRC R,L,S,P  _ _ ___ _            Monitor R,L,S,P _ _ ___ _

        Start Test at Port __            End Test at Port __

        Print Error Messages Only (Y/N) _
        Continually Loop Through Test (Y/N) _


        NOTE: Port numbers start at 1.  The start port MUST
              be specified.  If the end port is not specified,
              or if the end port is less than or equal to the
              start port, only the start port will be tested.
              Card must be previously put into the Diagnostic
              mode from the Card Maintenance Menu.
```

48388

The Service Circuit Test Utility consists of one screen. Use the **Print Screen** key to obtain a hard copy of this screen.

Service Circuit Test Utility Screen Field Definitions

The Service Circuit Test Utility screen contains the following fields:

Receiver R,L,S—*Data entry via main keypad*. Specifies the physical location (R,L,S hardware address) of the receiver card on which the tested ports reside.

Card Type—*Display only*. Shows the type of card selected. Possible values for this field are described in Table 3-1 of the "Accessing the Database Administration Menu Screen" section on page 3-3.

Monitor R,L,S,P—*Data entry via main keypad*. Four fields that specify the physical location (R,L,S,P port address) of a port on a line/trunk card or receiver card used to monitor the test. This port monitors the reception of test digits, spoken digits, and call progress tones. Possible port types include:

CPA

DRC

SLIC

DID

UTC

Single Span T1/E1

Four Span T1/E1

MVDC T1

ICC T1/E1

E + M

DCC

Start Test at Port—*Data entry via main keypad*. Specifies the port with which to begin the test. If you do not specify a Start Test at Port value, the test is not performed. Valid values are determined by the number of ports supported by the card type:

CPA—1 to 24

DRC—1 to 8

DRC 24/48—1 to 24 or 1 to 48

MRC—1 to 8

MFCR2—1 to 8

End Test at Port—*Data entry via main keypad*. Specifies the port with which to end the test. If you do not specify a value, or the value is less than or equal to the start port value, only the port contained in the Start Test at Port field is tested. Valid values are determined by the number of ports supported by the card type:

CPA—1 to 24

DRC—1 to 8

DRC24/48—1 to 24 or 1 to 48

MRC—1 to 8

MFCR 2—1 to 8

IPRC— 1 to 8

IPRC 64/128—1 to 64 or 1 to 128

Print Error Messages Only (Y/N)—*Data entry via main keypad*. Specifies whether to display and print test results as the test is being conducted or only if an error occurs. Printing messages (output to screen and system printer) slows execution of the test. Valid values are **Y** (print only error messages if they occur) or **N** (print results of test for all ports).

Continually Loop Through Test (Y/N)—*Data entry via main keypad*. Specifies whether or not the test should loop (cycle through port tests repeatedly until loop is terminated by user). Valid values are **Y** (run a continuous loop of tests) or **N** (only execute test once). Pressing any key on the keyboard stops the test.

Testing a Service Circuit

Complete the following steps to test one or more CPA, DTMF or MF receiver ports:

Step 1   Access the Service Circuit Test Utility screen (refer to the "Accessing the Service Circuit Test Utility Screen" section on page 6-22.

Step 2   Type the physical location of the receiver card—type the rack/cabinet number, level number, and slot/group/span number, and press the **Next Field** key after each field.

The cursor moves to the Monitor R,L,S,P field.

Step 3   If the test is to be monitored, proceed to Step 4; otherwise, proceed to Step 7.

Step 4   Press the **Tab** or **Next Field** key to advance the cursor to the Start Test at Port field.

Step 5   Type the physical location of the monitoring port.

✎

Note   This port must be deactivated.

Step 6   Type the rack/cabinet number, level number, and slot/group/span number and press the **Next Field** key after each field.

The cursor moves to the Start Test at Port field.

Step 7   Type the port number with which to begin the test and press the **Next Field** key.

The cursor moves to the End Test at Port field.

Step 8   Type the port number with which to end the test and press the **Next Field** key.

The cursor moves to the Print Error Messages Only (Y/N) field.

Step 9   Choose the test reporting type by typing **Y** or **N**.

The cursor moves to the Continually Loop Through Test (Y/N) field.

Step 10   Choose the looping mode or single test execution mode by typing **Y** or **N** and press **Enter**.

The Card Type field is updated to show the type of receiver card specified, and the "Rcvr X, Test Y" message appears. X is the number of the port currently being tested and Y is the cumulative number of tests that were run.

If you chose loop mode, the tests run continuously until you press any key. When all ports are tested or the test loop is terminated, either the "Test Loop Complete ATP" or the "Test Loop Complete STF" message appears. ATP = All Tests Passed and STF = Some Tests Failed. The cursor returns to the R,L,S data entry field. The system printer logs all failed tests.

Step 11   Press the **Exit** key to return to the Diagnostics Menu screen.

✎

Note   To abort a test in progress, press any key. Once the test is aborted, press **Exit** to return to the Diagnostics menu.

Test Port Card

Use the Test Port Card function to test individual Single Span T1, Four Span T1, MVDC T1, or ICC T1/E1 card channels or ISDN B-channels. The test sets a path over the selected channel(s) between selected DTMF or MF receiver circuit(s) and a tone channel, then sends digits to the receiver. The system compares the digits sent with the digits received. If any discrepancies are detected, an error message, the two digit test strings, and the addresses of the channel are sent to the error log and the system printer. You can test any or all channels on the same card with a single command. Channels are tested in sequential order from the start channel you specify to the end channel you specify.

✎

Note   PRI D-channels cannot be tested using this utility.

Before a test is performed, you must use the Card Maintenance screen to place the cards on which the channels and receiver ports reside in Diagnostic mode. If either card is not in Diagnostic mode, an error message appears and the test command is aborted.

The card is put into a local loopback state which ends any active calls when placed in Diagnostic mode. Press any key to abort a test in progress. Channel looping across spans is not supported.

Accessing the Test Port Card Screen

Complete the following steps to access the Test Port Card screen:

Step 1   Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **G** and press **Enter**.

The Test Port Card screen appears (see Figure 6-9). The cursor is located in the Port Card R,L,S field.

Figure 6-9   Test Port Card Screen

```
                     T E S T    P O R T    C A R D


     Port Card  R,L,S  _ _ ___          Start Channel 1    End Channel 24


     MRC/DRC    R,L,S  _ _ ___          Start Port 1       End Port 8


     Port Card Type    ____             Receiver Type ____

     Print Error Messages Only (Y/N) Y
     Continually Loop Through Test (Y/N) N


     NOTE:       Both cards used for this test MUST FIRST be placed in
                 Diagnostic mode using the Card Maintenance Screen.
```

The Test Port Card consists of one screen. Press the **Print Screen** key to obtain a hard copy of this screen.

Test Port Card Screen Field Definitions

The Test Port Card screen contains the following fields:

Port Card R,L,S—Data entry via main keypad. Specifies the physical location (R,L,S hardware address) of the card where the tested channels reside.

Start Channel — Data entry via main keypad. Specifies the channel with which to begin the test; this field must be specified or the default port, port 1, is used. Possible values are the following cards:

Single Span T1—1 to 24

Four Span T1—1 to 24

ICC T1—1 to 24

MVDC T1—1 to 24

ISDN PRI (channel 24, the D-channel, cannot be tested using this utility)—1 to 23

Single Span E1—1 to 32

Four Span E1—1 to 32

ICC E1—1 to 32

E1-PRI—1 to 32

End Channel — Data entry via main keypad. Specifies the channel with which to end the test. If you do not specify a value, or the value is less than or equal to the Start Channel value, only the port contained in that field is tested. Valid values are 1 to 24 for T1 protocols, and 1 to 32 for E1 protocols.

MRC/DRC R,L,S — Data entry via main keypad. Specifies the physical location (R,L,S hardware address) of the receiver card where the ports to be tested reside.

Start Port — Data entry via main keypad. Specifies the receiver port with which to begin the test. If you do not specify a port, the test is not performed. Valid values are 1 to 48.

End Port — Data entry via main keypad. Specifies the port with which to end the test. If you do not specify a port, or the value is less than or equal to the start port value, only the port contained in the Start Test at Port field is tested. Valid values are 1 to 48.

Port Card Type — Display only. Shows the port card type. Possible values for this field are described in Table 3-1 of the "Accessing the Database Administration Menu Screen" section on page 3-3.

Receiver Type — Display only. Shows the receiver card type. Possible values for this field are described in Table 3-1 of the "Accessing the Database Administration Menu Screen" section on page 3-3.

Print Error Messages Only (Y/N) — Data entry via main keypad. Specifies whether to display and print test results as the test is being conducted or only if an error occurs. Printing messages (output to screen and system printer) slows execution of the test. Valid values are **Y** (yes, print only error messages if they occur) or **N** (no, print results of test for all ports). Press any key on the keyboard to stop the test.

Continually Loop Through Test (Y/N) — Data entry via main keypad. Specifies whether to loop (cycle through port tests repeatedly) until you terminate the loop. Valid values are **Y** (yes, run a continuous loop of tests), or **N** (no, run one cycle of tests). Only error messages are printed in loop mode. Press any key on the keyboard to stop the test.

Testing a Channel

Complete the following steps to test one or more channels:

Step 1   Access the Test Port Card screen (refer to the "Accessing the Test Port Card Screen" section on page 6-26

Step 2   Type the rack/cabinet number, level number, and slot/group/span number (physical location of the port card) and press the **Next Field** key after each field.

> **Note**   The card must be in Diagnostic mode.

The cursor moves to the Start Channel field.

Step 3   Type the channel number with which to begin the test and press the **Next Field** key.

The cursor moves to the End Channel field.

Step 4   Type the T1 channel number with which to end the test and press the **Next Field** key.

The cursor moves to the MRC/DRC R,L,S field.

Step 5   Type the rack/cabinet number, level number, and slot/group/span number (physical location of the receiver card) and press the **Next Field** key after each field.

✎
Note   The card must be in Diagnostic mode.

The cursor moves to the Start Port field.

Step 6   Type the port number with which to begin the test and press the **Next Field** key.

The cursor moves to the End Port field.

Step 7   Type the port number with which to end the test and press the **Next Field** key.

The cursor skips the Port Card Type and Receiver Type fields and moves to the Print Error Messages Only (Y/N) field.

Step 8   Type **Y** or **N**, depending upon whether you want to view all the test results or only error messages, and press the **Next Field** key.

The cursor moves to the Continually Loop Through Test (Y/N) field.

Step 9   Type **Y** or **N**, depending on whether you want to run a continuous test loop, and press **Enter**.

The Port Card Type and the Receiver Type fields are updated to show the type of receiver card specified and testing begins.

If all messages are printed, the display shows the address of the channels and receiver circuits currently being tested, with a pass/fail indication.

If you chose loop mode, the tests run continuously until you press any key. When all ports are tested or you terminate the test loop, either the "Test Loop Complete ATP" or "Test Loop Complete STF" message appears. ATP = All Tests Passed and STF = Some Tests Failed. The system printer logs all failed tests.

The cursor returns to the Port Card R,L,S field.

Step 10   Press the **Exit** key to return to the Diagnostics Menu screen.

To abort a test once the card is initialized, press any key. Once the test is aborted, press the **Exit** key to return to the Diagnostics Menu screen.

Display Call Generation Ports

Use Display Call Generation Ports option to view the status of all virtual call generation ports. A virtual port is a logical entity maintained by system internal processing. An internal resource group of 999 virtual ports is available for use in the system. This screen also provides access to the Port Display screen for viewing individual ports.

Accessing the Call Generation Ports Display Screen

Complete the following steps to access the Call Generation Ports Display screen:

Step 1 Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2 Type **H** and press **Enter**.

The Call Generation Ports Display screen appears (see Figure 6-10). The cursor is located in the Display Port (Y/N) field.

Figure 6-10   Call Generation Ports Display Screen

```
        C A L L    G E N E R A T I O N    P O R T S    D I S P L A Y
        Total In Use 0      Start Port #: 1      Display Port (Y/N) N

PORT STATUS (0/1) NO.              NO.           NO.           NO.
Idle/In Use       1    00000000   9   00000000  17  00000000  25   00000000
     Trace Off/On      00000000       00000000      00000000       00000000
Idle/In Use       33   00000000   41  00000000  49  00000000  57   00000000
     Trace Off/On      00000000       00000000      00000000       00000000
Idle/In Use       65   00000000   73  00000000  81  00000000  89   00000000
     Trace Off/On      00000000       00000000      00000000       00000000
Idle/In Use       97   00000000   105 00000000  113 00000000  121  00000000
     Trace Off/On      00000000       00000000      00000000       00000000
Idle/In Use       129  00000000   137 00000000  145 00000000  153  00000000
     Trace Off/On      00000000       00000000      00000000       00000000
Idle/In Use       161  00000000   169 00000000  177 00000000  185  00000000
     Trace Off/On      00000000       00000000      00000000       00000000
Idle/In Use       193  00000000   201 00000000  209 00000000  217  00000000
     Trace Off/On      00000000       00000000      00000000       00000000
Idle/In Use       225  00000000   233 00000000  241 00000000  249  00000000
     Trace Off/On      00000000       00000000      00000000       00000000
```
48318

The Call Generation Ports Display option consists of multiple screens. Use the **Print Screen** key to obtain a hard copy of this screen. If you choose to display all ports, the information is updated every few seconds to show the current status. To stop the updates, press any key except the **Print Screen** or **Hold** key. To resume updating, press **Enter**.

Call Generation Ports Display Screen Field Definitions

The Call Generation Ports Display screen contains the following fields:

Total in Use—*Display only.* Shows the total number of ports currently in use. Valid values are from 1 to 999.

Start Port #:—*Data entry via main keypad.* Use this field to navigate to a particular port.

Display Port (Y/N)—*Data entry via main keypad*; all card types. Provides direct access to the Port Display screen so you can view the status of individual ports.

PORT STATUS—*Display only.* A group of fields that display per-port information for call generation. The fields that make up this area are arranged in groups of eight contiguous ports. Information for 999 virtual ports is displayed in this area. A binary bit represents each port, with the ports listed in increasing order from left to right. The port number listed under the NO. heading corresponds to the left-most bit in the column.

Idle/In Use—Shows whether the port is currently linked into a call. Valid values are 0 for Idle or 1 for In Use.

Trace Off/On—Data entry via main keypad. Use these fields to enable/disable host message tracing for individual virtual call generation ports. To enable tracing, set the field(s) to 1; to disable trace, set the fields to 0. These fields are used by Cisco TAC and Engineering personnel.

Displaying Call Generation Port Data

Complete the following steps to view the current status of virtual call generation ports:

Step 1   Access the Call Generation Port Display screen (refer to the "Accessing the Call Generation Ports Display Screen" section on page 6-28. T

The cursor is located in the Display Port (Y/N) field.

Step 2   Complete one of the following options to choose between viewing all call generation ports or a specific port:

- To view the status of all call generation ports, press **Enter** for the default value of **N** in the Display Port (Y/N) field.

  The screen displays the status of each virtual call generation port. The system continues to update this information every few seconds.

- To view the status of individual call generation ports, type **Y** and press **Enter**.

  The Port Display screen is displayed for the internal R,L,S address 0,0,0. Refer to the "Display Port Data" section on page 6-10 for more information about using the Port Display screen.

Step 3   Stop the screen updates by completing one of the following options:

- To temporarily stop the screen updates, press the **Hold** key; press it again to resume screen updates.

- To stop the updates entirely, press any key except the **Print Screen** or **Hold** key. Updating stops and the cursor returns to the Display Port (Y/N) field.

Step 4   Press the **Exit** or **Prev Menu** key to return to the Diagnostics Menu screen.

Accessing Other Screens from the Call Generation Ports Display Screen

You can access the Port Display screen from the Call Generation Ports Display screen. Complete the following steps:

Step 1   Stop the screen updates.

The cursor moves to the Display Port (Y/N) field.

Step 2   Type **Y** and press **Enter**.

The Port Display screen appears.

Monitor Call Progress Tones

Use the Call Progress Tone Monitor option to verify the detection of call progress tones on a line/trunk port. A monitoring CPA port detects all signaling events occurring during a call. Event detections are shown on the screen and, optionally, on the system printer. Current port states and transitions for the monitored line/trunk port and any attached line/trunk port are displayed. The outpulse rule processed and current token being executed are also maintained.

Monitoring can continue while you perform other types of system administration. The Print option on the screen allows the test to continue and monitored events to be printed to the system printer after you exit the display. If you choose the Print option, you must manually deactivate the diagnostic.

Deactivate the CPA port used for monitoring via the Card Maintenance screen or a Change Port Status ($90) host command. If you do not deactivate the port, an error message appears immediately after the CPA port address is entered.

Accessing the Call Progress Tone Monitor Screen

Complete the following steps to access the Call Progress Tone Monitor screen:

Step 1   Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **I** and press **Enter**.

The Call Progress Tone Monitor screen appears (see Figure 6-11). The cursor is located in the CPA, RLSP field.

Figure 6-11   Call Progress Tone Monitor Screen

```
              C A L L    P R O G R E S S    T O N E    M O N I T O R

CPA        RLSP _ _ ____ ___     PA ____      Print (Y/N) N

Monitor   RLSP _ _ ____ ___     PA ____              RLSP _ _ ____ ___  PA ____
  Major State  _____                   Major State  _____
  Supplementary_____                   Supplementary_____
  Outpulse Rule__  Token _____          Outpulse Rule__ Token _____

   Event #   Supervisory Events                     SDS Actions
```

The Call Progress Tone Monitor option consists of one screen. Press the **Print Screen** key to obtain a hard copy of this screen.

Call Progress Tone Monitor Screen Field Definitions

The Call Progress Tone Monitor screen contains the following fields:

CPA, RLSP—*Data entry via main keypad*. Specifies the physical location (R,L,S/G/S,P hardware address) of the CPA port to be used to monitor tones from the specified line/trunk port. You can also specify the port by port address; in this case, the field displays the port's hardware address.

CPA, PA—*Data entry via main keypad*. Specifies the logical port address of the CPA port to be used to monitor tones from the specified line/trunk port. You can also specify the port by R,L,S/G/S,P; in this case, the field displays the port's logical address.

Print (Y/N)—*Data entry via main keypad*. Specifies whether to print supervisory events and system actions to the system printer and to continue the monitoring after you exit the display. Valid values are Y (yes, print monitored events and continue monitor upon screen exit) or N (no, do not print log of events and stop monitoring when the screen is exited).

Monitor, RLSP—*Data entry via main keypad*. Specifies the physical location (R,L,S/G/S,P hardware address) of the line/trunk port being monitored. You can also specify the port by port address; in this case, the field displays the port's hardware address.

Monitor, PA—*Data entry via main keypad*. Specifies the logical port address of the line/trunk port being monitored. You can also specify the port by R,L,S/G/S,P; in this case, this field is used to display the port's logical address.

RLSP (Incoming/Outgoing)—*Display only*. Shows the hardware address of the line/trunk port attached to the monitored port. If the monitored port is an incoming line/trunk port, Outgoing precedes the hardware address. If the monitored port is an outgoing line/trunk port, Incoming precedes the hardware address.

PA (Incoming/Outgoing)—*Display only*. Shows the software address of the line/trunk port attached to the monitored port. If the monitored port is an incoming line/trunk port, Outgoing precedes the RLSP hardware address fields. If the monitored port is an outgoing line/trunk port, Incoming precedes the RLSP hardware address fields.

Major State—*Display only*. Shows the current call processing major state for the port specified. If no activity is present, the major state is CP_IDLE.

Supplementary—*Display only*. Shows the current call processing supplementary state for the port specified. If no activity is present, this field is blank.

Outpulse Rule, Token—*Display only*. Two fields that indicate the outpulse rule and token currently being processed. Rules are defined from the Outpulse Rules Table screens. If no rule processing is taking place, these fields are blank.

Event #—*Display only*. Shows the sequential order of the supervisory events. Values range from 1 to 99. Event numbers are reset each time the monitor is activated.

Supervisory Events—*Display only*. Shows the type of signaling event detected by the CPA monitoring the call. Valid events and their meanings are:

Dial Tone—The connected equipment is ready to receive digits.

Ringback—A connection is established to the called equipment.

Busy Tone—The called equipment is in use.

Reorder—Indicates an error condition (all circuits busy, etc.).

Sit Tones—Indicates additional information (special information tones).

Ringback Cess.—Silence immediately after presence of ringback is established.

Voice—Signal is within the range of human speech.

Voice Cess.—Silence detected immediately after presence of voice is established.

Pager Cue—Signal requesting the pager callback number.

SDS Actions—*Display only*. Shows the switch action corresponding to the supervisory event.

For detailed information on signal characteristics, refer to Chapter 3, "Database Administration."

Monitoring a Port

To monitor call progress tone events on a line/trunk port, follow these steps.

Step 1   Access the Call Progress Tone Monitor screen (refer to the "Accessing the Call Progress Tone Monitor Screen" section on page 6-31).

The cursor is located in the CPA, RLSP fields.

Step 2   Specify the monitoring CPA port to by using one of the following options—either by hardware or by software address:

- By hardware address: Type the value for the RLSP fields and press the **Next Field** key after entering each value.

  Press the **Next Field** key to skip over the PA field and move the cursor to the Print (Y/N) field.

- By software address: Press the **Next Field** key until the cursor moves to the PA field.

  Type the port address and press the **Next Field** key. The cursor moves to the Print (Y/N) field.

Step 3   Choose whether to print supervisory events, and whether to continue the monitoring after the user exits the utility, by typing **Y** or **N**.

The cursor moves to the Monitor RLSP fields.

Step 4   Specify the line/trunk port to monitor by using one of the following options—either by hardware or by software address:

- By hardware address: Type the value for the RLSP fields and press the **Next Field** key.

  Type the port value and press **Enter**.

- By software address: Press the **Next Field** key until the cursor moves to the PA field.

  Type the port address and press **Enter**.

If the monitored port is attached to another line/trunk port, the software and hardware addresses of the attached port appear on the screen. The screen displays the current port states, processed outpulse rules and tokens, and detected call progress tone events. The system continues to update this information every few seconds. If the Print (Y/N) option is enabled (set to **Y**), events are sent to the system printer in the following format:

```
DGN32: [EVENT] detected at RLSP X, X, XX, XX
```

Step 5   Stop the screen updates by completing one of the following options:

- To temporarily stop the screen updates, press the **Hold** key; press it again to resume screen updates.

- To stop the updates entirely, press any key except the **Print Screen** or **Hold**. key. Updating stops and the cursor returns to the CPA RLSP data entry fields.

Step 6   To return to the Diagnostics menu, press the **Prev Menu** or **Exit** key.

If the Print (Y/N) option is enabled (set to **Y**), the CPA port continues to monitor events after you exit the screen. Events are printed on the system printer. When you reaccess the Call Progress Tone Monitor screen, the previous data entered is redisplayed. To deactivate the monitoring, change the value in the Print (Y/N) field to **N** and exit the display. The screen data is cleared and no event messages are written to the system printer.

Display Routing Statistics

Use the Routing Statistics Display option to view the TeleRouter routing activity on an individual route or on all routes in a table. The screen shows routing attempts for a specified table and route. A utility is also provided to trace routing activity. An elapsed time counter indicates the duration of the statistics collection period.

Refer to the *Cisco VCO/4K TeleRouter Reference Guide* for Routing Statistics Display screen instructions.

System Trace Configuration

Use System Trace Configuration option to verify the exchange of messages between the host and the system, and between the NBC and other system cards. The Voice Path Trace option under the NBC message trace function produces a list of the connections between port addresses (showing voice paths between line/trunk ports or port addresses set to listen to static tones).

Accessing the System Trace Configuration Screen

Complete the following steps to access the System Trace Configuration screen:

Step 1   Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **K** and press **Enter**.

The System Trace Configuration screen appears (see Figure 6-12). The cursor is located in the HOST MESSAGE TRACE field.

Figure 6-12 System Trace Configuration Screen

```
          S Y S T E M   T R A C E   C O N F I G U R A T I O N

    HOST MESSAGE TRACE: DISABLED          MESSAGES: NONE
        Enable On Reboot:  N              __ __ __ __ __ __ __ __ __ __ __
        Reset/Clear Ports: N              __ __ __ __ __ __ __ __ __ __ __
        Host Connections:  NONE           __ __ __ __ __ __ __ __ __ __ __
        Port Addresses:    NONE
        Print Port List:   N              NETWORK STATUS: ALL
        Trace Output:      Printer        __ __ __ __ __ __ __ __ __ __ __


    NBC MESSAGE TRACE: DISABLED           MESSAGES: NONE
        Enable On Reboot:  N              __ __ __ __ __ __ __ __ __ __ __
        Reset/Clear Ports: N              __ __ __ __ __ __ __ __ __ __ __
        Voice Path Trace:  N              __ __ __ __ __ __ __ __ __ __ __
        Port Addresses:    NONE
        Print Port List:   N
        Trace Output:      Printer
```

48382

The System Trace Configuration option consists of one screen. Use the **Print Screen** key to obtain a hard copy of this screen.

System Trace Configuration Screen Field Definitions

The System Trace Configuration screen contains the following fields:

HOST MESSAGE TRACE—*Data entry via Select key.* Shows whether host message tracing is in progress or disabled. Valid entries are ENABLED (tracing in progress) or DISABLED (no trace task running).

NBC MESSAGE TRACE—*Data entry via Select key.* Shows whether NBC message tracing (and possibly voice path tracing) is in progress or disabled. Valid entries are ENABLED (tracing in progress) or DISABLED (no trace task running).

Note The remaining screen fields define the parameters of the trace task. Most parameters apply to both host message tracing and NBC message tracing. The definition for each field identifies which tracing type it applies to (or if it applies to both).

Enable On Reboot—*Data entry via main keypad.* Specifies whether tracing begins or continues after a system reset. Valid values are Y (yes) and N (no). Applies to both host and NBC message tracing.

Reset / Clear Ports—*Data entry via main keypad.* Specifies whether to clear the tracing bit field settings for each selected port address. This applies when the Port Addresses field is set to SELECTED. Valid values are **Y** (yes) and **N** (no). Applies to both host and NBC message tracing.

Host Connections—*Data entry via Select key.* Specifies whether message tracing is performed over all host links or specific links only. Valid values are ALL, NONE, and SELECTED. If you choose SELECTED, the specific host link(s) are shown in the Host Configuration screen (refer to "Host Configuration" section on page 4-9 for more information). Applies to host message tracing only.

Voice Path Trace—*Data entry via main keypad.* Specifies whether voice path tracing is performed. Possible values are Y (yes) and N (no). NBC message tracing must be enabled for voice path tracing to be activated. Applies to NBC message tracing only.

Port Addresses—*Data entry via Select key.* Shows whether message tracing is performed for all system ports or only selected ports. Possible values are ALL, NONE, and SELECTED. If you choose SELECTED, the specific port addresses are shown in the tracing bit settings on the Port Display screen. Applies to both host and NBC message tracing.

Print Port List—*Data entry via main keypad.* Shows whether the system printer generates a list of the port addresses selected for tracing. Valid values are Y (yes) and N (no). Applies to both host and NBC message tracing.

Trace Output—*Data entry via Select key.* Shows the output device for trace messages. Applies to both host and NBC message tracing. Valid values are:

PRINTER—Messages are output to system printer only.

FILE—Messages are written to system trace files only.

BOTH—Messages are output to printer and system trace files.

MESSAGES—*Data entry via main keypad and Select key.* You can specify tracing for all host/NBC messages or for a selected set of message types.

Command field—*Data entry via Select key.* Specifies whether tracing is performed for all messages or a selected set. Possible values are ALL, NONE, and SELECTED. If you choose SELECTED, you can access the message type fields to specify message IDs. Applies to both host and NBC message tracing.

Message Type fields—*Data entry via main keypad.* Specifies the individual messages to be traced. You can enter up to 36 message IDs in these fields; message IDs normally consist of two digits/characters. Valid entries include all hexadecimal characters (0 to 9 and A to F) and the wildcard characters "*" and "?". Use the wildcard characters in the second digit/character position of the field to specify a range of messages. For example, entering 6? in a field indicates tracing for all valid messages with IDs between 60 and 6F.

In the case of messages with four digit/character IDs ($C0 01, $C0 02, etc.), enter only the last two digits in a field. Refer to the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* for a list of system host commands and reports. NBC message IDs are not published; contact Cisco TAC for more information.

NETWORK STATUS—*Data entry via main keypad and Select key.* Use this field to limit host message tracing to specific network status bytes.

Command field—*Data entry via Select key.* Shows whether tracing is performed for all network status byte values or a selected set. Valid selections are ALL, NONE, and SELECTED. If you choose SELECTED, you can access the status byte fields to specify values. Applies to host message tracing only.

Status Byte fields—*Data entry via main keypad.* Specifies the individual Network Status bytes to limit host tracing. You can enter up to 12 network status bytes; these bytes consist of two digits/characters. Valid entries include all hexadecimal characters (0 to 9 and A to F). Refer to the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* for a list of all network status bytes.

Tracing Host Messages

Complete the following steps to start a host message trace task:

Step 1   Access the System Trace Configuration screen (refer to the "Accessing the System Trace Configuration Screen" section on page 6-34).

The cursor is located in the HOST MESSAGE TRACE field.

Step 2   Use the **Select** and **Reverse Select** keys to toggle between the values until ENABLED is displayed, then press the **Next Field** key.

The cursor moves to the Enable On Reboot field.

Step 3   Type **Y** or **N** to enable or disable tracing after a system reset and press the **Next Field** key.

The cursor moves to the Reset / Clear Ports field.

Step 4   Type **Y** or **N** to clear or retain the tracing bit fields for each selected port and press the **Next Field** key.

The cursor moves to the Host Connections field.

Step 5   Use the **Select** and **Reverse Select** keys to toggle between the values until the correct host connection selection is shown and press the **Next Field** key.

> **Note**   If you choose SELECTED in the Host Connections field, the specific host(s) must be indicated on the Host Configuration screen. Refer to the "Host Configuration" section on page 4-9 for more information.

Step 6   Use the **Select** and **Reverse Select** keys to toggle between the values until the correct port address selection is shown and press the **Next Field** key.

> **Note**   If you choose SELECTED in the Port Addresses field, host message tracing bits for the specific port(s) must be set from the Port Display screen. Refer to "Display Port Data" section on page 6-10 for more information.

Step 7   Type **Y** or **N** to specify whether or not to print a list of the ports involved in the trace and press the **Next Field** key.

The cursor moves to the Trace Output field.

Step 8   Use the **Select** and **Reverse Select** keys to step through the values until the correct output device is shown and press the **Next Field** key.

The cursor moves to the MESSAGES field.

Step 9   Use the **Select** and **Reverse Select** keys to choose one of the following options:

- ALL—proceed to Step 11.
- NONE or SELECTED—press the **Next Field** key.

  The cursor moves to the NETWORK STATUS field.

Step 10   Use the **Prev Field**, **Next Field** key, and the main keypad, to specify the ID for each message type you want traced. When all message types are specified, proceed to Step 11.

Step 11   Press the **Next Field** key.

Step 12   Use the **Select** and **Reverse Select** keys to choose one of the following options:

- ALL—proceed to Step 13.

- SELECTED or NONE—press the **Next Field** key.

  Use the **Prev Field**, **Next Field**, and the main keypad to specify the network status byte values and proceed to Step 13.

Step 13 Press **Enter** to start the trace task. When the task has begun, press the **Exit** key to return to the Diagnostic Menu screen.

To exit the System Trace Configuration screen without making any changes, press the **Exit**, **Prev Menu**, or **Main Menu** key. No changes are made to the database unless you press **Enter**.

Tracing NBC Messages/Voice Paths

Complete the following steps to start an NBC message trace task:

Step 1 Access the System Trace Configuration screen (refer to the "Accessing the System Trace Configuration Screen" section on page 6-34).

The cursor is located in the NBC MESSAGE TRACE field.

Step 2 Use the **Select** and **Reverse Select** keys to toggle between the values until ENABLED is displayed, then press the **Next Field** key.

The cursor moves to the Enable On Reboot field.

Step 3 Type **Y** or **N** to enable or disable tracing after a system reset and press the **Next Field** key.

The cursor moves to the Reset/Clear Ports field.

Step 4 Type **Y** or **N** to clear or retain the tracing bit fields for each selected port and press the **Next Field** key.

The cursor moves to the Voice Path Trace field.

Step 5 Type **Y** or **N** to enable or disable voice path tracing and press the **Next Field** key.

The cursor moves to the Port Addresses field.

Step 6 Use the **Select** and **Reverse Select** keys to toggle between the values until the desired port address is shown and press the **Next Field** key.

The cursor moves to the Print Port List field.

> **Note** If you chose SELECTED in the Port Addresses field, you must set NBC messages and voice path tracing bits for the specific port(s) from the Port Display screen. Refer to "Display Port Data" section on page 6-10 for more information.

Step 7 Type **Y** or **N** to specify whether or not to print a list of the ports involved in the trace and press the **Next Field** key.

The cursor moves to the Trace Output field.

Step 8 Use the **Select** and **Reverse Select** keys to step through the values until the correct output device is shown and press the **Next Field** key.

The cursor moves to the MESSAGES field.

Step 9 Use the **Select** and **Reverse Select** keys to choose one of the following options:

- ALL—press the **Next Field** key and proceed to Step 10.

- NONE or SELECTED—press the **Next Field** key and use the **Prev Field**, **Next Field** key, and the main keypad to specify the ID for each message type you want traced. Proceed to Step 10.

Step 10   Press **Enter** to start the trace task. When the task has begun, press the **Exit** key to return to the Diagnostic Menu screen.

To exit the System Trace Configuration screen without making any changes, press the **Exit**, **Prev Menu**, or **Main Menu** key. No changes are made to the database unless you press **Enter**.

Send Packet Utility

Use the Generic Packet Utility option to send hexadecimal data directly to a card via the Comm Bus. You can specify the card either by logical address or by hardware address. This utility should be used only under the direction of Cisco TAC.

Subrate Connection Display

Use the Subrate Connection Display option to display subrate connections and manually establish or remove subrate connections. The display function also provides you with a way to filter the connection display by trunk port interface. The filter reduces the amount of information presented on the screen.

Accessing the Subrate Connection Display Screen

Complete the following steps to access the Subrate Connection Display screen:

Step 1   Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2   Type **M** and press **Enter**.

The Subrate Connection Display screen appears (see Figure 6-13). The cursor is located in the Command field. The default selection is DISPLAY.

Figure 6-13   Subrate Connection Display Screen

```
        S U B R A T E   C O N N E C T I O N   D I S P L A Y

    Total Subrate Connections:  522        Filtered Connections: 8

         Command: DISPLAY      Refresh (Y/N): N
    Display Index: 1           Display Filter: 1 1 14-1 24 PA  5F


      Num     Mode    Subrate   R L  S    P  B      R L  S    P  B
       1     2-way    8 Kb      1 1 14-1 24 1      1 1 13-1 10  3
       2     2-way    8 Kb      1 1 14-1 24 2      1 1 18-1  5  2
       3     2-way    8 Kb      1 1 14-1 24 3      1 1  8-1 22  8
       4     2-way    8 kb      1 1 14-1 24 4      1 1 13-1  9  5
       5     2-way    8 kb      1 1 14-1 24 5      1 1 13-1 10  7
       6     2-way    8 kb      1 1 14-1 24 6      1 1 13-1 20  1
       7     2-way    8 kb      1 1 14-1 24 7      1 1 13-1 20  2
       8     1-way    8 kb      1 1 14-1 24 8      1 1 13-1  1  3
       9     1-way    8 kb      1 1 14-1 23 1      1 1 13-1  1  4
```

48383

The Subrate Connection Display option can consist of numerous screens. The upper part of the screen contains user input fields that control the operation of the screen. The lower part of the screen provides the actual connection display. A single screen displays up to 12 connections. Press the **Next Screen** or **Prev Screen** key to display additional connections.

Select DISPLAY to display subrate connections. You can also specify a display filter to reduce the size of the connection display output. At the Display Filter field, enter either the RLSP or the port address of the destination endpoint of the subrate path; do not enter its source endpoint. A path's destination endpoint makes it unique. A display filter that specifies the source for one-way connections results in no path being displayed, since paths are indexed by their destinations, not their sources.

Specify subrate connections as follows:

- Connection mode (one-way or two-way)

- Size of the connection (8 Kb, 16 Kb, . . . 64 Kb)

- Source trunk port (RLSP) and subrate bit offset (B)

- Destination trunk port (RLSP) and subrate bit offset (B)

For two-way connections, the source channel is also a destination. Press **Enter** to update the connection display.

Select ADD to manually establish subrate connections. When you establish a subrate connection, you must enter the mode, size, the sender and listener trunk ports, and bit offsets. Figure 6-14 shows the Subrate Connection Display screen after you select ADD. A new line appears where you enter the connection specification. The line displays the last specifications that you entered.

Figure 6-14   Establishing a Subrate Connection

```
       S U B R A T E    C O N N E C T I O N    D I S P L A Y

     Total Subrate Connections:  0      Filtered Connections:  0

          Command: ADD           Refresh (Y/N):  N
     Display Index: 0            Display Filter:  _ _ ____ __   PA:  ____
   Mode: 2-Way  Subrate:  8 Kb  Source: _ _ ____ __ _   Dest: _ _ ____ __ _
          Num     Mode    Subrate   R L  S   P  B    R L  S   P  B
```

Select DELETE to remove subrate connections. When you remove a subrate connection, you can enter either the connection number or the entire connection specification (mode, size, sender, listener).

Note   The Source and Dest fields of this version of the Subrate Connection Display screen (see Figure 6-14) cannot fully represent ICC rack, level, slot, group, and span data due to the fields' four character limitation.

Subrate Connection Display Screen Field Definitions

The Subrate Connection Display screen contains the following fields:

Total Subrate Connections—*Display only.* Shows the number of active subrate connections within the system.

Filtered Connections—*Display only.* Shows the number of subrate connections in the display buffer.

Command—*Data entry via main keypad or Select key.* Select the screen operation to be performed. Valid entries are:

DISPLAY—Display list of active subrate connections.

ADD—Establish a new subrate connection.

DELETE—Remove an existing subrate connection.

Refresh (Y/N)—*Data entry via main keypad.* Controls screen refresh. When refresh is enabled, screen processing updates the connection display every five seconds until you stop the refresh with a keystroke. Valid entries for this field are **Y** or **N**. The default value is N.

Display Index—*Data entry via main keyboard.* Specifies the number of the connection to start the display. If the display index is greater than the number of connections in the display buffer, the index is set to the last screen. When you press the **Next Screen** or **Prev Screen** key, the Display Index field is updated. The default value is 1.

Display Filter—*Data entry via main keyboard*. Specifies the trunk port location data to filter the list of subrate connections to be displayed. You can specify the trunk port location by rack, level, slot, port position (RLSP), or by timeslot port address (PA). In addition, when specifying a trunk port filter by RLSP, you can set the port field to zero as a wildcard entry to filter all ports on the trunk interface (e.g., all ports on a T1 span). Note that the display filter operates only on the listener channel specifications, so that duplicate paths are not displayed.

> **Note** This field cannot fully represent ICC rack, level, slot, group, and span data due to the field's four character limitation.

Num—*Display only*. Shows the connection index within the display buffer.

Mode—*Display or data entry via Select key or main keyboard*. If you select DISPLAY in the Command field, this field displays the connection modes of the subrate paths. If you select either ADD or REMOVE, this field defines the connection mode of a path as either one-way or two-way.

Subrate—*Display or data entry via Select key or main keyboard*. If you select DISPLAY in the Command field, this field displays connection sizes for the subrate paths. If you select either ADD or REMOVE, this field defines the connection size of a path in Kbits/second (8 Kb, 16 Kb, . . . 64 Kb).

RLSPB—*Display or data entry via Select key or main keyboard*. If you select DISPLAY in the Command field, this field displays the rack, level, slot, port, and bit offset containing the subrate channel for the source and destination trunk port interfaces. If you select either ADD or REMOVE, this field defines the RLSP required to address the source and destination trunk port interfaces.

Subrate Statistics Display

Use the Subrate Statistics Display option to display run-time subrate statistics information.

Accessing the Subrate Statistics Display Screen

Complete the following steps to access the Subrate Statistics Display screen:

Step 1 Access the Diagnostic Menu screen (refer to the "Accessing the Diagnostic Menu Screen" section on page 6-2).

Step 2 Type **N** and press **Enter**.

The Subrate Statistics Display screen appears (see Figure 6-15).

Figure 6-15   Subrate Statistics Display Screen

```
          S U B R A T E    S T A T I S T I C S    D I S P L A Y

     Active Subrate Card: 1 1 10        Standby Subrate Card: 1 1 15
                        Reset Statistics (Y/N): _

                         Timeslot Usage Statistics
                    Configured   In Use   Available   High
                       888         192       696       192


                        Subrate Connection Statistics
                                                    Timeslot    Other
            Subrate    Current    Cumulative    High    Failures    Failures
              8 Kb       243         9453       320        0          5
             16 Kb       101         3420       229        0          9
             24 Kb         0            0         0        0          0
             32 Kb         0            0         0        0          0
             40 Kb         0            0         0        0          0
             48 Kb         0            0         0        0          0
             56 Kb         0            0         0        0          0
             64 Kb         0            0         0        0          0
```

48384

The Subrate Statistics Display option consists of one screen. The upper portion of the screen provides basic configuration information and a field from which you can reset the statistics counts. The middle portion contains subrate timeslot usage statistics, and the lower portion provides the actual subrate connection statistics for each subrate. Once initiated, the statistics are continually refreshed every three seconds, until you stop the refresh by pressing any key.

Use the Reset Statistics field to clear the timeslot high usage count and all counts for each subrate. When reset, these statistics are set to zero. Note that the Configured, In Use, and Available timeslot usage counts cannot be cleared since they are defined by configuration, not run-time subrate traffic.

Subrate Statistics Display Screen Field Definitions

The Subrate Statistics Display screen contains the following fields:

Active Subrate Card—*Display only.* Shows the rack, level, and slot location of the active subrate card.

Reset Statistics (Y/N)—*Data entry via main keypad.* Use this field to clear the timeslot usage high count and the subrate connection statistics counts. Valid entries are **Y** or **N**. The default value is N.

Standby Subrate Card—*Display only.* Shows the rack, level, and slot location of the standby subrate card for subrate card redundancy configurations.

Timeslot Usage Statistics—*Display only.* Shows the configured number of time slots, the number of time slots currently in use (consumed) by subrate connections, remaining available time slots, and the maximum number of time slots in use at any point in time.

Subrate Connection Statistics—*Display only.* Shows the connection statistics for each subrate. The information displayed for each subrate includes current number of connections, cumulative connection total, maximum number of connections at any point in time, connection attempt failures due to timeslot exhaustion, and connection attempt failures due to other reasons.

Subrate Statistics Display