Cisco VCO/4K System Software Version 5.1(4) Release Notes

August 2000

These release notes describe new features and caveats in system software release 5.1(4) for the Cisco VCO/4K switch. Use these release notes in conjunction with the *Cisco VCO/4K Software Installation Guide*, the *Cisco VCO/4K System Administrator's Guide*, and *Cisco VCO/4K System Messages*.

Contents

These release notes contain the following sections:

New and Changed Information

The following features are new or have changed for Cisco VCO/4K system software, hardware, or firmware:

CISCO SYSTEMS

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SPC Static Tone Support

VCO/4K system software version 5.1(4) includes a new Service Platform Card (SPC) static tone card type—SPC-TONE—which provides the same functionality as the DTG/DTG2 static tone.

Users may add the SPC-TONE card type to the system database with the system software's Card Maintenance screen. Sixty-four time slots in the range of 0x4C0 to 0x4FF are reserved for each service engine configured as SPC-TONE. SPC-TONE and DTG/DTG2 tones are identical.

The SPC-TONE card type is supported with 1 + N redundancy. For redundant service engines, a switchover occurs when one of the following conditions is met:

- The active service engine is taken out-of-service (OOS) administratively.
- The active service engine is detected as failed.

When either of these two conditions is met, the VCO/4K system software removes the failed service engine, places it into the OOS state, and places a standby service engine into the active state. The previously active service engine enters the initialization procedure and becomes the standby service engine.

SPC Static Tone Support Interface Modifications

The Alarm Condition ($F0) report has been modified in both the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* to include the new alarm code, $4B, which indicates that no SPC-TONE is configured in the VCO/4K system.

Alarm Code $4B—*Cisco VCO/4K Standard Programming Reference* and *Cisco VCO/4K Extended Programming Reference*

Byte offset 5 (Alarm Code) of the $F0 report indicates a value of $4B, with a message of ALM075: No SPC Static Tone In System, when no SPC-TONE is configured in the VCO/4K system. The new alarm code is defined as follows:

```
ALM075: No SPC Static Tone In System
```

Explanation SPC-TONE span(s) is defined in the system, but unavailable; span(s) is out of service (OOS).

Action Access system administration and change an OOS SPC-TONE span to in service. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information.

Refer to *Cisco VCO/4K System Messages* for more information on system messages.

SPC Static Tone Support Restrictions and Limitations

There are no restrictions or limitations when using the SPC static tone.

Internal Timing Alarm Support

Internal timing alarm support has been added to VCO/4K system software version 5.1(4). This support resolves DDTs issue CSCdr09792.

VCO/4K system timing is derived from internal clocking, an incoming bit stream, or from the external network. When incoming timing loses synchronization, a report is sent to the VCO/4K system, which then switches the timing to the next timing source, the backup. If the backup timing source is not available or fails to synchronize, the VCO/4K system switches to internal timing. This event—the switch to internal timing—is recorded in the log file, and is also reported to the host, via the Alarm Condition ($F0) report.

Internal Timing Alarm Interface Modifications

The $F0 report has been modified in both the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* to include the new alarm code, $4C, which indicates a switch to internal timing.

Alarm Code $4C—*Cisco VCO/4K Standard Programming Reference* and *Cisco VCO/4K Extended Programming Reference*

The new alarm code, $4C, is contained in byte offset 5 (Alarm Code) of the $F0 report.

Byte offsets 9 through 12 (Additional Data Bytes) of the $F0 report have been modified to include a reason that the timing has changed to internal.

When using VCO/4K system software version 5.1(4) and higher, and byte offset 5 = 4C, the length of the $F0 report is truncated to nine byte offsets. Byte offset 9 indicates the reason that the incoming timing source changed to internal clock timing.

Possible values of byte offset 9, and their associated meanings, are listed as follows:

- 01 – T1 card Slip Maintenance reached report received
- 02 – PRI card Slip Maintenance reached report received
- 03 – T1 card OOF condition present report received
- 04 – PRI card OOF condition present report received
- 05 – T1 card Loss of Carrier condition report received
- 06 – PRI card Loss of Carrier condition report received
- 07 – T1 card Remote Carrier Alarm Detected report received
- 08 – PRI card Remote Carrier Alarm Detected report received
- 09 – T1 card Signaling bit alarm report received
- 0A – T1 card OOF Maintenance Limit reached report received
- 0B – PRI card OOF Maintenance Limit reached report received
- 0C – NBC loss of synchronization—external reference
- 0D – Change in T1 synchronization source. Host sent T1 Synchronization Control ($C0 02) command

- 0E – NBC incoming reference signal is not present
- 0F – NBC loss of synchronization—incoming reference
- 10 – NBC loss of incoming reference
- 11 – NBC external reference signal is not present
- 12 – NBC cannot synchronize on the external reference
- 13 – NBC cannot synchronize on the incoming reference
- 14 – ICC hardware change has been detected. Possibilities include the insertion or removal of an I/O module, or a mismatch between hardware type and configuration.

Byte offset 5 (Alarm Code) indicates a value of $4C, with a message of ALM076: Incoming Timing Changed to Internal, when the incoming timing has switched to internal. The new alarm code is defined as follows:

```
ALM076: Incoming Timing Changed to Internal
```

Explanation The system software changed the timing source to backup because the NBC3 lost synchronization with the incoming timing source. The backup timing source was also not available, or it failed to synchronize, and the system software changed the timing source to internal. An Alarm Condition ($F0) report is sent to the host with an alarm code of $4C.

Action Analyze the contents of alarm code $4C to verify the reason for the change in timing source. Refer to the *Cisco VCO/4K Extended Programming Reference* for more information. Access the Master Timing Link Selection screen to change the timing source to incoming, if needed. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information.

Refer to *Cisco VCO/4K System Messages* for more information on system messages.

Internal Timing Restrictions and Limitations

There are no restrictions or limitations associated with internal timing alarm support.

Enhanced Conference

VCO/4K system software version 5.1(4) includes the enhanced conference feature. In addition to the basic conference capabilities of the Conference Control ($6D) command (refer to the *Cisco VCO/4K Extended Programming Reference*), the command allows users to define an enhanced conference in extended mode. A new card type, Service Platform Card - Enhanced Conference (SPC-ENHCNF), can be configured through the system software's Card Maintenance screen to add this type into the system database for an enhanced conference.

A single enhanced conference can accommodate up to sixteen two-way line/trunk ports, or as many one-way line/trunk ports as are available in the system. An enhanced conference allows the system to support up to 640 simultaneous enhanced conferences. An enhanced conference can employ Automatic Gain Control (AGC) to maintain volume, Voice Activity Detect (VAD), and DTMF detection/suppression on each two-way conference port. These features are controlled by bit selections in the $6D command. The enhanced conference feature also allows the ability to play a prompt to a conference.

Enhanced Conference Interface Modifications

Modifications have been made to the Conference Control ($6D) command to enable the enhanced conference feature. The following byte offsets have been modified:

- Conference Number, byte offsets 13 and 14
- Port Count, byte offset 16
- Port Control Code, byte offsets 17 and 18

The modifications to these byte offsets are described below. Refer to the *Cisco VCO/4K Extended Programming Reference* for more information on the $6D command.

Conference Number

Conference Number (byte offsets 13 and 14)—Specifies the number of the conference upon which the action should be taken. To start or reserve a conference, specify a conference identifier from 0 to 640; 0 is valid only if a conference is available for allocation. When the conference identifier = 0, the system returns the ID of the allocated conference. When adding to, deleting from, adjusting input/output levels for, or tearing down a conference, the conference number is required. Convert from decimal to hexadecimal for the conference number. Construct bytes in binary according to the descriptions below, then convert to hexadecimal for use in the command.

```
F0000000  00000000
```

- F – specifies a basic or an enhanced conference.
  - F = 1 – Use the enhanced conference feature. The system searches for conference ports from the enhanced conference resource.
  - F = 0 – Use the basic conference feature. The system searches for conference ports from either the enhanced or the basic conference resource.

Note Enhanced conference resources can also be used for basic conferences; this may come into practice if the host designates nine to sixteen two-way legs in a single conference.

Port Count

Port Count (byte offset 16)—Specifies the number of ports affected by this command. If R = 1 in Conference Control Code (byte offset 15), the Port Count specifies how many conference ports to reserve. In this case, the maximum number of ports to reserve is sixteen. For all other settings, the Port Count specifies how many Port Control Code bytes are contained in this command. Convert from decimal to hexadecimal for use in the command.

Port Control Code

Port Control Code (byte offsets 17 and 18)—This field (with Port Address) exists for each port utilized. A three-byte set is required when a conference action is required for a specific line/trunk port. One Port Control Code byte set is required for each line/trunk port affected when S, T, A, D, or G = 1 in the Conference Control Code (byte offset 15); the number of Port Control Code byte sets must be equal to PPPP specified in the Port Count (byte offset 16). When T = 1 in the Conference Control Code (byte offset 15), any line/trunk port that should be left active must be represented by a Port Control Code byte set.

Note Do not specify Port Control Codes when reserving a conference (R = 1). The system will automatically reserve the ports based on their availability. Setting R = 1 and specifying Port Control Codes causes a syntax error.

Construct bytes in binary according to the following descriptions, then convert to hexadecimal for use in the command.

```
IIIIA0CL   WSVDF000
```

- IIII – determines whether the input level from this line/trunk port into the conference is to be adjusted when S, A, or G—of the Conference Control Code (byte offset 15)—is equal to 1. Specify bit settings according to the following list:

0000 = no level adjustment (default)	0110 = – 7.5 dB	1100 = + 6 dB
0001 = –1 dB	0111 = – 9 dB	1101 = +4.5 dB
0010 = – 2 dB	1000 = – 10.5 dB	1110 = + 3 dB
0011 = – 3 dB	1001 = – 12 dB	1111 = +1.5 dB
0100 = – 4.5 dB	1010 = – 13.5 dB	
0101 = – 6 dB	1011 = – 15 dB	

- A – Specifies the talk-only conference capability. Specify bit setting as follows:
  - A = 1 – Talk-only conference enabled. The port is talk-only to the conference to which it is attached; this setting has precedence over the W setting (described below).
  - A = 0 – Talk-only conference disabled. The W setting determines configuration.
- C – Specifies if Automatic Gain Control (AGC) is used for this port.
  - C = 0 – Do not use AGC for this port; apply the input level (bits IIII, above) as a manual offset to this channel's input.
  - C = 1 – Use AGC to scale the input voice level to the desired level, given by the input level (bits IIII, above).
- L – Specifies if the output level of the conference port associated with this line/trunk port is to be decreased by 3 dB when S, A, or G = 1 in the Conference Control Code. Specify bit settings as follows:
  - L = 0 – No output level adjustment is required.
  - L = 1 – Decrease output level by 3 dB.
- W – Determines whether to set up a two-way (talk and listen) or one way (listen only) voice path for this line/trunk port when it becomes part of a conference. This bit has no meaning unless S or A = 1 in the Conference Control Code. Specify bit settings as follows:
  - W = 0 – Set up two-way voice path (talk and listen) for line/trunk port when it becomes part of the conference.
  - W = 1 – Set up one-way voice path (listen only) for line/trunk port when it becomes part of the conference.

Note Do not set both the talk-only bit (A) and the listen-only bit (W) equal to 1 for the same port and time. Failure to follow this guideline results in a port added to a conference which can neither receive from nor transmit to other ports.

- S – Determines whether this line/trunk port should be left active (CP_SETUP state) or idled (Permanent Signal processing begun) when it is removed from a conference. This bit has no meaning unless D or T = 1 in the Conference Control Code. Specify bit settings as follows:
  - S = 0 – Leave the line/trunk port active (setup state) when deleted from the conference.
  - S = 1 – Set the line/trunk port to idle through Permanent Signal processing when deleted from the conference.
- V – Determines when the voice path of an outgoing trunk port in CP_WTFSUP is set to the conference. The voice path can be established when the outgoing message is answered or immediately when the command is received. Specify bit settings as follows:
  - V = 0 – Establish voice path of outgoing port to conference when outgoing message is answered.
  - V = 1 – Establish voice path of outgoing port to conference immediately.
- D – Specifies if Voice Activity Detect (VAD) is used for this port. Specify bit settings as follows:
  - D = 0 – Do not use VAD for this port.
  - D = 1 – Use VAD for this port.
- F – Specifies if DTMF suppression and report are enabled/disabled. Specify bit settings as follows:
  - F = 0 – disable DTMF digit detection and DTMF tone suppression—all legs of the conference can hear the DTMF tones when the DTMF digits are entered; no DTMF digit reported.
  - F = 1 – enable DTMF digit detection and DTMF tone suppression—the leg in the conference that is entering the DTMF digits can hear the DTMF tones, all other legs in the conference cannot hear the DTMF tones of the DTMF digits being entered; report DTMF digit.

Note When this bit (F) is set to 1, a first digit report is generated upon detecting the single DTMF digit on the two-way conference port. A DTMF Digit ($D1) report is sent to the host, which indicates the detected DTMF digit.

Enhanced Conference Restrictions and Limitations

There are no restrictions or limitations with the enhanced conference feature.

ICC ISDN Span Configuration

Interface Controller Card (ICC) Integrated Services Digital Network (ISDN) span configuration remains unchanged in VCO/4K system software version 5.1(4). However, the PRI Card Protocol Configuration screen has been eliminated and cannot be accessed from the ICC ISDN Span Configuration screen.

ICC ISDN Span Configuration Interface Modifications

The ICC ISDN Span Configuration screen has been modified in VCO/4K system software version 5.1(4). The Display Protocol Parameter field has been removed from the T1 version of the ICC ISDN Span Configuration screen (see Figure 1) and from the E1 version (see Figure 2).

Figure 1 Revised ICC ISDN Span Configuration Screen—T1

```
            I C C  I S D N  S P A N  C O N F I G U R A T I O N


 SPAN LOCATION: R,L,S 1 1 15-1-1    TYPE  : ICC-T1 PRI/NI2
                                    STATUS:  Out of Service

ACCESS TYPE:  USER     TRX CLOCK:  SCLK   CA IP RULE: 0  SLIP MAINT LIMIT:  255
SWITCH TYPE:  NI2      REF CLOCK:  LOOP   NCA IP RULE: 0  OOF  MAINT LIMIT:  17
SPAN LENGTH:  0-133    SPAN TYPE:  ESF    A/Mu LAW:    Mu

              PORT     NAME     GROUP    GRP NAME     COS
              ----   --------   -----    ---------    -----
               1                 __      _________    2
               2                 __      _________    2
               3                 __      _________    2
               4                 __      _________    2
               5                 __      _________    2
               6                 __      _________    2
               7                 __      _________    2
               8                 __      _________    2
```

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Figure 2 Revised ICC ISDN Span Configuration Screen—E1

```
            I C C  I S D N  S P A N  C O N F I G U R A T I O N


 SPAN LOCATION: R,L,S 1 1 15-1-1    TYPE  : ICC-E1 PRI/NET5
                                    STATUS:  Out of Service

ACCESS TYPE:  USER     TRX CLOCK:  SCLK   CA IP RULE: 3  SLIP MAINT LIMIT:  255
SWITCH TYPE:  NET5_UK  REF CLOCK:  LOOP   NCA IP RULE: 0  OOF  MAINT LIMIT:  17
SPAN LENGTH:  533-655  CRC4     :  ON     A/Mu LAW:    A  OVERLAP: FORWARD

              PORT     NAME     GROUP    GRP NAME     COS
              ----   --------   -----    ---------    -----
               1                 __      _________    2
               2                 __      _________    2
               3                 __      _________    2
               4                 __      _________    2
               5                 __      _________    2
               6                 __      _________    2
               7                 __      _________    2
               8                 __      _________    2
```

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ICC ISDN Span Configuration Restrictions and Limitations

The PRI Card Protocol Configuration screen was a read-only screen. No functionality has been modified with its elimination, or with the elimination of the Display Protocol Parameters field from the ICC ISDN Span Configuration screen.

Time Slot License Restriction Removal

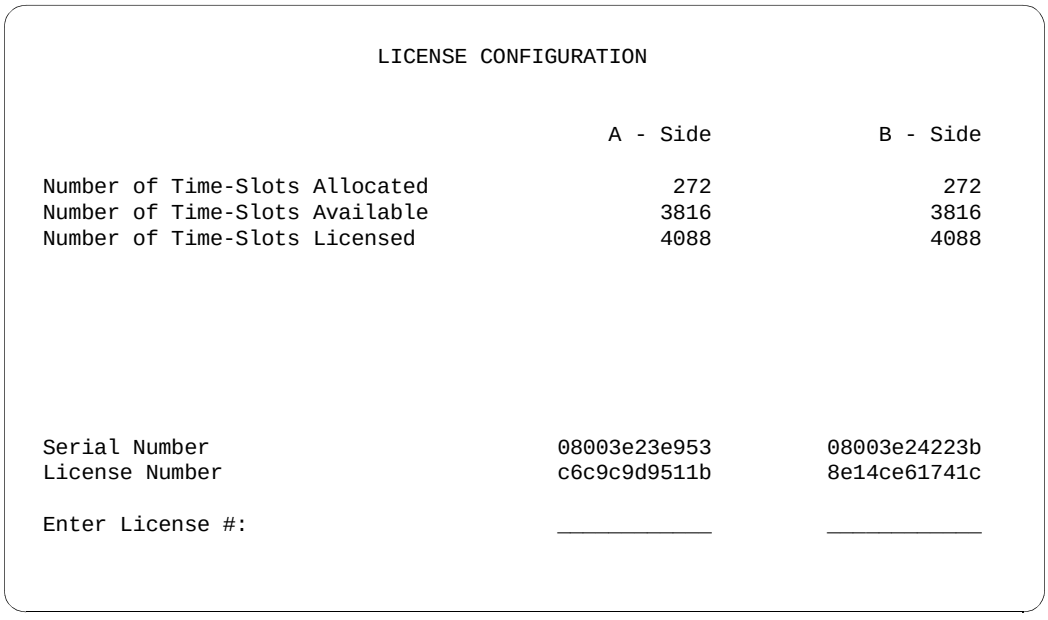
Time slot license restriction has been removed from VCO/4K system software version 5.1(4). Users no longer need to receive an authorized license number before increasing the number of time slots on the VCO/4K switch. Users of system software version 5.1(4) and higher must access the License Configuration screen and enter the Universal License Code (ULC)—summa4—which enables the maximum number of time slots available for the system.

VCO/4K systems in 2K mode receive 1936 time slots upon entering the ULC. VCO/4K systems in 4K mode receive 4088 time slots upon entering the ULC.

Time Slot License Restriction Removal Interface Modifications

The use of the License Configuration screen has been modified in VCO/4K system software version 5.1(4). The screen itself has not been modified (see Figure 3).

Figure 3 License Configuration Screen



Complete the following steps to configure the maximum time slots for the VCO/4K system. If the system is redundant, ensure that the following steps are performed on the active A side. Refer to the *Cisco VCO/4K System Administrator's Guide* for complete configuration instructions.

Note Upgrading to V5.1(4) or higher does not automatically update VCO/4K systems in 2K mode to 1936 time slots or 4K mode systems to 4088 time slots. Complete the following steps after the upgrade to V5.1(4) is finished.

Step 1 Access the License Configuration screen (see Figure 3).

The cursor is located in the A - Side column's Enter License # field.

Step 2 Type **summa4**.

Step 3 Press **Enter**.

Step 4 Press **Next Field**.

The cursor moves to the B - Side column's Enter License # field.

Step 5 Type **summa4**.

Step 6 Press **Enter**.

The VCO/4K switch is now configured with the maximum number of time slots allowed.

Time Slot License Restriction Removal Restrictions and Limitations

There are no restrictions or limitations for the time slot license restriction removal.

ISDN TS 014 Timer T310 User Side Expiry Alteration

The Integrated Services Digital Network (ISDN) Australian protocol, TS 014, uses a T310 timer which has been altered with VCO/4K system software version 5.1(4). The Interface Controller Card (ICC) implements ISDN protocols. This alteration resolves DDTs issue CSCdr73001.

ISDN TS 014 Timer T310 User Side Expiry Alteration Implementation

The TS 014 standard defines a value for the T310 timer for the network side. No value is specified in the TS 014 standard for the user side. The T310 timer specifies the time to wait for a response to a CALL PROCEEDING message.

In previous VCO/4K software releases, the ICC implemented the same T310 timer value for the TS 014 user side as is implemented for the TS 014 network side—10 seconds. With this release, the ICC implements the same T310 timer value for the TS 014 user side as is implemented for the ISDN NET5 (EURO) protocol's user side—120 seconds. The TS 014 protocol waits for an extended time (120 seconds) for a response to a CALL PROCEEDING message before the T310 timer expires and abandons a call attempt.

Refer to the *Australian Communications Authority Technical Specification 014 (ACA TS 014 - 1997)* for more information on the TS 014 protocol.

ISDN TS 014 Timer T310 User Side Expiry Alteration Restrictions and Limitations

There are no restrictions or limitations for the ISDN TS 014 timer T310 alteration.

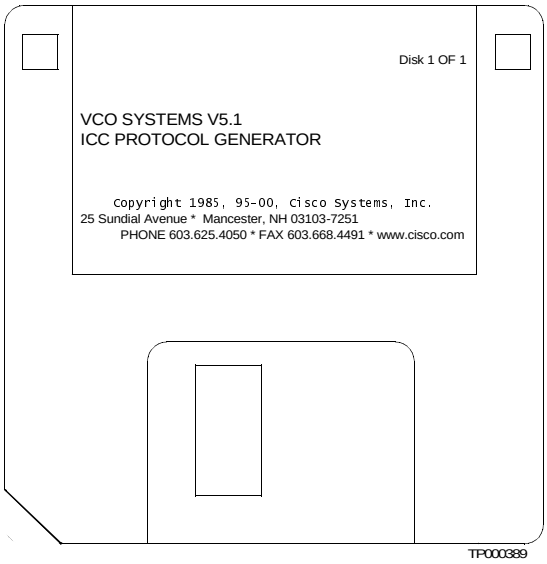
Interface Controller Card Universal Protocol Generator Update Tool

The Interface Controller Card (ICC) Universal Protocol Generator (UPG) Update Tool has been modified to allow users of VCO/4K system software version 5.1(4) to modify the guard time values of .upg files.

Two versions of the ICC UPG Update Tool are provided on a diskette (see Figure 4):

- upgedsol.exe—For SUN Solaris workstation users
- upgedwin.exe—For Microsoft Windows (2000, NT, 98, and 95) PC users

Figure 4 ICC Protocol Generator Diskette



The tool allows users to modify the default .upg files in order to create custom ICC protocol data files for E&M and CAS/R2 protocols. Two versions of the default files are provided on diskette number 6 of the generic software diskettes:

- iccem.upg—For the E&M, T1 protocol
- icccasr2.upg—For the CAS/R2, E1 protocol

Note Default files do not need to be customized for the system software to function properly. The ability to customize the default .upg files is provided for flexibility in signaling configurations.

Users must modify a system default .upg file to create a custom .upg file. Customize the iccem.upg file when using the E&M, T1 protocol. Customize the icccasr2.upg file when using the CAS/R2, E1 protocol. A maximum of four customized .upg files may be created; the ability to customize .upg files is provided for configuring flexibility in three signaling areas:

- ABCD signaling bit pattern
- Minimum and maximum detection times of signals (wink, seize, flash, etc.)
- Guard time

Installation Instructions

The ICC UPG Update Tool is a command line executable software program. The following sections describe the installation of the ICC UPG Update Tool and the creation of customized .upg files using either a SUN Solaris workstation or a PC workstation.

Install and Start the ICC UPG Update Tool with a SUN Solaris Workstation

Complete the following steps to install the ICC UPG Update Tool on a SUN Solaris workstation and create a customized .upg data file. For Microsoft Windows PC users, refer to "Install and Start the ICC UPG Update Tool with a Microsoft Windows PC Workstation," page 13, for tool installation instructions.

Step 1 Create a directory named UPGTOOL on your SUN workstation.

Step 2 Copy the upgedsol.exe executable file—the ICC UPG Update Tool—from the ICC PROTOCOL GENERATOR diskette to the UPGTOOL directory.

Step 3 Copy the appropriate default .upg file from diskette 6 to the UPGTOOL directory according to the following rules:

- Copy the iccem.upg file if you are using the E&M, T1 protocol.
- Copy the icccasr2.upg file if you are using the CAS/R2, E1 protocol.

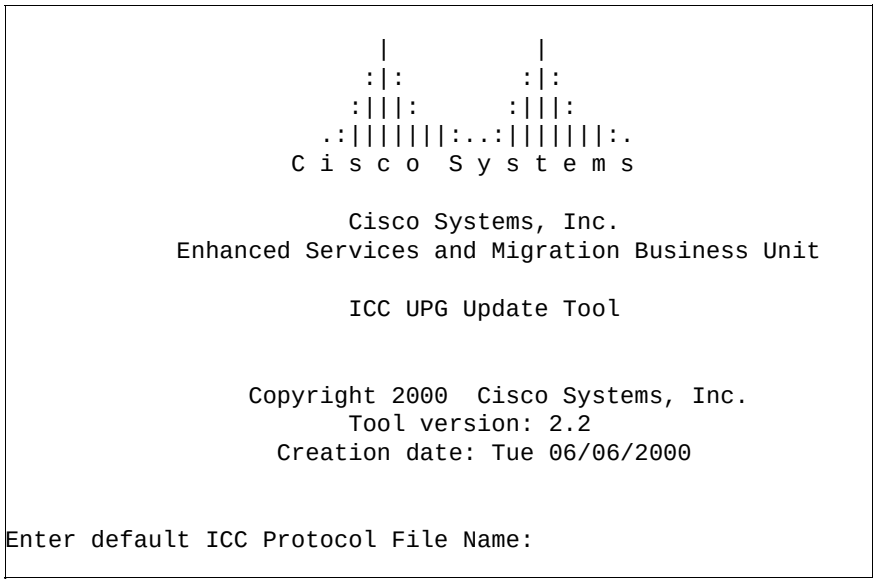
Step 4 Start a new shell.

Step 5 Change to the UPGTOOL directory within the new shell.

Step 6 Type **./upgedsol.exe** and press **Enter** to start the tool.

An introductory message and prompt are displayed on the screen. (See Figure 5.)

Figure 5 ICC UPG Tool Introductory Message and Prompt



Step 7 Enter the file name of the default .upg file copied in Step 3.

The UPG Update Tool menu, and a prompt, are displayed on the screen. (See Figure 6.)

Figure 6 ICC UPG Update Tool Menu and Prompt

```
        ******************************************
        *                                        *
        *           UPG Update Tool              *
        *                                        *
        *       1.  Display Rx Pulse data        *
        *       2.  Modify  Rx Pulse data        *
        *       3.  Display Tx Pulse data        *
        *       4.  Modify  Tx Pulse data        *
        *       5.  Display State Model          *
        *       6.  Modify State Model           *
        *       7.  Display Guard Time           *
        *       8.  Modify Guard Time            *
        *       9.  Create User Defined Data File*
        *                                        *
        *       0.  Exit                         *
        *                                        *
        ******************************************

Enter your Choice:
```

The ICC UPG Update Tool menu options, and custom .upg file creation instructions, are described in "Custom .upg File Creation Instructions," page 14.

Install and Start the ICC UPG Update Tool with a Microsoft Windows PC Workstation

Complete the following steps to install and start the ICC UPG Update Tool on a Microsoft Windows PC workstation. For SUN Solaris users, refer to "Install and Start the ICC UPG Update Tool with a SUN Solaris Workstation," page 12, for tool installation instructions.

Step 1 Create a directory named UPGTOOL on your PC.

Step 2 Copy the upgedwin.exe executable file—the ICC UPG Update Tool—from the ICC PROTOCOL GENERATOR diskette to the UPGTOOL directory.

Step 3 Copy the appropriate default .upg file from diskette 6 to the UPGTOOL directory according to the following rules:

- Copy the iccem.upg file if using the E&M, T1 protocol.
- Copy the icccasr2.upg file if using the CAS/R2, E1 protocol.

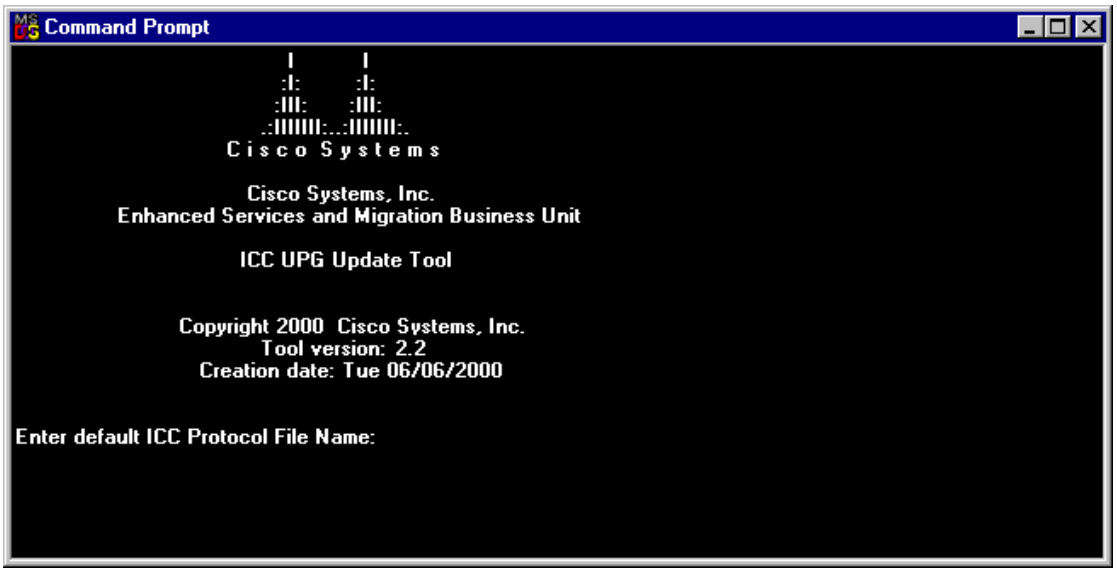
Step 4 Open a Command Prompt window.

Step 5 Change to the UPGTOOL directory within the window.

Step 6 Type **upgedwin.exe** and press **Enter** to start the tool.

An introductory message and prompt are displayed in the window. (See Figure 7.)

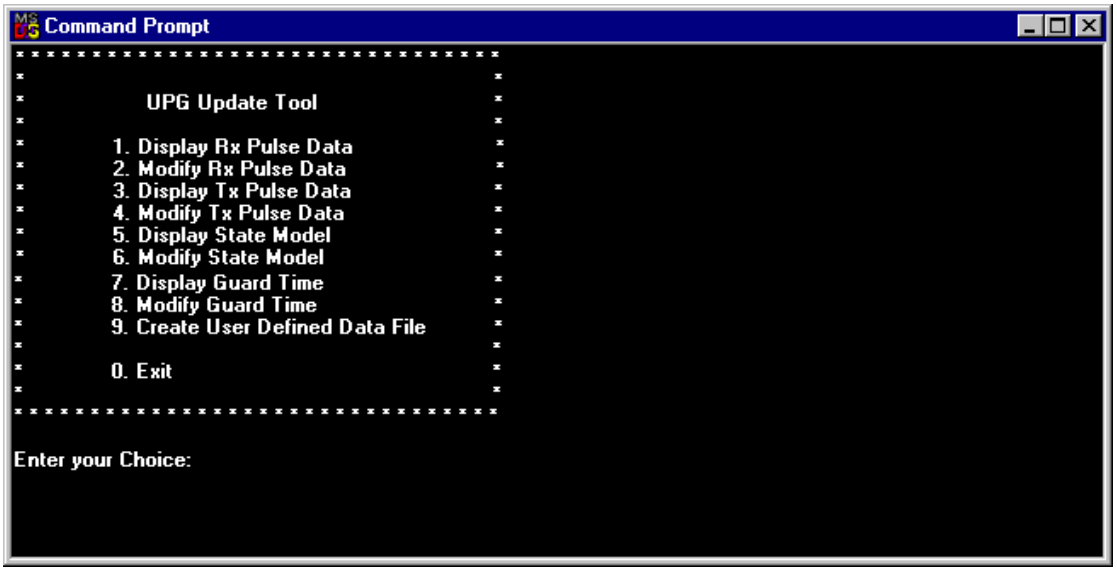
Figure 7 ICC UPG Tool Introductory Message and Prompt



Step 7 Enter the file name of the default .upg file copied in Step 3.

The ICC UPG Update Tool menu, and a prompt, are displayed on the screen. (See Figure 8.)

Figure 8 ICC UPG Update Tool Menu and Prompt



Refer to "Custom .upg File Creation Instructions," page 14, for a description of the ICC UPG Update Tool menu options, and custom .upg file creation instructions.

Custom .upg File Creation Instructions

The creation of custom .upg files is accomplished with the ICC UPG Update Tool. All customizing instructions are illustrated with figures representative of those seen while using a SUN Solaris workstation. PC workstation users see the same information, but in a Command Prompt window.

SUN Solaris workstations users, refer to Figure 6 for the ICC UPG Update Tool menu. PC workstation users, refer to Figure 8 for the ICC UPG Update Tool menu. The ICC UPG Tool menu options are described in Table 1.

Table 1 ICC UPG Update Tool Menu Options

Menu Option	Description
1. Display Rx Pulse Data	Displays a list of receive pulse data (incoming signals)—data traveling from the network to the card—and describes how each is decoded by the protocol.
2. Modify Rx Pulse Data	Allows the user to modify the active bit pattern (ABCD bits) and the minimum and maximum detection times of each received pulse. **Note** The ABCD signaling bits for the CAS/R2, E1 protocol must not be modified.
3. Display Tx Pulse Data	Displays a list of transmit pulse data (outgoing signals)—data traveling from the card to the network—that can be transmitted by the protocol, and describes how each is decoded by the protocol.
4. Modify Tx Pulse Data	Allows the user to modify the active bit pattern (ABCD bits) and the minimum and maximum detection times of each transmitted pulse. **Note** The ABCD signaling bits for the CAS/R2, E1 protocol must not be modified.
5. Display State Model	Displays the current state model.
6. Modify State Model	Not available for customer use at this time.
7. Display Guard Time	Displays the current value of the guard time—the length of time that a port is held in guard state, after the port is abandoned.
8. Modify Guard Time	Allows the user to modify the length of the guard time.
9. Create User Defined Data File	Allows the user to save the customized .upg file.
0. Exit	Allows the user to exit the ICC UPG Update Tool menu.

Follow the procedures in the following sections to customize a default .upg file.

Display and Modify Receive Pulse Data—Options 1 and 2

Complete the following steps to display and modify the receive pulse data of a default .upg file:

Step 1 From the ICC UPG Update Tool menu, type **1** and press **Enter**.

The receive pulse data is displayed on the screen (see Figure 9), followed by the ICC UPG Update Tool menu and the Enter your Choice prompt.

Figure 9 Display Rx Pulse Data Display

```
  ****  Receive Pulses  ****

                                  Timing (ms)
Name                   ABCD bits   Min   Max
--------------------   ---------  -----------
rx_seize                  12       375     0
rx_wink                   12       100   350
rx_flash                   0       100   350
rx_idle                    0       375     0
```

Each protocol can detect a certain number of receive pulses (our example, Figure 9, contains four). Each pulse is described by four parameters. (See Table 2.)

Table 2 Display Rx Pulse Data Parameters

Parameter	Description
Name	Name for the pulse; for debugging and maintenance only.
ABCD bits	The ABCD bit pattern identifying a specific signal. The pattern is a binary number from 0000 to 1111, which is displayed as decimal, 0 to 15.
Timing (ms), Min	Represents the minimum time, in milliseconds, that the active bit pattern (see Table 3) must be present on the incoming line.
Timing (ms), Max	Represents the maximum time, in milliseconds, that the active bit pattern (see Table 3) can be present on the incoming line.

Step 2 Type **2** and press **Enter** to modify the receive pulse data.

The first receive pulse data is displayed. (See Figure 10.) The cursor is located after the Enter ABCD Bits value (0-15) [n] prompt. The default, or current, value is contained within the square brackets.

Figure 10 First Receive Pulse Data Display—ABCD Bits Prompt

```
Enter your Choice: 2

  ****  Receive Pulses  ****

Signal: 'rx_seize'
Enter ABCD Bits value (0-15)   [  12]:
```

Step 3 Modify the ABCD bit pattern, taking into account the following considerations:

- For the E&M, T1 protocol, the receive pulses contain a certain sequence of changes in the A and B bits; the C and D bits are not used for defining receive pulses. Refer to Table 3 for the default values of the ABCD bit patterns.

Note Only the active bit pattern is stored in the customized .upg file.

Table 3 Default ABCD Bit Patterns for the E&M, T1 Protocol

Signaling Name	Start Pattern	Active Pattern	End Pattern
Seize	0000	1100	—
Wink	0000	1100	0000
Flash	1100	0000	1100
Idle	1100	0000	—

- For the CAS/R2, E1 protocol, the receive pulses contain specific ABCD bit patterns. Refer to Table 4 for the default values of the ABCD bit patterns.

Table 4 Default ABCD Bit Patterns for the CAS/R2, E1 Protocol

Signaling Name	Bit Pattern
Seize	0001
Seize Acknowledge	1101
Answer	0101
Clear Back	1101
Idle	1001

a. Convert the appropriate binary ABCD bit pattern to decimal.

b. Type the decimal value.

c. Press **Enter**.

Note Pressing Enter without first entering a value leaves the default, or current, value unmodified.

A new prompt—Enter Minimum Timer Value (ms) [n]—followed by the cursor, is displayed. (See Figure 11.) The default, or current, value is contained within the square brackets.

Figure 11 First Receive Pulse Data Display—Minimum Timer Selection Prompt

```
Enter your Choice: 2

  ****  Receive Pulses  ****

Signal: 'rx_seize'
Enter ABCD Bits value (0-15)   [  12]:
Enter Minimum Timer Value (ms) [ 375]:
```

Step 4 Modify the minimum timer value, taking into account the following considerations:

- For the E&M, T1 protocol, the receive pulses contain a minimum time, in milliseconds, that the active bit pattern must be present on the incoming line. Refer to Table 5 for the default minimum timer values. Adhere to E&M protocol industry standards for valid timer selections.

Table 5 Default Minimum Timer Values for the E&M, T1 Protocol

Signaling Name	Minimum Time (ms)
Seize	375
Wink	100
Flash	100
Idle	375

- For the CAS/R2, E1 protocol, all bit patterns are valid the instant they are present; default minimum timer values are always 0. You must select 0 (zero) for the minimum timer value.

a. Type the appropriate minimum timer value for the seize receive pulse.

b. Press **Enter**.

Note Pressing Enter without first entering a value leaves the default, or current, value unmodified.

A new prompt—Enter Maximum Timer Value (ms) [n]—followed by the cursor, is displayed. (See Figure 12.) The default, or current, value is contained within the square brackets.

Figure 12 First Receive Pulse Data Display—Maximum Timer Selection Prompt

```
Enter your Choice: 2

  ****  Receive Pulses  ****

Signal: 'rx_seize'
Enter ABCD Bits value (0-15)   [  12]:
Enter Minimum Timer Value (ms) [ 375]:
Enter Maximum Timer Value (ms) [   0]:
```

Step 5 Modify the maximum timer value, taking into account the following considerations:

- For the E&M, T1 protocol, the receive pulses contain a maximum time, in milliseconds, that the ABCD bit pattern can be present on the incoming line. Refer to Table 6 for the default maximum timer values. Adhere to E&M protocol industry standards for valid timer selections.

Table 6 Default Maximum Timer Values for the E&M, T1 Protocol

Signaling Name	Maximum Time (ms)
Seize	0
Wink	350
Flash	350
Idle	0

- For the CAS/R2, E1 protocol, the receive pulses do not contain a maximum time; default maximum timer values are always 0. You must select 0 (zero) for the maximum timer value.

Note A zero maximum timer value indicates that the pattern can remain indefinitely.

a. Type the appropriate maximum timer value for the seize receive pulse.

b. Press **Enter**.

Note Pressing Enter without first entering a value leaves the default, or current, value unmodified.

The second receive pulse data is displayed, along with the Enter ABCD Bits value (0-15) [n] prompt.

Step 6 Repeat Step 3 through Step 5 for this and all remaining receive pulse data.

When all receive pulse data is modified, the ICC UPG Update Tool screen is displayed. SUN Solaris workstation users, refer to Figure 6. Microsoft Windows PC workstation users, refer to Figure 8.

Display and Modify Transmit Pulse Data—Options 3 and 4

Complete the following steps to display and modify the transmit pulse data of a default .upg file:

Step 1 From the ICC UPG Update Tool menu, type **3** and press **Enter**.

The transmit pulse data is displayed on your screen (see Figure 13), followed by the ICC UPG Update Tool menu and the Enter your Choice prompt.

Figure 13 Display Tx Pulse Data Display

```
Enter your Choice: 3

  ****  Transmit Pulses  ****

Pulse                Segment  ABCD bits  On Time (ms)
-------------------  -------  ---------  ------------
tx_seize                1        12         350
tx_idle                 1         0         350
tx_wink                 1        12         240
tx_wink                 2         0         350
tx_flash                1         0         240
tx_flash                2        12         350
```

Each protocol can send a certain number of transmit pulses (our example, Figure 13, contains four). Each pulse is described by four parameters. (See Table 7.)

Note The transmit pulses wink and flash are assigned two segments. Each segment contains an ABCD bit pattern value and an active bit pattern timing value. Both can be modified.

Table 7 Display Tx Pulse Data Parameters

Parameter	Description
Pulse	Name of the pulse.
Segment	A numerical identifier for each segment of a pulse; a pulse is assigned one or two segments.
ABCD bits	The ABCD bit pattern that is to be transmitted. The pattern is a binary number from 0000 to 1111, which is displayed as decimal, 0 to 15.
On Time (ms)	Represents the guaranteed time, in milliseconds, that the active bit pattern (refer to Table 8) will be transmitted on the outgoing line.

Step 2 Type **4** and press **Enter** to modify the transmit pulse data.

The first transmit pulse name and segment data is displayed (seize). (See Figure 14.) The cursor is located after the Enter ABCD Bits value (0-15) [n] prompt. The default, or current, value is contained within the square brackets.

Figure 14 Transmit Pulse Data Display—ABCD Bits Value Prompt

```
Enter your Choice: 4


  ****  Transmit Pulses  ****

Signal: 'tx_seize'
Segment 1: Enter ABCD Bits value (0-15) [  12]:
```

Step 3 Modify the ABCD bit pattern, taking into account the following considerations:

- For the E&M, T1 protocol, the transmit pulses contain a certain sequence of changes in the A and B bits; the C and D bits are not used for defining transmit pulses. Refer to Table 8 for the default values of the ABCD bit patterns.

Table 8 Default ABCD Bit Patterns for the E&M, T1 Protocol

Signaling Name	Start Pattern	Active Pattern	End Pattern
Seize	0000	1100	—
Wink	0000	1100	0000
Flash	1100	0000	1100
Idle	1100	0000	—

- For the CAS/R2, E1 protocol, the transmit pulses contain specific ABCD bit patterns. Refer to Table 9 for the default values of the ABCD bit patterns.

Table 9 Default ABCD Bit Patterns for the CAS/R2, E1 Protocol

Signaling Name	Bit Pattern
Seize	0001
Seize Acknowledge	1101
Answer	0101
Clear Back	1101
Idle	1001

a. Convert the appropriate binary ABCD bit pattern to decimal.

b. Type the decimal value.

c. Press **Enter**.

Note Pressing Enter without first entering a value leaves the default, or current, value unmodified.

A new prompt—Enter Time On Value (ms) [n]—followed by the cursor, is displayed. (See Figure 15.)

Figure 15 Transmit Pulse Data Display—Time On Value Prompt

```
Enter your Choice: 4


  ****  Transmit Pulses  ****

Signal: 'tx_seize'
Segment 1: Enter ABCD Bits value (0-15) [  12]:
Segment 1: Enter Time On Value (ms)     [ 350]:
```

Step 4 Modify the minimum timer value (segment 1 timer value), taking into account the following considerations:

- For the E&M, T1 protocol, the transmit pulses are described in part by the length of time, in milliseconds, that the active bit pattern must be present on the outgoing line. Refer to Table 10 for the default minimum timer values. Adhere to E&M protocol industry standards for valid timer selections.

Table 10 Default Minimum Timer Values for the E&M, T1 Protocol

Signaling Name	Minimum Time (ms)
Seize	375
Wink	100
Flash	100
Idle	375

- For the CAS/R2, E1 protocol, all bit patterns are valid the instant they are present; default minimum timer values are always 0. You must select 0 (zero) for the maximum timer value.

a. Type the appropriate timer value for the seize receive pulse.

b. Press **Enter**.

Note Pressing Enter without first entering a value leaves the default, or current, value unmodified.

Step 5 Use the following considerations to determine your next step.

- If the seize or idle transmit pulse was configured in Step 4, configuration for that transmit pulse is complete. Repeat Step 1 through Step 5 for the next transmit pulse displayed.
- If the wink or flash transmit pulse was configured in Step 4, proceed to Step 6.

Step 6 Modify the ABCD end bit pattern (segment 2) following the guidelines discussed in Step 3.

Step 7 Modify the maximum timer value (segment 2 timer value), taking into account the following considerations.

Note Transmit pulses wink and flash are the only transmit pulses with maximum timer values. The maximum timer values are always contained in segment 2 of a transmit pulse.

- For the E&M, T1 protocol, the transmit pulses contain a maximum time, in milliseconds, that the ABCD bit pattern can be present on the outgoing line. Refer to Table 11 for the default maximum timer values. Adhere to E&M protocol industry standards for valid timer selections.

Table 11 Default Maximum Timer Values for the E&M, T1 Protocol

Signaling Name	Maximum Time (ms)
Seize	0
Wink	350
Flash	350
Idle	0

- For the CAS/R2, E1 protocol, the transmit pulses do not contain a maximum time; default maximum timer values are always 0. You must select 0 (zero) for the maximum timer value.

Note A zero maximum timer value indicates that the pattern can remain indefinitely.

a. Type the appropriate maximum timer value for the transmit pulse.

b. Press **Enter**.

Note Pressing Enter without first entering a value leaves the default, or current, value unmodified.

The next transmit pulse data is displayed, along with the Enter ABCD Bits value (0-15) [n] prompt.

Step 8 Repeat Step 3 through Step 5 for this and all remaining transmit pulse data.

When all transmit pulse data is modified, the ICC UPG Update Tool screen is displayed. SUN Solaris workstation users, refer to Figure 6. Microsoft Windows PC workstations users, refer to Figure 8.

Display and Modify the State Model—Options 5 and 6

Note It is not necessary to access option 5 or option 6 to create a customized .upg file. Option 5 is display only, and option 6 is not available for customer use at this time. We advise proceeding to "Display and Modify the Guard Time—Options 7 and 8," page 24.

Complete the following steps to display the state model:

Step 1 From the ICC UPG Update Tool screen, type **5** and press **Enter** to display the current state model.

The current state model, which describes protocol states, is displayed on the screen. (See Figure 16.)

Figure 16 State Model Display

```
Enter your Choice: 5


  ****  State Model  ****

#    State           Event            Next State
--  ------------     -----------      -----------
1    1:idle          1:tx_seize       3:wait_for_rx_ans
2    1:idle          4:abandon        7:guard
3    1:idle          5:alarm          8:alarm
.    .               .               .
.    .               .               .
.    .               .               .
```

The state model is described by four parameters. (See Table 12.)

Table 12 State Model Parameters

Parameter	Description
#	A sequential number list which gives the state model display some structure.
State	The current state of the protocol.[1]
Event	Transition identifier; event possibly encountered.[1]
Next State	Resulting state; the state achieved if State and Event conditions are met.[1]

1. The last three parameters described in Table 12 require some explanation. Using the #2 row of Figure 16 as an example, if the current protocol state is idle (1:idle) and the abandon (4:abandon) event is encountered, the next state which the protocol assumes is guard (7:guard).

The state model display is followed by the ICC UPG Update Tool menu.

Step 2 Proceed to "Display and Modify the Guard Time—Options 7 and 8," page 24. Do not select option 6.

Note Option 6 is not supported for customer use at this time. However, if you happen to select option 6, press **Enter** to accept default values until the ICC UPG Update Tool menu is displayed.

Display and Modify the Guard Time—Options 7 and 8

Complete the following steps to display and modify the guard time of a default .upg file:

Step 1 From the ICC UPG Update Tool screen, type **7** and press **Enter**, to display the guard time.

The message in Figure 17 is displayed on the screen, followed by the ICC UPG Update Tool menu and the Enter your Choice prompt.

Figure 17 Display Guard Time Display

```
Enter your Choice: 7


Guard Time = 200 ms.
```

A port is held in the guard state, after it is abandoned (the call associated with that port has ended), for the length of time specified by the guard time.

Step 2 Type **8** and press **Enter** to modify the guard time.

The message in Figure 18 is displayed. The cursor is located after the Enter new Guard Time in milliseconds [n] prompt. The default, or current, value is contained within the square brackets.

Figure 18 Modify Guard Time Display

```
Enter your Choice: 8


Enter new Guard Time in milliseconds [ 200]:
```

Step 3 Type an appropriate guard time value and press **Enter**.

Note Pressing Enter without first entering a value leaves the default, or current, value unmodified.

The ICC UPG Update Tool menu is displayed. SUN Solaris workstation users, refer to Figure 6. Microsoft Windows PC workstation users, refer to Figure 8.

Save a Customized .upg Data File—Option 9

Complete the following steps to save the customized receive and transmit pulse modifications to a new .upg file:

Step 1 From the ICC UPG Update Tool screen, type **9** and press **Enter**.

The message in Figure 19 is displayed on the screen. The cursor is located after the Enter (3-6) prompt.

Figure 19 Create User Defined Data File Display

```
Enter your Choice: 9
Select the user defined file name (icc0x.upg),
Enter (3-6) :
```

Step 2 Type a number from 3 to 6.

Step 3 Press **Enter**.

The information in Figure 20 is displayed on the screen.

Figure 20 Created File Display

```
Enter your Choice: 9
Select the user defined file name (icc0x.upg),
Enter (3-6) : 4


protocol id:14
protocol name:E&M04
```

The number entered in Step 2 is used to create three items:

- A customized .upg file containing the number entered in Step 2 in the form of icc0n.upg, where n is the number entered in Step 2. For example, if the number 4 is entered, a file with the name icc04.upg is created.
- An identifier for the customized protocol in the form of USER0n, where n is the number entered in Step 2. For example, if the number 4 is entered, a protocol identifier with the name USER04 is created.
- A new protocol name—signaling type—in one of two forms:
  - E&M0n, for the E&M, T1 protocol, where n is the number entered in Step 2
  - Cas0n, for the CAS/R2, E1 protocol, where n is the number entered in Step 2

Note A maximum of four customized .upg data files can be created and saved. Reuse an existing data file to create subsequent data files.

Table 13 describes the items created with Step 2 for the E&M, T1 protocol.

Table 13 Customized .upg File Elements for the E&M , T1 Protocol

Step 2 Number Entry	File Name	Protocol ID	Signaling Type
3	icc03.upg	USER03	E&M03[1]
4	icc04.upg	USER04	E&M04[1]
5	icc05.upg	USER05	E&M05[1]
6	icc06.upg	USER06	E&M06[1]

1. T1 signaling types are displayed as selectable SIG. TYPE field values within the VCO/4K software administration's ICC Programmable Trunk Configuration screen.

Table 14 describes the items created with Step 2 for the CAS/R2, E1 protocol.

Table 14 Customized .upg File Elements for the CAS/R2, E1 Protocol

Step 2 Number Entry	File Name	Protocol ID	Span Type
3	icc03.upg	USER03	Cas03[1]
4	icc04.upg	USER04	Cas04[1]
5	icc05.upg	USER05	Cas05[1]
6	icc06.upg	USER06	Cas06[1]

1. E1 signaling types are displayed as selectable SPAN TYPE field values within the VCO/4K software administration's ICC Programmable Trunk Configuration screen.

Note Switch configuration with the customized .upg file makes use of the different files and names created in Step 2; keep accurate records.

Step 4 Press **Enter** to return to the ICC UPG Update Tool screen.

Exit from the ICC UPG Update Tool—Option 0

From the ICC UPG Update Tool screen, type **0** and press **Enter** to exit from the tool.

Copy the customized .upg file from the hard drive to a floppy diskette.

A new custom .upg file is now ready for implementation on the VCO/4K switch. Refer to "Switch Configuration with a Customized .upg File," page 26, for complete configuration instructions.

Switch Configuration with a Customized .upg File

Complete the following steps to configure the VCO/4K switch with a customized .upg file.

Note For each step, refer to the *Cisco VCO/4K System Administrator's Guide* for more instructions.

Step 1 Access the VCO/4K software administration's Copy Files screen.

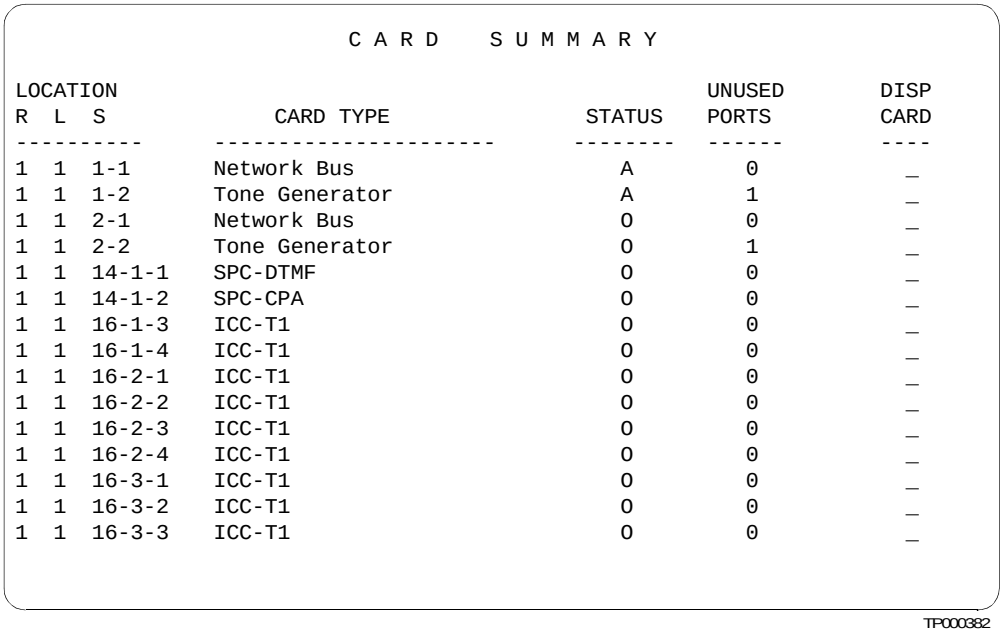
Step 2 Copy the customized .upg file from the diskette (the file created on the diskette with instructions in "Custom .upg File Creation Instructions," page 14) to the C:/BOOT directory on both the A and B sides of the switch.

Step 3 Access the VCO/4K software administration Card Maintenance screen.

Step 4 Take the entire ICC out of service (OOS).

Step 5 Access the Card Summary screen (see Figure 21) via the Database Administration menu.

Figure 21 Card Summary Screen



```
                        C A R D   S U M M A R Y

LOCATION                                                    UNUSED      DISP
R  L  S            CARD TYPE                  STATUS       PORTS       CARD
---------- ---------------------- -------- ------ ----
1  1  1-1      Network Bus                    A        0          _
1  1  1-2      Tone Generator                 A        1          _
1  1  2-1      Network Bus                    O        0          _
1  1  2-2      Tone Generator                 O        1          _
1  1  14-1-1   SPC-DTMF                       O        0          _
1  1  14-1-2   SPC-CPA                        O        0          _
1  1  16-1-3   ICC-T1                         O        0          _
1  1  16-1-4   ICC-T1                         O        0          _
1  1  16-2-1   ICC-T1                         O        0          _
1  1  16-2-2   ICC-T1                         O        0          _
1  1  16-2-3   ICC-T1                         O        0          _
1  1  16-2-4   ICC-T1                         O        0          _
1  1  16-3-1   ICC-T1                         O        0          _
1  1  16-3-2   ICC-T1                         O        0          _
1  1  16-3-3   ICC-T1                         O        0          _
```

TP000382

Step 6 Display the span of the ICC you want to configure with the customized .upg file.

The ICC Programmable Trunk Configuration screen is displayed. (See Figure 22.)

Figure 22 ICC Programmable Trunk Configuration Screen—T1

```
                    ICC PROGRAMMABLE TRUNK CONFIGURATION

SPAN LOCATION:   R,L,S 1 1 16-1-1       STATUS:     Out of Service
CARD TYPE:       ICC-T1                 SPAN TYPE:  SF        CODE: AMI
TXGAIN: Obd      TXCLCK: SCLK           SLIP: 255   ALM: SYS  LENG: 0-133
RXGAIN: Obd      RFCLCK: LOOP           OOF:  17

          TRUNK                  GROUP      SIG.   INPULSE
PORT      NAME       GROUP       NAME       TYPE    RULE      COS       LAW
----    --------     -----     ---------     ----   --------   ----      ---
 1                     __       ________     E&M03    0         2        Mu
 2                     __       ________     E&M      0         2        Mu
 3                     __       ________     E&M      0         2        Mu
 4                     __       ________     E&M      0         2        Mu
 5                     __       ________     E&M      0         2        Mu
 6                     __       ________     E&M      0         2        Mu
 7                     __       ________     E&M      0         2        Mu
 8                     __       ________     E&M      0         2        Mu
```

TP000383

Step 7 Use the SIG. TYPE field (for the E&M, T1 protocol) to select the customized .upg file signaling type for each port for which it is appropriate. (See Figure 22.) Use the SPAN TYPE field (for the CAS/R2, E1 protocol) to select the customized .upg file signaling type for each span for which it is appropriate. (See Figure 23.)

Figure 23 ICC Programmable Trunk Configuration Screen—E1

```
                    ICC PROGRAMMABLE TRUNK CONFIGURATION

SPAN LOCATION:   R,L,S 1 1 16-1-1       STATUS:     Out of Service
CARD TYPE:       ICC-E1                 SPAN TYPE:  Cas03         TS0:
TXGAIN: Obd      TXCLCK: SCLK           SLIP: 255   ALM: SYS  LENG: 0-133
RXGAIN: Obd      RFCLCK: LOOP           OOF:  17

          TRUNK                  GROUP      SIG.   INPULSE
PORT      NAME       GROUP       NAME       TYPE    RULE      COS       LAW
----    --------     -----     ---------     ----   --------   ----      ---
 1                     __       ________     ___      0         2        Mu
 2                     __       ________     ___      0         2        Mu
 3                     __       ________     ___      0         2        Mu
 4                     __       ________     ___      0         2        Mu
 5                     __       ________     ___      0         2        Mu
 6                     __       ________     ___      0         2        Mu
 7                     __       ________     ___      0         2        Mu
 8                     __       ________     ___      0         2        Mu
```

TP000392

Note The customized SIG. TYPE (T1) or SPAN TYPE (E1) field selections are those created in "Save a Customized .upg Data File—Option 9," page 25, and described in Table 13 and Table 14.

Note When you select or modify the signaling type on port 1, the Enter Y to propagate port 1 values message is displayed. Enter **Y** to configure all remaining ports with the same signaling type as that of port 1. Enter **N** to configure only port 1 with a particular signaling type.

Step 8 Access the VCO/4K software administration Card Maintenance screen.

Step 9 Activate the ICC.

The customized .upg file is now configured in the switch and the new protocol is implemented.

ICC UPG Update Tool Restrictions and Limitations

Keep the following restrictions and limitations in mind when configuring the switch with customized .upg files.

Caution The ICC UPG Update Tool allows you to create customized .upg files that may not be valid for the VCO/4K system. Interruption of service and loss of calls may occur.

- A maximum of four customized .upg data files can be created and saved. Reuse an existing data file to create subsequent data files.
- The customized .upg file names are fixed—icc03.upg through icc06.upg.
- The customized .upg file names are not protocol specific; the names can designate either the E&M, T1 or the CAS/R2, E1 protocol.
- Users of customized .upg files must create new customized .upg files when upgrading system software. The new customized .upg files must be created using the new default .upg files.
- Option 6, Modify the State Model, of the ICC UPG Update Tool is not available for customer use at this time.

VCO/4K Documentation Set—New Document

The Cisco Systems VCO/4K product is supported by a new document, *Cisco VCO/4K System Messages*. This document contains all of the prompt, warning, and error messages users may encounter while operating VCO/4K system software.

VCO/4K Documentation Set Modifications

Descriptions of prompt, warning, and error messages have been removed from the following documents and are now contained in the new *Cisco VCO/4K System Messages* document:

- *Cisco VCO/4K System Administrator's Guide*
- *Cisco VCO/4K ISDN Supplement*

- *Cisco VCO/4K Ethernet Guide*
- Signaling System No. 7 supplements

Access the Cisco VCO/4K customer documentation at the following URL: http://www.cisco.com/univercd/cc/td/doc/product/tel_pswt/.

VCO/4K Documentation Set Restrictions and Limitations

There are no restrictions or limitations to the VCO/4K documentation set with the addition of *Cisco VCO/4K System Messages*.

System Requirements

This section provides a list of system requirements for running VCO/4K system software. These requirements are categorized by hardware, firmware, and software. Contact Cisco Systems Technical Assistance Center (TAC) for any site-specific information.

Hardware Requirements

To operate system software V5.1, your Cisco VCO/4K switch must be equipped with the following minimum components and revisions:

- System Controller
  - VME-147 System Controller Card (must have updated boot PROMs) or Combined Controller (16 MB 68030-based CPU)

    Refer to the *CPU Upgrade Procedure* (63104050100) if you need to replace a 25-MHz/8-MB CPU with a 33-MHz/16-MB CPU.
  - CPU Transition Module (CPU-TM) or storage/control I/O module
  - SWI Version A0AR
- Storage Subsystem
  - SCSI interface hard drive, 42 MB or larger
  - 3.5" SCSI interface floppy drive
- Control Circuit Cards
  - NBC3 card, rev C0GR or E0AR

    Two NBC3 cards are required for redundant systems.
  - Alarm Arbiter Card (AAC), rev COUR (or later) is required for C-bus operation
- Service Circuit Cards
  - DTG-2 or DTG (Digital Tone Generator)

    or
  - SPC-TONE and SPC-OUTPULSE
- Network Circuit Cards
  - ICC, rev C09P
  - 16-span ICC-E1 I/O module, rev A15P

- 4- and 8-span ICC-E1 I/O module, rev A16P
- 16-span ICC-T1 I/O module, rev A16P
- 4- and 8-span ICC-T1 I/O module, rev A17P

Note Use the I/O module specific to your needs. You do not need all of the I/O modules listed above to meet the hardware minimum requirements.

Firmware Requirements

Table 15 lists the system firmware requirements. Refer to the technical descriptions in Volumes 3 and 4 of your Cisco VCO/4K hardware documentation set for firmware locations for each card.

For tone plan-specific firmware requirements (which affect DTG-2 or DTG, CPA, and MFCR2 cards), refer to the *Cisco VCO/4K Tone Plan Release Notes.*

Note The firmware label applied by Cisco Systems may list only the last four digits of the checksum. The checksum for the NBC3 LP125 is not listed because the programming for this item is part of the NBC3 download file.

Table 15 Firmware Requirements

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(3)
8LTC	8LTC	0000E09F	1.43	U2	N
BRC	BRC	00002412	2.01	U2	N
CPA	CPA	0000A7A2	1.03	U2	N
CPU	Boot EVEN	006E691D	5.00	U1	N
	Boot ODD	00866CBF	5.00	U15	
	MVME147-023 ODD	5741B41F	2.44	U30	
	MVME147-023 EVEN	5741B42F	2.44	U22	
D+I	D+I	00003158	2.02	U9	N
DID-2	DID-2	000010C3	1.41	U2	N
DRC-8	DRC	00009625	5.23	U2	N
DRC-24/48	DRC-2	00004241	3.08	U2	N
DVC	DVC	000095BE	2.07	U2	N
E+M	E+M	0000D381	2.06	U2	N

Table 15 Firmware Requirements (continued)

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(3)
E1-CAS	E1-CAS/MERC	0000F1C6	2.13	U23	N
	E1-CAS/R2	00002654	2.01	U23	
	E1-31B	0000EF58	3.03	U23	
	E1-CAS/R2 (No CRC4)	000EDF08	3.43	U23	
	CAS PROC	00001E78	1.04	U85	
	32 CHAN SETUP	0000CDDE	1.00	U113	
	GAIN/LAW PROM	000011D2	1.02	U45/53	
ICC I/O Module	Com Bus	00299FE4	8.01	U48	N
	J3	00275397	8.01	U76	
	CS	002A9F8A	8.01	U12	
	5x7, Rev B	000B5C9A	8.01	U11	
	PCM Interface	00257696	8.02	U41	
IPRC-8	IPRC 8-PORT	00220D75	1.03	U2	N
IPRC-64	IPRC 64-PORT	00220DC1	1.03	U2	N
IPRC-128	IPRC 128-PORT	00220E0A	1.03	U2	N
MRC	MRC	0000EE80	3.08	U2	N
MVDC-T1	Local Bus	000D373B	LP100A	U35	N
	Com Bus	00186169	LP101A	U19	
	Interrupt	000AE787	LP102	U75	
	PCM Interface	001748E3	LP103A	U107	
	Framer	0005FE2C	LP104	U76	
	Gain/Law	0005A153	LP105B	U49	
	T1 Clock	000BE051	LP106	U80	
	Gain/Law	00776220	—	U50	
	Boot PROM	0066DF90	1.06	U10	
NBC3 Card Rev C	LP122 SWI	00194974	LP122C	U66	N
	LP123 Counter	0018E096	LP123E	U13	
	LP124 Chip Select	000D7B43	LP124C	U12	
	LP125 Com Bus FPGA	—	LP125C	U43	
	LP126 Com Bus EPLD	0005CED8	LP126B	U47	
	LP127 Mezzanine Add.	0006C919	LP127A	U105	
	Boot PROM	00F597BE	1.02	U4	

Table 15 Firmware Requirements (continued)

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(3)
NBC3 Card	LP141 SWI	0019204D	LP141A	U31	N
Rev E	LP140 Counter	0015E220	LP140H	U73	
	LP139 Chip Select	000D4209	LP139A	U30	
	LP125 Com Bus FPGA	—	LP125C	U53	
	Boot PROM	00F597BE 00F5D06E	1.02 or 1.03	U1	
SLIC-2	SLIC-2	000010B9	1.41	U2	N
SSC	Com Bus Control	00186169	LP101A	U24	N
	PCM Interface	00185A34	LP130B	U76	
	Quad 9 to 1	0017878C	LP129A	U71/U70	
	Redundancy Control	0017F249	LP128A	U100	
	Subrate Matrix Control	000BB573	LP131	U31	
	Boot PROM	00400736	1.02	U10	
T1	T1	00002BA5	1.26	U2	N
	T1 Aux Proc	00007125	1.00	U45	N
UTC-2 Rev A	UTC	0000F91E	6.00	U2	N
UTC-2 Rev B	UTC	0000ECF0	6.54	U2	N
4XT1	4XT1 68340 VIRT CM	28FAF0	1.09	U10	N
	4XT1 68302 ODD	00277AE4	1.14	U47, 93, 150, 185	N
	4XT1 68302 EVEN	00242750	1.14	U48, 94, 151, 186	N
	GAIN/LAW CCITT G.711	000FCD68	1.03	U25, 28, 67, 78, 120, 131, 158, 170	N
	PATH SETUP ROM	0000CDDE	1.00	U35, 86, 116,178	N
E1-PRI	E1-PRI FW Odd	00105999	1.03	U38	N
(NTDASS2, DPNSS)	E1-PRI FW Even	000DA6C3	1.03	U39	N
	E1-PRI 32 Chan Setup	0000CDDE	1.00	U113	N
	PCM Gain/Law	000011D2	1.02	U45/53	N
E1-PRI 120Ω	Net5 ODD	1075A4	1.04	U38	N
(NET5)	Net5 EVEN	DB375	1.04	U39	N

Table 15 Firmware Requirements (continued)

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(3)
PRI	PRI FW Odd	00107EA5	1.02	U38	N
	PRI FW Even	000DB30B	1.02	U39	N
	32 Chan Setup	0000CDDE	1.00	U29	N
	PCM GAIN/LAW	000011D2	1.02	U45/53	N
PRI/N	ODD	00115CB1	1.09	U38	N
	EVEN	000DEE1D	1.09	U39	N
	32 Chan Setup	0000CDDE	1.00	U29	N
	PCM Gain/Law	000011D2	1.02	U45/53	N
4XE1	4XE1 68340 VIRT CM	28FAF0	1.09	U10	N
	4XE1 68302 ODD	00263E25	1.04	U47, 93, 150, 185	N
	4XE1 68302 EVEN	002313DD	1.04	U48, 94, 151, 186	N
	GAIN/LAW CCITT G.711	000FCD68	1.03	U25, 28, 67, 78, 120, 131, 158, 170	N
	PATH SETUP ROM	0000CDDE	1.00	U35, 86, 116,178	N
DCC[1]	DCC	0000A575	2.02	U2	N
(North American Tone Plan)	LIN/PCM 0 DB	0000B9A2	1,00	U43	N
	LIN/PCM -3 DB	0000AB04	1.00	U44	N
	PCM/LIN Odd	0000AFA2	1.00	U33	N
	PCM/LIN Even	0000B736	1.00	U34	N
DTG/DTG-2[1]	DTG-FW[2]	000077AD	1.23	U2	N
(North American Tone Plan)		00007C30	1.25	U2	
	Tone ODD	00000078	2.04	U54	
	Tone EVEN	00004217	2.04	U53	
	MAP PROM LP87	0000628A	1.1	U36	
	MAP PROM LP88	00004B9E	1.1	U37	

1. Refer to the *Cisco VCO/4K Tone Plan Release Notes* for listings of firmware requirements for countries other than those found in North America.
2. Version 1.23 or 1.25 is required. Version 1.25 supplies an additional tone for customers in Canada.

Software Requirements

Table 16 lists valid software checksums and versions for the VCO/4K system software and optional software products.

Use the Software/Firmware Configuration utility to identify the version and checksum of each software file installed on the system (refer to the *Cisco VCO/4K System Administrator's Guide* for more information). System software files are distributed across the installation floppy diskettes. Optional software products are contained on two floppy diskettes.

Table 16 Software Requirements

VCO/4K System Software	Filename	Checksum	File Version[1]	Changed Since V5.1(3)
Executable Files	GLOBALS.EXE	01543A98	—	**Y**
	HOSTMGR.EXE	04BE8DCF	—	**Y**
	SYSWD.EXE	01BB092B	—	**Y**
	REDMGR.EXE	00FF596D	—	**Y**
	PERMGR.EXE	00000000	—	N
	NETMGR.EXE	031B0F0A	—	**Y**
	SNMP.EXE	02E966F3	—	**Y**
	INSTALL.EXE	022B14C2	—	**Y**
	TELERTE.EXE	00007ADA	4.00	N
	NFAS.EXE	00007B0C	6.48	N
	NI2.EXE	00007B0C	6.48	N
	ETHERMGR.EXE	00007B0C	—	N
Download Files	MVDCT1.DWN	00F2D33A	1.08	N
	NBC.DWN	01095D96	1.09	N
	DNI.DWN	006F4101	1.02	N
	SSC.DWN	006C84CB	1.00	N
	CPA.DWN	003079F3	8.09	N
	DVC.DWN	005ADA02	1.08	N
	DTMF.DWN	00053D1A	2.02	N
	IPRC.DWN	0023113E	1.05	N
	4XT1.DWN	0037015B	1.55	**Y**
	4XE1.DWN	0037A584	1.45	**Y**
	SPC.DWN	064731BC	5.09	**Y**
	ICC.DWN	0630C324	5.12	**Y**

Table 16 Software Requirements (continued)

VCO/4K System Software	Filename	Checksum	File Version[1]	Changed Since V5.1(3)
Protocol Files[2]	ICCCASR2.UPG	000007B4	—	**Y**
	ICCCCS31.UPG	00000128	—	N
	ICCCLEAR.UPG	00000128	—	N
	ICCEM.UPG	00000666	—	N
	ICCGR303.UPG[3]	000009E1	—	**Y**
	ICC01.UPG	00000666	—	N
	ICC02.UPG	0000077A	—	N
	ICCFXOGS.UPG	000007C2	—	**Y**
	ICCFXOLS.UPG	00000773	—	**Y**
	ICCFXSGS.UPG	000007F4	—	**Y**
	ICCFXSLS.UPG	00000699	—	**Y**
Operating System Files	VRTX OS	—	1.08	N
	IFX	—	1.11	N
	TNX	—	1.45	N
ISDN Optional Software[4]				
ISDN-NFAS	PRI.DWN	0091BB77	8.04	**Y**
	PRIN.DWN	009665C2	9.00	**Y**
ISDN-PRI	PRI.DWN	0091BB77	8.04	**Y**
	PRIN.DWN	009665C2	9.00	**Y**
NI-2	PRI.DWN	0091BB77	8.04	**Y**
	PRIN.DWN	009665C2	9.00	**Y**
NTTPRI	NTTPRI.DWN	008DF385	1.09	N
NTDASS2	NTDASS2.DWN	009F44C9	3.08	N
DPNSS	DPNSS.DWN	00AB15B6	3.12	N
NET5	NET5.DWN	008774E7	1.29	N
SNMP				
Management Information Base	VCO.MIB[5]	—	2.2.9	**Y**

1. The software no longer lists the individual executable file (.EXE) version numbers in the Software/Firmware Configuration screen. A "—" character in the File Version column signifies that the file version matches the system software release, for example, V5.1. If a version number appears in the File Version column for an .EXE file, it is strictly for reference purposes; it does not appear in the Software/Firmware Configuration screen.
2. The checksum values for .upg files (protocol files) are displayed by accessing the Display File screen. Go to Maintenance Menu > Disk Utilities > Display File, and type: **c:boot/<filename>**. The .upg file checksum value is displayed in the first four bytes of the second row.
3. GR-303 is not supported for customer use; it is reserved for Cisco Systems internal use only.
4. The optional software file version numbers are listed as they appear on the optional software diskette label.
5. The VCO.MIB file is not installed on the switch; it is intended for the SNMP host system.

Important Notes

- Live Upgrade
- ICC-T1 mixed protocols
- ICC-T1 ISDN span as primary timing source

Live Upgrade

You can use Live Upgrade to upgrade to system software 5.1(4); however, refer to the following two sections for version-specific workaround procedures.

Live Upgrade Procedures from V4.2 and Higher

Complete the following steps to use Live Upgrade if you are using system software V4.2 and higher. This procedure is a workaround for DDTs issue CSCdp23217—Live Upgrade failure with a Process Event Handler.

Caution If you are using system software from V5.0.0.25 through V5.1.0.26, you must complete the following steps, and the steps in "Live Upgrade Procedures from V5.0.(0.25) through V5.1.(0.26) with SPCs," page 37, so that you do not lose all calls.

Caution Do not access the Software/Firmware Configuration screen at any time during Live Upgrade procedures. Failure to follow this instruction results in Live Upgrade failure. Proceed to Step 1 below; do not deviate from these procedures.

Step 1 Boot the standby side of the switch.

Step 2 Wait for file synchronization and perform a switchover.

Step 3 Boot the new standby side and wait for file synchronization.

Step 4 Follow the Live Upgrade procedures contained in the *Cisco VCO/4K Software Installation Guide*.

Live Upgrade Procedures from V5.0.(0.25) through V5.1.(0.26) with SPCs

Complete the following steps to use Live Upgrade from system software V5.0.0.25 through V5.1.0.26. This procedure prevents DSP failure on switchover and is a workaround for DDTs issue CSCdm22671.

Caution Follow this workaround procedure when using Live Upgrade from V5.0.0.25 through V5.1.0.26. Failure to do so will result in the loss of all calls that require SPC resources. Use this procedure to minimize the volume of lost calls, limiting them to calls that are active on the SPC and that are taken out of service in order to re-flash.

Step 1 Load the new SPC.DWN on the active side of the system.

Step 2 Take one SPC out of service (OOS).

Step 3 Place the same SPC in the active state.

Step 4 Wait for the download to complete and all DSPs to become active on the SPC.

Step 5 Repeat Step 2 through Step 4 for all other SPCs, one at a time.

Step 6 Follow the Live Upgrade procedures contained in the *Cisco VCO/4K Software Installation Guide*.

ICC-T1 Mixed Protocols

The ICC-T1 can be configured with many combinations of ISDN and non-ISDN protocols. Support is limited to a maximum of two protocols per ICC. Due to the vast number of combinations, Cisco Systems has not tested all possible span/protocol combinations.

Table 17 lists the mixed protocols tested by Cisco Systems. Additional combinations will be tested in the future.

Table 17 ICC-T1 Mixed Protocols Tested by Cisco Systems

	Test Combination		
Test	**Group/Span**	**Group/Span**	**Result**
1	ICC-T1, SF/AMI, E&M	ICC-T1, ESF/B8ZS, E&M	Pass
2	ICC-T1, ESF/B8ZS, Clear	ICC-T1, ESF/B8ZS, E&M	Pass
3	ICC-T1, ESF/B8ZS, Clear	ICC-T1, SF/AMI, E&M	Pass
4	ICC-ISDN, ESF/B8ZS, NTI	ICC-T1, ESF/B8ZS, E&M	Pass
5	ICC-ISDN, ESF/B8ZS, NTI	ICC-T1, SF/AMI, E&M	Pass
6	ICC-ISDN, ESF/B8ZS, NTI	ICC-T1, ESF/B8ZS, Clear	Pass
7	ICC-ISDN, ESF/B8ZS, 4ESS	ICC-T1, SF/AMI, E&M	Pass
8	ICC-ISDN, ESF/B8ZS, 4ESS	ICC-T1, ESF/B8ZS, Clear	Pass
9	ICC-ISDN, ESF/B8ZS, 4ESS	ICC-T1, SF/AMI, Clear	Pass
10	ICC-ISDN, ESF/B8ZS, NI2	ICC-T1, SF/AMI, E&M	Pass
11	ICC-ISDN, NFAS	ICC-T1, ESF/B8ZS, E&M	Pass
12	ICC-T1, SF/AMI, FXOLS	ICC-T1, SF/AMI, FXOGS	Pass
13	ICC-T1, ESF/B8ZS, FXOLS	ICC-T1, SF/AMI, FXOGS	Pass
14	ICC-T1, ESF/B8ZS, FXOLS	ICC-T1, ESF/B8ZS, FXOLS	Pass
15	ICC-T1, SF/AMI, FXOLS	ICC-T1, ESF/B8ZS, FXOLS	Pass
16	ICC-T1, SF/AMI, FXOLS	ICC-T1, SF/AMI, FXSLS	Pass
17	ICC-T1, SF/AMI, FXSLS	ICC-T1, SF/AMI, FXSGS	Pass
18	ICC-T1, ESF/B8ZS, FXSLS	ICC-T1, SF/AMI, FXSGS	Pass
19	ICC-T1, ESF/B8ZS, FXSLS	ICC-T1, ESF/B8ZS, FXSLS	Pass
20	ICC-T1, SF/AMI, FXSLS	ICC-T1, ESF/B8ZS, FXSLS	Pass

ICC-T1 ISDN Span as Primary Timing Source

When an ICC-T1 ISDN span is configured as the primary timing source, the incoming clock on the ICC-T1 ISDN fails to synchronize if you are upgrading from an existing database—prior to system software version 5.1(1)—to a new database in VCO/4K system software version 5.1(4).

To utilize your existing ICC-T1 ISDN (NI2, 4ESS, 5ESS, NTI, NTT) span as the primary timing source, complete the following steps when you upgrade to 5.1(4).

Note You do not need to perform the following procedure if you are adding a new T1 span as the primary timing source to the database or if you are currently running system software V5.1(1), and higher.

Note When you upgrade your software to 5.1(4), Cisco Systems recommends that you perform this procedure on the ICC-T1 ISDN spans configured as the primary and secondary timing source.

Step 1 Take the existing ICC-T1 ISDN span, configured as the primary timing source, out of service (OOS).

Step 2 From the ICC ISDN Span Configuration screen, perform the following steps:

a. Change the REF CLOCK field parameter from **LOOP** to **1544**.

b. Press **Enter**.

c. Change the REF CLOCK field parameter from **1544** to **LOOP**.

d. Press **Enter**.

Step 3 Return the ICC-T1 ISDN span (from Step 1) back in service.

Limitations and Restrictions

Table 18 lists the design constraints which have been identified in VCO/4K system software and related software. Unless noted, these limitations and restrictions apply to all Cisco VCO/4K releases up to and including 5.1(4). Cisco Systems currently has no plans to address the following known design constraints.

Table 18 Known Design Constraints up to and Including 5.1(4)

DDTs Issue	Description
—	Do not pull the active side NBC3 on an operating production switch. If you pull an active NBC3, it can impact traffic and the system will generate errors. If you suspect a problem with an NBC3 card and you wish to remove it, first switch sides to make it the standby side.
—	The ICC and SPC automatically reset after downloads. After a download to the ICC or the SPC, the card resets itself in order for the new download to take effect.

Table 18 Known Design Constraints up to and Including 5.1(4) (continued)

DDTs Issue	Description
—	The system does not allow the operational mode to be set back to standard once it has been set to extended. This is due to larger values which could be set in extended mode and are not valid in standard mode. The mode is stored in one of the database files. If you must return to standard mode during testing, do so by reverting to the saved database files which were copied before you set the extended mode.
—	With Four Span E1 cards, resource groups can include channel 17, depending on whether the card spans are provisioned for CCS/31B or CAS. In CCS/31B mode, channel 17 is a bearer channel and can be added to a resource group. In CAS mode, channel 17 is used as the D-channel, and therefore, cannot be in a resource group. After adding and configuring a Four Span E1 card, you can change the mode (CAS or CCS/31B) while the card is in a resource group. However, the system does not automatically remove channel 17 from the resource group when you change the mode from CCS/31B to CAS, or automatically add channel 17 to the resource group when you change the mode from CAS to CCS/31B. When you change the span from CCS/31B to CAS, all call attempts on channel 17 fail because channel 17 is no longer a bearer channel. When you change a span from CAS to CCS/31B mode, bandwidth is wasted. **Resolution:** Verify that resource groups properly reflect the nature of channel 17 when changing the mode of a Four Span E1 card span between CCS and CAS. **Note** The system administration console and SNMP do not prevent users from configuring bearer-channel signaling and timing parameters for channels that are not truly bearer channels. This applies to channel 17 for CAS mode and channel 1 for both modes. (Channel 1 is used for framing.) Users may find this misleading, but it is harmless.
CSCdm18135	If a resource group contains SPC-CONF, the system hunts by means of the Rotary method only (regardless of whether you select Rotary or Cyclic in the Hunt Type field from the Resource Group Summary screen).
CSCdm29344	The single-span CPA card does not allow for assigning a REP token to the SIT *and* ISUP tone signaling events simultaneously in an answer supervision template. The SIT (special information tone) and ISUP (integrated services digital network user part) tones have similar frequencies. If you include both of these signaling events in an answer supervision template, and you assign a REP token to both, the system always detects the SIT tone rather than the ISUP tone. Therefore, when you create an answer supervision template, assign the REP token to only one of these signaling events. Since the ISUP tone is used for out-of-band signaling and the SIT tone is used for in-band signaling, the two tones can be separately enabled in the answer supervision template without affecting any application connected to the network.
CSCdm34650	Australia single span CPA fails to detect ringback cessation.
CSCdm75392	CONNECT not sent to PRI/N card configured for NTTPRI.

Table 18 Known Design Constraints up to and Including 5.1(4) (continued)

DDTs Issue	Description
CSCdp46791	Call Chain Dump messages may get printed in the logs after multiple system switchovers. These are diagnostic messages and indicate that a call associated with this chain was cleared as a result of a switchover.
CSCdp84909	The VCO receives alarms FRM506/FRM531 under the rare circumstances of the SWI buffer not being allocated for sending messages to the NBC, during very high volume traffic. Loss of traffic may result.
CSCdr56356	Inserting an MVDC-T1 into a slot with an IPRC cable causes damage. Do not insert anything other than an IPRC into the same slot to which an IPRC SCSI cable is attached. Disconnect the IPRC SCSI cable if it is not used so that the slot can be occupied by a card other than an IPRC.
CSCsf84771	A shutdown to the system results in a reboot. If you need to prevent a reboot, you must follow one of the workaround procedures described below: • Remove the Combined Controller on a VCO/4K. Rebooting attempts are prevented. • Reboot the system from a floppy disk. The system enters and remains in the installation state, and prevents further reboots.
CSCsf85214	Spans that have been taken OOS before a reboot must be manually taken OOS after the reboot is complete. It is also recommended that the system is not run with cards defined and OOS; remove cards from the database. This workaround will improve overall performance.

Caveats

This section contains resolved and open software caveats for this release of the Cisco VCO/4K. Caveats describe unexpected behavior or defects in Cisco VCO/4K system software or related hardware. Complete the following steps to access detailed information on resolved and open caveats:

Step 1 Open an Internet browser application.

Step 2 Go to http://www.cisco.com.

Step 3 Click on the site menu's Login hypertext.

The Username and Password Required dialog box is displayed.

Step 4 Enter your username and password.

Note If you do not have a valid username and password, contact your Cisco Systems representative.

Step 5 Click the OK button.

A Cisco Systems Web page is displayed.

Step 6 Click on the Technical Assistance Center hypertext, which is located beneath the Service & Support section.

Step 7 Click on the Tools hypertext.

Step 8 Click on the Software Bug Toolkit hypertext.

Step 9 Click on Search for Bug by ID Number hypertext.

The Search for Bug by ID Number tool is displayed.

Step 10 Use the Search for Bug by ID Number search tool to find detailed information on caveats for the VCO/4K product.

Resolved Caveats

Table 19 lists the caveats issued against VCO/4K system software, and related optional software applications, that have been resolved in system software version 5.1(4).

Table 19 Resolved Caveats for Release 5.1(4)

DDTs Issue	Description
CSCdm16458	ICC-ISDN spans go Active when looped back both as USER.
CSCdm71336	ICC responds improperly to ISDN T308 expiry.
CSCdm81186	VCO does not send $EA report to host when ISDN T309 expires.
CSCdp01358	Controller reports extra incorrect digits to host when interdigit timout.
CSCdp02305	ICC-T1 does not support FXO/FXS signaling.
CSCdp18684	BONG tone incorrect.
CSCdp23085	Disconnecting v-port before $67 command will not reboot standby side.
CSCdp32598	Alarm mismatch in card and system alarm screens.
CSCdp33247	Not all SPC DSPs will come active after system reboot.
CSCdp33999	T1 ISDN fails diagnostics.
CSCdp63985	SNMP poll returns 100 for year 2000.
CSCdp68345	SNMP not implemented for ISDN per-span overlap.
CSCdp68851	Missing some tokens and one token misnamed.
CSCdp70696	Incoming timing tries to synch on OOF span.
CSCdp71800	ISDN timer T302 does not fire when overlap sending.
CSCdp79890	VCO-host socket disconnect under certain load conditions – HST013.
CSCdp79898	ICC LED display does not reflect database changes.
CSCdp84612	ISDN overlap ACCUMULATE mode returns wrong SETUP ACK.
CSCdp88312	128 port IPRC cannot be seen in Card Display.
CSCdr07713	DSPs are going out/in service during load.
CSCdr08843	Cannot configure inpulse rule to greater than 100 for ICC.
CSCdr08845	VCO returned incorrect STATUS message when NOTIFY was received.
CSCdr09792	Alarm not generated when NBC3 goes to Internal Timing Source.
CSCdr11148	Core Dump while running extended mode Regression.
CSCdr11642	ICC-T1 does not support FXS-LS.
CSCdr18101	VCO sends disc (no cause codes) when T303 expires.

Table 19 Resolved Caveats for Release 5.1(4) (continued)

DDTs Issue	Description
CSCdr19071	Call is not disconnected when ICC-T1/NTT PRI carrier loss occurs.
CSCdr19644	SNMP returns no response for card alarm traps.
CSCdr24501	Restarts do not work correctly on NFAS circuits.
CSCdr28115	Cannot add 1920 member to resource group.
CSCdr28117	NET5 Network rejects CALL PROC without CHAN ID IE.
CSCdr30493	Live Upgrade Log (option K) has invalid default year.
CSCdr32033	ICC-ISDN span with D-channel failure is active.
CSCdr34829	Enhance single span PRI/N card with the ability to do service messages.
CSCdr38661	ICC quiet tone problems with A-law.
CSCdr40561	Data Link capacity limited by the buffer descriptor read algorithm.
CSCdr40569	No error message for insufficient disk space.
CSCdr41455	$6C to stop voice does not return T1 port to correct state.
CSCdr46368	Enhancement to make guard timing programmable.
CSCdr47457	Core dump while bringing SPC individual DSPs active.
CSCdr49239	Loss of All DTMF/CPA/MFRC Alarm at 256 ports.
CSCdr50707	Remove time slot restriction on VCO/4K.
CSCdr52063	Fix potential ICC/SRM memory leaks.
CSCdr52375	A SLIC to ICC FXS/GS to ICC FXO/GS to SLIC fails.
CSCdr52969	ICC-T1 stays Active when OOF.
CSCdr54695	$90 Command does not restore FXSGS Ports to CP_IDLE.
CSCdr55667	ALM073 does not provide R-L-S or Interface/Span Info.
CSCdr57151	Disconnect last talk-only port will fail with NSB=0x1D.
CSCdr73001	Enhancement request for T310 of greater than ten seconds.
CSCdr74790	$90 does not restore FXOLS, FXSLS, and FXOGS to CP_IDLE.
CSCdr77705	ANSSUP not included in SNMP mib.
CSCsf85047	The SSC downloads and goes into Maintenance.
CSCsf85087	ICC/E1 and D&I broken in Mu-law.
CSCsf85180	PRI timer screen incorrect.
CSCsf85230	Card type needs to be larger.
CSCsf85236	Test Port Card display broken.
CSCsf85264	A/Mu law change allowed even if ICC-NET5 span is active.

Open Caveats

Table 20 describes possible unexpected behavior by Cisco VCO/4K release 5.1(4). Unless noted, these caveats apply to all Cisco VCO/4K system software releases up to and including 5.1(4).

Table 20 Open Caveats up to and Including Release 5.1(4)

DDTs Issue	Description
CSCdp49217	FTP hangs while running ftp scripts to the VCO.
CSCdp63988	If Delete Directory fails then Show Directory will fail.
CSCdp64900	The SPC-OUTP fails to work first time after defining in dbase.
CSCdp71864	ICC ISDN QSIG reports wrong state.
CSCdr05012	Can license 4088 ports instead of 4096.
CSCdr24372	Loss of Connect Message from Host.
CSCdr24375	SPC-CPA is not reporting DA (supervision).
CSCdr27105	ICC-T1 reports FRM289/FRM290/FRM285 messages incorrectly.
CSCdr27189	SPC-CPA/Generic does not report FAX Tone.
CSCsf31137	After a warm start, the system sends a ($DC) report to start call processing before IPRC prompt downloading is complete.
CSCsf41605	If an error occurs in the disk operation when you use the Data Base Store or Data Base Retrieve commands (under File Utilities), no warning is displayed to indicate that all files may not have been copied correctly.
CSCsf41657	If a SLIC ICT (incoming trunk) is telerouted to a SLIC OGT (outgoing trunk), and the SLIC OGT is ringing during a switchover, the SLIC OGT does not stop ringing when the SLIC ICT goes back on-hook.
CSCsf41717	Avoid using the Software/Firmware Configuration screen to view the contents of floppy diskettes (device A:).
CSCsf51888	You must specify a resource type when you use the RELEASE inpulse rule token. If you do not specify a resource (IPRC, MRC, DRC, DTG, or CPA), the RELEASE token has no effect.
CSCsf51960	If you use an Ethernet system host interface with up to four hosts and high loads, the system may fail. Higher loads may support even fewer host connections.
CSCsf51966	One of the fields in Trunk Timing configuration is the Wink Send. For E1, this is the time period of the delayed dial signal. Tests have shown that this is about 60 ms as opposed to the 30 ms stated in the specifications.
CSCsf52155	When the Four Span T1 is configured as FXO-LS, the card processes a WINK command after it seizes out.
CSCsf52242	MF Digit ($D0) reports indicating garbled digits are not sent to the host when the inpulse rule performing the collection contains the reporting control tokens REP EACH or REP NEXT.
CSCsf52244	When using the $67 command to append an odd number of digits to a field, which already contains an odd number of digits, digits may be lost.
CSCsf52245	67 command not rejected for digits over 40, but will only collect 40 digits.
CSCsf52246	An Inpulse Rule Complete ($DD) report is generated when an inpulse rule aborts due to a CPA exhaust condition.
CSCsf52247	You may experience a corrupted database if you inadvertently try to load a backup copy of an outdated database. The system does not detect the outdated database and does not automatically perform the database conversion.

Table 20 Open Caveats up to and Including Release 5.1(4) (continued)

DDTs Issue	Description
CSCsf52300	When the caller enters digits, a combination of the $67 command and inpulse rule is being processed.
CSCsf52355	When a channel RESTART occurs, the system issues an ISDN Port Change of State ($EA) report.
CSCsf52581	Aux1 alarms triggered by the hardware (power supply, fan unit, or ring voltage failure) are not displayed on the System Alarms Display screen. Therefore, remote users cannot determine if a major hardware alarm is set.
CSCsf62790	A load seize on inpulse rules with record and speak tokens at 22 seizures causes IPRC cards to go OOS.
CSCsf62862	A network status byte of $02 (Invalid command function ID) is returned by the Subrate Path Control ($65) command when the $65 command contains 82 destinations. The ISDN Port Control ($49) command also returns a network status byte of 02 if the $49 command contains between 258 and 261 bytes.
CSCsf62917	There is a mismatch between the on-line and diskette disk utilities.
CSCsf62948	Four Span T1 and Four Span E1 cards perceive the test patterns from a TTS-3 Analyzer as incoming seizures and generate FRM373 (Internal Message Length Error) and FRM102 (Card MSG) errors.
CSCsf62956	The administration console intermittently gets reinitialized when the system reboots. This causes the keyboard type to reset to Numeric, instead of Application, which is required by the system software.
CSCsf62982	Major Alarm Not Set on Loss of Hosts.
CSCsf63022	Telerouter $D5 (Routing Action) reports do not appear in the system trace file, but they are sent to the host.
CSCsf63117	When you change the system host configuration, the system may generate the following error: `RED44: Standby DB Update Error - Bad Record Count, File [filename]` When this error occurs, the changes made on the active side do not get written to the standby side.
CSCsf63144	During the broadcast download cycle, Four Span T1 and Four Span E1 cards intermittently generate an internal error code 1.
CSCsf63245	If you attempt to update the gateway routing tables before you install and enable Ethernet, the gateway routing tables get corrupted.
CSCsf63261	If you use SNMP to configure resource groups on redundant systems, the port.tbl file gets corrupted and ports are missing from the resource groups.
CSCsf63269	The RELEASE DTG token does not work: The RELEASE outpulse rule token does not release the DTG/DTG-2 and causes the system to log an error during inpulse rule execution.
CSCsf63349	Outgoing ports on Single Span T1 cards intermittently become stuck in CP_OUTPUL after incoming seizures.
CSCsf63398	If you add or delete a tone generator card while another tone generator is outpulsing, the switch may be unable to do further outpulsing and may even fail.

Table 20 Open Caveats up to and Including Release 5.1(4) (continued)

DDTs Issue	Description
CSCsf63569	If the outgoing Four Span T1 trunk resource groups are set to ROTARY search, the ports in the resource group get stuck in CP_WTFSUP.
CSCsf63570	If you press the ABORT button on the system controller, it has no effect if you have not installed the Ethernet option.
CSCsf73828	If you delete a DTG from the database in an active system, outpulsing ceases.
CSCsf73902	The system does not log an error indication when the switch fails. Earlier releases of the software logged an error indication to aid in determining the cause of failure.
CSCsf73909	Following a warm reset, the 4xE1 cards display ACTIVE while downloading.
CSCsf73960	The FTP quote command is inconsistent. The quote compress command requires a drive specification (c:), but the uncompress and the split commands cannot accept it.
CSCsf73961	The FTP command, `quote join c:core1 c:core1.x??`, does not work.
CSCsf74440	The Display Card Data screen does not record MVDC slips.
CSCsf84591	The active and standby sides may not correctly reflect the license of the opposite side.
CSCsf84601	Can't delete large files from administration console.
CSCsf84608	The prompt library is not working properly.
CSCsf84795	The Programmable Trunk Configuration (non ICC or 4xT1/E1), Diagnostics Port Display, Call Progress Tone Monitor, and Routing Statistics Display screens support only two digits for inpulse and outpulse rules.
CSCsf84962	All inpulse rules are aborting on port $47F.
CSCsf84981	Error message may appear when you activate the SPC.
CSCsf85092	When your system is operating in extended mode, the "C" bit in the last fragment of the $83 report is reporting digits rather than a 0 (zero). This bit should report a zero indicating that this is the last fragment.
CSCsf85137	If a DSP SRM is not physically installed on the SPC, but the DSPs are configured in the database, the system displays the SPC with a status of Maintenance (M) rather than Out of Service (O).
CSCsf85166	When the system is running in extended mode, the api_stat.c routine to format the rack, level, and slot in the $83 command from tokens does not work correctly.

Related Documentation

The following documents contain information that may be useful to system software 5.1(4) users.

- *Cisco VCO/4K Software Installation Guide*
- *Cisco VCO/4K System Administrator's Guide*
- *Cisco VCO/4K Card Technical Descriptions*
- *Cisco VCO/4K System Messages*
- Product supplements for optional software, including:
  - *Cisco VCO/4K Management Information Base (MIB) Reference Guide*
  - *Cisco VCO/4K Standard Programming Reference*

- *Cisco VCO/4K Extended Programming Reference*
- *Cisco VCO/4K ASIST Programming Reference*
- *Cisco VCO/4K TeleRouter Reference Guide*
- *Cisco VCO/4K ICC ISDN Supplement*
- *Cisco VCO/4K Ethernet Guide*
- *Cisco VCO/4K Tone Plan Release Notes*
- Applicable tone plan supplements

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