



# Cisco VCO/4K System Software Version 5.2(0) Release Notes

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## February 2001

These release notes describe new features and caveats in system software Version 5.2(0) for the Cisco Systems 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

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## VCO/4K Documentation CD-ROM

VCO/4K system software Version 5.2(0) currently ships with the VCO/4K V5.1(4) Documentation CD. All V5.2(0) specific information is contained in these release notes.



The following VCO/4K documents, updated with V5.2(0) content, will be available on the Cisco Systems Documentation CD-ROM on February 22, 2001:

- *Cisco VCO/4K Card Technical Descriptions*
- *Cisco VCO/4K Conferencing Guide*
- *Cisco VCO/4K Ethernet Guide*
- *Cisco VCO/4K Extended Programming Reference*
- *Cisco VCO/4K Hardware Installation Guide*
- *Cisco VCO/4K Hardware Planning Guide*
- *Cisco VCO/4K ISDN Supplement*
- *Cisco VCO/4K Management Information Base (MIB) Reference*
- *Cisco VCO/4K Mechanical Assemblies*
- *Cisco VCO/4K Product Overview*
- *Cisco VCO/4K Site Preparation Guide*
- *Cisco VCO/4K Software Installation Guide*
- *Cisco VCO/4K Supervision and Call Progress Tone Detection*
- *Cisco VCO/4K System Administrator's Guide*
- *Cisco VCO/4K System Maintenance Manual*
- *Cisco VCO/4K System Messages*

All other VCO/4K documents will be available on the Cisco Systems Documentation CD-ROM on March 21, 2001. Refer to the "Obtaining Documentation" section for more information on Cisco Systems customer documentation.

## System Requirements

This section provides system requirements for operating 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 Version 5.2, make sure your Cisco VCO/4K switch is 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 *Cisco VCO/4K CPU Upgrade Procedure* 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-inch 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
  - DTG2 or DTG (Digital Tone Generator)—not used with the multiple tone plan feature or
  - SPC-TONE and SPC-OUTPULSE—mandatory if using the multiple tone plan feature
- 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 1 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 DTG2 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 1** *Firmware Requirements*

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(4)
8LTC	8LTC	0000E09F	1.43	U2	N
BRC	BRC	00002412	2.01	U2	N
CPA	CPA	0000A7A2	1.03	U2	N

Table 1 Firmware Requirements (continued)

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(4)
CPU	Boot EVEN	006E691D	5.00	U1	N
	Boot ODD	00866CBF	5.00	U15	
	MVME147-023	5741B41F	2.44	U30	
	MVME147-023	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
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	
IIRC-8	IIRC 8-PORT	00220D75	1.03	U2	N
IIRC-64	IIRC 64-PORT	00220DC1	1.03	U2	N
IIRC-128	IIRC 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	

Table 1 Firmware Requirements (continued)

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(4)
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	
NBC3 Card Rev E	LP141 SWI	0019204D	LP141A	U31	N
	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

Table 1 Firmware Requirements (continued)

Card	Firmware	Checksum	Versions	Location	Changed Since V5.1(4)
E1-PRI (NTDASS2, DPNSS)	E1-PRI FW Odd	00105999	1.03	U38	N
	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)	Net5 ODD	1075A4	1.04	U38	N
	Net5 EVEN	DB375	1.04	U39	N
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 ITU-T 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 <sup>1</sup> (North American Tone Plan)	DCC	0000A575	2.02	U2	N
	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/DTG2 <sup>1</sup> (North American Tone Plan)	DTG-FW <sup>2</sup>	000077AD	1.23	U2	N
		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 firmware requirements of 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 2 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 2** *Software Requirements*

VCO/4K System Software	Filename	Checksum	File Version <sup>1</sup>	Changed Since V5.1(4)
Executable Files	GLOBALS.EXE	01542CF8	—	Y
	HOSTMGR.EXE	04CBAC60	—	Y
	SYSWD.EXE	01A47416	—	Y
	REDMGR.EXE	010100E1	—	Y
	PERMGR.EXE	00000000	—	N
	NETMGR.EXE	0332F70F	—	Y
	SNMP.EXE	0331D3BC	—	Y
	INSTALL.EXE	0231EF46	—	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	006F3224	1.03	Y
	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	N
	4XE1.DWN	0037A584	1.45	N
	SPC.DWN	06438478	5.10	Y
	ICC.DWN	06329445	5.13	Y

Table 2 Software Requirements (continued)

VCO/4K System Software	Filename	Checksum	File Version <sup>1</sup>	Changed Since V5.1(4)
Protocol Files <sup>2</sup>	ICCCASR2.UPG	000007B4	—	N
	ICCCCS31.UPG	0000012D	—	N
	ICCCLEAR.UPG	0000012D	—	N
	ICCEM.UPG	00000666	—	N
	ICC01.UPG	00000666	—	N
	ICC02.UPG	0000077A	—	N
	ICCFXOGS.UPG	000007C2	—	N
	ICCFXOLS.UPG	00000773	—	N
	ICCFXSGS.UPG	000007F4	—	N
	ICCFXSLS.UPG	00000699	—	N
Operating System Files	VRTX OS	—	1.08	N
	IFX	—	1.11	N
	TNX	—	1.45	N
<b>ISDN Optional Software<sup>3</sup></b>				
ISDN-NFAS	PRI.DWN	0091BB77	8.04	N
	PRIN.DWN	009665C2	9.00	N
ISDN-PRI	PRI.DWN	0091BB77	8.04	N
	PRIN.DWN	009665C2	9.00	N
NI-2	PRI.DWN	0091BB77	8.04	N
	PRIN.DWN	009665C2	9.00	N
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
<b>SNMP</b>				
Management Information Base	VCO.MIB <sup>4</sup>	—	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, Version 5.2. 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. The optional software file version numbers are listed as they appear on the optional software diskette label.
4. The VCO.MIB file is not installed on the switch; it is intended for the SNMP host system.



# New and Changed Information

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

- “Multiple Tone Plan Feature” section on page 9
- “Congestion Notification Support” section on page 48

## Multiple Tone Plan Feature

The multiple tone plan feature has been added to VCO/4K system software Version 5.2(0). The feature enables users to install and administratively configure up to eight tone plans in a single VCO/4K switch. Users may also select and configure tone plans from several extended mode host application commands and from inpulse/outpulse rule configuration.



Note

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VCO/4K system software currently supports eight tone plans for multiple tone plan feature configuration. In the future, additional tone plans will be available. Refer to Table 4 for a list of currently available tone plans.

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## Multiple Tone Plan Feature System Requirements

This section describes the minimum system requirements for operating the multiple tone plan feature on the VCO/4K.

### Hardware Requirements

Service Platform Cards (SPCs) are required to operate the multiple tone plan feature. Refer to the *Cisco VCO/4K Tone Plan Release Notes* and the *Cisco VCO/4K Card Technical Descriptions* for A-law/Mu-law and timing rules governing the configuration of cards with jumpers or dual in-line package (DIP) switches.

### Firmware Requirements

Refer to the *Cisco VCO/4K Tone Plan Release Notes* for country-specific firmware requirements.

### Software Requirements

VCO/4K system software Version 5.2(0) is required to operate the multiple tone plan feature. The multiple tone plans are preinstalled on VCO/4K systems configured with system software 5.2(0). Upgrades to system software 5.2(0) require the additional task of installing the Multiple Tone Plans diskette.

Refer to the *Cisco VCO/4K Tone Plan Release Notes* for country-specific software requirements.

## Multiple Tone Plan Feature Installation—System Administration Modifications

Modifications have been made to the VCO/4K system administration installation software. The following screen has been modified to install the multiple tone plan feature:

Disk Utilities Menu

The following screen has been added to install the multiple tone plan feature:

#### Tone Files Installation/Removal

The multiple tone plan feature consists of eight tone plans (see Table 4) which can be installed in a single VCO/4K system. The tone plans can be installed via VCO/4K system software Disk Utilities administration screens or via file transfer protocol (FTP). Refer to the “Multiple Tone Plan Feature Installation via Disk Utilities” section on page 10 to install multiple tone plans from the Multiple Tone Plans diskette. Refer to the “Multiple Tone Plan Feature Installation via File Transfer Protocol” section on page 13 to install multiple tone plans using FTP. Refer to the “Multiple Tone Plan Feature Tone Plan Removal” section on page 15 to remove tone plans from the VCO/4K configuration that are associated with the multiple tone plan feature.

### Multiple Tone Plan Feature Installation via Disk Utilities

Complete the following steps to install multiple tone plans via VCO/4K system software Disk Utilities administration screens. These installation instructions contain new and changed VCO/4K system administration screens.



#### Note

The following instructions describe the installation of multiple tone plans for users upgrading to VCO/4K system software Version 5.2(0). VCO/4K systems shipped with system software Version 5.2(0) have the multiple tone plans preinstalled—proceed to “Multiple Tone Plan Feature Configuration—System Administration/Programming Modifications” section on page 16.

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**Step 1** Insert the Multiple Tone Plans diskette into the VCO/4K system active side.



**Note** For these installation instructions, China3 is used as an example—the actual tone plan you install may be different.

**Step 2** From the Administrator Main Menu screen, type **C** and press **Enter**.

The Maintenance Menu screen is displayed.

**Step 3** Type **B** and press **Enter**.

The Disk Utilities Menu screen is displayed with a new option—Q, Tone Files Installation/Removal (see Figure 1).

**Figure 1** *Disk Utilities Menu Screen*

```

          D I S K   U T I L I T I E S   M E N U

A) Show Directory           M) Compress File
B) Copy Files              N) Uncompress File
C) Delete Files           O) Split File
D) Rename Files           P) Join Files
E) Database Store         Q) Tone Files Installation/Removal
F) Database Retrieve
G) Display File
H) Show Free Space On Disk
I) Format Disk
J) Create Directory
K) Delete Directory
L) Rename Directory

      Enter Selection: _

```

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The cursor is located at the Enter Selection prompt.

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

The Reading Next Format message is displayed briefly at the lower right of the Disk Utilities Menu screen and the new Tone Files Installation/Removal screen is displayed (see Figure 2).

**Figure 2** *Tone Files Installation/Removal Screen—Default Tone Plan Displayed*

```

          Tone Files Installation/Removal

LOC  TONE PLAN  LOC  TONE PLAN  LOC  TONE PLAN  LOC  TONE PLAN
000  NORTHAMERICA  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____
___  _____  ___  _____  ___  _____  ___  _____

      Install or Remove Tone Files (I/R):_

```

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**Note** Default tone plans are preinstalled on VCO/4K systems. Figure 2 lists North America as the preinstalled default tone plan at location 000 (the C:/BOOT directory). Your default tone plan may be different.

The Tone Files Installation/Removal screen fields are arranged in eight columns and twelve rows in the center of the screen and a single field at the bottom of the screen. The eight columns form four pairs; each pair consists of a Loc column and a Tone Plan column. Each Loc field is associated with the Tone Plan field directly to its right. The Tone Files Installation/Removal screen fields are described in Table 3.

**Table 3** *Tone Files Installation/Removal Screen Fields*

Field Name	Definition
Loc	<i>Display only.</i> Describes the location of the installed tone plan listed in the associated Tone Plan field. Locations are defined as follows: <ul style="list-style-type: none"> <li>• 000—The VCO/4K system C:/BOOT directory; default tone plan location.</li> <li>• 001 to 047—The VCO/4K system C:/TONE directory.</li> </ul>
Tone Plan	<i>Display only.</i> Contains the name of the installed tone plan listed in the associated Loc field.
Install or Remove Tone Files (I/R)	<i>Data entry via main keyboard.</i> Allows you to install or remove a tone plan. Valid options are as follows: <ul style="list-style-type: none"> <li>• I—Install a tone plan.</li> <li>• R—Remove a tone plan.</li> </ul>

The cursor is located in the Install or Remove Tone Files (I/R) field.

**Step 5** Type **I** and press **Enter**.

The “Enter Path of Tone Files To Install” message appears.



**Note** If you type an invalid character, the “Invalid Operation Specified” message appears and the screen is refreshed. Repeat Step 5.

**Step 6** Type **A:/** and press **Enter**.

The tone plan files are copied from the Multiple Tone Plans diskette to the VCO/4K system C:/TONE directory. The following subdirectories are created, each containing the files described in Table 7 and Table 8:

- Belgium
- Finland
- France
- Germany
- Netherla (Netherlands)
- Norway
- Spain

The cursor moves to the Install or Remove Tone Files (I/R) field and the following message appears at the bottom right of the Tone Files Installation/Removal screen:

```
Tone Files Are Installed
```



**Note** If you type an invalid path name, the “Tone Files Not Found” message appears and the screen is refreshed. Repeat Step 5.

The tone plan copied in Step 6 is installed in a subdirectory of the VCO/4K system C:/TONE directory and assigned a fixed number between 001 and 047 (see Figure 3).

**Step 7** Repeat Step 5 and Step 6 to install the tone plans needed to meet your configuration requirements.

**Figure 3** *Tone Files Installation/Removal Screen—Default and Installed Tone Plan Displayed*

Tone Files Installation/Removal							
LOC	TONE PLAN	LOC	TONE PLAN	LOC	TONE PLAN	LOC	TONE PLAN
000	NORTHAMERICA						
002	CHINA3						

Install or Remove Tone Files (I/R):\_

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**Step 8** If you have a nonredundant system or if all required tone plans have been installed to meet your configuration requirements, proceed to the “Multiple Tone Plan Feature Configuration—System Administration/Programming Modifications” section on page 16. If you have a redundant system, log in to the standby side and proceed to Step 9. Refer to the *Cisco VCO/4K Administrator’s Guide* for instructions on changing the active side.

**Step 9** Repeat Step 1 through Step 7 on the standby side.

The multiple tone plans are installed. Proceed to the “Multiple Tone Plan Feature Configuration—System Administration/Programming Modifications” section on page 16.

## Multiple Tone Plan Feature Installation via File Transfer Protocol

Complete the following steps to install multiple tone plans via FTP:

**Step 1** From VCO/4K active side, access the Administrator Main Menu screen, type **C** and press **Enter**.

The Maintenance Menu screen is displayed.

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

The Disk Utilities Menu screen is displayed.

**Step 3** Type **J** and press **Enter** to access the Create Directory screen.

The Create Directory screen (see Figure 4) is displayed.

*Figure 4 Create Directory Screen*



The cursor is located at the beginning of the blank line.

**Step 4** Type **C:/TEMP** and press **Enter** to create a temporary directory on the VCO/4K hard drive.

The TEMP directory is created on the active side of the VCO/4K system.

**Step 5** Start an FTP client.

**Step 6** Type **mkdir temp** and press **Enter** to create a temporary directory within the FTP client.

**Step 7** Type **cd temp** and press **Enter** to access the newly created directory within the FTP client.

**Step 8** Type **bin** and press **Enter** to set the FTP client to binary mode.

**Step 9** Type **mput \*.\*** and press **Enter** to transfer the tone plan files to the VCO/4K C:/TEMP directory created in Step 4.

**Step 10** Close the FPT client.

**Step 11** From the Administrator Main Menu screen, type **C** and press **Enter**.

The Maintenance Menu screen is displayed.

**Step 12** Type **B** and press **Enter**.

The Disk Utilities Menu screen is displayed. The cursor is located at the Enter Selection prompt.

**Step 13** Type **Q** and press **Enter**.

The Reading Next Format message appears briefly at the lower right of the Disk Utilities Menu screen and the new Tone Files Installation/Removal screen is displayed (see Figure 2).




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**Note** Default tone plans are preinstalled on VCO/4K systems. Figure 2 lists North America as the preinstalled default tone plan at location 000 (the C:/BOOT directory). Your default tone plan may be different.

---

The cursor is located in the Install or Remove Tone Files (I/R) field. Refer to Table 3 for a description of the Tone Files Installation/Removal screen.

**Step 14** Type **I** and press **Enter**.

The “Enter Path of Tone Files To Install” message appears.




---

**Note** If you type an invalid character, the “Invalid Operation Specified” message appears and the screen is refreshed. Repeat Step 14.

---

**Step 15** Type **C:/TEMP** and press **Enter**.

The tone plan files are copied from the VCO/4K system C:/TEMP directory to the C:/TONE directory. The cursor moves to the Install or Remove Tone Files (I/R) field, and messages similar to the following appear at the bottom right of the Tone Files Installation/Removal screen:

Tone Files for CHINA3 Are Installed.




---

**Note** If you type an invalid path name, the “Tone Files Not Found” message appears and the screen is refreshed. Repeat Step 14.

---

**Step 16** Repeat Step 1 through Step 15 on the standby side.

The multiple tone plans are installed. Proceed to the “Multiple Tone Plan Feature Configuration—System Administration/Programming Modifications” section on page 16.

---

## Multiple Tone Plan Feature Tone Plan Removal

Complete the following steps to remove a tone plan associated with the multiple tone plans feature:

---

**Step 1** From the Administrator Main Menu screen, type **C** and press **Enter**.

The Maintenance Menu screen is displayed.

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

The Disk Utilities Menu screen is displayed with a new option—Q, Tone Files Installation/Removal (see Figure 1).

**Step 3** Type **Q** and press **Enter**.

The Tone Files Installation/Removal screen is displayed. The cursor is located in the Install or Remove Tone Files (I/R) field.

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

The “Enter LOC# of Tone Files to Remove” message appears.




---

**Note** If you type an invalid character, the “Invalid Operation Specified” message appears and the screen is refreshed. Repeat Step 4.

---

**Step 5** Type the Loc field number of tone plan you want to remove from the VCO/4K configuration.

**Step 6** Press **Enter**.

The “Tone Files For xxx Is Removed” message appears, where xxx represents the tone plan Loc number.




---

**Note** If you type an invalid Loc number, the “Tone Files Not Found!” message appears. Repeat Step 4 through Step 6.

---

**Step 7** Repeat Step 4 through Step 6 for all other tone plans you want to remove from the VCO/4K configuration.

The removal of multiple tone plan associated tone plans is complete.

---

## Multiple Tone Plan Feature Configuration—System Administration/Programming Modifications

Modifications have been made to the VCO/4K system administration configuration software. The following screens have been modified to configure the multiple tone plan feature:

- System Configuration Menu
- Database Administration Menu
- Impulse Rules Table
- Outpulse Rules Table

The following screens have been added to configure the multiple tone plan feature:

- Multiple Tone Plan Configuration
- SPC-TONE Plan Configuration

A limit of eight tone plans can be configured in VCO/4K system software Version 5.2(0) simultaneously, with no more than one of the tone plans containing MFCR2 tones. Refer to Table 4 to determine which tone plans contain MFCR2 tones and configure the VCO/4K accordingly.

**Table 4** Available Tone Plans—MFCR2 Support Status

Tone Plan	MFCR2 Support?
Belgium	No
Finland <sup>1</sup>	Yes
France	No
Germany	No
Netherlands	No
North America	No



**Table 4 Available Tone Plans—MFCR2 Support Status (continued)**

Tone Plan	MFCR2 Support?
Norway	No
Spain	No

- The Finland tone plan must be set as the default tone plan if it uses MFCR2 signaling in call scenarios or applications. MFCR2 signaling for Finland is not supported by the multiple tone plan feature. The Finland tone plan used without MFCR2 in call scenarios or applications can be used as a non-default tone plan with the multiple tone plan feature. Refer to DDTs issue CSCdt23584 for more information.

The DTG/DTG2 cards are not supported for users of the multiple tone plan feature. Complete the following steps before using the VCO/4K system administration multiple tone plan feature configuration menu options:

- 
- Step 1** Ensure that the default multiple tone plan SPC-TONE card type is in service (SPC-TONE provides the same functionality as DTG/DTG2).
  - Step 2** Ensure that the SPC-OUTP outpulsing resource is in service and added to a resource group.
  - Step 3** Take the DTG/DTG2 cards out of service (OOS).




---

**Note** If this procedure is not completed, and both DTG/DTG2 and SPC-TONE card types reside in the system, the DTG/DTG2 becomes the default.

---

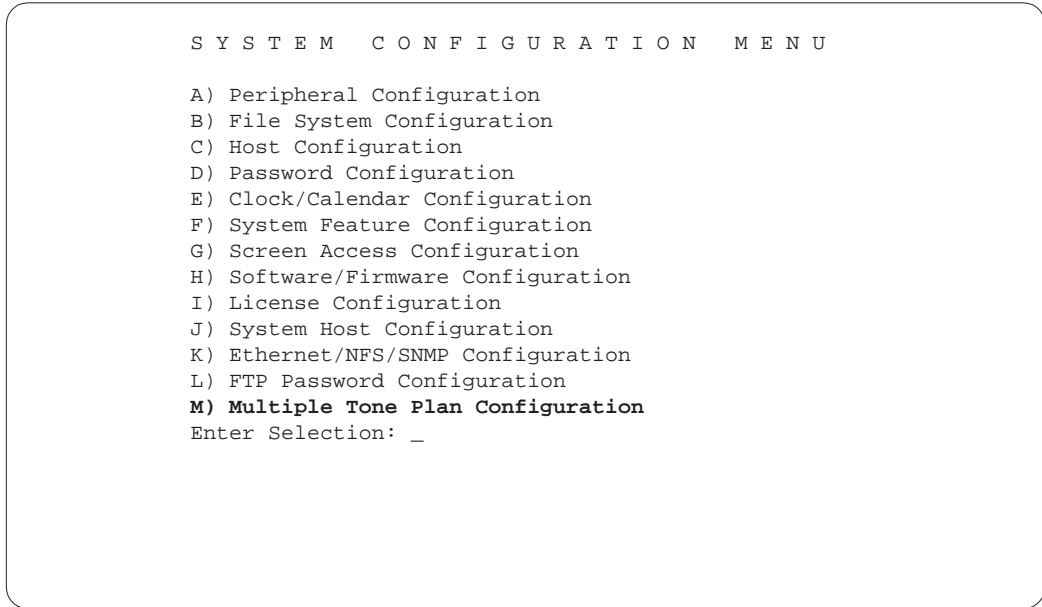
You are now ready to configure the multiple tone plan feature.

### Multiple Tone Plan Feature Interface Modifications—System Administration

Complete the following steps to configure the multiple tone plan feature:

- 
- Step 1** From the Administrator Main Menu screen, type **B** and press **Enter**.  
The System Configuration Menu screen (see Figure 5) is displayed with a new option—M, Multiple Tone Plan Configuration.

**Figure 5 System Configuration Menu Screen**

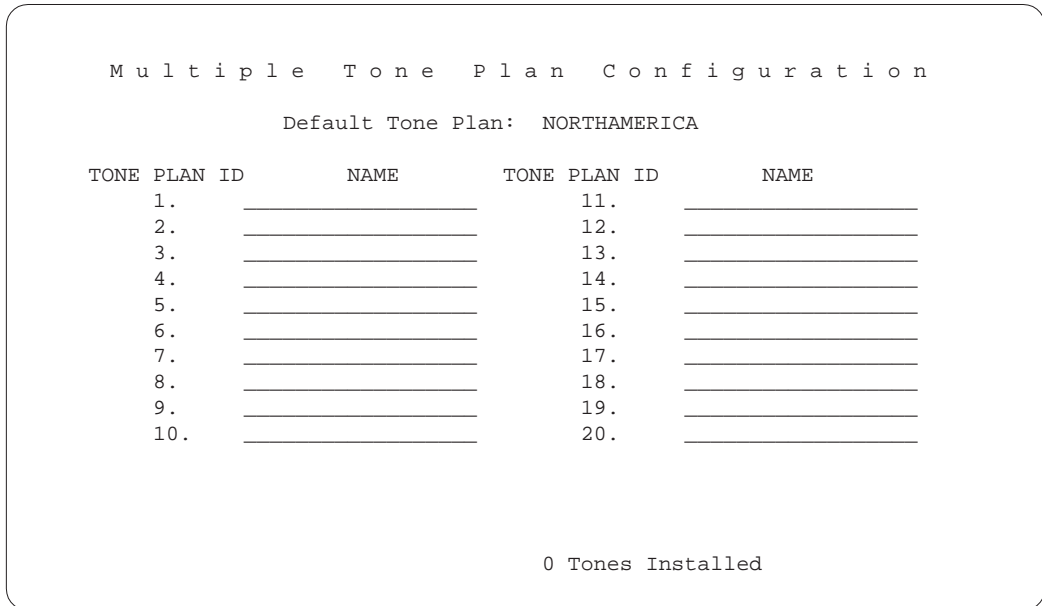


The cursor is located at the Enter Selection prompt.

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

The new Multiple Tone Plan Configuration screen is displayed (see Figure 6).


**Figure 6 Multiple Tone Plan Configuration Screen**



The Multiple Tone Plan Configuration screen fields are described in Table 5. The data that this screen contains is used to identify specific tone plans with which to further configure the VCO/4K system via the following administration screens and commands:

- SPC-TONE Plan Configuration
- Impulse Rules Table
- Outpulse Rules Table
- Commands listed in the “Multiple Tone Plan Feature Interface Modifications—Extended Operational Mode Programming” section on page 24.

**Table 5** Multiple Tone Plan Configuration Screen Fields

Field Name	Definition
Default Tone Plan	<i>Data entry via Select key.</i> Identifies the name of the default tone plan installed. 
	<b>Note</b> Any installed tone plan can be the default tone plan.
Tone Plan ID	<i>Display only.</i> Describes the tone plan ID number associated with the Name directly to its right.
Name <sup>1</sup>	<i>Data entry via Select key.</i> Identifies the name of the tone plan associated with the Tone Plan ID directly to its left.
n Tones Installed	<i>Display only.</i> Identifies the number of tone plans, other than the default, installed on the VCO/4K system. Access the Tone Files Installation/Removal screen to determine the names of the tone plans installed.

1. The Finland tone plan cannot be selected in this field; it can be selected as a default tone plan only.

The cursor is located at the Default Tone Plan entry field.

**Step 3** Use the **Select** key to select the appropriate default tone plan for your configuration requirements.



**Note** If the correct default tone plan is listed, proceed to Step 4.

**Step 4** Use the **Next Field** key to position the cursor in the Name entry field associated with the first Tone Plan ID.

**Step 5** Use the **Select** key to select an appropriate tone plan for your configuration requirements.

**Step 6** Press the **Next Field** key to position the cursor in the next available Name entry field.

**Step 7** Use the **Select** key to select an appropriate tone plan for your configuration requirements.

**Step 8** Repeat Step 6 and Step 7 for the remaining Name fields, as needed.

**Step 9** Press **Enter**.

The following message appears at the bottom of the screen:

Press 'Y' to Confirm Change

**Step 10** Press **Y**.

The following message appears at the bottom of the screen:

Tone Configuration Changed!




---

**Note** Your configuration may not require that all eight available tone plan selections be made; select only those needed. Refer to Table 4 as you configure the multiple tone plans in the VCO/4K system to ensure that the limit of six MFCR2 tone plans in one system is not exceeded.

---

The selections are saved to the VCO/4K system configuration table; the data is now backed up and can be restored after a system reboot.

---

Complete the following steps to assign specific tone plans to individual SPC spans of the VCO/4K:

---

- Step 1** Access the Card Maintenance Screen via the software administration Maintenance menu.
- Step 2** Define an available slot, group, and span (R-L-S) by following the instructions in the *Cisco VCO/4K System Administrator's Guide*.




---

**Note** For the purposes of these configuration instructions, an R-L-S of 14-1-1 is defined in Step 2. Your configuration may be different.

---

- Step 3** Add a digital signal processor (DSP) as SPC-TONE card type for the R-L-S defined in Step 2 by following the instructions in the *Cisco VCO/4K System Administrator's Guide*.



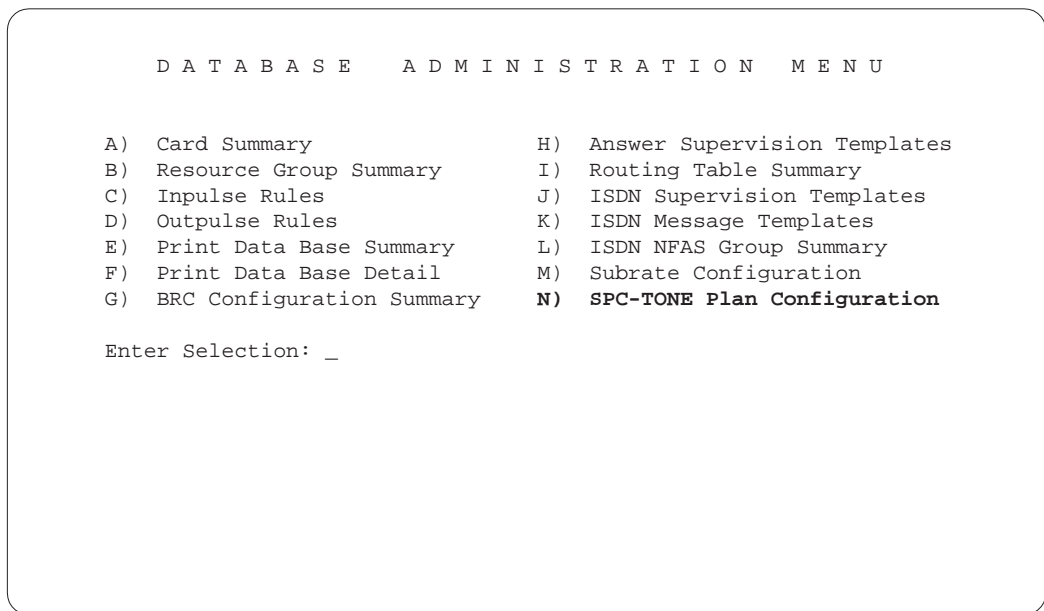

---

**Note** Ensure that the added SPC-TONE card type remains out of service (O) until you reach Step 10.

---

- Step 4** From the Administrator Main Menu screen, type **A** and press **Enter**.  
The Database Administration Menu screen (see Figure 7) is displayed with a new option—N, SPC-TONE Plan Configuration.

**Figure 7 Database Administration Menu Screen**



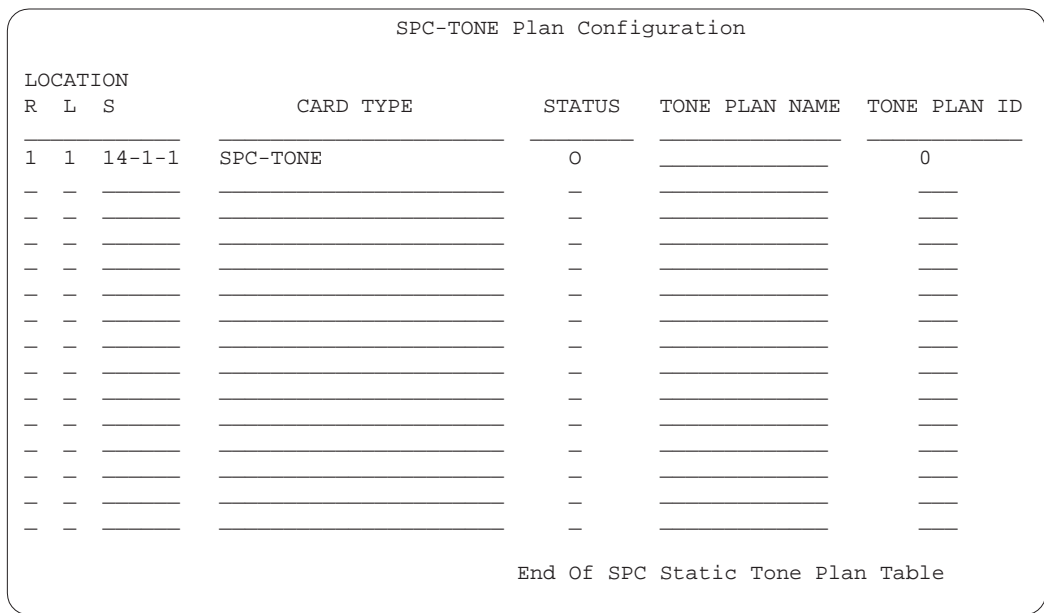
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The cursor is located at the Enter Selection prompt.

**Step 5** Type **N** and press **Enter**.

The SPC-TONE Plan Configuration screen is displayed (see Figure 8).

**Figure 8 SPC-TONE Plan Configuration Screen**



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The SPC-TONE Plan Configuration screen fields are described in Table 6.

**Table 6** SPC-TONE Plan Configuration Screen Fields

Field Name	Definition
Location R L S	<i>Display only.</i> Describes the location of the SPC-TONE card type within the VCO/4K chassis.
Card Type	<i>Display only.</i> Describes the card type defined in the associated Location RLS field.
Status	<i>Display only.</i> Describes the current status of the associated Card Type field. Possible states are as follows: <ul style="list-style-type: none"> <li>• A—Active.</li> <li>• O—Out of service.</li> <li>• M—Maintenance.</li> <li>• S—Standby.</li> </ul>
Tone Plan Name	<i>Display only.</i> Identifies the name of the associated Tone Plan ID field.
Tone Plan ID	<i>Data entry via main keyboard.</i> Contains the tone plan ID number of the associated Tone Plan Name field.

The R-L-S and card type configured in Step 2 and Step 3 are displayed in the first row of data. The cursor is located in the first row's Tone Plan ID field.

- Step 6** Use the **Select** key to select an appropriate tone plan ID for the span in the corresponding row. Refer to the Multiple Tone Plan Configuration screen for a list of all available tone plans—those that are installed and configured in the VCO/4K system database.
- Step 7** Press **Enter**.  
The new configuration is saved to the VCO/4K system database and the SPC-TONE Plan Configuration screen is refreshed.
- Step 8** From the Administrator Main Menu screen, type **C** and press **Enter**.  
The Maintenance Menu screen is displayed.
- Step 9** Type **A** and press **Enter** to access the Card Maintenance screen.  
The Card Maintenance screen is displayed.
- Step 10** Change the SPC span defined in Step 2 to active (A).
- Step 11** Repeat Step 1 through Step 10 to configure all remaining SPC-TONE spans necessary for your configuration requirements.

The multiple tone plan feature system administration configuration is completed by adding a new token, TONEPLAN, and appropriate tone plan IDs, to impulse and outpulse rules. Complete the following steps to add the new TONEPLAN token and a tone plan ID to impulse and outpulse rules:

- Step 1** From the Administrator Main Menu screen, type **A** and press **Enter**.  
The Database Administration Menu screen is displayed.
- Step 2** Type **C** and press **Enter** to access the Impulse Rules Table screen.  
The Impulse Rules Table screen is displayed. The cursor is located in the first token field.

- Step 3** Use the cursor movement keys to advance the cursor to the first token field of the rule you want to configure.
- Step 4** Use the **Select** key to select the TONEPLAN token.
- Step 5** Use the **Next Field** key to move the cursor to the associated additional data field.
- Step 6** Type the three number identification of the appropriate tone plan ID with which to configure the rule.



**Note** Refer to the Multiple Tone Plan Configuration screen to determine the installed and configured tone plan IDs available in the VCO/4K system.

- Step 7** Press **Enter**.

The database is automatically updated. Figure 9 displays the new TONEPLAN token and tone plan ID configured in an impulse rule. Your configuration requirements may be different.

*Figure 9 Impulse Rules Table Screen*

I N P U L S E R U L E S T A B L E				
RULE # 1	RULE # 2	RULE # 3	RULE # 4	RULE # 5
TONEPLAN 3	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

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- Step 8** Repeat Step 3 through Step 7 for all impulse rules necessary for your configuration requirements.
- Step 9** From the Administrator Main Menu screen, type **A** and press **Enter**.  
The Database Administration Menu screen is displayed.
- Step 10** Type **D** and press **Enter** to access the Outpulse Rules Table screen.  
The Outpulse Rules Table screen is displayed.
- Step 11** Repeat Step 3 through Step 8 to configure outpulse rules with TONEPLAN tokens and tone plan IDs to meet your configuration requirements.

The multiple tone plan feature system administration configuration is complete. Additional configuration for the multiple tone plan feature is accomplished with extended mode host application commands. The next section describes multiple tone plan feature command modifications and configuration guidelines.

### Multiple Tone Plan Feature Interface Modifications—Extended Operational Mode Programming

The following host application commands have been modified to enable the multiple tone plan feature:

- ISDN Port Control (\$49)
- Voice Path Control (\$66)
- DTMF Collection Control (\$67 Standard)
- DTMF Collection Control (\$67 Enhanced)
- MF Collection Control (\$68)
- Outgoing Port Control (\$69)
- Incoming Port Control (\$6A)

The modified commands contain identical changes (with the exception of the \$66 command) to the tone plan segment, byte offsets 9 through 12, in VCO/4K system software Version 5.2(0).

The tone plan segment is used to specify multiple tone plans. Byte offsets 9 and 10 uniquely identify the tone plan which is to be used in the commands. Byte offsets 11 and 12 are reserved for future enhancements and must remain 00 in the commands. Specify a tone plan segment hexadecimal value according to the following description.

Access the VCO/4K administration software Multiple Tone Plan Configuration screen for a list of the available tone plan names and their associated unique tone plan identification numbers, which are decimal values. From the Multiple Tone Plan Configuration screen, determine which tone plan name is to be configured in this command and make a notation of its associated unique tone plan ID decimal value. Convert the decimal value to hexadecimal and specify the hexadecimal value in the command. Use the following as a quick reference for the tone plan segment:

- 0000—Hexadecimal default tone plan ID; access the Multiple Tone Plan Configuration screen to determine the default tone plan name.
- 0100 to 1400—Hexadecimal tone plan IDs other than the default; access the Multiple Tone Plan Configuration screen to view the available tone plan names and their associated unique decimal ID values.

Modifications have also been made to the \$66 command, in the extended operational mode, to enable the multiple tone plan feature. The following \$66 command segments have been modified in VCO/4K system software Version 5.2(0):

- Path Modifier, byte offset 9
- B Port Address, byte offsets 14 through 17

The path modifier segment, byte offset 9, determines the type of voice path constructed and whether a tone plan ID is used in the command. Specify one of the two new options to use the multiple tone plan feature in the \$66 command:

- 10—Breaks the voice path. Hexadecimal representations of the tone plan ID and tone value are specified in the B port address segment—byte offsets 14 to 17.
- 11—Specifies a one-way connection. Hexadecimal representations of the tone plan ID and tone value are specified in the B port address segment—byte offsets 14 to 17. Refer to Appendix E, “Tone Values,” of the *Cisco VCO/4K Extended Programming Reference* for a list of tone values.



Refer to the *Cisco VCO/4K Extended Programming Reference* for a complete list of the \$66 command's path modifier segment options.

The B port address segment, byte offsets 14 through 17, has two uses, dependent upon whether the multiple tone plan feature is in use:

- If the multiple tone plan feature is not in use, the B port address is used to specify the address of the sender. Refer to the *Cisco VCO/4K Extended Programming Reference*, Appendix E, "Tone Values," for a list of port addresses reserved for tones.
- If the multiple tone plan feature is in use, the B port address is used to specify the tone plan ID and the tone value:
  - Byte offsets 14 and 15 indicate the tone plan ID hexadecimal value. Refer to the VCO/4K administration software Multiple Tone Plan Configuration screen for a list of available tone plan names and their associated unique tone plan identification numbers, which are listed as decimal values. Determine which tone plan name is to be configured in this command and make a notation of its associated unique tone plan ID decimal value. Convert the decimal value to hexadecimal and specify the hexadecimal value in the command.
  - Byte offsets 16 and 17 indicate the tone value. Refer to the *Cisco VCO/4K Extended Programming Reference*, Appendix E, "Tone Values," for a list of reserved tone values and specify an appropriate tone value in the command.

Refer to the *Cisco VCO/4K Extended Programming Reference* for more information on extended mode host application commands and reports.

## Multiple Tone Plan Feature—Tone Plan Specifications

This section describes the specifications for each tone plan, categorized by the following:

- Tone interpretation (answer supervision)
- Tone generation
- Tone detection (digit collection)
- Tone plan file checksums and version numbers
- R2 signaling tones and pulse code modulation line signaling, for those tone plans employing MFCR2 tones

The tone plan specification elements are contained in several tone plan files. The tone plan files are contained on the Multiple Tone Plans diskette. The names of the files are identical for each tone plan; however, the files contain tone plan specific data. Refer to Table 7 and Table 8 for a list of tone plans and verify the checksum and version numbers for each tone plan downloaded in the "Multiple Tone Plan Feature Installation—System Administration Modifications" section on page 9. The North America tone plan checksums and version numbers do not need to be verified; they are a part of the VCO/4K system software Version 5.2(0).

**Table 7** *Multiple Tone Plan Feature Tone Plan Files—Checksums and Version Numbers for Tone Plans Belgium through Germany*

File Name	Belgium Tone Plan		Finland Tone Plan		France Tone Plan		Germany Tone Plan	
	Checksum	Version	Checksum	Version	Checksum	Version	Checksum	Version
cpa.ctg	00090007	3.0	007d0060	3.02	00780076	18.02	0019011c	1.01
cpa.dwn	0030be23	14.01	0030f685	10.07	003194a8	3.30	—	—
cpa.nor	08aa07ae	3.0	155d04e8	3.02	091005e0	18.02	157e0332	1.01

**Table 7 Multiple Tone Plan Feature Tone Plan Files—Checksums and Version Numbers for Tone Plans Belgium through Germany (continued)**

File Name	Belgium Tone Plan		Finland Tone Plan		France Tone Plan		Germany Tone Plan	
	Checksum	Version	Checksum	Version	Checksum	Version	Checksum	Version
cpa.sit	00000000	3.0	0082015e	3.02	00ba017c	18.02	01cb0137	1.01
cpa.spc	0294035d	3.0	02940345	3.02	0d340342	18.02	02940374	1.01
dtg.tpl	43e4559d	14.16	4c3845b3	10.18	01824118	18.20	01824118	1.21
dtg.sim	dac4c883	14.16	cd93cdb2	10.18	12f8768e	18.20	c02fa458	1.21
dtg.spe	000e0001	14.16	c0080013	10.18	00140015	18.20	00140015	1.21
dtg.utg	62133110	14.16	03063e14	10.18	5fd34110	18.20	691327c3	1.21
dtmf.spc	5b3b1a06	1.01	53024766	3.02	53024766	1.01	53024766	1.01
mf.spc	075a3119	1.00	075a3119	1.00	075a3119	3.00	075a3119	3.00
mfc2.sim	—	—	606d07f6	3.02	—	—	—	—
mfc2.sma	—	—	7f043d26	3.02	—	—	—	—
mfc2.smt	—	—	98100103	3.02	—	—	—	—
mfc2.spc	—	—	3c7b2e67	3.02	—	—	—	—
mfc2.utg	—	—	000b3999	3.02	—	—	—	—

**Table 8 Multiple Tone Plan Feature Tone Plan Files—Checksums and Version Numbers for Tone Plans Netherlands through Spain**

File Name	Netherlands Tone Plan		Norway Tone Plan		Spain Tone Plan	
	Checksum	Version	Checksum	Version	Checksum	Version
cpa.ctg	00920084	1.01	0022011f	1.0	000b0003	3.00
cpa.dwn	—	—	—	—	003212b6	33.01
cpa.nor	15758431	1.01	157a0332	1.0	08db03c4	3.00
cpa.sit	00000000	1.01	01f4015e	1.0	00000000	3.00
cpa.spc	0294034e	1.01	02940377	1.0	0294035f	3.00
dtg.tpl	52ad10a6	1.23	43e4559d	1.14	52ad10a6	1.19
dtg.sim	6b9f2841	1.23	d8743d98	1.14	45f2fe39	1.19
dtg.spe	c00b0014	1.23	000e0001	1.14	c00b0014	1.19
dtg.utg	1b1e0e1c	1.23	6ade42dc	1.14	191375d0	1.19
dtmf.spc	5b3b1a06	3.00	5b3b1a06	3.0	53024766	3.00
mf.spc	075a3119	1.00	075a3119	1.0	075a3119	3.00
mfc2.sim	—	—	—	—	—	—
mfc2.sma	—	—	—	—	—	—
mfc2.smt	—	—	—	—	—	—
mfc2.spc	—	—	—	—	—	—
mfc2.utg	—	—	—	—	—	—

The VCO/4K controller downloads the tone plan files to the Service Platform Card (SPC) upon installation.

Network tone generation is performed through SPC-TONE outpulse and static tone channels. The allocation of tones is controlled by the following:

- Impulse rules
- Voice Path Control (\$66) command
- DTMF Collection Control (\$67) command

The supervision events and tones listed in the Answer Supervision Template screen use standard North American network terminology. Table 9 describes the correct Answer Supervision Template screen names to use with specific tone plans when using the multiple tone plan feature.

Table 9 Answer Supervision Template Screen Terminology and Multiple Tone Plan Feature Tone Names

Template Screen Name	Multiple Tone Plan Feature Tone Plan Specific Names						
	Belgium	Finland	France	Germany	Netherlands	Norway	Spain
Dial	Dial	Dial	Dial, Special Dial	Dial	Dial	Dial	Dial
Ringback	Ringback	Ringback	Ring	Ring	Ring	Ring	Ringback
Busy	Busy	Busy	Congestion (Howler)/ Call in Progress	Busy	Busy	Busy	Busy
Reorder	Fast Busy	Fast Busy	—	Disconnect/ Reorder	Reorder	Fast Busy/ Congestion	Fast Busy
SIT	SIT	SIT	SIT	SIT	SIT	SIT	SIT
Pager Cue	—	Fax	—	—	Pager Cue	—	—
Ring Cess. <sup>1</sup>	—	—	—	—	—	—	—
Voice Det. <sup>1</sup>	—	—	—	—	—	—	—
Voice Cess. <sup>1</sup>	—	—	—	—	—	—	—
Wink <sup>1</sup>	—	—	—	—	—	—	—
Answer <sup>1</sup>	—	—	—	—	—	—	—
Time <sup>1</sup>	—	—	—	—	—	—	—
Hook Flash <sup>1</sup>	—	—	—	—	—	—	—
ISUP Tone <sup>1</sup>	—	—	—	—	—	—	—
ISUP Cess. <sup>1</sup>	—	—	—	—	—	—	—

1. Not a tone.

Refer to the *Cisco VCO/4K Tone Plan Release Notes* for a list of tone plan specific firmware information.

## Belgium Tone Plan Specifications

Table 10 summarizes the characteristics of the most frequently used supervision tones employed in the Belgium network.

**Table 10** *Belgium DTG Supervision Tones*

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Dial	425	-4.8	Continuous	Yes
Ringback	425	-4.8	1 second on, 3 seconds off, Repeated	Yes
Busy	425	-4.8	0.5 second on, 0.5 second off, Repeated	Yes
Fast Busy	425	-4.8	0.17 second on, 0.17 second off, Repeated	Yes

SPC-CPA processing is modified to support Belgium network tone detection requirements. Use the VCO/4K system administration Answer Supervision Template screen to control tone detection for the tones listed in Table 10. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on supervision template processing.

Table 11 describes the Belgium network tones and their corresponding output levels. The information contained in Table 11 supersedes, for the Belgium network, the tone generation table listed in the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*, as well as the tone output level specifications described in the *Cisco VCO/4K Card Technical Descriptions*. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on tone generation.

**Table 11** *Belgium Tone Plan—Tone Names and Output Levels*

Tone Name	Output Level
Beep	—
Quiet (PCM idle pattern 01010100)	—
1 kHz Test Tone	0 dBm
<b>Dial</b>	<b>-4.8 dBm</b>
380 Hz Digit Trip	-10 dBm
425 Hz	-10 dBm
480 Hz High Tone	-17 dBm
1400 Hz	-10 dBm
1000 Hz @max CODEC output	—
950 Hz	-13 dBm

*Table 11 Belgium Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
404 Hz Test Tone	0 dBm
1004 Hz Test Tone	0 dBm
2804 Hz	0 dBm
380 Hz	-10 dBm
1760 Hz	-10 dBm
Digital Test Pattern	—
425 Hz	-10 dBm
<b>Ringback</b>	<b>-4.8 dBm</b>
<b>Busy</b>	<b>-4.8 dBm</b>
<b>Fast Busy</b>	<b>-4.8 dBm</b>
380 Hz	-10 dBm
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
DTMF digit 0 (steady)	-6/-4 dBm/freq
DTMF digit 1 (steady)	-6/-4 dBm/freq
DTMF digit 2 (steady)	-6/-4 dBm/freq
DTMF digit 3 (steady)	-6/-4 dBm/freq
DTMF digit 4 (steady)	-6/-4 dBm/freq
DTMF digit 5 (steady)	-6/-4 dBm/freq
DTMF digit 6 (steady)	-6/-4 dBm/freq
DTMF digit 7 (steady)	-6/-4 dBm/freq
DTMF digit 8 (steady)	-6/-4 dBm/freq
DTMF digit 9 (steady)	-6/-4 dBm/freq
DTMF digit A (steady)	-6/-4 dBm/freq
DTMF digit B (steady)	-6/-4 dBm/freq
DTMF digit C (steady)	-6/-4 dBm/freq

**Table 11** *Belgium Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
DTMF digit D (steady)	-6/-4 dBm/freq
DTMF digit * (steady)	-6/-4 dBm/freq
DTMF digit # (steady)	-6/-4 dBm/freq
MF digit 0 (steady) (1300 + 1500 Hz)	-7 dBm/freq
MF digit 1 (steady) (700 + 900 Hz)	-7 dBm/freq
MF digit 2 (steady) (700 + 1100 Hz)	-7 dBm/freq
MF digit 3 (steady) (900 + 1100 Hz)	-7 dBm/freq
MF digit 4 (steady) (700 + 1300 Hz)	-7 dBm/freq
MF digit 5 (steady) (900 + 1300 Hz)	-7 dBm/freq
MF digit 6 (steady) (1100 + 1300 Hz)	-7 dBm/freq
MF digit 7 (steady) (700 + 1500 Hz)	-7 dBm/freq
MF digit 8 (steady) (900 + 1500 Hz)	-7 dBm/freq
MF digit 9 (steady) (1100 + 1500 Hz)	-7 dBm/freq
MF digit KP (steady) (1100 + 1700 Hz)	-7 dBm/freq
MF digit ST (steady) (1500 + 1700 Hz)	-7 dBm/freq
MF digit ST3P (700 + 1700 Hz)	-7 dBm/freq
MF digit STP (900 + 1700 Hz)	-7 dBm/freq
MF digit ST2P (1300 + 1700 Hz)	-7 dBm/freq

## Finland Tone Plan Specifications

Table 10 summarizes the characteristics of the most frequently used supervision tones employed in the Finland network.

**Table 12** *Finland DTG Supervision Tones*

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Dial	425	-10	Continuous	Yes
Ring	425	-10	1 second on, 4 seconds off, Repeated	Yes
Busy	425	-10	0.3 second on, 0.3 second off, Repeated	Yes
Reorder <sup>1</sup>	425	-9	150 milliseconds on, 150 milliseconds off, Repeated	Yes

**Table 12** *Finland DTG Supervision Tones (continued)*

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
SIT <sup>1</sup>	950 1400 1800	-9 -9 -9	300 milliseconds on, 300 milliseconds off, 300 milliseconds on, 1.0 second off, Repeated	Yes
Intrusion	425	-10	200 milliseconds on, 300 milliseconds off, 200 milliseconds on, 1.3 seconds off, Repeated	No
Warning	1400	-10	400 milliseconds on, 14.6 seconds off, Repeated	No
Waiting	900	-13	650 milliseconds on, 350 milliseconds off, 350 milliseconds on, 30 milliseconds off, Repeated	No
		-10	1.3 seconds on, 2.8 seconds off, Repeated	
Special Dial	425	-10	650 milliseconds on, 650 milliseconds off, Repeated	No
Fax <sup>2</sup>	1100	—	2.0 seconds on	Yes

1. This tone is available in the tone library, but not used in the Finland network.

2. The fax tone is detected only; it is not generated.

SPC-CPA processing is modified to support Finland network tone detection requirements. Use the VCO/4K system administration Answer Supervision Template screen to control tone detection for the tones listed in Table 12. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on supervision template processing.

Table 13 describes the Finland network tones and their corresponding output levels. The information contained in Table 13 supersedes, for the Finland network, the tone generation table listed in the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*, as well as the tone output level specifications described in the *Cisco VCO/4K Card Technical Descriptions*. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on tone generation.

**Table 13** *Finland Tone Plan—Tone Names and Output Levels*

Tone Name	Output Level
Beep	—
Quiet (PCM idle pattern 01010100)	—



*Table 13 Finland Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
1 kHz Test Tone	0 dBm
<b>Dial</b>	<b>-10 dBm</b>
380 Hz Digit Trip	-10 dBm
425 Hz	-10 dBm
480 Hz High Tone	-17 dBm
1400 Hz	-10 dBm
1000 Hz @max CODEC output	—
950 Hz	-13 dBm
404 Hz Test Tone	0 dBm
1004 Hz Test Tone	0 dBm
2804 Hz	0 dBm
380 Hz	-10 dBm
1760 Hz	-10 dBm
Digital Test Pattern	—
425 Hz	-10 dBm
<b>Ring</b>	<b>-10 dBm</b>
<b>Busy</b>	<b>-10 dBm</b>
<b>Reorder</b>	<b>-9 dBm</b>
380 Hz	-10 dBm
Reserved	—
<b>Intrusion</b>	<b>-10 dBm</b>
<b>Warning</b>	<b>-10 dBm</b>
<b>Waiting</b>	<b>-13 dBm/ -10 dBm</b>
Reserved	—
<b>SIT</b>	<b>-9 dBm</b>
<b>Special Dial</b>	<b>-10 dBm</b>
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
DTMF digit 0 (steady)	-9/-11 dBm/freq
DTMF digit 1 (steady)	-9/-11 dBm/freq
DTMF digit 2 (steady)	-9/-11 dBm/freq
DTMF digit 3 (steady)	-9/-11 dBm/freq

**Table 13** *Finland Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
DTMF digit 4 (steady)	-9/-11 dBm/freq
DTMF digit 5 (steady)	-9/-11 dBm/freq
DTMF digit 6 (steady)	-9/-11 dBm/freq
DTMF digit 7 (steady)	-9/-11 dBm/freq
DTMF digit 8 (steady)	-9/-11 dBm/freq
DTMF digit 9 (steady)	-9/-11 dBm/freq
DTMF digit A (steady)	-9/-11 dBm/freq
DTMF digit B (steady)	-9/-11 dBm/freq
DTMF digit C (steady)	-9/-11 dBm/freq
DTMF digit D (steady)	-9/-11 dBm/freq
DTMF digit * (steady)	-9/-11 dBm/freq
DTMF digit # (steady)	-9/-11 dBm/freq
MF digit 0 (steady) (1300 + 1500 Hz)	-7 dBm/freq
MF digit 1 (steady) (700 + 900 Hz)	-7 dBm/freq
MF digit 2 (steady) (700 + 1100 Hz)	-7 dBm/freq
MF digit 3 (steady) (900 + 1100 Hz)	-7 dBm/freq
MF digit 4 (steady) (700 + 1300 Hz)	-7 dBm/freq
MF digit 5 (steady) (900 + 1300 Hz)	-7 dBm/freq
MF digit 6 (steady) (1100 + 1300 Hz)	-7 dBm/freq
MF digit 7 (steady) (700 + 1500 Hz)	-7 dBm/freq
MF digit 8 (steady) (900 + 1500 Hz)	-7 dBm/freq
MF digit 9 (steady) (1100 + 1500 Hz)	-7 dBm/freq
MF digit KP (steady) (1100 + 1700 Hz)	-7 dBm/freq
MF digit ST (steady) (1500 + 1700 Hz)	-7 dBm/freq
MF digit ST3P (700 + 1700 Hz)	-7 dBm/freq
MF digit STP (900 + 1700 Hz)	-7 dBm/freq
MF digit ST2P (1300 + 1700 Hz)	-7 dBm/freq

Refer to the *Cisco VCO/4K Finland Tone Plan Supplement* for information on the Finland network R2 signaling and pulse code modulation line signaling.

## France Tone Plan Specifications

Table 14 summarizes the characteristics of the most frequently used supervision tones employed in the France network.

**Table 14** France DTG Supervision Tones

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Dial	440	-13	Continuous	Yes
Ring	440	-13	1.5 seconds on, 3.5 seconds off, Repeated	Yes
Congestion (Howler)	440	-13	0.5 second on, 0.5 second off, Repeated	Yes <sup>1</sup>
Call in Progress	425	-13	50 milliseconds on, 50 milliseconds off, Repeated	Yes <sup>2</sup>
Special Dial	340 440	-12	Continuous	Yes <sup>3</sup>
Special Information	950 1400 1800	-12 -10 -12	0.3 second on, 0.3 second off, 0.3 second on, 1.0 second off, Repeated	Yes

1. The congestion (howler) tone is detected as the busy tone.
2. The call in progress tone is detected as the reorder tone.
3. The special dial tone is detected as the dial tone.

SPC-CPA processing is modified to support France network tone detection requirements. Use the VCO/4K system administration Answer Supervision Template screen to control tone detection for the tones listed in Table 14. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on supervision template processing.

Table 15 describes the France network tones and their corresponding output levels. The information contained in Table 15 supersedes, for the France network, the tone generation table listed in the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*, as well as the tone output level specifications described in the *Cisco VCO/4K Card Technical Descriptions*. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on tone generation.

**Table 15** France Tone Plan—Tone Names and Output Levels

Tone Name	Output Level
Beep	—
Quiet (PCM idle pattern 01010100)	—
1 kHz Test Tone	0 dBm
<b>Dial</b>	<b>-13 dBm</b>
380 Hz Digit Trip	-10 dBm
425 Hz	-10 dBm
480 Hz High Tone	-17 dBm

*Table 15 France Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
1400 Hz	-10 dBm
1000 Hz @max CODEC output	—
950 Hz	-13 dBm
404 Hz Test Tone	0 dBm
1004 Hz Test Tone	0 dBm
2804 Hz	0 dBm
380 Hz	-10 dBm
1760 Hz	-10 dBm
Digital Test Pattern	—
425 Hz	-10 dBm
<b>Ring</b>	<b>-13 dBm</b>
<b>Congestion (Howler)</b>	<b>-13 dBm</b>
<b>Call in Progress</b>	<b>-13 dBm</b>
380 Hz	-10 dBm
<b>Special Dial</b>	<b>-12 dBm</b>
Reserved	—
Reserved	—
Reserved	—
<b>Special Information</b>	<b>-12 dBm</b> <b>-10 dBm</b> <b>-12 dBm</b>
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
DTMF digit 0 (steady)	-9/-11 dBm/freq
DTMF digit 1 (steady)	-9/-11 dBm/freq
DTMF digit 2 (steady)	-9/-11 dBm/freq
DTMF digit 3 (steady)	-9/-11 dBm/freq
DTMF digit 4 (steady)	-9/-11 dBm/freq
DTMF digit 5 (steady)	-9/-11 dBm/freq
DTMF digit 6 (steady)	-9/-11 dBm/freq
DTMF digit 7 (steady)	-9/-11 dBm/freq
DTMF digit 8 (steady)	-9/-11 dBm/freq

**Table 15** France Tone Plan—Tone Names and Output Levels (continued)

Tone Name	Output Level
DTMF digit 9 (steady)	-9/-11 dBm/freq
DTMF digit A (steady)	-9/-11 dBm/freq
DTMF digit B (steady)	-9/-11 dBm/freq
DTMF digit C (steady)	-9/-11 dBm/freq
DTMF digit D (steady)	-9/-11 dBm/freq
DTMF digit * (steady)	-9/-11 dBm/freq
DTMF digit # (steady)	-9/-11 dBm/freq
MF digit 0 (steady) (1300 + 1500 Hz)	-7 dBm/freq
MF digit 1 (steady) (700 + 900 Hz)	-7 dBm/freq
MF digit 2 (steady) (700 + 1100 Hz)	-7 dBm/freq
MF digit 3 (steady) (900 + 1100 Hz)	-7 dBm/freq
MF digit 4 (steady) (700 + 1300 Hz)	-7 dBm/freq
MF digit 5 (steady) (900 + 1300 Hz)	-7 dBm/freq
MF digit 6 (steady) (1100 + 1300 Hz)	-7 dBm/freq
MF digit 7 (steady) (700 + 1500 Hz)	-7 dBm/freq
MF digit 8 (steady) (900 + 1500 Hz)	-7 dBm/freq
MF digit 9 (steady) (1100 + 1500 Hz)	-7 dBm/freq
MF digit KP (steady) (1100 + 1700 Hz)	-7 dBm/freq
MF digit ST (steady) (1500 + 1700 Hz)	-7 dBm/freq
MF digit ST3P (700 + 1700 Hz)	-7 dBm/freq
MF digit STP (900 + 1700 Hz)	-7 dBm/freq
MF digit ST2P (1300 + 1700 Hz)	-7 dBm/freq

### Germany Tone Plan Specifications

Table 16 summarizes the characteristics of the most frequently used supervision tones employed in the Germany network.

**Table 16** Germany DTG Supervision Tones

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Dial	425	-9	Continuous	Yes
Ring	425	-9	1 second on, 4 seconds off, Repeated	Yes
Busy	425	-9	0.48 second on, 0.48 second off, Repeated	Yes

**Table 16** Germany DTG Supervision Tones (continued)

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Disconnect/Reorder	425	-9	240 milliseconds on, 240 milliseconds off, Repeated	Yes
Special Information	950 1400 1800	-10 -10 -10	0.3 second on, 0.3 second off, 0.3 second on, 1 second off, Repeated	Yes

SPC-CPA processing is modified to support Germany network tone detection requirements. Use the VCO/4K system administration Answer Supervision Template screen to control tone detection for the tones listed in Table 16. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on supervision template processing.

Table 17 describes the Germany network tones and their corresponding output levels. The information contained in Table 17 supersedes, for the Germany network, the tone generation table listed in the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*, as well as the tone output level specifications described in the *Cisco VCO/4K Card Technical Descriptions*. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on tone generation.

**Table 17** Germany Tone Plan—Tone Names and Output Levels

Tone Name	Output Level
Beep	—
Quiet (PCM idle pattern 01010100)	—
1 kHz Test Tone	0 dBm
<b>Dial</b>	<b>-9 dBm</b>
380 Hz Digit Trip	-10 dBm
425 Hz	-10 dBm
480 Hz High Tone	-17 dBm
1400 Hz	-10 dBm
1000 Hz @max CODEC output	—
950 Hz	-13 dBm
404 Hz Test Tone	0 dBm
1004 Hz Test Tone	0 dBm
2804 Hz	0 dBm
380 Hz	-10 dBm
1760 Hz	-10 dBm
Digital Test Pattern	—
425 Hz	-10 dBm

*Table 17 Germany Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
<b>Ring</b>	<b>-9 dBm</b>
<b>Busy</b>	<b>-9 dBm</b>
<b>Disconnect/Reorder</b>	<b>-9 dBm</b>
380 Hz	-10 dBm
Reserved	—
Reserved	—
Reserved	—
Reserved	—
<b>Special Information</b>	<b>-10 dBm</b>
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
DTMF digit 0 (steady)	-9/-11 dBm/freq
DTMF digit 1 (steady)	-9/-11 dBm/freq
DTMF digit 2 (steady)	-9/-11 dBm/freq
DTMF digit 3 (steady)	-9/-11 dBm/freq
DTMF digit 4 (steady)	-9/-11 dBm/freq
DTMF digit 5 (steady)	-9/-11 dBm/freq
DTMF digit 6 (steady)	-9/-11 dBm/freq
DTMF digit 7 (steady)	-9/-11 dBm/freq
DTMF digit 8 (steady)	-9/-11 dBm/freq
DTMF digit 9 (steady)	-9/-11 dBm/freq
DTMF digit A (steady)	-9/-11 dBm/freq
DTMF digit B (steady)	-9/-11 dBm/freq
DTMF digit C (steady)	-9/-11 dBm/freq
DTMF digit D (steady)	-9/-11 dBm/freq
DTMF digit * (steady)	-9/-11 dBm/freq
DTMF digit # (steady)	-9/-11 dBm/freq
MF digit 0 (steady) (1300 + 1500 Hz)	-7 dBm/freq
MF digit 1 (steady) (700 + 900 Hz)	-7 dBm/freq
MF digit 2 (steady) (700 + 1100 Hz)	-7 dBm/freq
MF digit 3 (steady) (900 + 1100 Hz)	-7 dBm/freq

**Table 17** Germany Tone Plan—Tone Names and Output Levels (continued)

Tone Name	Output Level
MF digit 4 (steady) (700 + 1300 Hz)	-7 dBm/freq
MF digit 5 (steady) (900 + 1300 Hz)	-7 dBm/freq
MF digit 6 (steady) (1100 + 1300 Hz)	-7 dBm/freq
MF digit 7 (steady) (700 + 1500 Hz)	-7 dBm/freq
MF digit 8 (steady) (900 + 1500 Hz)	-7 dBm/freq
MF digit 9 (steady) (1100 + 1500 Hz)	-7 dBm/freq
MF digit KP (steady) (1100 + 1700 Hz)	-7 dBm/freq
MF digit ST (steady) (1500 + 1700 Hz)	-7 dBm/freq
MF digit ST3P (700 + 1700 Hz)	-7 dBm/freq
MF digit STP (900 + 1700 Hz)	-7 dBm/freq
MF digit ST2P (1300 + 1700 Hz)	-7 dBm/freq

## Netherlands Tone Plan Specifications

Table 18 summarizes the characteristics of the most frequently used supervision tones employed in the Netherlands network.

**Table 18** Netherlands DTG Supervision Tones

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Dial	425	-10	Continuous	Yes
Ring	425	-10	1 second on, 4 seconds off, Repeated	Yes
Busy	425	-10	0.5 second on, 0.5 second off, Repeated	Yes
Reorder	425	-10	250 milliseconds on, 250 milliseconds off, Repeated	Yes
Pager Cue	1600	-10	Continuous	Yes
Special Information	425	-10	75 milliseconds ( 33%) on, 75 milliseconds ( 33%) of, Repeated	Yes

SPC-CPA processing is modified to support Netherlands network tone detection requirements. Use the VCO/4K system administration Answer Supervision Template screen to control tone detection for the tones listed in Table 18. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on supervision template processing.



Table 19 describes the Netherlands network tones and their corresponding output levels. The information contained in Table 19 supersedes, for the Netherlands network, the tone generation table listed in the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*, as well as the tone output level specifications described in the *Cisco VCO/4K Card Technical Descriptions*. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on tone generation.

**Table 19 Netherlands Tone Plan—Tone Names and Output Levels**

Tone Name	Output Level
Beep	—
Quiet (PCM idle pattern 01010100)	—
1 kHz Test Tone	0 dBm
<b>Dial</b>	<b>-10 dBm</b>
380 Hz Digit Trip	-10 dBm
425 Hz	-10 dBm
480 Hz High Tone	-17 dBm
1400 Hz	-10 dBm
1000 Hz @max CODEC output	—
950 Hz	-13 dBm
404 Hz Test Tone	0 dBm
1004 Hz Test Tone	0 dBm
2804 Hz	0 dBm
380 Hz	-10 dBm
1760 Hz	-10 dBm
Digital Test Pattern	—
425 Hz	-10 dBm
<b>Ring</b>	<b>-10 dBm</b>
<b>Busy</b>	<b>-10 dBm</b>
<b>Reorder</b>	<b>-10 dBm</b>
380 Hz	-10 dBm
<b>SIT</b>	<b>-10 dBm</b>
<b>Pager Cue</b>	<b>-10 dBm</b>
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—

*Table 19 Netherlands Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
Reserved	—
Reserved	—
DTMF digit 0 (steady)	-9/-11 dBm/freq
DTMF digit 1 (steady)	-9/-11 dBm/freq
DTMF digit 2 (steady)	-9/-11 dBm/freq
DTMF digit 3 (steady)	-9/-11 dBm/freq
DTMF digit 4 (steady)	-9/-11 dBm/freq
DTMF digit 5 (steady)	-9/-11 dBm/freq
DTMF digit 6 (steady)	-9/-11 dBm/freq
DTMF digit 7 (steady)	-9/-11 dBm/freq
DTMF digit 8 (steady)	-9/-11 dBm/freq
DTMF digit 9 (steady)	-9/-11 dBm/freq
DTMF digit A (steady)	-9/-11 dBm/freq
DTMF digit B (steady)	-9/-11 dBm/freq
DTMF digit C (steady)	-9/-11 dBm/freq
DTMF digit D (steady)	-9/-11 dBm/freq
DTMF digit * (steady)	-9/-11 dBm/freq
DTMF digit # (steady)	-9/-11 dBm/freq
MF digit 0 (steady) (1300 + 1500 Hz)	-7 dBm/freq
MF digit 1 (steady) (700 + 900 Hz)	-7 dBm/freq
MF digit 2 (steady) (700 + 1100 Hz)	-7 dBm/freq
MF digit 3 (steady) (900 + 1100 Hz)	-7 dBm/freq
MF digit 4 (steady) (700 + 1300 Hz)	-7 dBm/freq
MF digit 5 (steady) (900 + 1300 Hz)	-7 dBm/freq
MF digit 6 (steady) (1100 + 1300 Hz)	-7 dBm/freq
MF digit 7 (steady) (700 + 1500 Hz)	-7 dBm/freq
MF digit 8 (steady) (900 + 1500 Hz)	-7 dBm/freq
MF digit 9 (steady) (1100 + 1500 Hz)	-7 dBm/freq
MF digit KP (steady) (1100 + 1700 Hz)	-7 dBm/freq
MF digit ST (steady) (1500 + 1700 Hz)	-7 dBm/freq
MF digit ST3P (700 + 1700 Hz)	-7 dBm/freq
MF digit STP (900 + 1700 Hz)	-7 dBm/freq
MF digit ST2P (1300 + 1700 Hz)	-7 dBm/freq

## North America Tone Plan Specifications

Refer to the *Cisco VCO/4K System Administrator's Guide* for the North America tone plan specifications.

## Norway Tone Plan Specifications

Table 20 summarizes the characteristics of the most frequently used supervision tones employed in the Norway network.

**Table 20** Norway DTG Supervision Tones

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Dial <sup>1</sup>	425	-10	Continuous	Yes
Ring	425	-10	1 second on, 4 seconds off, Repeated	Yes
Busy	425	-10	0.5 second on, 0.5 second off, Repeated	Yes
Fast Busy/ Congestion	425	-10	0.2 second on, 0.2 second off, Repeated	Yes
SIT <sup>1</sup>	950 1400 1800	-10	Each frequency is on for 333 milliseconds, one after the other, then off for 1 second.	Yes
Pay <sup>1</sup>	1477 941	-10	The first frequency (1477 Hz) is on for 200 milliseconds, and off for 200 milliseconds, then the second frequency (941 Hz) is on for 200 milliseconds, and off for 2 seconds. The cadence is repeated indefinitely. <sup>2</sup>	No

1. Required by the Norway network, but not required for customer use.
2. The Norway network requires the Pay tone cadence to be repeated for four cycles. The VCO/4K Norway tone plan implementation repeats the Pay tone cadence indefinitely.

SPC-CPA processing is modified to support Norway network tone detection requirements. Use the VCO/4K system administration Answer Supervision Template screen to control tone detection for the tones listed in Table 20. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on supervision template processing.

Table 21 describes the Norway network tones and their corresponding output levels. The information contained in Table 21 supersedes, for the Norway network, the tone generation table listed in the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*, as well as the tone output level specifications described in the *Cisco VCO/4K Card Technical Descriptions*. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on tone generation.

*Table 21 Norway Tone Plan—Tone Names and Output Levels*

Tone Name	Output Level
Beep	—
Quiet (PCM idle pattern 01010100)	—
1 kHz Test Tone	0 dBm
<b>Dial</b>	<b>-10 dBm</b>
380 Hz Digit Trip	-10 dBm
425 Hz	-10 dBm
480 Hz High Tone	-17 dBm
1400 Hz	-10 dBm
1000 Hz @max CODEC output	—
950 Hz	-13 dBm
404 Hz Test Tone	0 dBm
1004 Hz Test Tone	0 dBm
2804 Hz	0 dBm
380 Hz	-10 dBm
1760 Hz	-10 dBm
Digital Test Pattern	—
425 Hz	-10 dBm
<b>Ring</b>	<b>-10 dBm</b>
<b>Busy</b>	<b>-10 dBm</b>
<b>Fast Busy/Congestion</b>	<b>-10 dBm</b>
380 Hz	-10 dBm
<b>Pay</b>	<b>-10 dBm</b>
<b>SIT</b>	<b>-10 dBm</b>
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
DTMF digit 0 (steady)	-9/-11 dBm/freq
DTMF digit 1 (steady)	-9/-11 dBm/freq
DTMF digit 2 (steady)	-9/-11 dBm/freq

**Table 21 Norway Tone Plan—Tone Names and Output Levels (continued)**

Tone Name	Output Level
DTMF digit 3 (steady)	-9/-11 dBm/freq
DTMF digit 4 (steady)	-9/-11 dBm/freq
DTMF digit 5 (steady)	-9/-11 dBm/freq
DTMF digit 6 (steady)	-9/-11 dBm/freq
DTMF digit 7 (steady)	-9/-11 dBm/freq
DTMF digit 8 (steady)	-9/-11 dBm/freq
DTMF digit 9 (steady)	-9/-11 dBm/freq
DTMF digit A (steady)	-9/-11 dBm/freq
DTMF digit B (steady)	-9/-11 dBm/freq
DTMF digit C (steady)	-9/-11 dBm/freq
DTMF digit D (steady)	-9/-11 dBm/freq
DTMF digit * (steady)	-9/-11 dBm/freq
DTMF digit # (steady)	-9/-11 dBm/freq
MF digit 0 (steady) (1300 + 1500 Hz)	-7 dBm/freq
MF digit 1 (steady) (700 + 900 Hz)	-7 dBm/freq
MF digit 2 (steady) (700 + 1100 Hz)	-7 dBm/freq
MF digit 3 (steady) (900 + 1100 Hz)	-7 dBm/freq
MF digit 4 (steady) (700 + 1300 Hz)	-7 dBm/freq
MF digit 5 (steady) (900 + 1300 Hz)	-7 dBm/freq
MF digit 6 (steady) (1100 + 1300 Hz)	-7 dBm/freq
MF digit 7 (steady) (700 + 1500 Hz)	-7 dBm/freq
MF digit 8 (steady) (900 + 1500 Hz)	-7 dBm/freq
MF digit 9 (steady) (1100 + 1500 Hz)	-7 dBm/freq
MF digit KP (steady) (1100 + 1700 Hz)	-7 dBm/freq
MF digit ST (steady) (1500 + 1700 Hz)	-7 dBm/freq
MF digit ST3P (700 + 1700 Hz)	-7 dBm/freq
MF digit STP (900 + 1700 Hz)	-7 dBm/freq
MF digit ST2P (1300 + 1700 Hz)	-7 dBm/freq

### Spain Tone Plan Specifications

Table 22 summarizes the characteristics of the most frequently used supervision tones employed in the Spain network.

**Table 22** Spain DTG Supervision Tones

Tone	Frequency (Hz)	Amplitude (dBm)	Cadence	Detected by CPA?
Dial	425	-9	Continuous	Yes
Ringback	425	-9	1.5 seconds on, 3 seconds off, Repeated	Yes
Busy	425	-9	0.2 second on, 0.2 second off, Repeated	Yes
Fast Busy	425	-9	0.20 second on, 0.20 second off, 0.20 second on, 0.20 second off, 0.20 second on, 0.60 second off, Repeated	Yes

SPC-CPA processing is modified to support Spain network tone detection requirements. Use the VCO/4K system administration Answer Supervision Template screen to control tone detection for the tones listed in Table 22. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on supervision template processing.

Table 23 describes the Spain network tones and their corresponding output levels. The information contained in Table 23 supersedes, for the Spain network, the tone generation table listed in the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*, as well as the tone output level specifications described in the *Cisco VCO/4K Card Technical Descriptions*. Refer to the *Cisco VCO/4K System Administrator's Guide* for more information on tone generation.

**Table 23** Spain Tone Plan—Tone Names and Output Levels

Tone Name	Output Level
Beep	—
Quiet (PCM idle pattern 01010100)	—
1 kHz Test Tone	0 dBm
<b>Dial</b>	<b>-9 dBm</b>
380 Hz Digit Trip	-10 dBm
425 Hz	-10 dBm
480 Hz High Tone	-17 dBm
1400 Hz	-10 dBm
1000 Hz @max CODEC output	—
950 Hz	-13 dBm
404 Hz Test Tone	0 dBm
1004 Hz Test Tone	0 dBm

*Table 23 Spain Tone Plan—Tone Names and Output Levels (continued)*

Tone Name	Output Level
2804 Hz	0 dBm
380 Hz	-10 dBm
1760 Hz	-10 dBm
Digital Test Pattern	—
425 Hz	-10 dBm
<b>Ringback</b>	<b>-9 dBm</b>
<b>Busy</b>	<b>-9 dBm</b>
<b>Fast Busy</b>	<b>-9 dBm</b>
380 Hz	-10 dBm
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
Reserved	—
DTMF digit 0 (steady)	-9/-11 dBm/freq
DTMF digit 1 (steady)	-9/-11 dBm/freq
DTMF digit 2 (steady)	-9/-11 dBm/freq
DTMF digit 3 (steady)	-9/-11 dBm/freq
DTMF digit 4 (steady)	-9/-11 dBm/freq
DTMF digit 5 (steady)	-9/-11 dBm/freq
DTMF digit 6 (steady)	-9/-11 dBm/freq
DTMF digit 7 (steady)	-9/-11 dBm/freq
DTMF digit 8 (steady)	-9/-11 dBm/freq
DTMF digit 9 (steady)	-9/-11 dBm/freq
DTMF digit A (steady)	-9/-11 dBm/freq
DTMF digit B (steady)	-9/-11 dBm/freq
DTMF digit C (steady)	-9/-11 dBm/freq
DTMF digit D (steady)	-9/-11 dBm/freq
DTMF digit * (steady)	-9/-11 dBm/freq

**Table 23** Spain Tone Plan—Tone Names and Output Levels (continued)

Tone Name	Output Level
DTMF digit # (steady)	-9/-11 dBm/freq
MF digit 0 (steady) (1300 + 1500 Hz)	-7 dBm/freq
MF digit 1 (steady) (700 + 900 Hz)	-7 dBm/freq
MF digit 2 (steady) (700 + 1100 Hz)	-7 dBm/freq
MF digit 3 (steady) (900 + 1100 Hz)	-7 dBm/freq
MF digit 4 (steady) (700 + 1300 Hz)	-7 dBm/freq
MF digit 5 (steady) (900 + 1300 Hz)	-7 dBm/freq
MF digit 6 (steady) (1100 + 1300 Hz)	-7 dBm/freq
MF digit 7 (steady) (700 + 1500 Hz)	-7 dBm/freq
MF digit 8 (steady) (900 + 1500 Hz)	-7 dBm/freq
MF digit 9 (steady) (1100 + 1500 Hz)	-7 dBm/freq
MF digit KP (steady) (1100 + 1700 Hz)	-7 dBm/freq
MF digit ST (steady) (1500 + 1700 Hz)	-7 dBm/freq
MF digit ST3P (700 + 1700 Hz)	-7 dBm/freq
MF digit STP (900 + 1700 Hz)	-7 dBm/freq
MF digit ST2P (1300 + 1700 Hz)	-7 dBm/freq

## Multiple Tone Plan Feature Restrictions and Limitations

The following restrictions are valid with this release of the multiple tone plan feature:

- VCO/4K system software currently supports eight tone plans for multiple tone plan feature configuration, one of which can employ MFCR2 tones. Refer to Table 4 for a list of currently available tone plans. In the future, additional tone plans will be available.
- The multiple tone plan feature is supported by the extended operational mode. Users of the standard operational mode cannot take advantage of the multiple tone plan feature.
- The Finland tone plan must be set as the default tone plan if it uses MFCR2 signaling in call scenarios or applications. MFCR2 signaling for Finland is not supported by the multiple tone plan feature. The Finland tone plan used without MFCR2 in a call scenario or application can be used as a non-default tone plan with the multiple tone plan feature. Refer to DDT's issue CSCdt23584 for more information.

## Congestion Notification Support

Congestion notification support has been added to VCO/4K system software Version 5.2(0). This support consists of the following notifications:

- Inability to process a D-channel Setup request:  
The system is unable to process a D-channel Setup request due to resource limitation—which results in a failed call attempt. An ISDN Port Change of State (\$EA) report is sent to the host. The \$EA report contains a reason why the D-channel setup request was not processed.
- Interface Controller Card congestion alarm:



An ICC card is encountering congestion due to a high volume of traffic—which results in rejected call attempts. An Alarm Condition (\$F0) report is sent to the host. The \$F0 report contains the new \$4D alarm code to indicate the ICC/PRI card congestion.

## Congestion Notification Support Configuration and System Programming Modifications

Modifications have been made to the \$EA and \$F0 reports in both the standard and the extended operational mode to enable congestion notification support.

The following \$EA report segments have been modified in VCO/4K system software Version 5.2(0):

- Change—Byte offset 15 in standard mode, and byte offset 19 in extended mode.
- Information Elements (IEs)—Byte offsets 26 to n in standard mode, and byte offsets 31 to n in extended mode.

The new \$4D alarm code has been added to the \$F0 report in VCO/4K system software Version 5.2(0).

### Congestion Notification Support Interface Modifications—Standard and Extended Operational Mode Programming

The standard operational mode \$EA report Change segment, byte offset 15, specifies the type of change detected. The extended operational mode \$EA report specifies the type of change in byte offset 19. A new value has been added to this report:

- 60—VCO/4K system software is unable to process a D-channel Setup request due to congestion. Refer to the IEs segment to determine the reason this congestion notification was received.

The standard operational mode IEs segment, byte offsets 26 to n, has an added function. The extended operational mode IEs segment contains the added function in byte offsets 31 to n. If the Change segment = 60, the IEs segment contains a value which describes a reason that the VCO/4K system software is unable to process a D-channel Setup request. Possible values are as follows:

- A2—No circuit/channel available (preferred B-channel not available).
- AF—Resources unavailable, unspecified (internal memory exhausted).
- AA—Switching equipment congestion (limbo port exhausted).
- AC—Requested circuit/channel not available (exclusive channel not available).
- C2—Channel type not implemented (Layer 3 protocol error).

The standard and extended operational mode \$F0 report contains the new alarm code in byte offset 5 when an ICC encounters congestion. The \$4D alarm code produces the “ALM077: ICC Card Congestion Alarm” message which appears on the System Alarms Display screen and in the system log file. The ALM077 alarm is minor and does not change the status of the ICC; however, if the host has control of the ports on the congested span, stop sending new calls to the span listed in the \$F0 reports R-L-S information. The alarm is cleared after the ICC returns to a normal volume of traffic for 30 seconds.

Refer to the *Cisco VCO/4K Standard Programming Reference* for more information on standard mode host application commands and reports.

## Congestion Notification Support—Expected VCO/4K System Operation

During a congestion condition, expect the VCO/4K system to operate in the following manner:

- All existing calls are processed.
- All new calls from the network are released and \$EA reports are sent to the host which indicate the release of each call.

- If the ICC is configured for non-ISDN span type, all existing and all new calls from the network are processed.
- If the ICC is configured with a mix of ISDN and non-ISDN span types, the ISDN spans release new calls and the non-ISDN span types process new calls.

## Congestion Notification Support Restrictions and Limitations

There are no restrictions or limitations associated with ISDN resource exhaustion notification support.


# Limitations and Restrictions

Table 24 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 5.2(0). Cisco Systems currently has no plans to address the following known design constraints.

*Table 24 Known Design Constraints up to and Including Version 5.2(0)*

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 for the new download to take effect.
—	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.

Table 24 Known Design Constraints up to and Including Version 5.2(0) (continued)

DDTs Issue	Description
—	<p>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.</p> <p>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.</p> <p><b>Resolution:</b> 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.</p> <p> <b>Note</b> 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.</p>
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	<p>The single-span CPA card does not allow for assigning a REP token to the SIT <i>and</i> ISUP tone signaling events simultaneously in an answer supervision template.</p> <p>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.</p> <p>Because 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.</p>
CSCdm34650	Australia single-span CPA fails to detect ringback cessation.
CSCdm45047	The Disk Utilities screen option I, Format Disk, is unavailable for users of system software V5.x and higher. If you attempt to format a floppy disk in the A:/ drive, the “Formatting A Drive Is Not Permitted” message appears.
CSCdm75392	CONNECT not sent to PRI/N card configured for NTTPRI.
CSCdp49217	FTP hangs while running ftp scripts to the VCO.
CSCdp78129	ICC quiet tone: the administration diagnostic screen indicates that the port is attached/listening to 4C0, when it is actually generating the quiet tone itself and is not attached to 4C0.

*Table 24 Known Design Constraints up to and Including Version 5.2(0) (continued)*

DDTs Issue	Description
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.
CSCsf31137	After a warm start, the system sends a \$DC report to start call processing before IPRC prompt downloading is complete.
CSCsf41717	Avoid using the Software/Firmware Configuration screen to view the contents of floppy diskettes (device A:).
CSCsf51960	If you use Ethernet system host interface with up to four hosts and high loads, the system may fail. Higher loads may support even fewer host connections. Use minimum host connections for high load switches.
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.
CSCsf62917	There is a mismatch between the online and diskette disk utilities. Underscores and special characters are not supported in directory and file names.
CSCsf62982	Do not get major alarm ALM011: No Hosts Available when all hosts connections are lost if TeleRouter is enabled. TeleRouter causes this problem. If TeleRouter is disabled and all host connections are lost, the alarm appears.
CSCsf63022	Telerouter Routing Action (\$D5) reports do not appear in the system trace file, but they are sent to the host.
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.
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.
CSCsf84601	Can't delete large files from administration console.
CSCsf84771	A shutdown to the system results in a reboot. If you need to prevent a reboot, you must follow one of the following workaround procedures: <ul style="list-style-type: none"> <li>• Remove the Combined Controller on a VCO/4K. Rebooting attempts are prevented.</li> <li>• Reboot the system from a floppy disk. The system enters and remains in the installation state, and prevents further reboots.</li> </ul>
CSCsf84962	All inpulse rules are aborting on port \$47F, when using the physical address \$47F as a trunk resource. Inpulse rule aborting occurs because \$47F is adjacent to the tone card. Do not use physical address \$47F.

**Table 24 Known Design Constraints up to and Including Version 5.2(0) (continued)**

DDTs Issue	Description
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 M (maintenance) rather than the expected O (out of service) status.
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.

## Important Notes

This section contains important information for operating the VCO/4K system efficiently. The following sections are included to enhance configuration and performance:

- “Mandatory Database Conversion for Upgrade to Version 5.2(0)” section on page 53
- “Live Upgrade” section on page 53
- “ICC-T1 ISDN Span as Primary Timing Source” section on page 55

## Mandatory Database Conversion for Upgrade to Version 5.2(0)

You must complete a database conversion immediately after upgrading to VCO/4K system software Version 5.2(0). Refer to the *Cisco VCO/4K Software Installation Guide* for database conversion procedures.



Note

The database conversion is performed by the system without the usual advisory system messages.

## Live Upgrade

You can use Live Upgrade to upgrade to system software Version 5.2(0); however, refer to the following two sections for version-specific workaround procedures.



Caution

Do not operate conferences on the VCO/4K system while performing a Live Upgrade. Failure to follow this guideline may result in loss of calls. Ensure that the host is not sending Conference Control (\$6D) commands to the VCO/4K system during the system reset/file synchronization phase of the Live Upgrade procedure. Refer to Step 5 through Step 11 in the “Perform a Live Upgrade” section of the *Cisco VCO/4K Software Installation Guide* for more information.

## Live Upgrade Procedures from Version 4.2 and Higher

Complete the following steps to use Live Upgrade if you are using system software Version 4.2 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 Version 5.0.0.25 through Version 5.1.0.26, you must complete the following steps, and the steps in the “Live Upgrade Procedures from Version 5.0.(0.25) through Version 5.1.(0.26) with SPCs” section on page 54, 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; 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 in the *Cisco VCO/4K Software Installation Guide*.
- 

## Live Upgrade Procedures from Version 5.0.(0.25) through Version 5.1.(0.26) with SPCs

Complete the following steps to use Live Upgrade from system software Version 5.0.0.25 through Version 5.1.0.26. 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 Version 5.0.0.25 through Version 5.1.0.26. 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 reflash.

- 
- 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 in the *Cisco VCO/4K Software Installation Guide*.
-

## 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 5.2(0).

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 5.2(0).



**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 Version 5.1(1), and higher.



**Note** When you upgrade your software to 5.2(0), 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.
- 

## 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 **OK**.

- A Cisco Systems Web page is displayed.
- Step 6** Click on the Technical Support Help--Cisco TAC hypertext, which is located beneath the Service & Support section.
- Step 7** Scroll down the page and click on the Software Bug Toolkit hypertext, which is located beneath the Tools section.
- Step 8** Click on the Search by ID button on the left of the page.  
The Search for Bug by ID Number tool is displayed.
- Step 9** Use the Search for Bug by ID Number search tool to find detailed information on caveats for the VCO/4K product.

## Resolved Caveats

Table 25 lists the caveats issued against VCO/4K system software, and related optional software applications, that have been resolved in system software Version 5.2(0).

*Table 25 Resolved Caveats for Version 5.2(0)*

DDTs Issue	Description
CSCdm09016	Send notification to host when ISDN resource is exhausted.
CSCdp21550	VCO \$83 command does not support virtual ports.
CSCdp22893	ICC-T1 FXSGS, FXOGS, FXSLS and FXOLS—when you place the ports in the maintenance busy state with a \$90 command or by using the Card Maintenance screen the port returns to "Major CP_GARD" "Supplementary GD_WTRLS" when you place the ports back into service.
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.
CSCdp64553	Instructions for adding tokens to inpulse/outpulse rules updated.
CSCdp64554	The SNMP objects ptc Ts0 and ptc Ts16 MIB descriptions need to specify the E1 only restriction.
CSCdp68322	ICC-T1-ISDN-NTI USER, when connected to a DMS and a Reset (restart) of the B-Channels are done, Out Of Service to In Service very quickly (on the same command line) the B-Channels on the VCO stay OOS-FE. If the same command is done a few seconds apart (on 2 different command lines), the B-channels restore OK.
CSCdp71864	ICC ISDN QSIG reports wrong state.
CSCdp75641	SPC does not come active after reboot on a fully populated system.
CSCdr01339	Selective trace causes errors flushing/writing files.
CSCdr27189	SPC-CPA: system software does not report FAX tone.
CSCdr49023	SPC does not download on reboot.
CSCdr65214	Outpulsing DTMF digits ending in # actually sends DTMF digits ending in B. Occurs in an ISDN application using IA5 digits in \$49 commands.
CSCdr78510	ISDN glare; network CHAN ID preferred, user CHAN ID exclusive.



**Table 25** *Resolved Caveats for Version 5.2(0) (continued)*

DDTs Issue	Description
CSCdr86696	SETUPACK undefined in isdnMessageTempMessage object in the VCO MIB.
CSCdr92944	ICC card fails to come active after several particular administration procedures are performed.
CSCdr96772	ICC-T1 span keeps providing clock to NBC even though it is OOS.
CSCdr98226	Cannot perform SNMP Get() for elements in the firmwareExeTable object in the VCO MIB.
CSCds06509	4ESS NFAS CONNECT ACK not sent.
CSCds10150	File synchronization takes 30 minutes to complete.
CSCds23879	The error—CODERR.../source/cp_support.c, 243,0,0,26—repeats and fills the log file. Occurs if you do two \$67 commands with speak segment attached, and you enter digits before the speak is completed, then you do a \$6C command to play another set of prompts.
CSCds24802	Start Record Exhaust.
CSCds26795	SBY side crash because of invalid RED update messages.
CSCds26834	CRP13 and CRP14 Start/End Record Deallocation errors.
CSCds31016	SPC-CPA MA Interface Failed/Not Installed.
CSCds47218	Loss of primary timing span then loss of secondary timing span, timing stays as incoming.
CSCds47235	With timing set to incoming, will not synchronize to secondary span.
CSCds48949	When an ISDN outbound stable call receives a Disconnect message, the VCO/4K disconnects the outgoing and the incoming as it should, but it does not make the incoming port listen to the quiet tone as it should. The incoming port is told to listen to the outgoing port. Depending on the application this may cause unexpected one-way voice path on some calls.
CSCds49761	ICC Card lockup/reboot.
CSCds52116	Host Control of Call Load feature does not work.
CSCds63153	VCO shows port as idle, while unavailable on network.
CSCds68109	Telnet session console lockup when disconnecting.

## Open Caveats

Table 26 describes possible unexpected behavior by Cisco VCO/4K Version 5.2(0). Unless noted, these caveats apply to all Cisco VCO/4K system software releases up to and including 5.2(0).

**Table 26** *Open Caveats up to and Including Version 5.2(0)*

DDTs Issue	Description
CSCdm94205	SPC does not know when DSPs are dead when using MRC.
CSCdp56114	France SPC-CPA detects the reorder tone as the busy tone.
CSCdp64900	The SPC-OUTP fails to work first time after defining in dbase.

*Table 26 Open Caveats up to and Including Version 5.2(0) (continued)*

DDTs Issue	Description
CSCdr28154	ALM015 and ALM016 do not appear, as they should, when 75% of a resource group is out of service.
CSCdr30997	SPC-CPA diagnostics fail on Netherlands and Spain tone plans.
CSCdr39175	Single power supply causes Major alarm on fully populated switch.
CSCdr80380	Cannot administratively propagate first port change to all other ports for ISDN spans.
CSCdr98769	VCO shows incorrect Alarm Occurrences MIB value (systemAlarmOccur).
CSCds21994	OID incorrect for VCO/4K.
CSCds45890	When using an inpulse rule with the token TONE ENAB 3, there are intermittently inpulse rule aborts due to the generic not responding to a \$4B command with a \$4D report. When this happens, there is no dial tone played through the port.
CSCds52062	VCO with more than 58 ICC-T1/PRI spans experiences D-channel failures.
CSCds85078	Completing a card cut-over as part of a live upgrade and forcefully taking the card OOS results in a console lock up. Access the system administration Card Maintenance screen to download the new software to the VCO/4K system cards.
CSCds85102	Information on the Card Cut-Over screen disappears after the SPC and ICC card ports are cut-over during Live Upgrade procedures under conference load.
CSCds89831	T309 Timer does not stop after D-Channel is reestablished following a reboot.
CSCdt05993	ICC-E1/NET5-UK goes out of service under load. This event is preceded by an ICC Congestion Alarm Clear message.
CSCdt10301	Simultaneous seizures fail on ICC-T1/NTI and NI2 after reboot. You must take the ICC out of service and wait for it to become active.
CSCdt14634	FRM504: Major Alarm Set For - ALM065: Subrate Timeslot Threshold is set incorrectly. This is only related to Subrate switched calls that use an SSC (Subrate Switching Card). This Alarm does not affect the Subrate calls, it is just set at the wrong time. All Subrate call will be processed until there are no more Subrate Timeslots available.
CSCdt23584	When using the TONEPLAN token in an inpulse or outpulse rule, the default tone plan MFCR2 protocol is used instead of the specified token country ID. Multiple tone plans that employ MFCR2 tones can be used as default tone plans only, which limits the number of MFCR2 tone plans in a multiple tone plan configuration to one.
CSCdt23788	The disconnect sequence in NET5 with the icc.dwn from 5.1.4 (icc.dwn 5.12) is incorrect. At times, the originating party hangs up first, and the card may not send a release.
CSCdt26023	In system software V5.1.4 several customers have seen the error "Host Manager Failure" followed by a core. The core is caused by a watchdog timer firing.
CSCdt28292	The Netherlands SPC tone plan detects the SIT tone as busy, and the pager cue tone as voice.
CSCdt28292	Netherlands SPC tone plan detects SIT as the busy tone and detects the pager cue tone as voice.
CSCdt28335	The Germany SPC tone plan does not detect the SIT tone and times out waiting for an Outgoing Port Change of State (\$DA) report, which is never sent.

**Table 26** *Open Caveats up to and Including Version 5.2(0) (continued)*

DDTs Issue	Description
CSCdt41477	If SPC-CONF resources are used to setup a conference, voice path problems and voice quality degradation occurs after multiple switchovers. Use SPC-ENHCNF instead of SPC-CONF or reseal the SPC as a workaround for this issue.
CSCdt44271	Finland multiple tone plan feature tone plan SPC-CPA detects SIT as voice.
CSCsf63269	The RELEASE DTG token does not work: The RELEASE outpulse rule token does not release the DTG/DTG2 and causes the system to log an error during inpulse rule execution.
CSCsf84766	Subrate error during Live Upgrade—from 4.2.0.23 to 5.0.51.24 a "Subrate RS ack numbers: expected ==0x2, got==0x1" error message was printed to the log.
CSCsf84879	Standby crash when SPCs added and modified using SNMP.
CSCsf85140	SPC F.P. 5x7-LED display is incorrect—not fully implemented. The SPC-CONF DSP type does not indicate any activity in the LED display.
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.
CSCsf85216	No checksum values for cpa.xxx files shown on console display.
CSCec52889	<p>Problem:</p> <p>When the host sends a \$69 or \$49 command with an empty IP field and the SPC-outpulse is used to complete the outpulsing, calls fail.</p> <p>Workaround:</p> <p>Avoid having the host outpulse an empty field the using the SPC-outpulse or direct the host to use a different outpulse rule to outpulse an empty field.</p>

## Related Documentation

The following documents contain information that may be useful to system software Version 5.2(0) 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 ISDN Supplement*
  - *Cisco VCO/4K Ethernet Guide*

- *Cisco VCO/4K Tone Plan Release Notes*
- Applicable tone plan supplements

## Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

### World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

### Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

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### Technical Assistance Center

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If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/tac>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://www.cisco.com/register/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

## Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

This document is to be used in conjunction with the documents listed in the “Related Documentation” section.

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