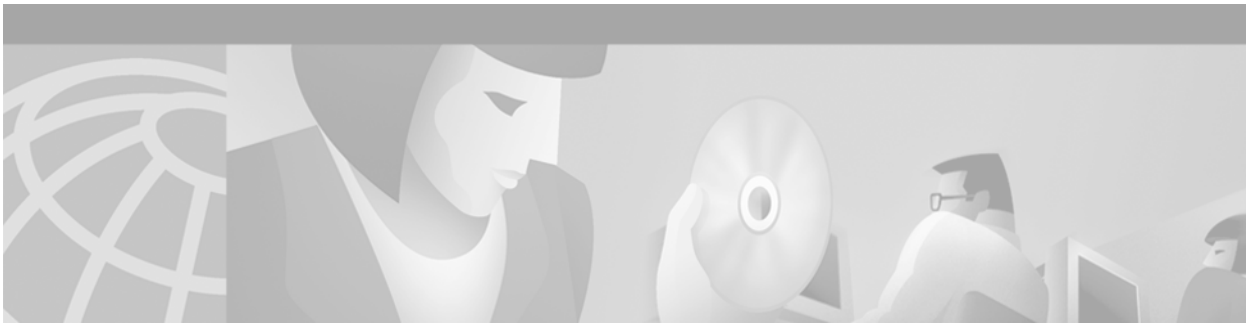

Preface

Objectives

The *Cisco VCO/4K Germany Supplement* is a comprehensive guide to operating the Germany tone plan in a Virtual Central Office (VCO) or Specialty Digital Switch (SDS) environment. This supplement helps you configure and use the Germany tone plan. It describes system requirements, system configuration, and the tone plan's components.

Audience

This supplement is intended for all personnel using the Germany country feature package.

Document Organization

This document is organized as follows:

Chapter 1, "System Administration Support," lists special considerations for running the system software in Germany.

Chapter 2, "PCM Signaling Codes," provides details pertinent to the channel-associated PCM signaling cards used by VCO/4K systems equipped with E1 interface cards.

Chapter 3, "Germany Tone Plan," details the modifications to the Digital Tone Generator (DTG) and Call Progress Analyzer (CPA).

Conventions

This document uses the following conventions:

Note Means *reader take note.* Notes contain helpful suggestions or references to material not covered in the manual.

Caution Means *reader be careful.* In this situation, you might do something that could result in equipment damage or loss of data.

Related Documentation

The *Cisco VCO/4K Germany Supplement* provides important information about running the Germany country feature package on the VCO and SDS platforms. If a topic is discussed in both the SDS/VCO documentation set and this supplement, refer to the information in this document.

You should have a working knowledge of R2 signaling.

Network signaling requirements appear in the following specifications:

- International Telecommunications Union (ITU, formerly Comité Consultatif International Téléphonique et Télégraphique, CCITT) Q.421 Digital Line Signaling Code
- ITU-T Q.440 Interregister Signaling

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Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

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.

CHAPTER 1

System Administration Support

This chapter lists special considerations for running the system software in Germany. The following information supersedes the information in the *Cisco VCO/4K System Administrator's Guide*.

Database Administration

The database table functions on the Database Administration menu support E1 cards.

The system software displays the TeleRouter Routing Table Summary, ISDN Supervision Templates, and ISDN Message Templates menu options even if the optional packages are not installed. If you choose an option that is not installed, the system sends you a message.

To assign operating characteristics to individual E1 cards, access the Trunk Card Configuration screen from the Card Summary menu. Use the T1 card guidelines for E1 trunks. To optimize system performance, group E1 ports into one or more resource groups.

For more information, refer to the *Cisco VCO/4K System Administrator's Guide*.

Maintenance

From the Card Maintenance menu, you can add, delete, and change the card/port status for E1 cards. When an E1 card is displayed, ports 1 and 17 of the card's 32 ports are deactivated. Table 1-1 shows the contents of these ports.

Table 1-1 E1 Port Contents

Port Name	Port Contents
Port 1 (Channel 0)	Frame alignment pattern Remote alarm indication bit National-use bits
Port 17 (Channel 16)	Multiframe alignment pattern Extra bits Channel-associated signaling bits

Note Special E1 cards are required to reactivate Port 17 for 31B support.

From the Master Timing Link Selection screen, you can select the system digital trunk timing source. You can also select the Rack, Level and Slot (R-L-S) hardware address of either a T1, ISDN or E1 card to provide incoming synchronization clocking. The T1 Synchronization Control ($C0 02) command provides the same functionality. All digital cards (regardless of type) synchronize to the same timing source.

Diagnostics

The Card Display and Port Display screens list the operating status of E1 cards. The information on the Card Display screen varies according to the card type. The Port Display screen lists the processing states, rule processing, links, paths, and the digit collection activity of E1 cards.

The Test Port Card function tests individual E1 channels. A path is set up between the selected channel(s) and a tone channel. The system compares the signals sent with the signals received and reports any discrepancies. You can test all channels on an E1 card with one command.

You can select the E1-CAS card for port card diagnostic tests. The E1-CAS card enters a local loopback mode during the test and sends out a pattern of all 1s (ones).

CHAPTER 2

PCM Signaling Codes

The 2-bit, channel-associated PCM signaling cards are used by VCO/4K systems equipped with E1 interface cards. Forward signals are used by originating or outgoing ports, while backward signals are generated by incoming ports.

Table 2-1 shows the PCM signaling codes.

Table 2-1 PCM Signaling Codes

Signal	Exchange Signaling Forward		Backward	
	A*f*	B*f*	A*b*	B*b*
Idle	1	0	1	0
Seize	0	0	1	0
Seize Acknowledge	0	0	1	1
Answer	0	0	0	1
Flash (for 600 ms)	1	0	0	1
Called Party Clear	0	0	1	1
Called Party Reanswer (before timeout)	0	0	0	1
Calling Party Clear (before called party)	1	0	0	1
Calling Party Clear (after called party)	1	0	1	1
Release Guard	1	0	1	0
Blocking	1	0	1	1

CHAPTER 3

Germany Tone Plan

This chapter details the modifications to the Digital Tone Generator (DTG) and Call Progress Analyzer (CPA) to support the following features:

- Supervision tones specific to the German Telecom network
- Additional tones used with the conferencing capabilities of the VCO

The information in this chapter supercedes the information in the following manuals.

- *Cisco VCO/4K System Administrator's Guide*
- *Cisco VCO/4K Standard Programming Reference*
- *Cisco VCO/4K Extended Programming Reference*
- *Cisco VCO/4K Supervision and Call Progress Tone Detection*

Tone Characteristics

The characteristics of the four most common supervision tones used in the German network are summarized in Table 3-1.

Table 3-1 German Network Supervision Tones

Tone	Frequencies (Hz)	Cadence	Generate	Detect	Port Address
Dial	425	Continuous	X	X	04C2
Ringing	425	1.0 seconds on, 4.0 seconds off, REPEATED	X	X	04D0
Busy	425	0.48 seconds on, 0.48 seconds off, REPEATED	X	X	04D1
Reorder	425	0.24 seconds on, 0.24 seconds off, REPEATED	X	X	04D2

Tone Detection

CPA processing is modified to support German network requirements. Use the system administration answer supervision templates function to control tone detection for dial, ringing, busy, and reorder. Supervision template processing is described in the *Cisco VCO/4K System Administrator's Guide*.

Terminology

The supervision events listed on the Answer Supervision Template screen are based on standard North American network terminology. Table 3-2 shows the North American terms and the German terms.

Table 3-2 Comparable Supervision Terminology

North American Term	German Term
Ringback Audible Ringback	Ringing Tone
Reorder Fast Busy	Disconnect Tone

Because the conference tones are used only within conference structures and are not transmitted or received over the network, no detection functions are required.

Tone Generation

Tone generation is performed using DTG outpulse and static tone channels. The allocation of these tones is controlled via inpulse rules, Voice Path Control ($66) commands, and DTMF Collection Control ($67) commands. The tones and their corresponding decimal values, hexadecimal values, and port addresses are summarized in Table 3-3.

This information affects the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference*. It also supersedes the tone output level specifications found in the *Cisco VCO/4K Card Technical Descriptions*. For more information on generating tones, refer to the *Cisco VCO/4K System Administrator's Guide.*

Table 3-3 Tone Levels, Values, and Port Addresses

Tone	Output Level	Decimal Value	Hex Value	Port Address
Beep		0	00	None
Quiet (PCM idle pattern 01010100)	—	1	01	04C0
1 KHz	0 dBm	2	02	04C1
Dial Tone (425 Hz)	**–9 dBm**	**3**	**03**	**04C2**
380 Hz	–10 dBm	4	04	04C3
Beep (425 Hz)	–13 dBm	5	05	04C4
480 Hz	–17 dBm	6	06	04C5
1400 Hz	–10 dBm	7	07	04C6

Table 3-3 Tone Levels, Values, and Port Addresses (continued)

Tone	Output Level	Decimal Value	Hex Value	Port Address
1000 Hz @max CODEC output	—	8	08	04C7
920 Hz	–13 dBm	9	09	04C8
404 Hz	0 dBm	10	0A	04C9
1004 Hz	0 dBm	11	0B	04CA
2804 Hz	0 dBm	12	0C	04CB
Steady RingBack	–10 dBm	13	0D	04CC
1760 Hz	–10 dBm	14	0E	04CD
Digital Test Pattern	—	15	0F	04CE
425 Hz	–10 dBm	16	10	04CF
Ringing Tone (425 Hz)	**–9 dBm**	**17**	**11**	**04D0**
Busy Tone (425 Hz)	**–9 dBm**	**18**	**12**	**04D1**
Reorder	**–9 dBm**	**19**	**13**	**04D2**
380 Hz	–10 dBm	20	14	04D3
Reserved	—	21	15	04D4
Reserved	—	—	16	04D5
Reserved	—	—	17	04D6
Reserved	—	27 to 32	20	04DF
DTMF digit 0 (steady)	–9/–11 dBm/freq	33	21	04E0
DTMF digit 1 (steady)	–9/–11 dBm/freq	34	22	04E1
DTMF digit 2 (steady)	–9/–11 dBm/freq	35	23	04E2
DTMF digit 3 (steady)	–9/–11 dBm/freq	36	24	04E3
DTMF digit 4 (steady)	–9/–11 dBm/freq	37	25	04E4
DTMF digit 5 (steady)	–9/–11 dBm/freq	38	26	04E5
DTMF digit 6 (steady)	–9/–11 dBm/freq	39	27	04E6
DTMF digit 7 (steady)	–9/–11 dBm/freq	40	28	04E7
DTMF digit 8 (steady)	–9/–11 dBm/freq	41	29	04E8
DTMF digit 9 (steady)	–9/–11 dBm/freq	42	2A	04E9
DTMF digit A (steady)	–9/–11 dBm/freq	43	2B	04EA
DTMF digit B (steady)	–9/–11 dBm/freq	44	2C	04EB
DTMF digit C (steady)	–9/–11 dBm/freq	45	2D	04EC
DTMF digit D (steady)	–9/–11 dBm/freq	46	2E	04ED
DTMF digit * (steady)	–9/–11 dBm/freq	47	2F	04EE
DTMF digit # (steady)	–9/–11 dBm/freq	48	30	04EF
MF digit 0 (steady)	–7 dBm/freq	49	31	04F0
MF digit 1 (steady)	–7 dBm/freq	50	32	04F1

Table 3-3 Tone Levels, Values, and Port Addresses (continued)

Tone	Output Level	Decimal Value	Hex Value	Port Address
MF digit 2 (steady)	–7 dBm/freq	51	33	04F2
MF digit 3 (steady)	–7 dBm/freq	52	34	04F3
MF digit 4 (steady)	–7 dBm/freq	53	35	04F4
MF digit 5 (steady)	–7 dBm/freq	54	36	04F5
MF digit 6 (steady)	–7 dBm/freq	55	37	04F6
MF digit 7 (steady)	–7 dBm/freq	56	38	04F7
MF digit 8 (steady)	–7 dBm/freq	57	39	04F8
MF digit 9 (steady)	–7 dBm/freq	58	3A	04F9
MF digit KP (steady)	–7 dBm/freq	59	3B	04FA
MF digit ST (steady)	–7 dBm/freq	60	3C	04FB
MF digit ST3P	–7 dBm/freq	61	3D	04FC
MF digit STP	–7 dBm/freq	62	3E	04FD
MF digit ST2P	–7 dBm/freq	63	3F	04FE