



Preface

Objectives

The *Cisco VCO/4K Extended Programming Reference* describes how to design applications for the Cisco Systems VCO/4K open programmable switch in extended operational mode by configuring the associated commands and reports.

Audience

This guide is intended for all personnel designing applications for the VCO/4K switch. You should be familiar with the components of the switch as well as the system administrator master console. The master console is your access to the system administration functions.

Document Organization

This publication is organized as follows:

Chapter 1, “Switch Overview,” provides an overview of the VCO/4K switch.

Chapter 2, “Inpulse and Outpulse Rules,” provides a summary of inpulse and outpulse rules, focusing on the interaction between the rules and the system extended operational mode command and report set.

Chapter 3, “Message Structure Overview,” provides an overview of the system message structure. Data between the system and the host computer is passed over one or more communications links. Regardless of the protocol chosen by the application designer, the structure of the message data transferred over the links remains the same.

Chapter 4, “System Commands,” describes the extended operational mode system commands, which allow the host application program to control many configuration parameters and resources. These commands fall into five categories: configuration control, system status, system diagnostics, system maintenance, and resource control.

Chapter 5, “System Reports,” describes the extended operational mode system reports, which communicate the operating and call processing status of the system to the host. These reports fall into three categories: configuration control, system status, and resource control.

Appendix A, “DTMF and MF Frequencies,” lists the frequencies and hex values used for DTMF and MF inpulsing and outpulsing.

Appendix B, “Decimal/Hexadecimal/Binary Conversion,” provides reference tables to simplify the conversions required to construct and interpret extended mode system commands and reports.

Appendix C, “System Digitized Voice Card Prompts,” lists the prompts available in Version 1.08 of the Digitized Voice Card (DVC) voice prompts diskette.

Appendix D, “Network Status Byte Definitions,” defines the network status bytes encountered during the operation of the VCO/4K switch.

Appendix E, “Tone Values,” lists the system tones and their corresponding decimal and hexadecimal values, and port addresses, for use with impulse rules, and the following extended operational mode commands:

- Voice Path Control (\$66)
- DTMF Collection Control (\$67 Standard)
- DTMF Collection Control (\$67 Enhanced)

Appendix F, “Call Processing States,” describes the system internal processing, which uses a simple state machine representation to track the current condition of all resources in the system—Major States (MStates) and Supplementary States (SStates).

Appendix G, “Integrated Prompt and Record Card Prompt Library,” lists IPRC prompt numbers, in both decimal (for use in impulse rules) and hexadecimal (for use in commands), and their corresponding messages.

Document Conventions

This guide provides the following consistent visual clues to identify text and important descriptions:



Note

Means *reader take note*. Notes contain helpful suggestions.



Tips

Means *the following are useful tips*.



Caution

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



Warning

Means **danger**. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Related Documentation

You may want to refer to the following documents that apply to your Cisco VCO/4K configuration:

- *Cisco VCO/4K System Software Version 5.n(n) Release Notes*
- *Cisco VCO/4K System Administrator's Guide*

- *Cisco VCO/4K System Messages*
- *Cisco VCO/4K Software Installation Guide*
- *Cisco VCO/4K Hardware Installation Guide*
- *Cisco VCO/4K Card Technical Descriptions*
- Product supplements for optional software, including:
 - *Cisco VCO/4K Management Information Base (MIB) Reference*
 - *Cisco VCO/4K ASIST Programming Reference*
 - *Cisco VCO/4K TeleRouter Reference Guide*
 - *Cisco VCO/4K ISDN Supplement*
 - *Cisco VCO/4K Ethernet Supplement*
 - *Cisco VCO/4K IPRC Supplement*
 - 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>

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- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

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Obtaining Technical Assistance

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Cisco.com

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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.

