About This Manual

This section discusses the audience, organization, use, and conventions of the *Internetwork Troubleshooting Guide*.

Cisco technical documentation and additional literature are available on the Cisco Connection Documentation, Enterprise Series CD-ROM. This CD is updated and shipped monthly so it might be more current than printed documentation. To order the Cisco Connection Documentation CD-ROM, contact your local sales representative or call Customer Service. The CD is available both singly and as an annual subscription. You can also access Cisco technical documentation on Cisco Connection Online, at the URL http://www.cisco.com.

Audience

This document is intended for network administrators who are responsible for troubleshooting internetworks that implement Cisco products and Cisco-supported protocols.

Administrators should have hands-on experience in configuring, administering, and troubleshooting a network, should know how to configure routers and other internetwork devices, and should be familiar with the protocols and media that their hardware has been configured to support. Awareness of the basic topology of their network is also essential.

Document Organization

The *Internetwork Troubleshooting Guide* provides the information necessary to troubleshoot many problems commonly encountered in internetworks using Cisco hardware and software products. This publication consists of the following six parts:

- The chapters in Part 1, "Introduction to Troubleshooting," provide an introduction to troubleshooting techniques and an overview of common troubleshooting tools.

- The chapters in Part 2, "Hardware, Media, and Booting Problems," provide information for troubleshooting hardware problems, LAN media problems, and booting (system initialization) problems.

- The chapters in Part 3, "Troubleshooting Desktop and Routing Protocols," provide information on troubleshooting common connectivity and performance problems in TCP/IP, Novell IPX, AppleTalk, IBM, and other widely-implemented network environments.

- The chapters in Part 4, "Troubleshooting Serial Lines and WAN Connections," provide information on troubleshooting problems that commonly occur on serial lines and WAN links such as ISDN, Frame Relay, and X.25.

- The chapters in Part 5, "Troubleshooting Bridging and Switching Environments," provide information on troubleshooting problems commonly encountered in ATM switching, LAN switching, and bridging environments.

- The chapters in Part 6, "Troubleshooting Other Internetwork Problems," provide information on troubleshooting CiscoWorks installations, and on troubleshooting security implementations, including TACACS troubleshooting and password recovery.

- Appendixes provide supplemental troubleshooting information, including information on creating core dumps, memory maps for different Cisco routers, technical support information, and a list of references and recommended reading. In addition, at the end of the book are several perforated troubleshooting worksheets to assist you in gathering information when problems occur.

Using This Publication

This publication is designed to provide users with the information needed to troubleshoot *common* problems encountered in Cisco-based internetworks. Most of the sections in each chapter focus on describing symptoms, identifying their causes, and suggesting specific actions to resolve the problem. Other sections describe preventative measures or tips for identifying problems by interpreting command output.

The *Internetwork Troubleshooting Guide* publication is *not* designed to guide you through every possible error condition, obscure anomaly, or subtle protocol problem. For information regarding maintenance of your hardware, refer to your hardware installation and maintenance publication. For detailed information on configuring your software, or specific command syntax, refer to the Cisco IOS configuration guides and command references.

Document Conventions

Our software and hardware documentation uses the following conventions:

- The symbol ^ represents the key labeled *Control*.

  For example, *^D* means hold down the *Control* key while you press the *D* key.

- A string is defined as a nonquoted set of characters. For example, when setting up a community string for SNMP to "public," do not use quotes around the string, or the string will include the quotation marks.

Command descriptions use these conventions:

- Examples that contain system prompts denote interactive sessions, indicating that the user enters commands at the prompt. The system prompt indicates the current command mode. For example, the prompt `router(config)#` indicates global configuration mode.

- Commands and keywords are in **boldface** font.

- Arguments for which you supply values are in *italic* font.

- Elements in square brackets ([ ]) are optional.

- Alternative but required keywords are grouped in braces ({ }) and separated by vertical bars (|).

Examples use these conventions:

- Terminal sessions and information the system displays are in `screen` font.

- Information you enter is in **`boldface screen`** font.

- Nonprinting characters, such as passwords, are in angle brackets (< >).

- Default responses to system prompts are in square brackets ([ ]).

- Exclamation points (!) at the beginning of a line indicate a comment line.

- When part of the command output has been omitted (to conserve space), the deleted output is indicated with italicized brackets and ellipsis (*[. . .]*)

Note is a special paragraph that means *reader take note*. It usually refers to helpful suggestions, the writer's assumptions, or reference to materials not contained in this manual.

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

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