How to Use this Guide

This guide focuses on the resolution of commonly seen system problems and how to isolate these problems to a specific component replacement, parameter selection, a work around, or problem escalation.

This chapter describes how to approach problem isolation in conjunction with this guide. Different troubleshooting methods are appropriate in different circumstances within the context of a particular set of symptoms. These symptoms will, in general, determine the starting point for the isolation process.

Troubleshooting Overview

The knowledge gained by individuals familiar with troubleshooting the VCO/4K system and the tools provided with the system form the basis of this guide. This information is organized into chapters that address different aspects of this knowledge, different aspects of the system, and the troubleshooting capabilities built into the system.

There are fundamentally three avenues of approach in VCO/4K troubleshooting. This guide is the starting point for all three.

- Cisco customer support engineering experience. Chapter 2, "Problem Scenarios" presents a number of frequently encountered problem scenarios and corresponding resolution.

- System messages generated by the VCO subsystem and the SS7 subsystem. These messages are described in the *Cisco VCO/4K System Messages*.

- The third approach is through the hierarchy of the system starting at the highest level, the system level, and successively follows a path that is intended to isolate the cause of the problem. This process is described in:

    - Chapter 3, "System Troubleshooting"

    - Chapter 4, "VCO Subsystem Troubleshooting"

    - Chapter 5, "SS7 Subsystem Troubleshooting"

    - Chapter 6, "Host Communications Troubleshooting"

    - Chapter 7, "Peripheral Equipment Troubleshooting"

Some problems will remain unresolved despite the above efforts. Appendix B, "Checklists" provides a series of forms that will enable the Cisco Systems TAC to resolve the problem as quickly as possible.

Repair-by-replacement

The Cisco Systems repair-by-replacement policy provides maximum system availability with minimum downtime. The technician removes and replaces field-replaceable units (FRUs) to bring the system back to normal operation as quickly as possible, and then returns the original components to the factory for quick repair.

Spares Inventory

The Cisco *VCO/4K Hardware Planning Guide* lists the spare components that can be replaced in the field by trained technicians. It also lists the recommended spares for the VCO/4K system. Field-replaceable units (FRUs) not in the list can only be serviced or replaced by the factory or by Cisco Systems field engineers.

To maintain maximum system availability, Cisco Systems encourages the customer to purchase the recommended spares.

Obtain spare parts and maintenance kits for peripheral equipment from OEM suppliers.

Peripheral and host link cables are available from Cisco Systems and computer supply sources.

Troubleshooting Procedures

No troubleshooting procedure or set of procedures can be followed by rote. When you try to resolve a problem, you must always be aware of information that may be particular to a system and you must constantly be open to information that may not be explicitly identified or expected.

Despite the need for openness when you are troubleshooting, you must also adhere to a given process. Skipped steps, seemingly logical assumptions, and shortcuts leading to unproven data can easily invalidate the entire process.

Where to Begin

Always begin by checking basic requirements for a system and ensure that such obvious problems as a lack of power or disconnected cables are not the cause.

There are two classes of problems:

- Problems that can be reproduced. A problem that can be reproduced at will makes troubleshooting much easier and the fix can be easily verified.

- Problems that cannot be reproduced. Unfortunately problems are often not easily reproducible. This is generally due do to an intermittently failing component, a poor connection, a timing or protocol mismatch, or a software coding problem. Careful record keeping can help with these kinds of problems.

You have two choices when you are faced with a system that is not functioning properly. The approach you take depends on the symptoms.

- With systemic problems, you can't immediately identify where the failure is. All you know is that some function that was once working is no longer working. Generally this suggests a top-down approach. Starting at the highest level, attempt to isolate the problem to as small a component of the system (hardware or software) that you can. Chapter 3, "System Troubleshooting"addresses this approach.

- An identifiable symptom such as a screen or log file message typically leads you to a procedure (or set of procedures) that you can follow to isolate the problem. This is a bottom-up approach and is typified in Chapter 2, "Problem Scenarios".

System Administrative Details

Keep a complete and accurate record of your system's configuration. You would typically do this when the system is installed, but you can do it later. It is very important that changes to the system (and when these changes were implemented) be recorded. Often the introduction of a new feature or hardware precedes the emergence of a problem.

Note   When you are working with a Cisco Systems TAC Customer Support Engineer (CSE), always have this administrative information available or be prepared to log in to the system to obtain the information.

Third-Party Support

If you have a contract for third-party support, contact them. They will be operating with this same guide as a reference and any work you may already have done should be passed on to them.

What Cisco Will Do

Some problems cannot be isolated or resolved by using this guide and need to be escalated to a Cisco Systems TAC who will apply more exhaustive tests and procedures. You must be aware, however, that TAC involvement also places requirements on you. A TAC representative operates at a disadvantage without accurate and solid information about your problem (see the "System Administrative Details" section on page 1-3). Appendix B contains several forms for you to provide the needed accurate and complete data.

Troubleshooting Procedures