



Host Communications Troubleshooting

This chapter describes general corrective procedures for host communications links. Refer to the *Cisco VCO/4K System Administrator's Guide* for additional details on configuring Ethernet host communication links. The *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* describe the command and reports passed between a VCO/4K and a host. Refer to the *Cisco VCO/4K Ethernet Guide* for information on TCP/IP sockets and additional maintenance practices.

Reference is made to other OEM manuals supplied with the host computer I/O package and modems employed for a remote access (optional), and to documentation related to the communication and application packages to be run on the host computer.

Overview

In a VCO/4K, the CPU card in the system controller controls initializing and deinitializing the host link(s) and data transfer to and from the host. All control sequences are initiated by the CPU card; the Storage/Control I/O Module is merely a connector panel which provides physical connectivity between EIA cables and the CPU card.

Before a host communication channel can be initialized, you must first define it with the Host Configuration utility (refer to the *Cisco VCO/4K System Administrator's Guide*). This utility is used to configure host interfaces and software overlays (TeleRouter) and indicate the status of alarm conditions for host interfaces. The following constraints are placed on this configuration:

- In general, the more host interfaces you define, the more system processing time is dedicated to host interface processing.
- You can define up to eight Ethernet interfaces (sockets). Refer to the *Cisco VCO/4K Ethernet Guide* for more information on Ethernet interfaces.
- You can define a total of eight external interfaces.
- Configure the internal interface only if the TeleRouter software overlay is to be used. If you do not configure the internal interface, TeleRouter call routing is not performed.

The host communication parameters are defined in Table 6-1.

Table 6-1 Host Communication Parameters

Interface	Parameters
Ethernet	Host Name
	Connect Password (for local port)—optional
	Loc. Port (logical port number of local port)
	Rem.Inet.Addr (Remote Internet Address)
	Rem. Port (logical port number of remote port A)
	Trace
	Protocol (fixed at TCP)
	Reset Time

A reset deinitializes the link (if it was already in service) and then initializes it and applies the configuration parameters stored in the database. Three events can cause a link reset:

- A system reset occurs on the VCO/4K (system reboots or is powered up).
- The link configuration is modified with the Host Configuration utility.
- An error occurs on the link (polling timeout, signaling error, etc.).

Problem Isolation Techniques

VCO/4K administrative software continuously monitors host communications links. Since the VCO/4K acts as a subordinate node in a network configuration, it expects the host (master) to poll the communications channels at regular intervals for message exchanges.

Error and status messages reflect the status of the data links between the VCO/4K and the host computer. If a communication channel fails, the appropriate message is sent to the VCO/4K error log (stored to disk and/or printed on the local printer, depending on the File System Configuration selections). Messages with the HST prefix indicate errors or status changes in host communication. Refer to the *Cisco VCO/4K System Messages* whenever a host error or status message appears on the local system printer.

The following subsections offer general troubleshooting guidelines for remedying the cause of a host communications link failure.

Host Communications Failure on Power-On

If the system experiences a general failure of host communications at initial system power-on, check for the following:

- Verify proper installation and connection of communications cables. Refer to the *Cisco VCO/4K Installation Manual*, *Cisco VCO/4K Card Technical Descriptions*, and the *Cisco VCO/4K Ethernet Guide* for detailed information.
- Make sure that the host computer is on line and equipped with appropriate I/O hardware and software.
- Be sure that the host computer operating system and associated applications programs have been properly loaded and started.



Note For systems equipped with the optional Ethernet Communications Package, refer to the *Cisco VCO/4K Ethernet Guide* and the *Cisco VCO/4K System Administrator's Guide*.

- Make sure that the VCO/4K is powered on and that the Generic software is loaded on the system.
- If a VCO/4K is equipped with redundant system controllers, try switching from Side A to Side B. Monitor the system log for network messages. If host communication is restored, service the standby controller. If communication is not restored, recheck the I/O circuitry at the host computer.
- Enable the trace facility of the VCO/4K (refer to the *Cisco VCO/4K System Administrator's Guide* for information on setting message trace bits and using the System Trace Configuration utility). If the trace and message facilities fail to demonstrate data communications with the VCO/4K, insert a protocol analyzer in the communication link(s) to determine whether the VCO/4K (no responses sent) or host (no commands sent) is at fault.

Cabling

Cabling refers to the general wiring practices used to complete the physical connection between a host communications port and a DB-15 Ethernet port. The *Cisco VCO/4K Hardware Installation Guide* describes the possible host communication configurations supported by the VCO/4K. Cabling between the host and the VCO/4K is determined by the desired system implementation.

Use the following recommendations to detect and correct cabling problems:

- Make sure the cable used for the link meets electrical specifications.
- Select and install connectors on the cable in accordance with the pinout specifications detailed in the *Cisco VCO/4K Hardware Installation Guide* and/or the *Cisco VCO/4K Site Preparation Guide* and the OEM specifications for the I/O port on the host computer. Physical Ethernet connections are determined by the network environment.
- Route cables away from sources of EMI and RFI noise which might induce spurious signals. Induced noise can cause erratic system performance, including loss of service.
- Remove breakout boxes or other adapters and line analyzers from communications links as soon as possible. This is especially true when long cable runs are used between the host and the VCO/4K. Such devices increase the chance of errors caused by propagation delay of signals and low signal voltages.

Modems

Modem setup parameters are dictated by the type of interface, communication protocol, cabling requirements, and answering mode required for the intended application.

To determine the actual modem setup requirement, review the following documents:

- Cisco VCO/4K System Administrator's Guide
- OEM operation manual supplied with the modem
- I/O port driver specifications for the application software on the host computer
- Application throughput and load requirements

If the modems are connected over the switched public network or leased data lines, you must also contend with problems of noise, line losses and other problems common to data communications over analog networks.

Host Computer

Host computer I/O consists of hardware and software components which control data communications to and from the VCO/4K. The complexity of the data communications requirement is directly proportional to the number of channels between a host computer and the VCO/4K, the telecommunications traffic throughput expected for the intended application, the number of messages per call scenario, and the communications type/protocol selected for the links.

Traffic throughput requirements affect the CPU overhead required in the host computer. CPU overhead must also be provided for I/O processing of the communications links. The host computer communications software includes drivers for the I/O ports and I/O performance is controlled by the relative sophistication of the communications package running on the host.

If excess CPU overhead is expended on trying to run the call processing application, the I/O rate of the data links may be insufficient to prevent timeouts and resets at the interface ports of the VCO/4K. The host may be unable to receive, process, and return a command to the VCO/4K to prevent such autonomous timeouts and resets.

Host communications links must be operated and serviced in real time. All VCO/4K events and transitions are initiated over these links. Any delays in response affect the timely execution of the application.

If the call processing application requires sending/receiving a relatively large number of commands and reports over the communications links, the host I/O hardware and software should be selected to accommodate this requirement.

Use the following guidelines to reduce problems resulting from the handling of data communications between the host computer and the VCO/4K:

- Select the host computer and I/O hardware and software based on an analysis of the traffic and I/O requirements of the intended application, specifically the number of interrupts per second and network packets received or transmitted per minute, and buffering requirements to support these throughputs. Large system configurations with relatively complex call processing scenarios will require more powerful CPUs, intelligent I/O controllers and sophisticated communication protocols.
- Multiple active and redundant data link configurations also greatly affect the selection and configuration of the host computer. Dual host computers are recommended for large system configurations requiring full control redundancy.
- Strictly observe the interconnection and driver specifications for the selected host computer I/O hardware/software. Compare the desired communications requirements against the recommendations contained in the *Cisco VCO/4K Ethernet Guide*. Data communications problems often result from improper connection to, and control of, host I/O ports.
- The call processing application running on the host should incorporate the ability to monitor data communications to and from the VCO/4K. Refer to the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* for recommended use of commands and reports supported by the Generic software.
- If checking cabling, modem setup, and CPU status does not quickly resolve a host communications link failure, the problem is most likely the result of initial assumptions made when selecting the host computer and data communications options. This is particularly true when link failure occurs as traffic increases through the system.

- Cisco Systems recommends that physical host communications lines not be multiplexed or data compressed through statistical multiplexers. These devices induce transmit and receive latencies which cause timeouts between the VCO/4K and the host computer.

Corrective Procedures

The steps to be taken to correct host communications problems vary according to the suspected cause. Table 6-2 cross-references causes to corrective procedures.

Table 6-2 Lost Data and Lost Communications Causes

Possible Cause	Corrective Procedure	
	Erratic or Lost Data Communications at Initial Power-on	Erratic or Lost Data Communications After Successful Power-on
Host I/O Failure	<ol style="list-style-type: none"> 1. Reboot the host computer and load application and communications software. 2. Reboot the VCO/4K. 3. If unsuccessful, verify host computer I/O performance via the protocol analyzer or other in-circuit device. 	<ol style="list-style-type: none"> 1. Verify the operational performance of host computer and its I/O ports. 2. Enable message trace facility to determine whether messages are being passed over the communication links. 3. If unsuccessful, insert a data communications analyzer in the link. Look to see whether messages are being sent by the host and/or the VCO/4K. Failure to send a command or report isolates the cause to either the host or the VCO/4K. 4. Review the host I/O driver and application package to assure that VCO/4K commands and reports are being properly handled, without excessive delay.
Cabling	<ol style="list-style-type: none"> 1. Inspect all connections between the host and the VCO/4K. 2. Verify that the pinouts meet signaling requirements of host and the Storage/Control I/O Module. 	
CPU Card	<ol style="list-style-type: none"> 1. Verify that the CPU card is operating at normal parameters. 2. Use the Host Configuration Screen to verify link parameters. 3. Reboot the system. 4. If unsuccessful, refer to the <i>Cisco VCO/4K Card Technical Descriptions</i> and replace CPU card and/or the Storage/Control I/O Module. 	
Nonredundant controller failure	<ol style="list-style-type: none"> 1. Reboot the system. 2. If unsuccessful, service the controller and reboot. 	
Redundant controller failure	<ol style="list-style-type: none"> 1. Switch Active to Standby. 2. If successful, service the Standby controller. 	
Modem SetUp	Refer to OEM modem manual and verify setup parameters against desired communication protocols and signaling parameters. Verify the integrity of the analog data link.	

Figure 6-1 Troubleshooting Host Communications Links

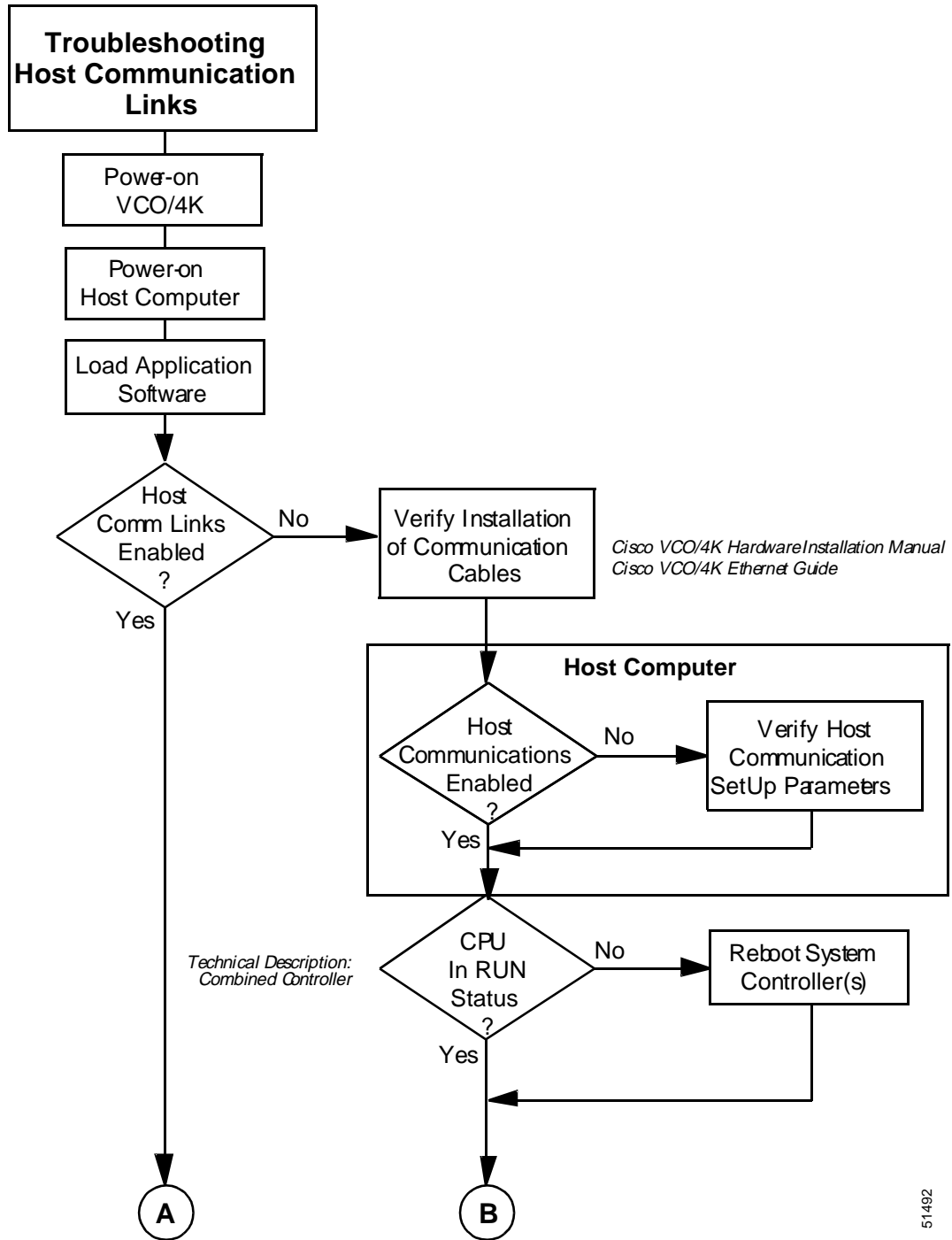


Figure 6-1 Troubleshooting Host Communication Links (continued)

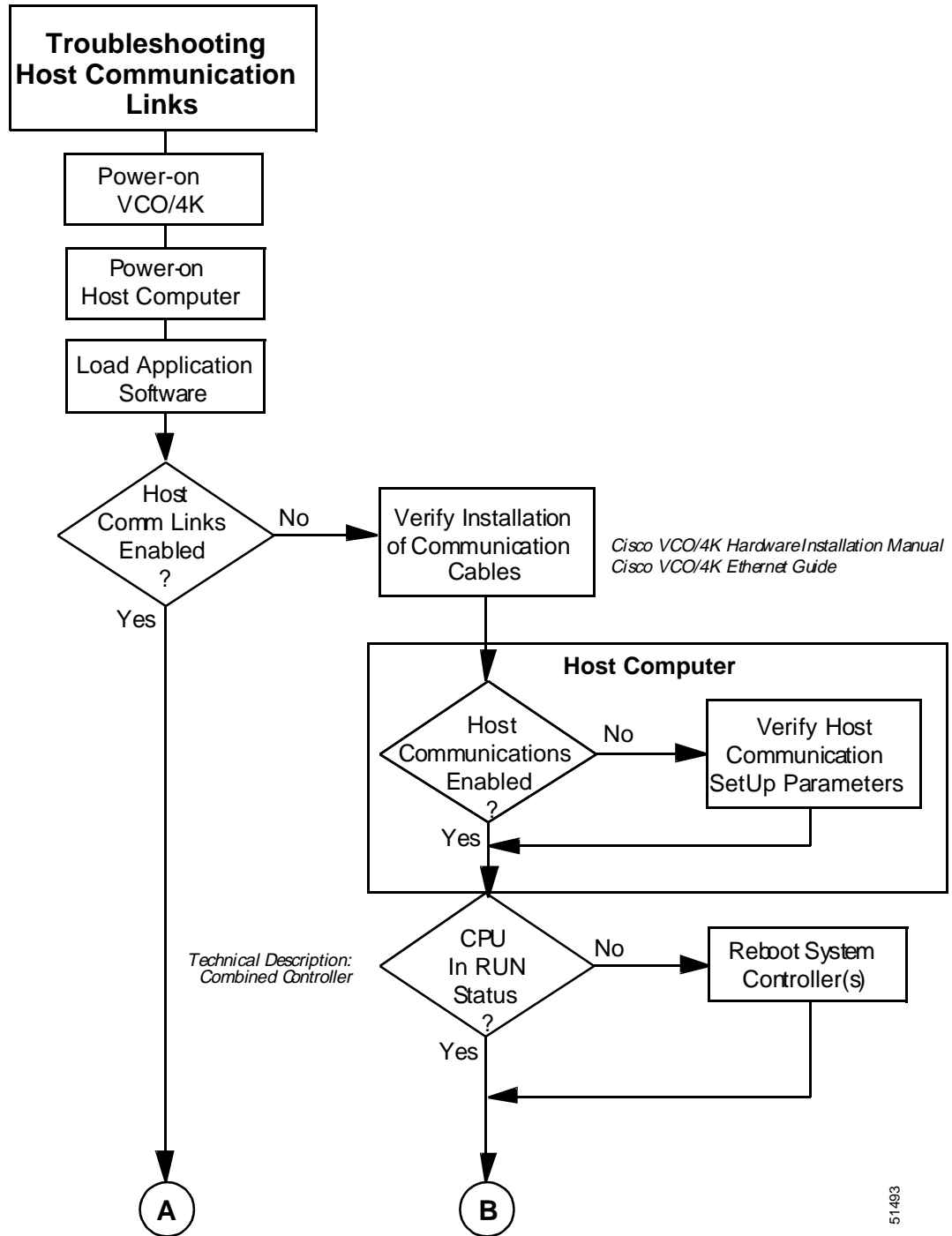
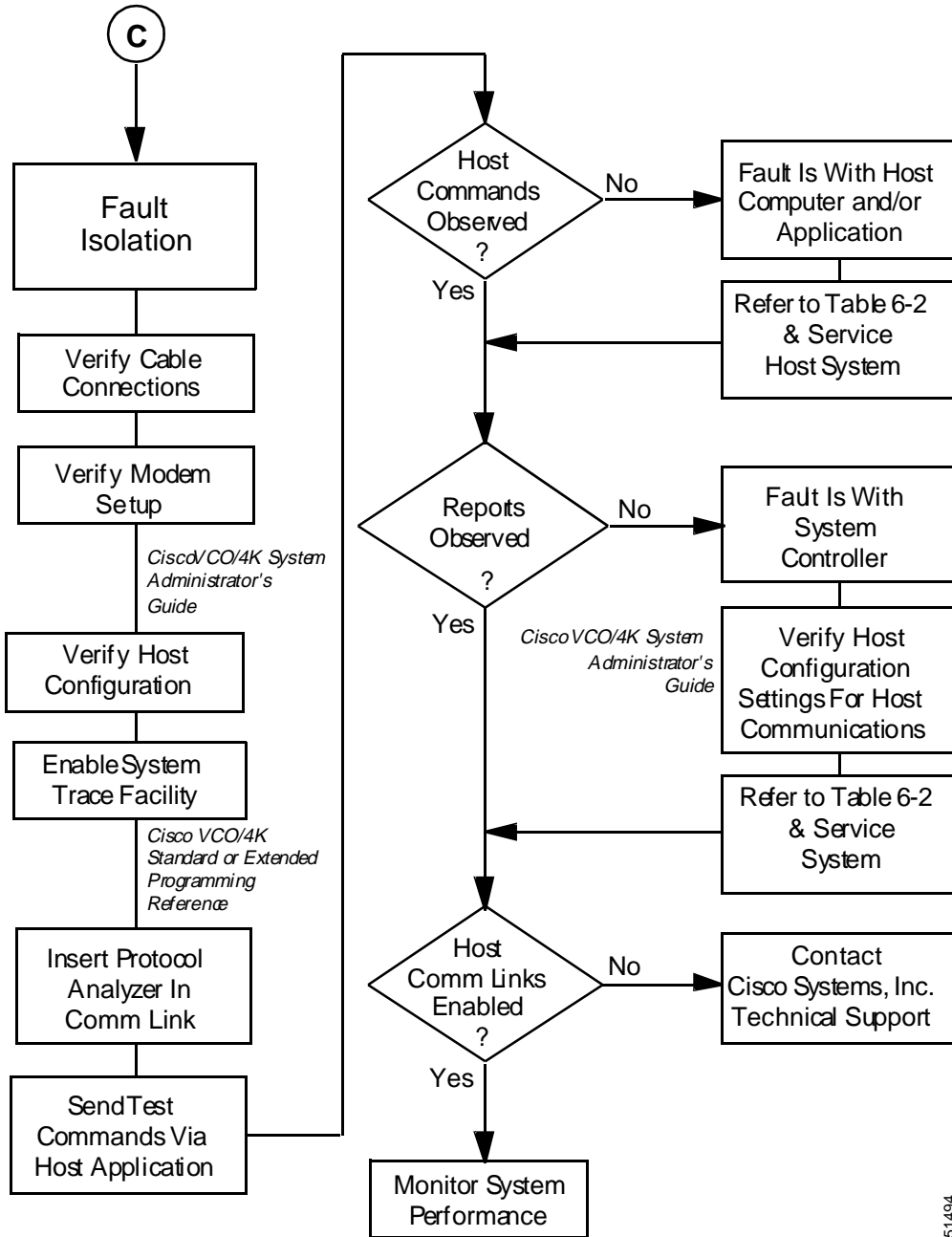


Figure 6-1 Troubleshooting Host Communications Links (continued)



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