

General Information

This manual provides two general categories of information:

- Preventive maintenance addresses actions which ensure continued operation of the system.
- Corrective maintenance describes the diagnostic and repair procedures to perform in response to a system malfunction.

You should be thoroughly familiar with the *Cisco VCO/4K Product Overview*. The VCO/4K system should be installed according to the requirements and procedures described in the *Cisco VCO/4K Site Preparation Guide* and the *Cisco VCO/4K Hardware Installation Guide*. You should also have access to the *Cisco VCO/4K Card Technical Descriptions*.

Original equipment manufacturer (OEM) documents contain details on maintaining the peripheral equipment (console, printer, and modems) connected to a VCO/4K system. Specialized OEM telecommunications equipment (such as voice response units, voice store-forward subsystems, telsets, etc.) are also available with similar documentation. Refer to these OEM documents when performing preventive and corrective maintenance.

Maintenance Procedures

This manual describes the following maintenance and fault isolation procedures for a VCO/4K system:

- Preventive maintenance for console, printer, and floppy drive
- Corrective maintenance for peripheral equipment including:
 - System Console (VDT)
 - Printer
 - Remote maintenance modem
- Corrective maintenance for power subsystems
- Corrective maintenance for the following interface cards:
 - T1 Interface Card for domestic or the E1 Interface Card for international.
 - T1-E Interface Card, which is for use in Japan only.
 - Programmable Four Span T1 Interface Card for domestic use or the Programmable Four Span E1 Interface Card for international.
 - Primary Rate Interface Card with NFAS (PRI/N).
 - E1-Primary Rate Interface Card (E1-PRI) which is for international only.

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- Corrective maintenance for the following service circuit cards:
 - Digital Tone Generator (DTG and DTG2).
 - Integrated Prompt/Record Card (IPRC) with 8, 64, or 128 ports.
 - Digital Conference Card (DCC).
 - Call Progress Analyzer (CPA).
 - MF Receiver Card (MRC).
 - MF Receiver Card with Compelled R2 Signaling (MFC-R2) for international only.
 - DTMF Receiver Card (DRC) with 8, 24, or 48 ports.
- Corrective maintenance for the following control cards:
 - Central Processing Unit (CPU) Card
 - Storage/Control I/O Module
 - Network Bus Controller (NBC3)
 - Alarm Arbiter Card (AAC)
- Corrective maintenance for host communication links

Maintenance Aids

The VCO/4K is fault tolerant with an optional provision for control and power subsystem redundancy. System logs and statistical reports monitor system performance. Status LEDs and diagnostic utilities help isolate faults to the subsystem and card level. Replacing cards, as opposed to repairing them, minimizes system downtime.

Performance Monitoring

Cisco Systems encourages VCO/4K application developers to incorporate diagnostic capabilities into their application programs. Refer to the *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*, and *Cisco VCO/4K Conferencing* manuals for additional details on the performance monitoring features of the VCO/4K system software.

Status LEDs

Light emitting diodes (LEDs) on system circuits and subsystems provide a visual indication of the operational status of individual system components. The *Cisco VCO/4K Card Technical Descriptions* and *Cisco VCO/4K Mechanical Assemblies* identify the meaning of the LED states on each component.

System Log

The VCO/4K incorporates error detection features which output messages on the bottom display lines of the system console. A complete listing of these messages is contained in the *Cisco VCO/4K System Messages*. Messages displayed at the console are also time stamped, logged to a specified storage device

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(based on selections in the File System Configuration screen), and sent to the system printer. The system software maintains the error log for 30 days. You can recall the log for display or selectively print it using the Maintenance Menu.

The system log on the VCO/4K stores the following information:

- Status messages reflecting changes to the system database
- Messages associated with read/write functions to storage devices
- Status and results from diagnostic utilities
- System status messages generated during normal system reboot and whenever a switchover of redundant controllers occurs
- Alarm conditions, including host communication link failures

Systems with redundant control maintain “shadow” error logs for both controllers. The administrator or technician can specify which controller’s log file to display or print through the Maintenance Menu. System logs include a designation as to whether the message was generated by the left or the right controller.

You should periodically review the system log to spot any trends which might indicate a chronic hardware or software problem. If problems are detected and repaired in the early stages, system downtime is greatly minimized. System logs are also accessible through a remote maintenance terminal and modem connection.

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