Preface

Objective

The *Cisco VCO/4K Software Installation Guide* is a comprehensive guide to installing and/or upgrading Cisco's VCO/4K switch system software. This guide also includes instructions for installing optional software products.

✎
Note In order to install and utilize optional software products, you must first purchase a feature license(s) from Cisco Systems, Inc. Contact the Cisco Systems Technical Assistance Center if you do not have the appropriate license(s).

Before you attempt to install or upgrade your VCO system, read the *Cisco VCO/4K System Software Version 5.n(n) Release Notes* to ensure that you have the most current system requirements (hardware, firmware, and software).

Audience

The *Cisco VCO/4K Software Installation Guide* is intended for all personnel installing or upgrading VCO switch software. You should be familiar with the system administration functions of the VCO interface.

Document Organization

This document is organized as follows:

Chapter 1, "Install the System Software," describes the procedures for installing Cisco VCO/4K system software.

Chapter 2, "Perform a Live Upgrade to a New System Software Release," describes the procedures for installing Cisco VCO/4K system software, and optional software products, on systems currently running generic V4.2 FSR00 or greater, or V5.0 FSR00 or greater.

Chapter 3, "Replacing PROMs and PLDs," describes the procedures for installing new firmware and programmable logic in circuit cards.

Document Conventions

This document uses the following conventions:

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.

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

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

  http://www.cisco.com/go/subscription

- 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).

Documentation Feedback

If you are reading Cisco product documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

You can e-mail your comments to bug-doc@cisco.com.

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

Attn Document Resource Connection
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

http://www.cisco.com

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.

Install the System Software

This chapter describes the procedures for manually installing Cisco VCO/4K system software.

Note If you are installing system software in a redundant system, it is recommended that you use the Live Upgrade procedure described in Chapter 2, "Perform a Live Upgrade to a New System Software Release." Using Live Upgrade eliminates the need to power down your system, thereby preserving call flow. If you are installing system software in a non-redundant system, you must use the installation procedures described in this chapter.

Install Release 5.x(x) System Software

Caution If you deviate from these detailed installation instructions, data may become lost. Read all the material in this section before you install the software. If you encounter any problems during the installation, contact Cisco Systems Technical Response Center (TAC).

To perform an upgrade of the system and/or optional software, you must take both redundant and non-redundant systems off-line for a brief period.

Note To upgrade current system software to version 5.2, version 4.2 FSR00 or greater is required. If you are currently running a system software version less than V4.2, you must perform a two-stage upgrade: upgrade from V3.3.xx to V4.2, then from V4.2 to V5.2. A database conversion is required for each upgrade. Refer to *Generic V4.2 Release Notes* to upgrade to V4.2. Contact TAC if you are running a version of the system software prior to V3.3.3.

Overview of the Installation Procedure

Redundant systems require software installation on both sides, and since the optional software varies from customer to customer, there will very likely be a slightly different path for each upgrade. If you follow the instructions sequentially and perform the tasks as they apply to your system, you will be assured of a successful installation.

You must perform a database conversion when you install system software version 5.2, regardless of the software version from which your current database originated. The conversion utility is designed to determine what is required, and to perform the appropriate conversions. If conversions are not required, the system takes no action.

Determine File Sizes

Variations in existing installations may occur, therefore, you may have difficulty converting from your current database to V5.2. To determine if this is the case, you need to know the size of several of your files. Complete the following steps to display the file sizes in your current database directory.

Step 1 Go to Maintenance > Disk Utilities > Show Directory.

Step 2 At the `What Directory?` prompt, type `c:/dbase`, and then press **Enter**.

The file sizes in your system should match the file sizes in A:/DBASE on system software diskette 2 for your current release version. If the size of any of the files does not match, contact TAC immediately. Failure to have technical support evaluate the file size inconsistency may result in problems when you convert your current database to the V5.2 format.

What You Need

You need the following software, hardware, and firmware to perform the installation.

Software

- System software version 4.2.0.24 or higher.
- Multiple diskettes
  - Six (6) system software diskettes are labeled "Generic". The system software diskettes are labeled from 1 to 6, indicating the sequence in which the diskettes must be loaded when you install the system software.
  - The remaining diskettes contain Ethernet, MIB, Telerouter, and ISDN optional software.

Hardware

- AAC card Rev COUR (or later) is required for C-bus operation
- 68030 16MB CPU (or Combined Controller with 68030 16MB)

Note CPUs labeled CPU (with no underline) are 8-MB/25-MHz CPUs and need to be replaced with 16-MB/33-MHz CPUs at this time. CPUs labeled <u>CPU</u> (underlined) do not need replacement.

Firmware

- NBC-3 Card Boot V1.02 or V1.03

Other

For redundant systems, be sure you can connect a system console to both system controllers. Depending on your equipment's arrangement, you can:

- Set up a separate system console for each controller (A- and B-side).

- Use an A/B transfer switch wired to both system controller CPU-TM front panels to switch access.

- Physically remove and reconnect the system console cable from one CPU-TM front panel to the other.

Install the Software

The following section provides instructions for installing system software Version 5.2. Installation procedures for optional software follow the system software installation.

Database Backup

Complete the following steps to backup your database before you begin the installation process.

Step 1   Insert a blank diskette into the disk drive.

Step 2   Access the Disk Utilities Menu and press **E**.

A copy of the switch's active side database is now placed onto the diskette in the disk drive.

Step 3   Wait for the backup to complete, then press **A**.

The Disk Directory screen is displayed.

Step 4   Type **a:/**.

Step 5   Verify that the diskette's database file sizes match the file sizes on system software diskette 2, and verify that all .tbl files were copied.

Step 6   Remove the diskette and label it appropriately.

Step 7   For redundant systems, change the standby side to active and repeat Step 1 to Step 6 for the new active side of the VCO/4K.

You have completed the database backup. Continue with the installation instructions.

On Disk 1, the Incremental Install Basic System Software option installs the system software and downloads files onto the hard disk. This selection does not format the hard drive.

Note   The MIB software is installed on the host computer. Refer to the "Install the MIB Software" section on page 1-14.

Install the System Software

After you confirm the hardware and firmware V5.2 requirements, as described in the current *Cisco VCO/4K System Software Version 5.n(n) Release Notes*, install the new system software on your system.

> **Note**   Replace any firmware that needs updating before installing the software.

> **Note**   If you are performing an original installation, ensure that the power is removed from the switch before you begin.

Step 1   Select the AAC to the A-side.

Step 2   Insert Disk 1 into the floppy diskette drive (A-side if this is a non-redundant system, B-side if you are returning to this procedure to install software for the B-side).

Step 3   Connect or switch the administration console to the A-side CPU-TM, or go to the A-side system console.

Step 4   If you are performing an original installation, apply power to the A-side. If you are not performing an original installation, reboot the switch.

After the system performs diagnostic tests, one of two Installation Utilities menus is displayed:

- Users of system software version 5.1(2) and lower, refer to Figure 1-1.

- Users of system software version 5.1(3) and higher, refer to Figure 1-2.

The cursor is located in the `Enter Selection` data entry field.

Figure 1-1   Installation Utilities Menu—V5.1(2) and Lower

```
               I N S T A L L A T I O N    U T I L I T I E S


        1) Install/Configure Basic System Software
        2) Incremental Install of Basic System Software
        3) Disk Utilities
        4) Install Another Software Option
        5) Database Conversion
        6) License Configuration
        7) Set Extended Operational Mode
        8) Enable C-Bus Mode
        x) Terminate Installation



        Enter Selection: __
```
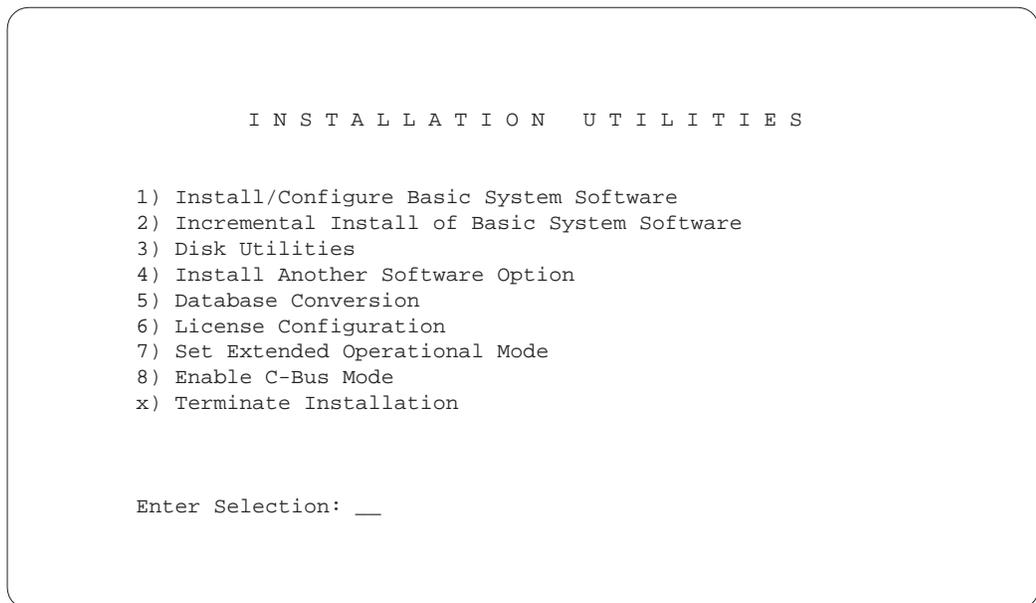
Figure 1-2   Installation Utilities Menu—V5.1(3) and Higher

```
            I N S T A L L A T I O N     U T I L I T I E S


     1) Install/Configure Basic System Software
     2) Incremental Install of Basic System Software
     3) Disk Utilities
     4) Install Optional Software Package
     5) Database Conversion
     6) License Configuration
     7) Set Extended Operational Mode
     8) Enable C-Bus Mode
     x) Terminate Installation



     Enter Selection: __
```

Step 5 Type **2** (Incremental Install of Basic System Software) and then press **Return**.

The following message is displayed:

```
Do You Wish To Back-Up The System Data Base? (Y/N) =N?_
```

Step 6 Press **Return** (this defaults to N).

> **Note** The system does not back up the database at this time. Make certain that the database was backed up previously.

The following message is displayed:

```
Insert disk 2 of Installation Set
Press return to continue
```

Step 7 Remove the current diskette from the drive, insert Disk 2, and then press **Return**.

The system copies the files from Disk 2 to the C: drive in the /BOOT, /DBASE, /LOG and /TRACE directories. When all the files from Disk 2 are copied, the following message is displayed:

```
Insert disk 3 of Installation Set
Press return to continue
```

Step 8 Remove the current diskette from the drive, insert Disk 3, and then press **Return**.

The system copies the files from Disk 3 onto the C: drive.

This pattern, of the system copying from the diskette and then prompting for the next, continues until all diskettes have been loaded and copied onto the system. Continue to remove and insert the installation diskettes when prompted to do so.

When the installation is complete, the Installation Utilities menu is displayed again. (See Figure 1-2.)

Step 9 If no optional software is to be installed, perform a database conversion now. (Refer to the "Perform a Database Conversion" section on page 1-7 for instructions.) If optional software is to be installed, proceed to Step 10.

> **Note**   Users of system software version 5.1(3) and higher, proceed to Step 11; to install optional software products which are included on two diskettes. Users of system software version 5.1(2) and lower, proceed to Step 10 to install optional software products each of which are contained on separate diskettes.

Step 10   Optional software needs to be installed every time you update the system software to ensure NVRAM update. For options such as TeleRouter, ISDN-NFAS, or Ethernet, type **4** (Install Another Software Option, and then press **Return**.

The following message is displayed:

```
Insert Another Install Disk
Press Return To Continue
```

When you install a software option (such as TeleRouter, etc.) on a system, the installation process makes changes to the non-volatile RAM (NVRAM) on the CPU. These changes make operation of software options specific to the CPU on which you installed the options. For this reason:

- Software options must be installed on both system controllers in a redundant system.
- Optional software must be installed every time you update the system software to ensure NVRAM update.
- Software options must be reinstalled if the CPU is replaced.

  Due to the reliability of the CPU, failures requiring replacement are rare occurrences.

Instructions for installing Ethernet for the Host and SNMP communications—for users of system software version 5.1(2) and lower—are contained in the "Install Ethernet for Host and SNMP Communication" section on page 1-7.

Step 11   Insert the first optional software package diskette.

The following message is displayed:

```
Do You Wish To Back-Up The System Data Base? (Y/N) =N?_
```

Step 12   Press **Return**. (This defaults to N).

The following message is displayed:

```
Copying download Files....
```

Step 13   Insert the second optional software package diskette.

The following message is displayed:

```
Do You Wish To Back-Up The System Data Base? (Y/N) =N?_
```

Step 14   Press **Return**. (This defaults to N).

The following message is displayed, followed by the Installation Utilities menu.

```
Copying download Files....
```

The optional software package installation is complete. Perform a database conversion now; refer to the "Perform a Database Conversion" section on page 1-7 for instructions.

Perform a Database Conversion

> **Note** A DB CONVERT ERROR message may be generated when you perform an incremental install and then perform a database conversion.
>
> To upgrade current system software to V5.2, system software V4.2 FSR00 or greater is required. If you are currently running V3.3.05 or V3.3.06, you must perform a two-stage upgrade: upgrade from V3.3.xx to V4.2.00, then from V4.2.00 to V5.2. A database conversion is required for each upgrade. Refer to the *Generic V4.2 Release Notes* for possible upgrade restrictions.

Performing a database conversion is required. To perform a database conversion, complete the following steps.

Step 1   Select option **5** from the Installation Utilities menu.

The conversion takes a few seconds. The following message is displayed on the screen:

```
Data base path for conversion: C:/dbase/
```

If the database does not need to be converted, that is, it had previously been converted, no other messages are displayed. However, if you do convert the database, several other messages may be displayed. For example:

```
Converting the System Configuration table ...
```

Step 2   If finished with the installation, press **X** (Terminate Installation).

Step 3   Proceed to "Install the Software on the B-Side" section on page 1-12.

The CPU reboots and installs the new software.

Install Ethernet for Host and SNMP Communication

> **Note** Users of system software version 5.1(3) and higher, do not use the information and instructions in the remaining parts of this section. Access the System Configuration Menu screen and access the Ethernet/NFS/SNMP Configuration screen to configure Ethernet, NFS, and SNMP communication, if you installed an updated CPU. When the Ethernet/NFS/SNMP configuration is complete, reboot the CPU from the AAC.
>
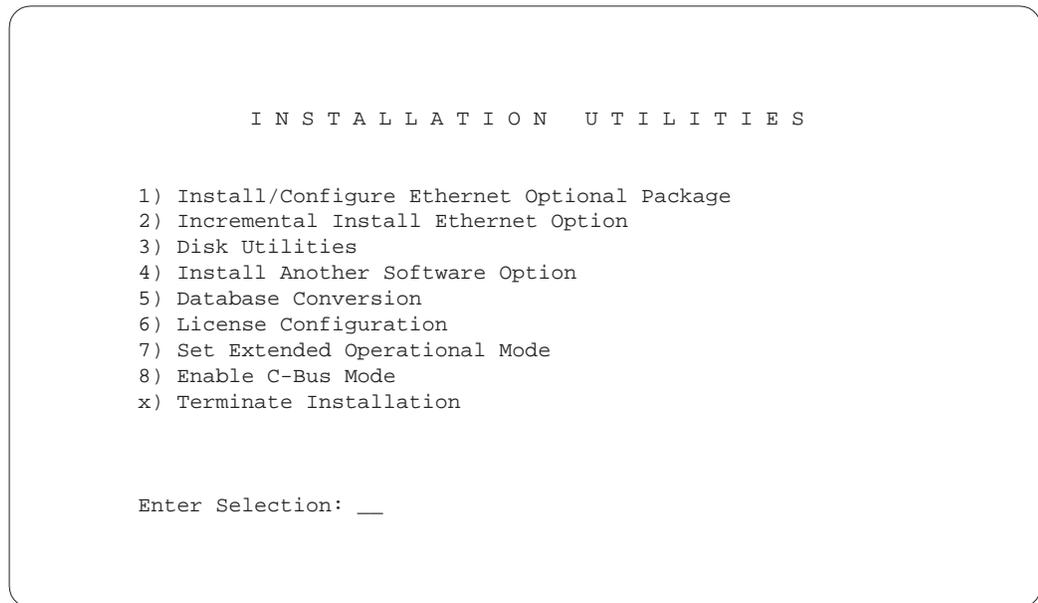> When complete, refer to "Install the Software on the B-Side" section on page 1-12.

To install and configure the Ethernet optional software, follow these steps.

Step 1   Insert the Ethernet software diskette and press **Return**.

After the system loads the Ethernet files from the diskette, the Ethernet Installation Utilities menu is displayed. (See Figure 1-3.)

The cursor is located in the `Enter Selection` data entry field.

Figure 1-3   Ethernet Installation Utilities Menu

```
                I N S T A L L A T I O N    U T I L I T I E S


        1) Install/Configure Ethernet Optional Package
        2) Incremental Install Ethernet Option
        3) Disk Utilities
        4) Install Another Software Option
        5) Database Conversion
        6) License Configuration
        7) Set Extended Operational Mode
        8) Enable C-Bus Mode
        x) Terminate Installation



        Enter Selection: __
```

51336

Step 2   To install and configure the Ethernet software, type **1** (Install/Configure Ethernet Optional Package) and then press **Return**.

The following message is displayed:

```
        Do You Wish To Back-Up The System Data Base? (Y/N) =N?_
```

Step 3   Press **Return** (this defaults to N).

You will not be backing up the database at this time.

The Ethernet Configuration menu is displayed. (See Figure 1-4.)

Figure 1-4   Ethernet Configuration Menu

```
                    E T H E R N E T    C O N F I G U R A T I O N


          1) Install Ethernet Options
          2) Edit Ethernet Parameters
          3) Edit SNMP Management Station Parameters
          4) Edit NFS Parameters
          5) Edit Gateway Routing Table Parameters
          6) Exit Ethernet Configuration



          Enter Selection: __
```

Install Ethernet Options

Step 1   Type **1** and press **Return**.

The following message is displayed:

```
Copy A:/BOOT/ETHERMGR.EXE
1 file(s) copied
Ethernet Option Enabled
```

Note   If you do not need to edit Ethernet parameters (system Ethernet address and/or subnet mask), SNMP management station parameters, NFS parameters, or gateway routing parameters, type **6** and press **Enter** to exit the Ethernet installation. Otherwise, continue with the next section.
If you installed an updated CPU as part of this upgrade, you must edit Ethernet/NFS/SNMP parameters.

Edit Ethernet Parameters

Step 1   To edit Ethernet parameters, type **2** (Edit Ethernet Parameters) and then press **Return**.

The following message is displayed:

```
System Internet Address = 107.3.254.98?
```

Note The Ethernet and Internet address numbers that you see in the screen messages in this section are only examples. In your system these numbers are replaced by numbers that represent your system addresses.

Step 2   Set the Internet address of this system and then press **Return**.

The following message is displayed:

```
Set System Internet Address To 107.3.254.98 (Y/N) =Y?
```

Step 3   If you change the address, you are prompted to confirm your new address. Type **Y** to confirm your selections.

The following confirmation message is displayed:

```
System Internet Address Configured
```

Step 4   Set the system subnet mask, or press **Return** to accept the displayed value.

After you complete this step, you can connect a remote console to your system via Telnet.

a.   If you *are not* going to manage this system with SNMP, go to the "Edit NFS Parameters" section on page 1-11.

b.   If you *are* going to manage this system with SNMP, continue with the next section.

Edit SNMP Management Station Parameters

Step 1   Type **3** and press **Return** to set the SNMP management station Internet address.

The following message is displayed:

```
SNMP Management Internet Address = 0.0.0.0?
```

Step 2   Set the Internet address to the address of the system that you are using as the NMS (Network Management System), and then press **Return**.

The following message is displayed:

```
Set SNMP Management Internet Station Address To 189.7.107.44 (Y/N) =Y?
```

Step 3   Type **Y** to confirm your selections.

The following confirmation message is displayed:

```
SNMP Management Station Internet Address Configured
```

After you complete this step, the system reports SNMP trap messages to the NMS that you selected.

a.   If you *are not* going to boot your system over the network, go to the "Exit Ethernet Configuration" section on page 1-12.

b.   If you *are* going to boot your system over the network, continue with the next section.

Edit NFS Parameters

Step 1 Type **4** to set the Network File System (NFS) server parameters.

The following selections appear one at a time. Enter the information for your system. Type **Y** and press **Return** after each selection.

```
Enable NFS Access (Y/N) =Y?

NFS Server Internet Address = 000.0.000.000?

NFS Server Name =xxx?

NFS Mount Directory Point #?

Target System Name =

Target System User Id =

Target System Group Id =

Target System Umask =

Update NFS Configuration With Above Data (Y/N) =Y?
```

Step 2 After you update the NFS configuration with the new data, the following message is displayed:

```
NFS Configuration Updated
```

You can now save the log files and database to a remote location.

Edit Gateway Routing Table Parameters

Step 1 Type **5** to set Gateway Routing Table parameters.

The following selections appear. Enter the information for your system.

```
Route No. 1

    Destination Subnet Address =0.0.0.0?

    Gateway System Internet Address =0.0.0.0?

Route No. 2

    Destination Subnet Address =0.0.0.0?

    Gateway System Internet Address =0.0.0.0?

Route No. 3

    Destination Subnet Address =0.0.0.0?

    Gateway System Internet Address =0.0.0.0?

Route No. 4

    Destination Subnet Address =0.0.0.0?

    Gateway System Internet Address =0.0.0.0?

Update Gateway Routing Table Configuration With Above Data (Y/N) =Y?_
```

Step 2 Type **Y** to update the gateway routing table configuration with the data changes.

If you type **N** at the final prompt, the following message is displayed, and the Ethernet Configuration screen is displayed:

```
Gateway Routing Table Configuration Aborted
```

Note   The Destination Subnet Address refers to the destination subnet address field in the Gateway Routing Configuration screen. The Gateway System Internet Address refers to the gateway IP address field in the Gateway Routing Configuration screen.

When finished, type **Y** and press **Return**.

Exit Ethernet Configuration

Step 1   Type **6** (Exit Ethernet Configuration) to exit, and then press **Return**.

The Installation Utilities screen is displayed. (See Figure 1-3.)

Step 2   Remove the Ethernet diskette from drive A.

Step 3   If additional optional software is to be installed, type **4** (Install Another Software Option).

Install the Software on the B-Side

If you have a redundant system, repeat all the steps in the "Install the Software" section on page 1-3.

If you do not have a redundant system, proceed to the "Install the MIB Software" section on page 1-14.

Verify File Synchronization

For redundant systems, after you have installed the software on both sides and rebooted the system, you must verify that file synchronization has occurred. Check the messages at the bottom of the screen until you see:

```
ACT FILE SYNC COMPLETED
```

Note   This message may be replaced by subsequent messages before it can be seen. Check the active and standby log files to confirm completion.

When file synchronization has been verified, the installation of system software for users employing standard operational mode is complete. Return the AAC select switch to the auto position. Proceed to the "SNMP" section on page 1-13 to install the MIB software.

Users employing extended operational mode must proceed to Set Extended Operational Mode to complete the installation procedure.

Set Extended Operational Mode

Perform the following steps to set the switch for extended mode.

⚠️

Caution   The system does not allow the operational mode to be set back to standard once it has been set to extended.

The mode is stored in one of the database files. If you must return to standard mode during testing, do so by reverting to the saved database files which were copied before you set the extended mode.

Step 1   Back up the database(s).

⚠️

Warning   **A backed up standard mode database is required to return to standard mode, if needed.**

Step 2   Remove traffic from the switch.

Step 3   Insert and boot Install Disk 1.

Step 4   Press **7** (Set Extended Operational Mode) from within the Installation Utilities screen.

Step 5   At the `Setting the Operational Mode To Extended Mode. Are you sure (Y/N) =N?` prompt, type **Y**. If unsure, type **N**.

Step 6   Bring up the switch.

Step 7   Verify that Extended Operational Mode is set: Go to the System Features screen and view the `Extended Operational Mode Set` field. If set for extended operation, this field should display **Y**.

✎

Note   Be sure to change both sides in a redundant system.

Extended operational mode is set, proceed to "SNMP" section on page 1-13 to install the MIB software.

SNMP

If you use SNMP (Simple Network Management Protocol) to manage your switch, install the MIB software on your network management system. Otherwise, you are finished with the installation process.

✎

Note   You must use the current MIB file shipped with the V5.2 software release as MIB files are not backward compatible.

Cisco Systems provides snmptalk on the MIB disk but does not support the application. It runs on the SUN operating system only.

Install the MIB Software

The following MIB software files are contained on the MIB - Supplemental diskette:

- vco.mib
- etc.ini
- mib.rt
- snmptalk

Complete the following steps to move the MIB software to a network management system:

Step 1   Place the MIB - Supplemental Disk in the floppy drive of the Host computer.

Note that snmptalk is a SunOS executable file and is usable only on SunOS computers. The three other files can be used on a non-SunOS platform.

Step 2   Create a directory in which the MIB files are to reside. Define the location and name of the directory.

Step 3   Move the files from the disk into the new directory created in Step 2.

✎ **Note**   All four files must reside in the same directory, if using a SUN workstation.

Set up snmptalk

Once you invoke the snmptalk program, you need to enter the following setup information so it can communicate with your system. Prior to doing the setup, you need to know the Internet Protocol (IP) address of your system.

Table 1-1 shows the snmptalk setup commands.

Table 1-1   snmptalk Setup Commands

Command	Meaning
v 1	Use to select the SNMP Version 1 mode
write-comm public	Use to set write community to "public"
dest *nnn.nnn.nnn.nnn*	Use to enter the IP address of the VCO (where *nnn.nnn.nnn.nnn* is the IP address)
?	Use to provide a list of the commands available
get sysUpTime.0	Example of get command
tset sysLocation.0 string here	Example of set command
quit	Use to exit program

✎ **Note**   This program cannot handle white space or quotes: You must enter commands without spaces. This is a limitation of the basic test program.

The vco.mib file is the ASN.1 notation MIB for the V5.2 system. This file can be compiled by a SNMP Network Management Station and used to provide the management station with information on the VCO MIB structure. The information in this file is also listed in the *Cisco VCO/4K Management Information Base (MIB) Reference Guide*.

Public Access

The community names for read and write access must be set to `public` for an NMS to properly access the Cisco Systems Enterprise MIB.

Perform a Live Upgrade to a New System Software Release

This chapter describes the procedures for installing system software V5.1 FSR00 on systems currently running V4.2 FSR00 or greater, or V5.0 FSR00 or greater, of the system software.

Note If you are installing system software in a redundant system, it is recommended that you use the Live Upgrade procedure described in this chapter. Using Live Upgrade eliminates the need to power down your system, thereby preserving call flow. If you are installing system software in a non-redundant system, you must use the installation procedures described in Chapter 1, "Install the System Software."

Note To upgrade current system software to version 5.1, version 4.2 or greater is required. If you are currently running a system software version less than V4.2, you must perform a two-stage upgrade: upgrade from V3.3.xx to V4.2, then from V4.2 to V5.1. A database conversion is required for each upgrade. Refer to *Generic V4.2 Release Notes* to upgrade to V4.2. Contact TAC if you are running a version of the system software prior to V3.3.3.

Refer to "Overview of the Installation Procedure" section on page 1-1 before you begin the Live Upgrade procedures.

Perform a Live Upgrade

Use the Live Upgrade option to update software on a redundant VCO/4K system without loss of calls, and with a minimum reduction in capacity. The procedure consists of:

- Installing the new software

  Note System software version 4.2.0.24 or higher is required to perform a live upgrade.

- Updating the system controller (CPU card) and/or NBC-3 card and/or DTG-2 card (if needed),
- Switching over to the new release
- Updating certain network and service circuit cards (if needed)

You can abort the process at any time and restore the prior version until the time when the active controller is running the new release of software. To revert to the prior release of software after the active controller is running the new software, you must perform a non-live (manual) installation of the prior release.

Note Live upgrade does not support SS7 upgrade. Following a live upgrade to the system software, systems that are not configured to reset upon a system controller reset require manual reset of the Sparc. The SS7 system must also be configured to auto-start the SS7 software.

Caution The MIB software is not backward compatible. If you are using SNMP, and you upgrade to this software release, you must recompile the MIB.

It is important that you note the following guidelines and restrictions to ensure a successful live upgrade.

- Call Cisco TAC if you are running a version of the system software prior to 4.2.00.
- DO NOT perform a live upgrade if you are currently running V4.2 FSR00 PUN24. Upgrading from V4.2 FSR00 PUN24 must be done manually.
- A live upgrade cannot be performed if you are currently running V5.0 FSR50 PUN21. Upgrading from V5.0 FSR50 PUN21 must be done manually.
- This section provides detailed installation instructions for loading system software and upgrading hardware. Deviating from these instructions can result in lost data. Read all material in this section prior to installing the software. If you encounter any problems during the installation, contact Cisco Systems Technical Support at the number listed above.

Prepare for Live Upgrade

Note the following when performing a live upgrade:

- Calls can be continued during the live upgrade.
- Live upgrade can be performed only on a redundant system. Non-redundant systems must be upgraded with the manual upgrade described in Chapter 1, "Install the System Software."
- The switch operates in non-redundant mode during much of the live upgrade procedure. This period of non-redundancy has been minimized as much as possible.
- The system administrator is prevented from modifying the configuration of the switch during the live upgrade procedure.
- If the upgrade includes hardware, firmware, or software for a card that is a single resource, there may be an interruption of service that is provided by that resource.
- Perform the live upgrade when call traffic is lowest; the switch cannot operate at full capacity during the live upgrade. Also note that, should the live upgrade fail, upgrading during low volume periods would affect the least number of calls.
- 20MB disk space must be available on each controller's hard drive to perform the live upgrade. Go to Maintenance/Disk Utilities/Show Free Disk Space on the master console for disk space availability.

- The live upgrade procedure automatically checks the free space on both hard drives and if there is a shortage of space, it aborts the live upgrade and reports the problem to both the regular log file and live upgrade log file. Live upgrade log file error messages and corrective actions are contained in *Cisco VCO/4K System Messages*.

- Modifications to the database are not allowed during the live upgrade. Do not remove cards from the switch unless directed to do so as part of the upgrade process.

- Control of the upgrade may be done via:

  – Local via serial port (master console)

  – Telnet session (Ethernet or serial PPP)

  – Modem port

> **Note** Hardware and/or firmware updates require on-site personnel. In this case, the live upgrade cannot be done remotely.

- Live upgrade cannot be performed if replacement of the Alarm Arbiter Card (AAC) is required.

  All log information about the live upgrade is sent to the regular log file and to the live upgrade log file (of both hard drives). Also, Prompt, Warning, and Error messages appear in the lower, right-hand corner of the master console screen when you execute various live upgrade steps from the Live Upgrade Control Menu.

> **Note** You must manually specify the day, month, and year of the log file before you display or print the file. See DDTs issue CSCdp46309 for further information.

  The format of the regular log file is C:/LOG/A-mmmdd.LOG and C:/LOG/B-mmmdd.LOG. These two filenames will be on both hard drives. However, keep in mind that A-mmmdd.LOG and B-mmmdd.LOG files on the A-side hard drive are different from A-mmmdd.LOG and B-mmmdd.LOG files on the B-side hard drive.

  The format of the live upgrade log file is C:/LOG/UGmmddyy.LOG. This log is similar to the regular log, but is written only during upgrade and reflects the upgrade in progress. Note that the filename contains the month, day, and year of the update in the format mmddyy. To display and print the log file, select the Display/ Print Upgrade Log menu option. This file will be on both hard drives. However, keep in mind that C:/LOG/UGmmddyy.LOG file on the A-side hard drive is different from C:/LOG/UGmmddyy.LOG file on the B-side hard drive.

  For information on how to display the regular log file on the screen, refer to the Maintenance section of the *Cisco VCO/4K System Administrator's Guide*.

  For information on how to display the live upgrade log file on the screen, refer to this procedure.

> **Note** If a printer is connected to the system while the live upgrade is in progress, both the regular and live upgrade log files are printed. Live upgrade log file messages appear indented with respect to the regular log file messages.

  Regular log file entries pertaining to live upgrade consist of an ALM15x message imbedded in an FRM5xx message.

  Live upgrade log file entries pertain only to live upgrade and do not contain ALM15x and FRM5xx headers.

- You can abort the upgrade up to the point where the active CPU running the old version of the software switches control over to the standby CPU running the new version of the software.
- Messages related to the live upgrade are contained in *Cisco VCO/4K System Messages*.

Live Upgrade Caveats

Live Upgrade is available for system software V4.2 and higher; however, some special procedures are required for certain releases. Refer to the following two sections for valuable workaround procedures.

Live Upgrade Procedures from V4.2 and Higher

Complete the steps below to use Live Upgrade if you are using system software V4.2 and higher.

⚠ **Caution**   If you are using system software from V5.0.0.25 through V5.1.0.26, you must complete the steps below, and the steps in the following section, Live Upgrade Procedures from V5.0.0.25 through V5.1.0.26, so that you do not lose all calls.

⚠ **Caution**   Do not access the Software/Firmware Configuration screen at any time during Live Upgrade procedures. Failure to follow this instruction results in Live Upgrade failure. Proceed to Step 1 below; do not deviate from these procedures.

Step 1   Boot the standby side of the switch.

Step 2   Wait for file synchronization and perform a switchover.

Step 3   Boot the new standby side; wait for file synchronization.

Step 4   Go to the next section, Live Upgrade Procedures from V5.0.0.25 through V5.1.0.26, to complete Live Upgrade.

Live Upgrade Procedures from V5.0.0.25 through V5.1.0.26

Complete the following steps to use Live Upgrade from system software V5.0.0.25 through V5.1.0.26. This procedure prevents DSP failure on switchover.

⚠ **Caution**   Follow this workaround procedure when using Live Upgrade from V5.0.0.25 through V5.1.0.26. Failure to do so will result in the loss of all calls that require SPC resources. Use this procedure to minimize the volume of lost calls, limiting them to those calls that are active on the SPC and that are taken out of service in order to re-flash.

Step 1   Load the new SPC.DWN on the active side of the system.

Step 2   Take one SPC out of service (OOS).

Step 3   Place the same SPC in the active state.

Step 4   Wait for the download to complete and all DSPs become active on the SPC.

Step 5   Repeat Step 2 through Step 4 for all other SPCs, one at a time.

Step 6 Go to the next section, Live Upgrade Access, to complete Live Upgrade.

All other system software versions are compatible with the Live Upgrade procedures described in the remainder of this chapter.

Live Upgrade Access

To upgrade a system via live upgrade, you need to perform some or all of the following four basic tasks (tasks 1 and 3 are mandatory).

Step 1 Follow the live upgrade procedure to upgrade the software on both sides of the system.

Step 2 Update the CPU, and/or the NBC-3, and/or DTG/DTG-2, if needed.

Step 3 Switch over to the new software release.

Step 4 Update certain network and/or service circuit cards, if needed.

Step 5 To access the Live Upgrade Control Menu screen (see Figure 2-1) from the Maintenance menu, press **L**.

The cursor is located in the Enter Selection field.

Figure 2-1   Live Upgrade Control Menu

```
              L I V E   U P G R A D E   C O N T R O L   M E N U


        A) Prepare for Install
        B) Install New Release
        C) Prepare for Live Upgrade
        D) Enable/Disable/Configure Optional S/W
        E) Update Generic
        F) Switchover to Standby
        G) Cutover Port and Service Cards
        H) Database Store (Backup)
        I) Post Live Upgrade Cleanup
        J) Abort Live Upgrade
        K) Display/Print Live Upgrade Log




        Enter Selection (A,H,K): __


  #00 Fri Mar 26, 1999  16:01  A-USB  B-UAC
```

51525

Screen selections are limited to the appropriate letter for the current step as indicated as part of the Enter Selection prompt. In Figure 2-1, valid selections are A, H, and K.

The system lets you know that a live upgrade is in progress by displaying UAC or USB at the bottom of the screen; UAC indicates Upgrade Active mode and USB indicates Upgrade Standby mode. As shown in Figure 2-1, side A is in standby mode and side B is active.

Live Upgrade Procedure Overview

The upgrade process is illustrated in Figure 2-2. Table 2-1 lists the steps required to perform a live upgrade, as well as which option to select from the Live Upgrade Control Menu, and the actions taking place within the system. A detailed description of the steps begin in "Perform a Live Upgrade" section on page 2-8.
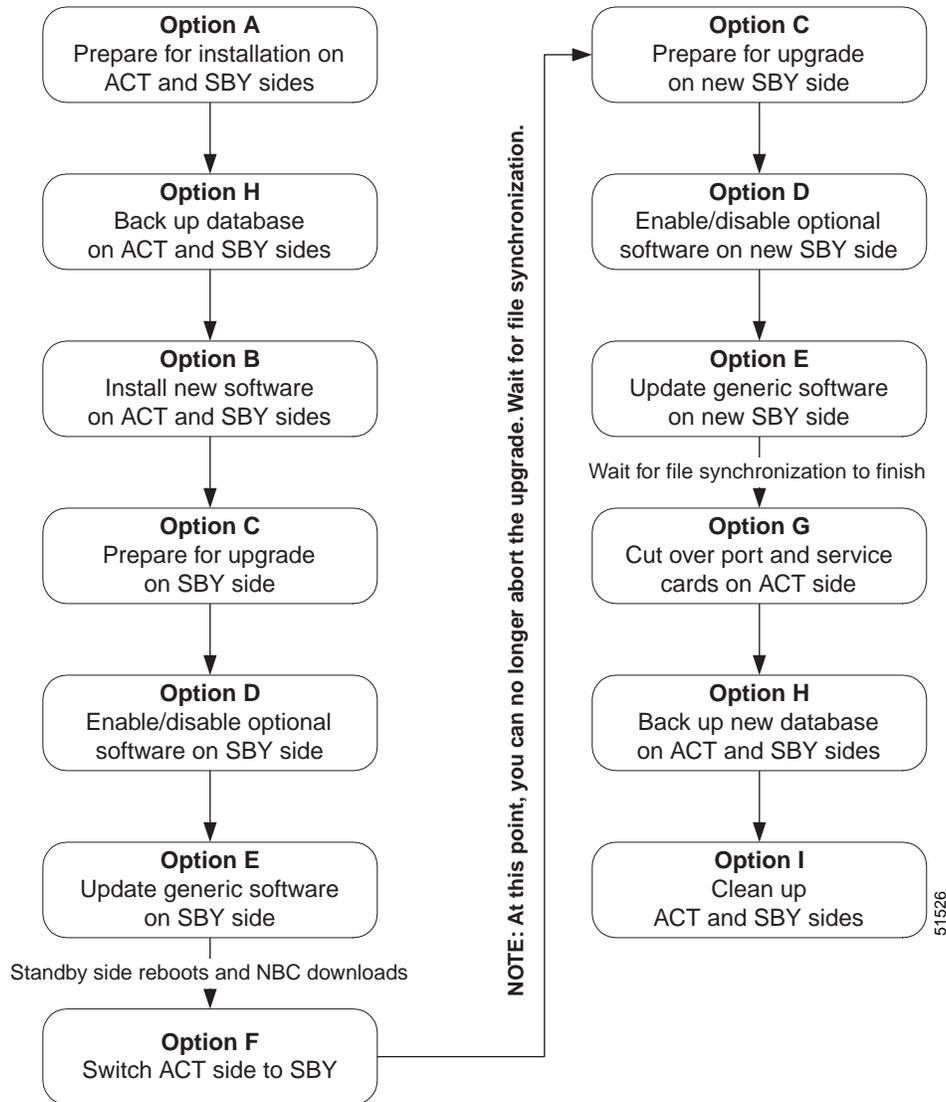
Figure 2-2   Live Upgrade Flow Chart

Option A
Prepare for installation on
ACT and SBY sides

Option H
Back up database
on ACT and SBY sides

Option B
Install new software
on ACT and SBY sides

Option C
Prepare for upgrade
on SBY side

Option D
Enable/disable optional
software on SBY side

Option E
Update generic software
on SBY side

Standby side reboots and NBC downloads

Option F
Switch ACT side to SBY

NOTE: At this point, you can no longer abort the upgrade. Wait for file synchronization.

Option C
Prepare for upgrade
on new SBY side

Option D
Enable/disable optional
software on new SBY side

Option E
Update generic software
on new SBY side

Wait for file synchronization to finish

Option G
Cut over port and service
cards on ACT side

Option H
Back up new database
on ACT and SBY sides

Option I
Clean up
ACT and SBY sides

51526

Table 2-1   Live Upgrade Procedure Overview

	Screen Selection	Action
Step 1	Option A	Prepare for the installation of the new release on active and standby sides. Directories that are needed for the process are automatically created. The current release on each side of the system is backed up.
Step 2	Option H	Back up the existing database on the active and standby sides.
Step 3	Option B	Install the new software on the active and standby sides. The system installs the necessary files on each controller of the switch.
Step 4	Option C	Prepare for the upgrade on the standby side. The system is set up to boot from the new release. Suitability of system to accept the release is checked.
Step 5	Option D	Enable/disable/configure optional software (Ethernet, ISDN, NFAS, TeleRouter) on the standby side.
Step 6	Option E	Update the system software on the standby side. The system automatically reboots the standby side with the new release and performs a database conversion. The system synchronizes the dynamic information.
		Standby side reboots and NBC downloads.
Step 7	Option F	Switch the active side to standby. The alternate side is updated. **After this step is complete, you can no longer abort the upgrade. Repeat steps 4 to 6 on the standby controller.**
		Wait for file synchronization.
Step 8	Option C	Prepare for the upgrade on the new standby side. The system is set up to boot from the new release. Suitability of the system to accept the release is checked.
Step 9	Option D	Enable/disable/configure optional software (Ethernet, ISDN, NFAS, TeleRouter) on the new standby side.
Step 10	Option E	Update the system software on the new standby side. The system automatically performs a database conversion. The system synchronizes the dynamic information.
		Wait for file synchronization. If you are running conferences on the VCO/4K during the live upgrade procedure, Cisco recommends that you proceed to Step 13, Option 1.
Step 11	Option G	Cut over port and service cards on the active side. The system switches over the port and service cards.
Step 12	Option H	Back up the new databases on the active and standby sides.
Step 13	Option I	Clean up the active and standby sides. If you are proceeding with this step directly from Step 10 due to running conferences, access the system administration Card Maintenance screen to download the new software to the VCO/4K system cards.

Perform a Live Upgrade

The following is a detailed explanation of the steps outlined in Table 2-1. Follow these steps to perform a live upgrade on your system. When referring to Option x (where x signifies the option letter from the Live Upgrade Control Menu screen), you are directed to select the appropriate option from the Live Upgrade Control Menu screen. For example, Option A directs you to select the Prepare for Install option.

Step 1: Prepare for Installation of New Release

Option A—Prepare for Install

This step must be performed on both controllers (active and standby side).

To initiate installation of both the active and standby sides, select the Prepare for Install option on the Live Upgrade Control Menu; type **A** then press **Enter**.

The installation routine determines if the disk has enough free space to create a new directory structure and store the new files. If a shortage of disk space is detected, you are notified and the upgrade is automatically aborted.

If you do not have enough free space to perform the upgrade and are unsure of the disk maintenance necessary to obtain it, contact Cisco Systems TAC.

The directory structure that is required by the upgrade process is shown in Figure 2-3. The directories created for the upgrade procedure are shown in bold; they are automatically created by the system software when you select the Prepare for Install option. If they already exist, any existing files are removed from the directories. The directories themselves are maintained, and are used during the upgrade process.

Figure 2-3   Upgrade Process Directory Structure
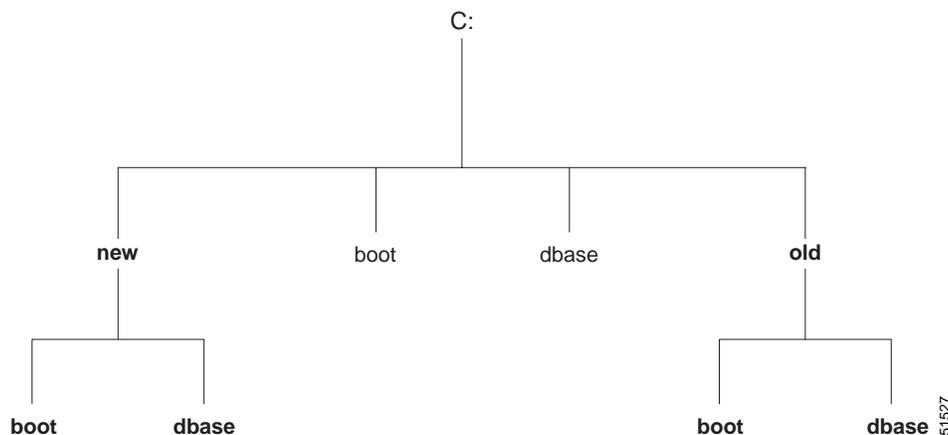
The directory and its purpose are:

C:/new/boot   The new executable files and download application files.

C:/new/dbase   The new, empty database.

| C:/old/boot | The current software release. The current system software is restored from this directory if you select the Abort Upgrade option from the Live Upgrade Control Menu. |
| C:/old/dbase | The current database. The current database is restored from this directory if you select the Abort Upgrade options from the Live Upgrade Control Menu. |

Note You can abort the upgrade at this time: Select option **J** from the Live Upgrade Control Menu.

Step 2: Back up the Existing Database

Option H—Database Store (Backup)

The first step in the live upgrade process is to back up the existing database. *Do this before proceeding to the next step.* You must perform this step on both system controllers. Also note that backup of a standby controller is allowed only during live upgrade.

You should back up your current database in case it is necessary to restore the previous system software version from floppy diskette. The backup database option on the Live Upgrade Control Menu is similar to the manual database backup utility.

To back up your existing database, insert a blank diskette and press **H**. When the Store from C:/ to A:/ YES/NO prompt is displayed; press **Y** to continue with the database backup process.

Note You can abort the upgrade at this time: Select option **J** from the Live Upgrade Control Menu.

Step 3: Install the New Software

Option B—Install New Release

After the new directories are created and you have performed a database backup, install the new system software and database in the appropriate directories on the internal hard drive of both active and standby system controllers.

Install the new software from floppy diskettes, or from another host with FTP or FTP and PPP, if Ethernet or a modem connection is available and FTP is supported within the system controller software. The files are copied to the subdirectories under the C:/new directory.

Perform Step 3 on *both* system controllers before proceeding to the next step. After completing Step 3 on both controllers, continue the upgrade process on the standby controller. No further activity is performed on the active controller until you have upgraded the standby controller.
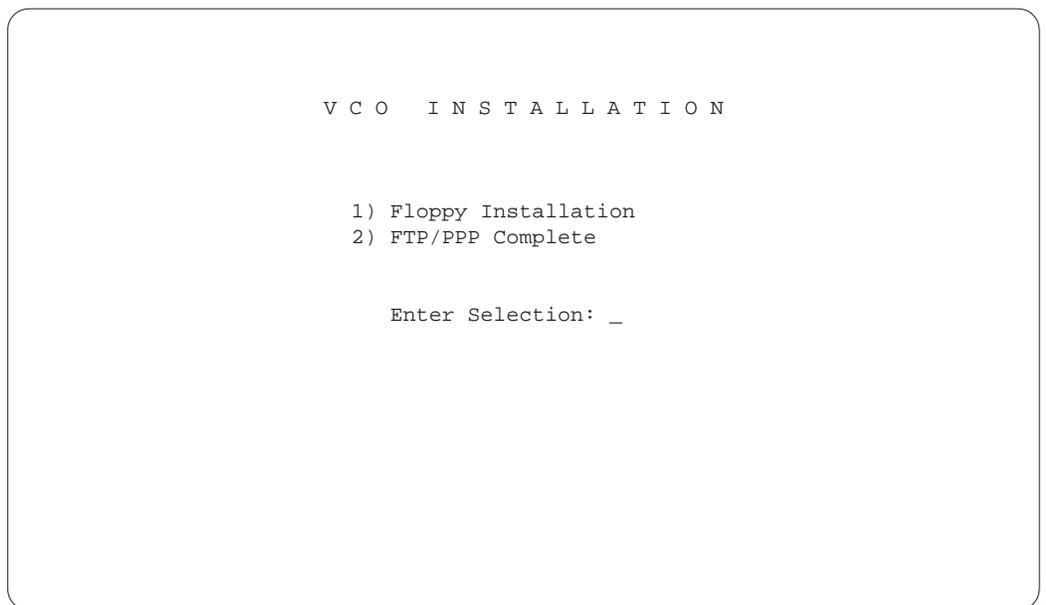
Note You can abort the upgrade at this time: Select option **J** from the Live Upgrade Control Menu.
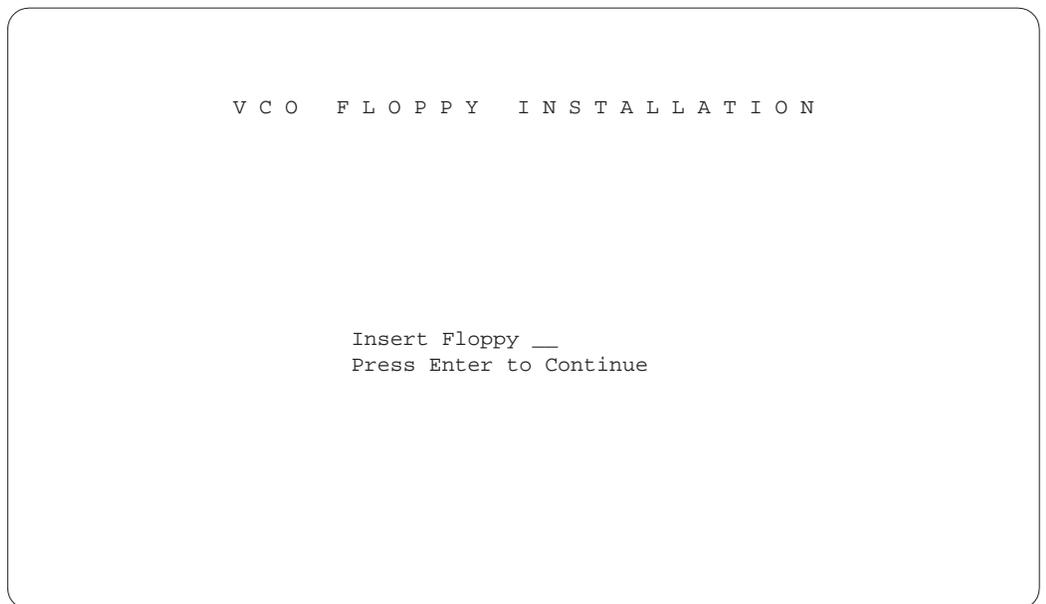
Install from Floppy Diskettes

When you select the Install New Release option from the Live Upgrade Control Menu, the VCO Installation screen is displayed (see Figure 2-4).

Figure 2-4   VCO/4K Installation Screen

```
                    V C O   I N S T A L L A T I O N



            1) Floppy Installation
            2) FTP/PPP Complete


               Enter Selection: _
```

To install from floppy diskettes, type **1**, then press **Enter**. The VCO Floppy Installation screen is displayed (see Figure 2-5).

Figure 2-5   VCO/4K Floppy Installation Screen

```
              V C O   F L O P P Y   I N S T A L L A T I O N






               Insert Floppy __
               Press Enter to Continue
```

You are prompted to insert the installation diskettes into the floppy drive so that the files can automatically be transferred into the appropriate directories. Press any key other than **Enter** or **Return** to stop the loading of files from the floppy drive.

The floppy diskette number is displayed in the VCO Floppy Installation screen; for example, `Insert Generic Floppy 1`. When you insert the floppy diskette the volume label is verified. Your response (for example, if you pressed the **Enter** key to continue) is logged in the upgrade log file along with the files that are being installed. If any files are missing from the floppy, or if there is a mismatch, the upgrade is aborted.

After all software diskettes have been installed, you are prompted to install optional software. (See Figure 2-6.) If no other software is to be installed, select option 2: Installation Complete (see Figure 2-6) and press Enter to exit the installation.

Install Optional Software

After the system software is installed, you can install optional software package files. (See Figure 2-6.)

To install an optional software package:

- Select Option 1: Install Optional Software. (Type **1** in the Enter Selection field, then press **Enter**.)

- After inserting the floppy diskette into the disk drive, press **Enter**.

After completing the installation of an option, the menu in Figure 2-6 is displayed again. Select Option 1 again to install another software package, or select Option 2: Installation Complete, to terminate the installation.
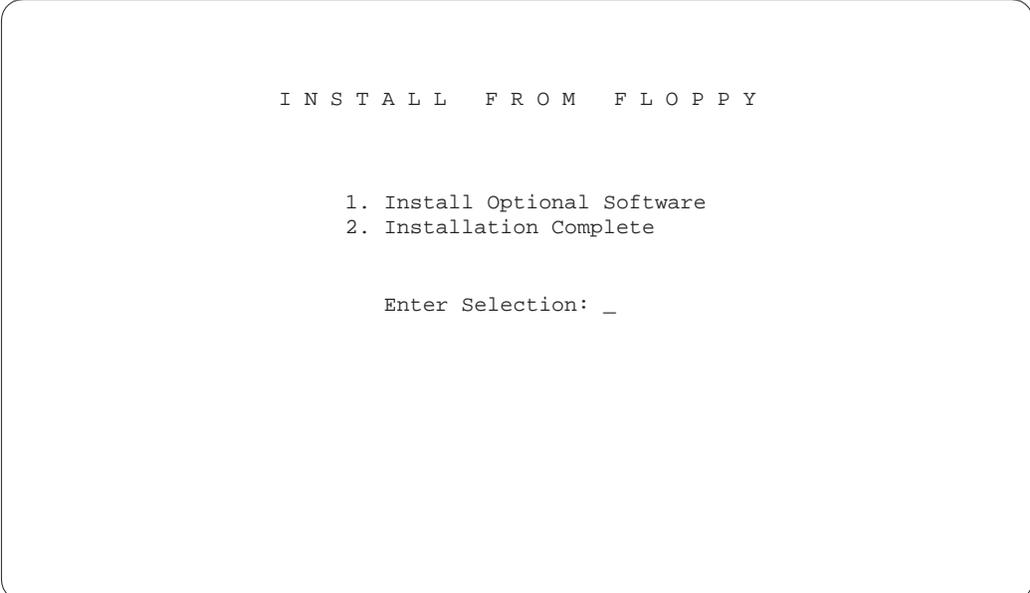
In a separate step, you must enable and configure the optional software; refer to the "Install from Another Host" section on page 2-12.

Figure 2-6   Install From Floppy Screen

```
                    I N S T A L L    F R O M    F L O P P Y




                    1. Install Optional Software
                    2. Installation Complete


                    Enter Selection: _
```

Install from Another Host

If you install the software from a remote computer through FTP via Ethernet, or PPP, you control the process from the FTP client. You are required to select the needed files and copy them to the appropriate subdirectories under the `C:/new` directory. This option assumes that you know how to FTP files from your host computer to the VCO system.

When the FTP transfer of the new system software to the hard disk is complete, you must indicate that the transfer is complete by selecting Option 2 in the VCO Installation screen. (See Figure 2-4.) The system software then verifies that the transfer is complete. Successful transfer is indicated by the `Check for all Files Successful` message.

Step 4: Prepare for the Upgrade

Option C—Prepare for Live Upgrade

On the standby side of the system, select the Prepare for Live Upgrade option from the Live Upgrade Control Menu. Type **C** then press **Enter**. You perform this step later on the other side of the system; refer to the "Step 8: Prepare to Upgrade the Remaining Side" section on page 2-16.

During this step, the system software automatically performs several tasks and verifies that:

- The side being upgraded in this step is in standby mode and that the alternate side is active and running.
- The file synchronization (static database and dynamic state information) has completed.
- The new software release has been placed in the C:/new directory on the hard drive and that all needed files are available for the upgrade.
- The version number of the software release being installed is newer than the current software release.
- The switch configuration is suitable for the upgrade.

> **Note** If the configuration is not suitable, information is logged and the upgrade is prohibited.

You are notified if there are single resources in the system that require updating. Note that updating a single resource causes a loss of capacity for that resource. Refer to *Cisco VCO/4K System Messages* for live upgrade messages.

When verification of the preceding has been successfully completed, the existing system software and the switch configuration is copied to the `C:/old` directory. Finally, the system software copies the new boot files from `C:/new/boot` into the current boot area, `C:/boot`. During this and later steps, you are locked out from making any configuration changes on the system.

> **Note** You can abort the upgrade at this time: Select option **J** from the Live Upgrade Control Menu.

Step 5: Enable/Disable/Configure Optional Software

Option D—Enable/Disable/Configure Optional S/W

This step is optional. If you do not have optional software, skip this step.

Note   Users of system software version 5.1(3) and higher must skip this step; proceed to Step 6: Update the System Software, page 2-14. Optional software products for users of V5.1(3) and higher are enabled upon installation.

To initiate step 5, perform the following steps.

Step 1   Select the Enable/Disable/Configure Optional S/W option from the Live Upgrade Control Menu.

Step 2   Type **D** then press **Enter**.

The screen shown in Figure 2-7 is displayed. Perform this step on the standby side of the system.

Note   The only the optional software packages that have been installed are shown in the Enable/Disable/Configure Optional S/W screen.

The Enable/Disable/Configure Optional Software procedure consists of two parts; 1) enable the options, and 2) configure the options.

Figure 2-7   Enable/Disable/Configure Optional Software Screen


```
              E N A B L E / D I S A B L E / C O N F I G U R E

                    O P T I O N A L   S O F T W A R E


                   A) Enable Ethernet
                   B) Disable Telerouter
                   C) Enable ISDN
                   D) Enable NFAS
                   E) Enable NI-2



                   Enter Selection: _




#00 Fri Mar 26, 1999 16:41  A-USB   B-UAC
```

You can enable or disable software depending on its current state. For instance, note in Figure 2-7 that the only software package enabled is TeleRouter, since the option for TeleRouter is to `Disable`. All other options are to `Enable`, thereby indicating that the other software packages (Ethernet, ISDN, NFAS, NI-2) are currently disabled.

If you select the Enable Ethernet option, you are prompted to set the parameters. The Ethernet configuration process is the same as the manual Ethernet configuration process, that is, installing Ethernet using the Ethernet Install diskette.

Note   You can abort the upgrade at this time: Select option **J** from the Live Upgrade Control Menu.

Step 6: Update the System Software

Option E—Update System Software

Perform this step on the standby side of the switch. This step results in an update of the system software.

Note   The system is non-redundant from the time you start the update of one side (step 6) until the time that new release is running on both sides of the system. Once both sides are running the new release of software, the system returns to a redundant mode of operation.

Any hardware or firmware upgrades required on the standby NBC-3, the DTG-2 card on the standby NBC-3, and/or the standby CPU should be done before initiating step 6. Refer to the following subsections for information on upgrading the firmware and/or hardware before proceeding.

To initiate step 6, select the Update Generic option on the Live Upgrade Control Menu; type **E** then press **Enter**.

When the Update Generic option is selected:

1. The standby side is rebooted.

2. The new system software performs a database conversion (if needed).

3. A login screen is displayed on the console.

Upgrade the CPU

To upgrade the CPU, select option **E**, Update Generic, and press **Enter**. Once the CPU reboots, you may remove the CPU card for upgrading.

If you are replacing a 25MHz/8MB CPU with a 33MHz/16MB CPU, refer to the *Cisco VCO/4K Card Technical Descriptions* for a step-by-step procedure.

Note   A CPU card which is housed in a combined controller carrier may be removed from the card cage while under power. If the CPU is not housed in a combined controller carrier, you must first remove the power to the standby CPU. Refer to the *Cisco VCO/4K Card Technical Descriptions* for removal and replacement procedures.

After upgrading the hardware/firmware, insert the CPU card into the system and restore power if it had been previously powered off.

Update the NBC-3 Card

If the hardware or firmware of the NBC-3 card needs to be replaced, it should be done at this time. An NBC-3 card that is in standby mode can be removed while the system is running.

Note that when the NBC-3 card is removed, a DTG-2 card mounted on that NBC-3 is consequently also removed and updated (see the following subsection). If the DTG-2 card is the only tone generator in the switch, the system will experience a loss of tone generation resources while the NBC-3 and/or DTG-2 is upgraded. Refer to the *Cisco VCO/4K Card Technical Descriptions* for removal and replacement procedures.

To upgrade the NBC-3, select option **E**, then press **Enter**. Once the CPU reboot process starts, the NBC-3 may be removed and upgraded. After restoring the NBC-3 card, reset the standby CPU via the Alarm Arbiter Card.

Update the DTG-2 Card

Note   If your system has a DTG card, the card does not get updated at this time.

If the hardware or firmware of the DTG-2 card needs to be replaced, you should do it at this time. You must take the DTG-2 out of service (OOS) when its firmware or hardware is updated.

Upgrade the DTG-2 mounted on the standby NBC-3, even if it is the active tone card. If your system has redundant tone cards, assure that the DTG-2 card on the standby NBC-3 is in standby mode. If the system does not have redundant DTG-2 cards, note that the system will experience a loss of tone generation resources while the DTG-2 is upgraded.

To upgrade the DTG-2, select option **E**, then press **Enter**.

When you upgrade your system software via live upgrade, the system performs an automatic database conversion as part of the upgrade.

Database Conversion

When the new system software is running, a database conversion is automatically performed by the software. The converted files are updated in the `C:/dbase` directory and loaded into memory as the static portion of the new database. Any new tables needed for the upgrade are obtained from the `C:/new/dbase` directory. Note that some upgrades may *not* require a database conversion.

Note   You can abort the upgrade at this time: Select option **J** from the Live Upgrade Control Menu.

Step 7: Switch the Active Side to Standby

Option F—Switch to Standby

Caution   Before you begin this step, make certain that the file synchronization (static database and dynamic state information) has completed. A message is displayed on your screen indicating that the synchronization is complete.

In step 7, place the active side (controller) in standby mode. When this is done, the previously active side, running the old system software, becomes available to upgrade. In addition, the side which was in standby mode will become active and be running the new software.

To initiate this step, on the active side of the system, choose the Switchover to Standby option from the Live Upgrade Control Menu; type **F** then press **Enter**.

Note   Make certain your console is on the active side of the switch when performing the switchover.

Caution   When this step is complete, the upgrade can no longer be aborted. If restoring the old software release is required, you must perform a traditional reinstallation of the original software.

Once the switchover has taken place, i.e., the reboot and NBC download are complete, your console should be on the standby controller's side (the controller that needs to be updated).

Step 8: Prepare to Upgrade the Remaining Side

This is a repeat of the steps already performed on the other side, described in Step 4: Prepare for the Upgrade. This now becomes the new standby side of the system. Select the Prepare for Live Upgrade option from the Live Upgrade Control Menu. Type **C** then press **Enter**.

During this step, the system software automatically performs several tasks and verifies that:

- The side being upgraded in this step is in standby mode and that the alternate side is active and running.
- The file synchronization (static database and dynamic state information) has completed.
- The new software release has been placed in the `C:/new` directory on the hard drive and that all needed files are available for the upgrade.
- The version number of the software release being installed is newer than the current software release.
- The switch configuration is suitable for the upgrade.

Note   If the configuration is not suitable, information is logged and the upgrade is prohibited.

You are notified if there are single resources in the system that require updating. Note that updating a single resource causes a loss of capacity for that resource. Refer to *Cisco VCO/4K System Messages* for live upgrade messages.

When verification has been successfully completed, the existing system software and the switch configuration is copied to the `C:/old` directory. Finally, the system software copies the new boot files from `C:/new/boot` into the current boot area, `C:/boot`. During this and later steps, you are locked out from making any configuration changes on the system.

Note   The upgrade can no longer be aborted.

Step 9: Enable/Disable/Configure Optional Software

Option D—Enable/Disable/Configure Optional S/W

Perform this step on the new standby side of the switch. Skip this step if you do not have optional software.

To initiate step 9, select the Enable/Disable/Configure Optional S/W option from the Live Upgrade Control Menu; type **D** then press **Enter**. The screen shown in Figure 2-7 is displayed.

Note   The only the optional software packages that have been installed are shown in the Enable/Disable/Configure Optional S/W screen.

This step consists of two parts:

1. Enable the options.

2. Configure the options.

You can enable or disable software depending on its current state. For instance, note in Figure 2-7 that the only software package enabled is TeleRouter, since the option for TeleRouter is disabled. All other options are to enabled, thereby indicating that the other software packages (Ethernet, ISDN, NFAS, NI-2) are currently disabled.

If you select the Enable Ethernet option, you are prompted to set the parameters. The Ethernet configuration process is the same as the manual Ethernet configuration process, i.e., installing Ethernet using the Ethernet Install diskette.

Note   The upgrade can no longer be aborted.

Step 10: Update the System Software

Option E—Update System Software

Perform this step on the new standby side of the switch. This step results in an update of the system software.

Note   The system is non-redundant from the time you start the update of one side (step 6) until the time that new release is running on both sides of the system. Once both sides are running the new release of software, the system returns to a redundant mode of operation.

Any hardware or firmware upgrades required on the standby NBC-3, the DTG-2 card on the standby NBC-3, and/or the standby CPU should be done before initiating step 10. Refer to the following subsections for information on upgrading the firmware and/or hardware before proceeding.

To initiate step 10, select the Update Generic option on the Live Upgrade Control Menu; type **E** then press **Enter**.

When the Update Generic option is selected:

1. The standby side is rebooted.

2. The new system software performs a database conversion (if needed).

3. A login screen is displayed on the console.

Update the CPU

To upgrade the CPU, select option **E**, Update Generic, and press **Enter**. Once the CPU reboots, you may remove the CPU card for upgrading.

> **Note** A CPU card which is housed in a combined controller carrier may be removed from the card cage while under power. If the CPU is not housed in a combined controller carrier, you must first remove the power to the standby CPU. Refer to the *Cisco VCO/4K Card Technical Descriptions* for removal and replacement procedures.

After upgrading the hardware/firmware, insert the CPU card into the system and restore power if it had been previously powered off.

Update the NBC-3 Card

If the hardware or firmware of the NBC-3 card needs to be replaced, it should be done at this time. An NBC-3 card that is in standby mode can be removed while the system is running.

Note that when the NBC-3 card is removed, a DTG-2 card mounted on that NBC-3 is consequently also removed and updated (see the following subsection). If the DTG-2 card is the only tone generator in the switch, the system will experience a loss of tone generation resources while the NBC-3 and/or DTG-2 is upgraded. Refer to the *Cisco VCO/4K Card Technical Descriptions* for removal and replacement procedures.

To upgrade the NBC-3, select option **E**, then press **Enter**. Once the CPU reboot process starts, the NBC-3 may be removed and upgraded. After restoring the NBC-3 card, reset the standby CPU via the Alarm Arbiter Card.

Update the DTG-2 Card

> **Note** If your system has a DTG card, the card does not get updated at this time.

If the hardware or firmware of the DTG-2 card needs to be replaced, you should do it at this time. You must take the DTG-2 out of service (OOS) when its firmware or hardware is updated.

Upgrade the DTG-2 mounted on the standby NBC-3, even if it is the active tone card. If your system has redundant tone cards, assure that the DTG-2 card on the standby NBC-3 is in standby mode. If the system does not have redundant DTG-2 cards, note that the system will experience a loss of tone generation resources while the DTG-2 is upgraded.

To upgrade the DTG-2, select option **E**, then press **Enter**.

When you upgrade your system software via live upgrade, the system performs an automatic database conversion as part of the upgrade.

Database Conversion

When the new system software is running, a database conversion is automatically performed by the software. The converted files are updated in the `C:/dbase` directory and loaded into memory as the static portion of the new database. Any new tables needed for the upgrade are obtained from the `C:/new/dbase` directory. Note that some upgrades may *not* require a database conversion.

Verify File Synchronization

For redundant systems, after you have installed the software on both sides and rebooted the system, you must verify that file synchronization has occurred. Check the messages in the log file and verify that the following messages appear:

```
RED32:ACT FILE SYNC COMPLETED
```
(from the active side)

```
RED20:SBY FILE SYNC COMPLETED
```
(from the standby side)

When you have verified file synchronization, the installation of system software is complete. Proceed to the "Install the MIB Software" section on page 1-14, to install the MIB software if you have a Network Management System.

Note   You cannot abort the upgrade at this time. If you are running conferences on the VCO/4K during the live upgrade procedure, Cisco recommends that you proceed to "Step 13: Cleanup" section on page 2-22.

Step 11: Cutover of Port and Service Cards

Option G—Cutover Port and Service Cards

Once the new release is running on both sides of the system and the file synchronization is complete, cut over the port and service cards that need to be upgraded, from the active side of the system.

To initiate step 11, on the active side of the system, select the Cutover Port and Service Cards option from the Live Upgrade Control Menu; type **G** then press **Enter**. When you select the Cutover Port and Service Cards option, the Card Cut-Over screen is displayed. (See Figure 2-8.) This screen lists the cards needing an upgrade, and the type of upgrade (hardware, firmware, or software) that is needed. The fields and user options are described on the following pages.

From the Card Cut-Over screen, you can control the card cutover by choosing the ordering and timing for the upgrade of the cards. You can select to upgrade a single card, or several cards at a time; this depends on the call handling capacity that is to be maintained on the system. Take cards out of service and, if needed, upgrade the firmware or hardware then place the card back in service. When placed back in service, the new application is downloaded onto the card (if applicable) when it is placed back in service.

You do not have to wait until a card is completely OOS before starting the cutover process on another card. The OOS and Activate options operate on a single card, not a group of cards.

If you try to take the last active card of a resource type (the only card or the last active card of a group) out of service, the system notifies you and requests confirmation prior to performing the request. Refer to *Cisco VCO/4K System Messages* for a list of prompts, warnings, and error messages.

Figure 2-8   Card Cut-Over Screen

```
                    C A R D   C U T - O V E R


                                           FIRM      D/L
        R L S I    CARD TYPE          UPG   VERS      VERS      S
        _____     _____  ____  _____    _____    __
        1  1  3    Tone Generator     -F-   1.24      ----      A
        1  1  4    Tone Generator     -F-   1.24      ----      S
        1  1 10    Four Span T1 Card  HFS   1.12      1.49      G
        1  1 14    MVDC-T1 Trunk      --S   ----      ----      O
        1  1 15    MVDC-T1            --S   1.08      1.08      A




        ACTIVATE, GRACEFUL-OOS, OR FORCE-OOS (A, G, F): _ __ ____

        RLS 1  1 10  Being Gracefully Idled
        #00  Fri Mar 26, 1999 16:55  A-USB  B-UAC
```

The Card Cut-Over screen can display up to 14 cards. There can be up to 11 screens, which you can navigate by pressing the **Prev Screen** key if the previous screen is desired, and the **Next Screen** key to display the next screen. Use the **Exit**, **Prev Menu**, or **Main Menu** keys to exit the Card Cut-Over screen without making any changes. No changes are made unless you press the **Enter** key.

Card Cut-Over Screen Field Definitions: Display Only

The fields on the Card Cut-Over Screen are display-only.

RLSI—Contains the physical location of the card; rack, level, slot and interface that needs upgrading.

Card Type—Indicates the type of card in the location indicated in the corresponding column.

UPG—(Upgrade) Contains information on the type of upgrade needed on the corresponding card. The UPG indicators are:

   F—Firmware update needed

   H—Hardware update needed

   S—Software update needed

FIRM VERS—Displays the current firmware version.

D/L VERS—Displays the current download version. If the card does not support a download, the field contains four dashes.

Note   The version number (FIRM VERS and D/L VERS) information is not available when the card is out of service (O).

S—Indicates the status of the card, as noted below.

   A—Active. Ports on this card can be involved in active calls, and can be allocated to new calls.

   S—Standby. Valid for DTG (not DTG-2) cards or redundant BRC cards.

G—Graceful idling (graceful-OOS). Ports on this card are currently involved in active calls, but cannot be allocated to new calls. The card remains in this mode until all ports are idle. The card then is placed in the OOS state.

The card remains in a status of G until the card is OOS, at which time the G status changes to a status of O.

O—Out of service (OOS). No ports on this card are currently involved in active calls, and they cannot be allocated to new calls.

Card Cut-Over Screen Field Definitions: Data Entry

The `ACTIVATE, GRACEFUL-OOS, OR FORCE-OOS (A, G, F):` field is a data entry field. The options for this field are explained below.

A—Activate. Type **A** to place the card back in service. This causes an application download upgrade on the card, if appropriate. The system software also verifies that the version number for the firmware is compatible with the application download for the card. If not compatible, you are notified and the activation is prohibited.

Once the card is active again, it is removed from the list in the Card Cut-Over screen, and information is written to the log file to indicate that the card has been upgraded. This information is sent to the standby side via the update channel so that both sides have current information about the status of the cards.

G—Graceful-OOS. Type **G** to take all idle ports out of service (OOS). The system software waits for active ports to become idle before taking them out of service. Once all ports are idle, the card state is set to OOS. Until the card's status is O, indicating that the card is out of service, the card is still involved in active call processing. This command may take some time to complete, depending upon the duration of the active calls using the card.

F—Force-OOS. Type **F** for the system software to tear down any active calls and place the card out of service (OOS). If you select this option, you must press the **Enter** key a second time to confirm that this is what you want to do.

You can upgrade a card once the card state is OOS. You can remove cards which require firmware and/or hardware upgrades from the switch and update them after placing them in an out-of-service state. You can upgrade cards which require a software upgrade by simply activating the card.

When both sides of the system are running the new software release, you can change the configuration of the system. This may be needed to modify the setup of cards to take advantage of new features and capabilities. It is strongly recommended however, that non-upgrade related changes not be made until the upgrade process is complete. This helps isolate any potential problems.

Note   At this point, you cannot abort the operation.

Step 12: Back Up the New Database

Option H—Database Store (Backup)

This step involves backing up the new database. This is done in the event that there was a database conversion resulting in a changed format.

To back up the new database, from the Live Upgrade Control Menu, type **H** then press **Enter**. This option is the same as the Database Store option on the Disk Utilities menu. Refer to the *Cisco VCO/4K System Administrator's Guide* for detailed information.

You can also use the Copy Files option on the Disk Utilities menu, or FTP operations from a remote system, to store the database in an alternate location.

Step 13: Cleanup

Option I—Post Live Upgrade Cleanup

To initiate the cleanup, from the Live Upgrade Control Menu, type **I** then press **Enter**.

> **Note**   This step is not permitted until both sides are running the new software release, and cleanup should not be performed until the card cutover has been completed.

When you select this option, the system software removes the files from the `C:/old` and the `C:/new` directory trees.

Once you have updated both sides of your switch via live upgrade, you should now install the MIB software. Refer to the "Install the MIB Software" section on page 1-14, for detailed information.

Several messages associated with the live upgrade feature are displayed during the live upgrade process. Refer to *Cisco VCO/4K System Messages* for system error and status messages related to live upgrade procedures.

> **Note**   If you are proceeding with this step directly from Step 10 due to running conferences, access the system administration Card Maintenance screen to download the new software to the VCO/4K system cards.

Replacing PROMs and PLDs

This chapter describes the procedures for installing new firmware and programmable logic in circuit cards. Firmware is shipped in the form of programmable read only memory (PROMs), dual in-line packages (DIPs), integrated circuits (ICs) for through-hole mounting, and plastic leaded chip carriers (PLCC) for surface mount.

Programmable logic is shipped in the form of programmable logic devices (PLDs), DIPs for through-hole mounting, and PLCCs for surface mount.

PROMs are labeled with configuration data which should be checked, prior to installation, against the firmware requirements contained in the current *Cisco VCO/4K System Software Version 5.n(n) Release Notes*. PLDs are labeled with their LP identification number.

Removing and Replacing Through-hole PROMs and PLDs

The following sections provide information about removing and replacing through-hole PROMs and PLDs. Refer to the appropriate technical description for the physical locations of the PROMs and PLDs on each circuit card.

Removing Through-hole PROMs and PLDs

Step 1   If the circuit card is currently installed in the switch, follow the removal and replacement procedures in the appropriate technical description. Be sure to also locate affected circuit cards kept as spares.

⚠️

Caution   Observe antistatic precautions near circuit cards. Wear a ground strap connected to the equipment frame whenever servicing or cleaning circuit cards. The ground point is located above the card slots on the front of the switch, and is indicated by the "Connect ESD Wrist Strap Here" label.

Step 2   Remove the PROM to be replaced from the circuit card. Use a PROM removal tool to grasp the integrated circuit and pull it straight up and away from the socket.

⚠️

Caution   To prevent damaging PROM pins or scratching the circuit card, avoid using devices such as screwdrivers to remove PROMs.

Step 3   Remove the new PROM chip from the shipping package. Refer to the current *Cisco VCO/4K System Software Version 5.n(n) Release Notes* to verify that the label on the chip matches the software requirements.

Replacing Through-Hole PROMs and PLDs

Step 1   Before installing the new chip, verify that its pins are all evenly spaced and vertically aligned. If necessary, align the IC pins properly prior to installation. To align the pins, you can either use a commercially available pin-straightener tool, sized for a 28-pin DIP device, or you can lay the PROM or PLD on its side and gently press the top edge, as shown in Figure 3-1, being careful not to press on the pins. Repeat this procedure for the other row of pins.

Figure 3-1   Aligning PROM or PLD Pins
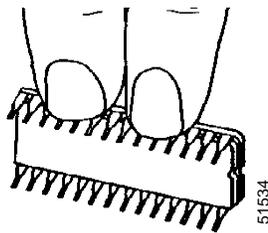
Step 2   Orient the PROM or PLD chip so that the notch in the chip, shown in Figure 3-2, faces the notch on the circuit card.

*Figure 3-2   Notch Orientation for IC Pin*

Notch
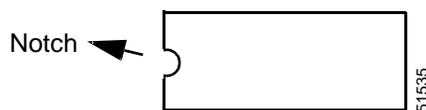
Step 3   Carefully insert the pins on one side of the PROM or PLD chip into holes on the correct side of the socket, as shown in Figure 3-3.

Figure 3-3   Inserting Pins on One Side of Socket
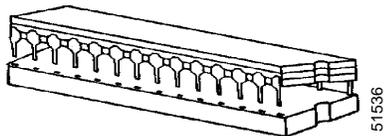
Step 4   Insert the pins on the other side of the PROM or PLD chip into the remaining holes of the socket, as shown in Figure 3-4.

Figure 3-4   Inserting Pins on Other Side of Socket
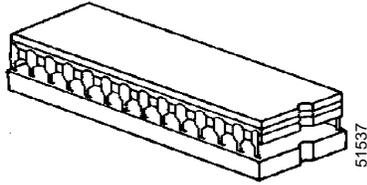
Note   If the pins are not aligned with the socket holes, remove the PROM or PLD chip and straighten the pins, as described in Step 1. After realigning the pins, repeat Step 2 through Step 4.

Step 5   Carefully examine all the pins on the PROM or PLD chip. Be sure that none of the pins are bent or touching one another.

Step 6   With all of the pins inserted into the socket holes, apply gentle and even pressure to the top of the chip until it is fully seated in the socket.

Step 7   Re-install the circuit card in the system or return the card to spares stock.

Removing and Replacing Surface-mount PROMs and PLDs

This section provides information about removing and replacing surface-mount PROMs and PLDs. Refer to the appropriate technical description for the physical locations of the PROMs and PLDs on each circuit card.

⚠
Caution   To prevent damage to the board, make sure you use the proper tool to remove surface mount PROMs and PLDs.

Removing Surface-Mount PROMs and PLDs

Step 1   If the circuit card is currently installed in the system, follow the removal and replacement procedures contained in the appropriate technical description. Be sure to also locate affected circuit cards kept as spares.

⚠
Caution   Observe antistatic precautions near circuit cards. Wear a ground strap connected to the equipment frame whenever servicing or cleaning circuit cards. The ground point is located above the card slots on the front of the switch, and is indicated by the "Connect ESD Wrist Strap Here" label.

Step 2   Use the surface-mount chip removal tool, provided by Cisco Systems, Inc., to remove the PROM or PLD that is to be replaced on the circuit card. To remove the PROM or PLD chip:

    c.   Spread or compress the tool legs so the tongs fit into the slots of the chip carrier socket.

    d.   Insert the tool tongs into the slots of the socket, and push firmly so that the tool butts on the socket.

    e.   Place the thumb and forefinger on the tool's grip. Squeeze the thumb and forefinger together to remove the chip from the socket.

Step 3   Remove the new PROM or PLD chip from the shipping package. Refer to *Release Notes for Cisco VCO/4K System Software Release 5.x* to verify that the label on the chip matches the software requirements.

Replacing Surface-Mount PROMs and PLDs

Step 1   Before installing the new PROM or PLD, verify that the pins are all evenly spaced and properly aligned. If necessary, use tweezers to carefully align the IC pins prior to installation.

Step 2   Align the notched edge on the PROMP/PLD to the silk screened dot on the circuit card, as shown in Figure 3-5.

Figure 3-5   PROM/PLD Alignment
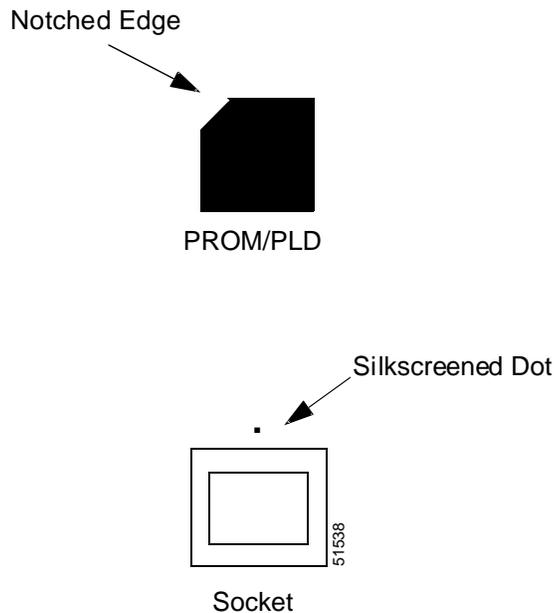
Step 3   With all pins aligned to the pins of the socket, apply gentle, even finger pressure to the top of the chip until it is fully seated in its socket. This completes the installation of the surface mount chip.

Step 4   Reinstall the circuit card in the system or return the card to spares stock.