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
```

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.
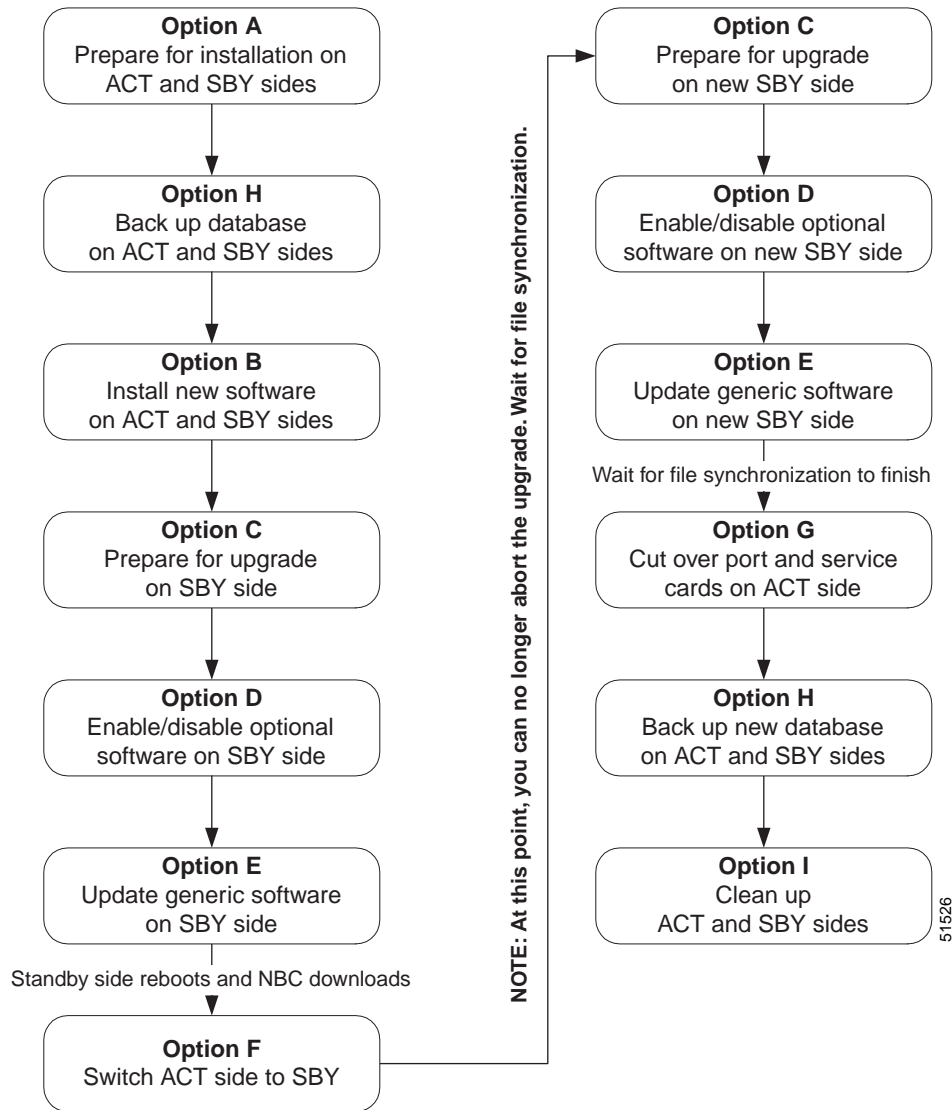
Figure 2-2   Live Upgrade Flow Chart

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

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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
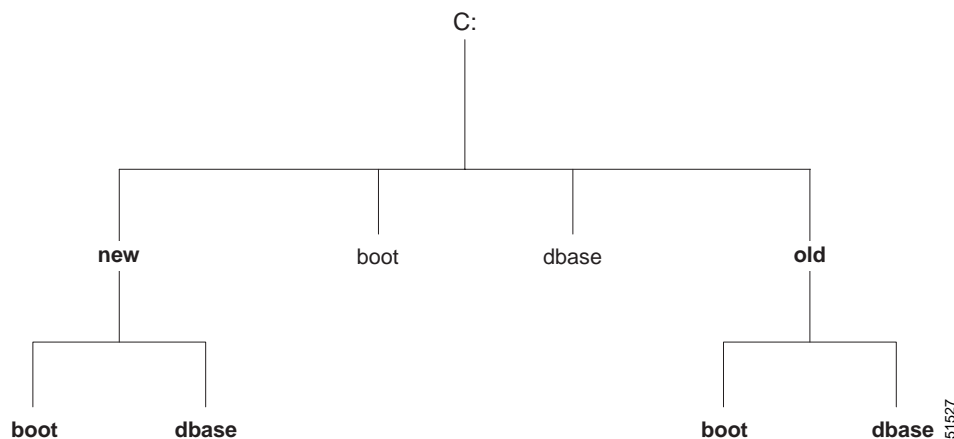
The directory and its purpose are:

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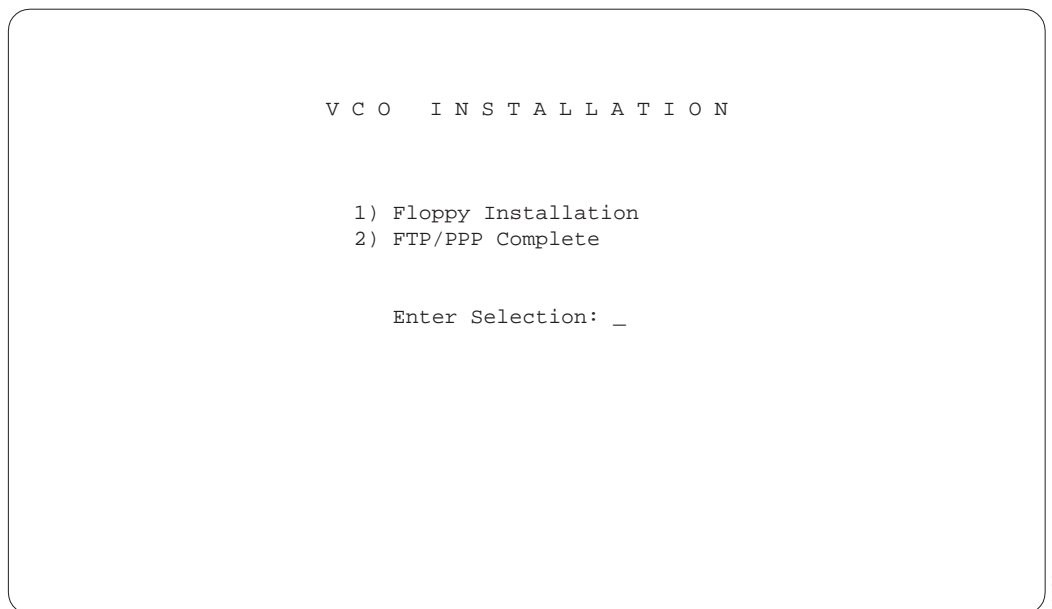
Note   You can abort the upgrade at this time: Select option **J** from the Live Upgrade Control Menu.

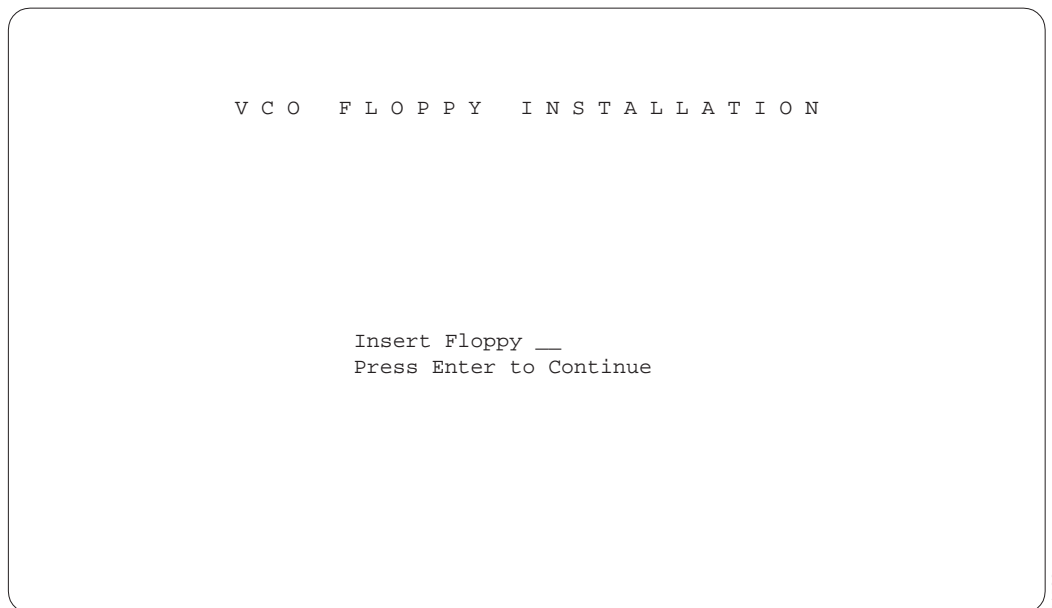## Install from Floppy Diskettes

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: _
```

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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
```

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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.
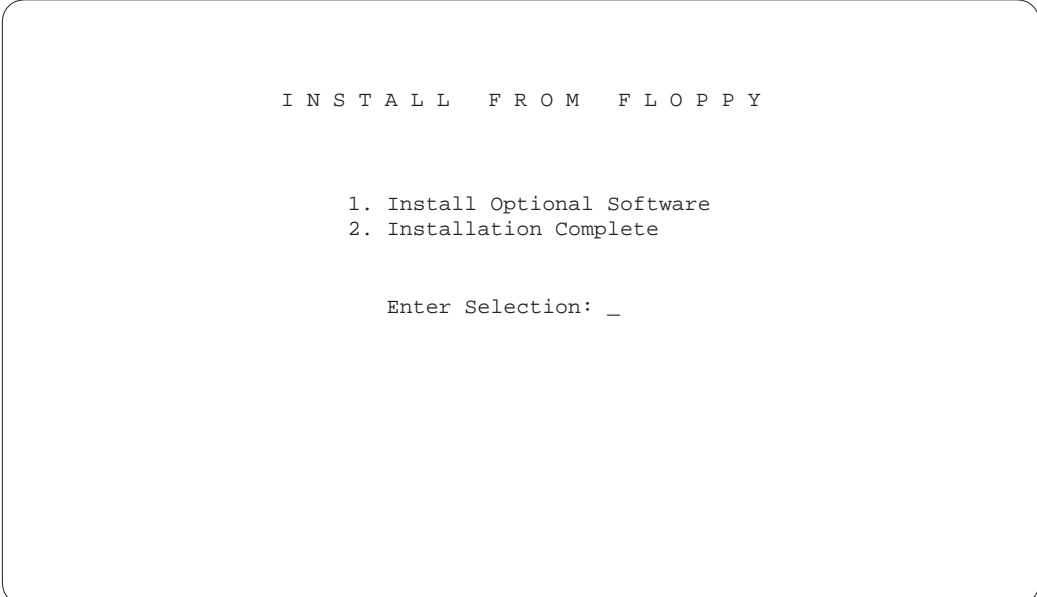
In a separate step, you must enable and configure the optional software; refer to the "Install from Another Host" section on page 2-12.

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**.

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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.