

Appendix B

Updating Software

This appendix describes procedures to update software on the Workgroup Concentrator. New software to implement enhancements, such as changes to the emerging SMT standard, will be provided periodically.

Following are two ways you can update the software:

- Use Kermit (popular public-domain software) to transfer the software from a PC or Sun workstation attached to the concentrator using the admin. port.
- Perform a network download from the concentrator through a download server.

Software updates are distributed on Sun- and PC-compatible 3.5-inch disks. Use the procedures in this appendix to copy the software from the disks and download the software from the workstation to the concentrator.

Local File Transfer with Kermit

There are multiple versions of Kermit you can use to download the software to the concentrator. The following two sections describe:

- Copying the Software Using a PC
- Copying the Software Using a Sun Workstation

Refer to the section that most closely matches your installation configuration.

Copying the Software Using a PC

To copy the software to the workstation, log in as root and perform the following procedures:

- Step 1** Connect a PC serial port to the concentrator admin. port as described in the chapter “Connecting to the Network.” Make sure you know the baud rate of the concentrator so you can set the line speed on the workstation accordingly.

Step 2 Insert the 3.5-inch software update disk into the floppy drive on the PC.

Step 3 Enter the following commands, where *x* is the disk drive containing the floppy:

```
C:\copy x:*. *  
C:\dir con*.rom
```

The **dir** command displays the filename of the new software in the format conxx.rom, where xx is the software revision number.

Set Kermit Parameters

To set the Kermit file transfer parameters, perform the following tasks:

Step 1 Start Kermit on the PC.

Step 2 At the `Kermit>` prompt, specify the serial port using the following command, where *x* is the serial port number (1 through 8) that you connected to the concentrator:

```
Kermit> set port comx
```

Step 3 At the `Kermit>` prompt, enter the following command to set the baud rate for the serial port, where *n* is the port speed of the concentrator:

```
Kermit> set speed n
```

The default port speed for the concentrator is 9,600 baud.



Caution To prevent communication problems, do not use a speed greater than 19,200 baud.

Note To change the line speed for the file transfer, first use the **set baud** command on the concentrator, then escape back to Kermit to execute a **set speed** command.

Download the New Software to the Concentrator

Use the following procedure to download the software from the PC.

Step 1 At the `Kermit>` prompt, enter the following command to connect to the concentrator:

```
Kermit> connect
```

If your line and speed are set correctly, the console prompt will be displayed.

Step 2 Enter **enable** to enter privileged mode.

```
Console> enable  
Console> (enable)
```

Step 3 At the `Kermit>` prompt, enter the download command:

```
Console> (enable) download serial
```

Step 4 After you press **<Return>**, the concentrator will wait for the new software to arrive. The following message displays:

```
Concentrator Boot ROM (Ver 2.00)  
Waiting for DOWNLOAD!!  
Return to your local machine by typing its escape  
sequence. Issue kermit send command from there [Send  
'Filename']
```

Step 5 Enter the escape sequence **Esc-Ctrl-]-c**

To enter this sequence correctly, press **Esc**, then hold down the Control key while you press **]** and then press **c**.

Step 6 At the `Kermit>` prompt, enter the following command to send the file to the concentrator (where `xx` is the software revision number):

```
Kermit> send c1100_XX.rom
```

Note During the download, the 1/A and 2/B LEDs on the front panel of the concentrator alternately flash green. Also, the traffic meter LEDs increment in binary counter fashion for each packet received by the concentrator.

A screen similar to the following appears, displaying the send status information:

```
File name: C1100_xx.rom
KBytes transferred:
Percent transferred:
Sending:

Number of Packets:
NUmber of retries:
Last error: None
Last warning: None
```

Wait while the file is being transferred. The information will change in the display until the following information appears in the send status screen:

```
File name: C1100_xx.rom
KBytes transferred: xxxx
Percent transferred: 100%
Sending: Complete

Number of Packets: xxxx
NUmber of retries: None
Last error: None
Last warning: None
```

```
Kermit>
```

Step 7 When the Kermit> prompt reappears, enter **connect** to return to the console prompt.

```
Kermit> connect
```

If the file transfer was not successful, the following message displays and you must repeat the procedure:

```
Download Not OK
```

Note If you do not return Kermit to terminal emulation mode immediately after the download has completed, you may not see a Kermit message.

Step 8 Reboot the concentrator to initialize Flash memory.

If the file transfer was successful, the concentrator erases Flash memory and reprograms it with the new software. The following messages display during the process:

```
Initializing flash...Erasing Flash....Done
Programming Flash
Base....Code....Length....Time....Done
```

If the concentrator successfully reprograms Flash memory, the new software will execute as follows:

```
Cisco Systems Console
Enter password:
Wed Feb 12, 1992, 17:35:08
Enter password:
```

This concludes the download procedure; the concentrator is now executing the new software. You can check the Sw field in the **show system** command display to verify that the new software is running.

Troubleshooting the PC Download Procedure

The most common problem with Kermit file transfers is an incorrect line setting. Make sure that the serial port on the PC connected to the concentrator matches the **set line** or **set port** command.

If you cannot communicate at all with the concentrator and you are sure the **set line** command is correct, check the serial port baud rate. The default baud rate of the concentrator admin. port is 9,600. If the concentrator baud rate was changed to an unknown value, you may have to enter several **set speed** commands in Kermit before you can make a connection.



Caution Do not use a baud rate of 38,400 for download. This causes Kermit to time out.

The following list identifies the Kermit error codes:

- T—Kermit timed out.
- N—Kermit is not acknowledging (NAK) the concentrator download process.
- E—Kermit detected an error in the progress of the transaction.

Example of a Successful PC Download

The following screen shows an example of a complete download procedure. Commands you enter appear in **boldface** screen font.

```
C:\ copy A:\*.*
copying c1100_25.rom
C:\ kermit
Kermit, 4C(057) 31 Jul 85, 4.2 BSD
Type ? for help
Kermit> set port com1
Kermit> set speed 9600
Kermit> connect
Connecting to com1,speed 9600.
The escape character is ^\ (ASCII 28).
Type the escape character followed by C to get back,
or followed by ? to see other options
Console> enable
Console> (enable) download serial
Return to your Local Machine by typing its escape sequence
Issue Kermit send command from there [Send 'Filename']
WAITING FOR DOWNLOAD!!

<CONTROL-\ c to return to Local Machine>

Kermit> send c1100_25.rom

          File name: C1100_25.rom
KBytes transferred: xxxx
Percent transferred: 100%
          Sending: Complete

Number of Packets: xxxx
NUmber of retries: None
          Last error: None
          Last warning: None

Kermit> connect
```

```
Cisco Systems Console
Enter password:
Wed Feb 12, 1992, 17:35:08
Console>
```

Copying the Software Using a Sun Workstation

To copy the software to the workstation, log in as root and perform the following procedures:

- Step 1** Connect a workstation serial port to the concentrator admin. port as described in the chapter “Connecting to the Network.” Make sure you know the baud rate of the concentrator so you can set the line speed on the workstation accordingly.
- Step 2** Insert the 3.5-inch software update disk into the floppy drive on the workstation.
- Step 3** At the workstation prompt change your working directory to /tmp by entering the following command:

```
workstation% cd /tmp
```

- Step 4** At the workstation prompt use the tar command to copy the new boot ROM file to the /tmp directory. Following is an example:

```
workstation% tar -xvfp /dev/rfd0
```

The following message displays while the files are being copied, where *xx* in the file name is the software revision number:

```
x c1100_xx.rom, 1156046 bytes, 2258 tape blocks
```

The number of bytes and tape blocks that display may be different.

Set Kermit Parameters

To set the Kermit file transfer parameters, perform the following tasks:

- Step 1** At the workstation prompt start Kermit on the workstation.

```
workstation% kermit
```

The workstation prompt will change to a Kermit> prompt similar to the following:

```
C-Kermit, 4E(072) 24 Jan 89, SUNOS 4.x
Type ? for help
Kermit>
```

Step 2 At the Kermit> prompt, specify the serial port connected to the concentrator by entering the following command, where x is port a or b:

```
Kermit> set line /dev/ttyx
```

Step 3 At the Kermit> prompt, enter the following command to set the baud rate for the serial port, where n is the port speed of the concentrator:

```
Kermit> set speed n
```

The default port speed for the concentrator is 9,600 baud.



Caution To prevent communication problems, do not use a speed greater than 19,200 baud.

Note To change the line speed for the file transfer, first use the **set baud** command on the concentrator, then escape back to Kermit to execute a **set speed** command.

Download the New Software to the Concentrator

Use the following procedure to download the software from the workstation.

Step 1 At the Kermit> prompt, enter the following command to connect to the concentrator and the following information will appear:

```
Kermit> connect
Connecting thru /dev/ttya, speed 9600.
The escape character is CTRL-\ (28).
Type the escape character followed by C to get back,
or followed by ? to see other options.
```

```
Console>
```

If your line and speed are set correctly, the console prompt will be displayed.

Step 2 At the Console prompt enter **enable** to enter privileged mode.

```
Console> enable
Console> (enable)
```

Step 3 At the Console prompt, enter the download command:

```
Console> (enable) download serial
```

Note Entering this command will take the concentrator out of service and affect your network. Be sure the software is on a local workstation (connected directly to the concentrator) and not on a Network File System (NFS) mounted partition.

Step 4 After you press **<Return>**, the concentrator will wait for the new software to arrive. The following message displays:

```
Concentrator Boot ROM (Ver 2.01)

Waiting for DOWNLOAD!!
Return to your local Machine by typing its escape sequence
Issue Kermit send command from there[ Send `Filename`]
```

Step 5 At this point you must enter the escape sequence **Ctrl-\-c** to return to the Kermit> prompt.

To enter this sequence correctly, hold down the Control key while you press \ and press c.

Step 6 At the Kermit> prompt, enter the following command to send the file to the concentrator (where xx is the software revision number):

```
[Back at Local System]
C-Kermit> send c1100_26.rom
SF
c1100_26.rom => C1100_26.ROM, Size: 1156046

CTRL-F to cancel file, CTRL-R to resend current packet
CTRL-B to cancel batch, CTRL-A for status report:
.....
*** Display Truncated ***
.....
..... [OK]
ZB?
```

Note During the download, the 1/A and 2/B LEDs on the front panel of the concentrator alternately flash green. Also, the traffic meter LEDs increment in binary counter fashion for each packet received by the concentrator.

A dot appears on the screen for every four packets transferred. Other letters appear if Kermit has trouble transferring the file. You can monitor the progress of the download by typing **a** any time during the Kermit download.

When the file transfer is finished you will hear a beep, and the following message appears:

```
..... [OK]  
ZB?
```

Step 7 Press <Return> to return to the Kermit> prompt:

```
Kermit>
```

If the file transfer was successful, the concentrator erases Flash memory and reprograms it with the new software. The following messages display during the process:

```
Download OK  
Initializing flash  
Programming Flash  
Base....Code....Length....Time....Done
```

If the concentrator successfully reprograms Flash memory, the new software will execute as follows:

```
Cisco Systems Console  
Enter password:  
Wed Feb 12, 1992, 17:35:08  
Console>
```

This concludes the download procedure; the concentrator is now executing the new software. You can check the Sw field in the **show system** command display to verify that the new software is running.

Troubleshooting the Download Procedure

The most common problem with Kermit file transfers is an incorrect line setting. Make sure that the serial port on the Sun or PC connected to the concentrator matches the **set line** or **set port** command.

If you cannot communicate at all with the concentrator and you are sure the **set line** command is correct, check the serial port baud rate. The default baud rate of the concentrator admin. port is 9600. If the concentrator baud rate was changed to an unknown value, you may have to enter several **set speed** commands in Kermit before you can make a connection.



Caution Do not use a baud rate of 38400 for download. This causes Kermit to time out.

On a **Sun workstation**, make sure that the shell window you are using is a local window (not an rlogin window to a different workstation).

During a successful file transfer, a dot appears on the screen for every four packets transferred. If Kermit has trouble transferring the file, other code letters may appear.

The following list identifies the Kermit error codes:

- T—Kermit timed out.
- N—Kermit is not acknowledging (NAK) the concentrator download process.
- E—Kermit detected an error in the progress of the transaction.

Example of a Successful Download

The following screen shows an example of a complete download procedure. Commands you enter appear in **boldface** screen font.

```
workstation% cd /tmp
workstation% tar -xvfp /dev/rfd0
x c1100_26.rom, 1156046 bytes, 2258 tape blocks
workstation% ls -la
total 1150
drwxrwsrwt  5 bin                512 Sep 28 04:15 .
drwxr-xr-x 18 root              1536 Sep 27 15:41 ..
-r--r--r--  1 60000            1156046 Jul 18 10:32 c1100_26.rom
workstation% kermit
C-Kermit, 4E(072) 24 Jan 89, SUNOS 4.x
Type ? for help
C-Kermit>set line /dev/ttya
C-Kermit>set speed 9600
/dev/ttya: 9600 baud
C-Kermit>connect
Connecting thru /dev/ttya, speed 9600.
The escape character is CTRL-\ (28).
Type the escape character followed by C to get back,
or followed by ? to see other options.

Console> enable
Console> (enable) download serial

Concentrator Boot ROM (Ver 2.01)

Waiting for DOWNLOAD!!
Return to your local Machine by typing its escape sequence
Issue Kermit send command from there[ Send `Filename`]
```

```

[Back at Local System]
C-Kermit>send c1100_26.rom
SF
c1100_26.rom => C1100_26.ROM, Size: 1156046

CTRL-F to cancel file, CTRL-R to resend current packet
CTRL-B to cancel batch, CTRL-A for status report:
.....
*** Display Truncated ***
.....
..... [OK]
ZB?
C-Kermit>connect
Connecting thru /dev/ttya, speed 9600.
The escape character is CTRL-\ (28).
Type the escape character followed by C to get back,
or followed by ? to see other options.

Download OK
Initializing flash
Programming Flash
Base....Code....Length....Time....Done

Cisco Systems Console
Enter password:
Wed Feb 12, 1992, 17:35:08
Console>

```

Network Download Initiated from the Concentrator

The following procedure describes how to perform a network download from the concentrator.

Note The workstation acting as the download server must have the TFTP daemon set up. On the Sun workstation, make sure the `/etc/inetd.conf` contains the following line:

```
tftp dgram udp wait root /usr/etc/in.tftpd in.tftpd -p -s
/tftpboot
```

You must restart the inet daemon after modifying the inetd.conf file. To restart the demon, either kill the inetd process and restart it, or do a **fastboot** on the Sun.

Step 1 Copy the new software from the floppy to the /tftpboot directory on the workstation. If this directory does not exist, you must create it first. The file you copy is c1100_xx.net, where xx is the software revision number.

Step 2 Log in to the admin. interface on the concentrator.

Step 3 Enter the **download** command, and specify the IP address or host name of the workstation acting as the download server and the file to download.

Following is an example:

```
Console> download 190.180.122.40 c1100_xx.net
```

During the download, the status LED on the concentrator flashes and the ring remains operational. When the download completes, the concentrator restarts automatically, causing the ring to go down momentarily. When the concentrator is up, use the **show system** command to check the version number of the software you are running.