APPENDIX B

Software Reinstallation

This appendix explains how to reinstall the LightStream 2020 software onto the hard disk(s) of a LightStream 2020 multiservice ATM switch (LS2020 switch). Reinstalling the LS2020 switch software involves the following three steps described in this appendix:

1. Connecting One or More NP Modules—using connect and reset commands
2. Reformatting the Hard Disk and Loading the Boot Diskette—using freshdisk and reboot command
3. Loading the Software—using swinstall and swchgver commands

Installing software from floppiy diskettes is not part of a routine system installation; necessary only when a problem occurs or the installation of new or replacement hardware is necessary. For example, you must install software when

- The hard disk is blank or its contents are unknown—because you have replaced a failed disk assembly;
- You are installing a second NP module (NP, NP access card, and disk assembly) in a system that already has an operating NP;
- A software problem or operator error has corrupted or destroyed files on the hard disk(s).

Note If you are upgrading the software on an operational system, do not use these instructions. See the release notes you received with the installation upgrade.

Overview

Each LS2020 switch is shipped with all system and application software installed on its hard disk(s). Copies of all system software, applications, and utilities are shipped with the hardware. The following is a list of the floppy diskette sets shipped with the hardware.

- Boot diskette set—contains a minimal file system, the Lynx operating system kernel, and a subset of Lynx utilities.
- System diskette set—contains the LynxOS operating system and a larger set of utilities.
- Application diskette set—contains LS2020 application software, including executable files, log files, and configuration files.
- Firmware diskette set—contains microcode programs to download to the NP and flash EEPROM images for the NP and line cards.
- Diagnostic diskette set—contains standalone diagnostics for LS2020 hardware.

You may also receive the following:

- One or more update diskettes containing software released since the last major software revision.

Note You should have already connected a terminal or established a modem connection to the LS2020 switch. A Telnet connection does not work for this purpose.

Reinstalling Software

Follow the procedures in this section to transfer the LS2020 software from floppy diskettes to the hard disk(s). If your system has two NPmodules, you must install the software on each of the NP modules hard disk. (It is important for both NP modules in the same node to have the same software.)The installation takes about 25 minutes per NP module.

Caution If you are upgrading an operating LS2020 system to a new software release, follow the instructions in the release notes you received with the software. Those instructions will preserve site-specific information on your system, such as configuration files. The procedures in this appendix tell you how to clear the hard disk and perform a full software installation; they are not designed for upgrades.

Connecting One or More NP Modules

To establish a connection to one or more NP modules, perform the following steps:

Step 1 Enter **'.** to get to the TCS hub if your prompt displays LSnode:2# (logged in as root) or LSnode:2$ (logged in as field support). Go to Step 2, if your prompt says TCS hub<<A>> or TCS hub<<B>>, or if the system is powered down.

Step 2 Reset the NP in a running node by powering up the system or using the **reset <slot#>** command at the TCS hub prompt. (The NPs reside in slots 1 and 2.) The following example shows that you are resetting the NP in slot 1:

```
TCS hub<<A>> reset 1
```

Step 3 Enter the **connect <slot#>** command to connect to the NP where you want to install the software. This example shows that you are connecting to the NP in slot 1:

```
TCS hub<<A>> connect 1
```

Step 4 Enter **Return** immediately if the following countdown appears on your screen. The NP may still be running POST.

```
System will boot in 5 seconds: hit <RETURN> to interrupt.
System will boot in 4 seconds: hit <RETURN> to interrupt.
System will boot in 3 seconds: hit <RETURN> to interrupt.
System will boot in 2 seconds: hit <RETURN> to interrupt.
System will boot in 1 seconds: hit <RETURN> to interrupt.
```

Note If the system is already booting, type **'.** to get to the TCS hub again, and then use the reset <slot#> command as described in Step 2. Repeat Step 3 and Step 4.

Step 5 Insert the boot diskette into the disk drive of the active NP. (Hold the disk with the label facing up and insert the edge with the metal slider first.)

Step 6 Enter **2** and press **Return** at the Option> prompt to begin a full installaiton.

```
Network Processor bootstrap (version 1.3: Sep 13 1995)
  1-Boot ATM switch application
  2-Begin full installation with boot from floppy disk
  3-List contents of hard disk root directory
  4-List contents of floppy disk root directory
  5-Boot system single-user
  6-Escape to full set of bootstrap options
  7-Extended help
Option>
```

The system takes about 4 minutes to boot, and then displays the single-user$ prompt.

Caution Do not remove the boot diskette from the drive until instructed to do so. The NP is now using the boot diskette as its root file system and will not function properly if the diskette is removed before rebooting.

Reformatting the Hard Disk and Loading the Boot Diskette

Perform the following steps to reformat the hard disk, run the date and time script, and load the boot diskette:

Caution This procedure destroys the contents of the hard disk.

Step 1 Enter the **freshdisk** command to erase the hard disk and start a script that prompts you for the date and time.

```
single-user$ freshdisk
```

Step 2 Enter time and date information at the system prompt.

```
Starting the Network Processor ”/bin/freshdisk” procedure

Step 1: Setting the system date

Set the daylight savings method to one of the following values:
     0 (no daylight savings)
     1 (USA)
     2 (Australia)
     3 (East Europe)
     4 (Central Europe)
     5 (Western Europe)
  Daylight savings method: 1
```

Note Indicate the daylight savings method that is followed at your site, regardless of whether daylight savings is actually in effect at the time of installation.

```
Set the timezone by specifying the number of minutes west of Greenwich
  Examples:
     300 (US Eastern Time)
     360 (US Central Time)
     420 (US Mountain Time)
     480 (US Pacific Time)
  Minutes west of Greenwich, England: 300

At the prompt, enter a new date or press <RETURN> to continue.

  The date is set to Tue May 3 16:04:57 EDT 1996
  Enter date (yymmddhhmm[.ss]: 9405041607

At the prompt, enter a new date or press <RETURN> to continue.
  The date is set to Tue May 3 16:07:00 EDT 1996
  Enter date (yymmddhhmm[.ss]: [Return]
```

(The second “Enter date” prompt is for confirmation.)

Step 3 Reformat the hard disk. The system prompts you for confirmation.

```
Step 2: Formatting and partitioning the target disk drive

”/bin/freshdisk” will create new file systems on ”/dev/sd0” and then copy to
”/dev/sd0” a minimal set of utilities so that a complete system can be loaded from
a tar-format source. NOTE that any existing data on ”/dev/sd0” will be completely
destroyed.

Do you want to continue? Y or N (default is No) Y
```

The system proceeds to reformat the hard disk, divide it into four partitions, build file systems, and copy files from the floppy diskette to the hard disk. The whole process takes about 4 minutes. The system displays the following:

```
Starting format and partitioning at Tue May 3 16:07:06 EDT 1996
  Building a file system on /dev/sd0a
  Building a file system on /dev/sd0b
  Building a file system on /dev/sd0c
  Building a file system on /dev/sd0d

Step 3: Making mount points for file systems and mounting them

Step 4: Copying files to the target disk
  Starting file copy at Tue May 3 16:08:51 EDT 1996
  Finished file copy at Tue May 3 16:10:45 EDT 1996

Step 5: Unmount the target file systems
”/bin/freshdisk” finished at Tue May 3 16:10:55 EDT 1996 .

To continue installing system and application software, enter ”reboot -n” and then
run the ”swinstall” utility.
```

Step 4 Reboot the NP at the single-user$ prompt by entering the following command:

```
single-user$ reboot -n
```

Step 5 Enter **5** and press **[Return]** at the `Option>` prompt.

```
Network Processor bootstrap (version 1.3: Sep 13 1995)
  1-Boot ATM switch application
  2-Begin full installation with boot from floppy disk
  3-List contents of hard disk root directory
  4-List contents of floppy disk root directory
  5-Boot system single-user
```

```
  6-Escape to full set of bootstrap options
  7-Extended help
Option>
```

The system boots from the hard disk in about 10 seconds, and then displays the single-user$ prompt.

Step 6 Eject the floppy diskette and continue to the next section.

Loading the Software

This procedure loads the software onto the NP's hard disk from the floppy diskettes, starting with the set of system diskettes. The NP where you load the software must be in the proper state.

Note If you are upgrading the software in an operating node, use the installation procedure provided in the release notes. Do not use this software reinstallation procedure.

NP States

The NP where you load the software must be in the inert state. If you have followed the previous procedures in this appendix, the NP will be in the single-user mode and in the inert state. (If there is a second NP in the chassis, it can be in any state.)

There are three possible states for an NP whose power is on:

- Active—Application software is up and providing network management services for the system; that is, handling network management requests and circuit setup. This state can occur in any system.
- Standby—Application software is up, but only monitors the active NP unless the active NP fails and this standby NP must take over. This state occurs only in a redundant system.
- Inert—Application software is not running or is inactive (disabled). Diagnostics or LynxOS may be running, or the card may be waiting for input at a boot prompt. This state can occur in any system.

Note The software diskettes must be installed in the correct order. Always insert diskette number 1 first (system disk 1), followed by applications, firmware, and diagnostics. The diskettes in each series are numbered.

Step 1 Insert *System Disk 1* into the floppy disk drive and enter

```
single-user$ swinstall
```

The system responds:

```
Insert the first installation diskette and press <RETURN>
```

When you press **Return**, the swinstall script copies the system distribution files onto the hard disk and prompts you for the next diskette. When the single-user$ prompt reappears, you can remove the last system diskette from the drive.

Step 2 Enter the **swinstall** command to install the software from the remaining diskette sets. You must re-enter the command for each set. The diskettes in each series are numbered; always insert diskette number 1 first. Install the remaining software in the following order:

- applications
- firmware
- diagnostics
- update diskettes (if provided)

Note Check for additional installation instructions or release notes if update diskettes are provided.

Step 3 Create the symbolic links using the ln command:

```
ln -s /usr/app/dist/base-2.1.1/config/mma.communities /usr/app/base-2.1.1/config/mma.communities
ln -s /usr/app/dist/base-2.1.1/config/mma.trap-communities /usr/app/base-2.1.1/config/mma.trap_communities
```

Step 4 Enter the **swchgver** command at the prompt. This activates the newly installed software, copies new images to the flash EEPROMs on the function cards if needed, resets the line cards, and reboots the NP. If there is another NP in this chassis, and it is active (so that the chassis is operational), use the switches **-nolinecardreset** and **-noflashupdate.** The switches prevent the execution of **swchgver** on this inert NP from disrupting the rest of your system.

The commands and corresponding output are as follows:

For the case of a second NP in a system that is operating:

```
single-user$ swchgver -nolinecardreset -noflashupdate

Rebooting the network processor.
```

For the first of two inert NPs being installed or for a system with a single NP:

```
single-user$ swchgver

Forcing reset of line cards.

Checking and downloading files for standby network processor.

Checking and downloading FLASH memory for all function cards.

Rebooting the network processor.
```

Note **swchgver** usually takes about a minute to run, but may take up to 75 minutes if flash images need to be loaded into all 10 function cards in a fully loaded system. (Flash loading takes about 7.5 minutes per card.) While a flash image is being loaded into a card, the card's yellow FLT LED is lit.

Step 5 See the "Hardware Installation" chapter for information about the bootstrap sequence and basic configuration procedure. When you complete basic configuration, return to step 6.

Step 6 Select the appropriate configuration scenario from Table B-1 and proceed as indicated.

Table B-1 Basic Configuration Scenarios

Number of NPs	What You Have Already Done	What to Do Now
One	Installed software and performed basic configuration	Use the LS2020 configurator to download a full configuration to this node. Refer to the *LightStream 2020 Configuration Guide* for instructions on using the configurator.
Two, both need software	Installed software and performed basic configuration on the first NP	Return to the procedure "Connecting One or More NP Modules" earlier in this appendix. For the second NP, repeat all steps from "Connecting One or More NP Modules" to the end of the appendix.
Two, both need software	Installed software and performed basic configuration on both NPs	Use the LS2020 configurator to load a full configuration into this node. Refer to the *LightStream 2020 Configuration Guide* for instructions on using the configurator.
Two, only one needs software	Installed software and performed basic configuration	Stop here—your installation is complete.
One upgrading to two	Installed software on the second (new) NP and performed basic configuration	Use the LS2020 configurator to add the new NP to the configuration, and then load the updated configuration into this node. Refer to the *LightStream 2020 Configuration Guide* for instructions on using the configurator.