CHAPTER 2

Software Upgrade Notes

Hardware Requirements for Upgrade • Outline of Upgrade Procedures • Procedure 1: Back Up the Distribution Diskettes • Procedure 2: Copy New Software to the Distribution Node • Procedure 3: Copy New Software to Remote Nodes • Procedure 4: Change the Running Software Version • Procedure 5: Upgrade Switch Card Flash Memory • Procedure 6: Make New MAC Address Known • Procedure 7: Free Up Disk Space • Procedure 8: Fall Back to the Prior Version • Procedure 9: Upgrade Workstation Software • Procedure 10: Enable Secure Single-User Mode • Distribution Media

This chapter provides information about upgrading the LightStream 2020 enterprise ATM switch to Release 2.0.7 of LightStream software.

Note If you are installing an uninitialized network processor (NP), use the installation procedures given in the *LightStream 2020 Installation and Troubleshooting Manual*. Use the procedures in this chapter only if you are upgrading software on a LightStream node that has already been installed and is running.

Note To upgrade the network management software running on a Sun workstation, use the procedures described in Procedure 9: Upgrade Workstation Software. To install this software on a Sun workstation for the first time, refer to the *LightStream 2020 Installation and Troubleshooting Manual*.

Hardware Requirements for Upgrade

For Release 2.0.7 to be installed, the network processor must have 32 Mb of memory.

Outline of Upgrade Procedures

Follow the upgrade procedures on all systems for the full set of diskettes for base release 2.0.7. These procedures are as follows:

Procedure
1 Back Up the Distribution Diskettes Some users may wish to back up the distribution diskettes.

Procedure
2 Copy New Software to the Distribution Node Use the **swinstall** command to copy the new software from the installation diskettes to the node being used as the software distribution node.
3 Copy New Software to Remote Nodes Use the **swremoteinstall** command to copy the new software from the distribution node to other nodes in the LightStream network.
4 Change the Running Software Version Use the **swchgver** command to change the version of software running on each node after copying the new software to the node. Do this on the most remote nodes first, and on the distribution node last.
5 Upgrade Switch Card Flash Memory Upgrade flash memory on switch cards, if this has not yet been done.
6 Make New MAC Address Known If necessary, create a new ARP record for the NP. to do this, delete ARP records on the NMS and re-establish a connection to the NP.
7 Free Up Disk Space If the **swinstall** command or the **swremoteinstall** command reports that you do not have enough disk space, delete files for obsolete releases of software. Then repeat the interrupted procedure (Procedure 2: Copy New Software to the Distribution Node or Procedure 3: Copy New Software to Remote Nodes).
8 Fall Back to the Prior Version You have the option of falling back to the prior version of software if you wish to for any reason.
9 Upgrade Workstation Software LightStream network management software must be installed on a Sun SPARCstation. Two procedures are given: for installing network management software under HP Penknife, and for installing network management software without HP Penknife.
10 Enable Secure Single-User Mode You have the option of enabling secure single-user operation to prevent unauthorized superuser access to the NP.

Note Do not follow the installation procedures given in the *LightStream 2020 Installation and Troubleshooting Manual*. Those procedures are intended for installing an uninitialized network processor (NP) rather than for upgrading software on a LightStream node that has already been installed and is running.

Caution The LightStream NP is a special-purpose communications processor. It should not be used as a general-purpose UNIX host. If any files have been copied or placed on the disk (especially in the root partition), they should be removed before upgrading to Release 2.0.7.If the names of any LightStream-provided files have been changed, the original file names should be restored.

Procedure 1: Back Up the Distribution Diskettes

If you are concerned about how carefully your diskettes may be handled and stored, you may wish to back up the software distribution diskettes before proceeding with the upgrade.

In this procedure, we assume you have access to a PC running DOS 5.0 and supporting at least one 1.44 Mb floppy disk drive. We also assume that you have a supply of at least 15 blank, DOS-formatted 1.44 Mb diskettes.

If Your PC Has Two 1.44 Mb Floppy Disk Drives

For each LightStream software distribution diskette, do the following:

Step 1 Insert the distribution diskette in the floppy disk drive. In the examples shown here, we assume this is disk drive A.

Step 2 Insert the blank, formatted diskette in the second 1.44 Mb disk drive. In the examples shown here, we assume this is disk drive B.

Step 3 Enter the following command at the DOS prompt:

```
C:\> diskcopy a: b: /v
```

Step 4 The program copies the data from the distribution diskette in drive A to the backup diskette in drive B.

Note With the **/v** option, the **diskcopy** command verifies that the copy is correct. If you wish to use the **diskcomp** command redundantly to verify that the copy is correct, refer to your DOS documentation for that command.

Note Do not use the **dir** command to verify the contents of the diskette. There is no FAT (the DOS file allocation table) on LightStream distribution diskettes, so there can be none on your backup diskettes. Consequently, if you type **dir a:** or **dir b:**, you see a read error message issued by DOS.

If Your PC Has Just One 1.44 Mb Floppy Disk Drive

For each LightStream software distribution diskette, do the following:

Step 1 Insert the distribution diskette in the floppy disk drive. In the example shown here, we assume this is disk drive A.

Step 2 Enter the following command at the DOS prompt:

```
C:\> diskcopy a: a: /v
```

Step 3 The program reads a portion of the disk contents into memory. When it prompts you to do so, remove the distribution diskette and insert a blank, formatted diskette into the floppy disk drive.

Step 4 The program copies the data from memory onto the diskette. When it prompts you to do so, remove the backup diskette and insert the distribution diskette into the floppy disk drive.

Step 5 Alternate Step 3 and Step 4 in response to program prompts until the disk copy is complete.

Note With the **/v** option, the **diskcopy** command verifies that the copy is correct. If you wish to use the **diskcomp** command redundantly to verify that the copy is correct, refer to your DOS documentation for that command.

Note Do not use the **dir** command to verify the contents of the diskette. There is no FAT (the DOS file allocation table) on LightStream distribution diskettes, so there will be none on your backup diskettes. Consequently, if you type **dir a:**, you will see a read error message issued by DOS.

Procedure 2: Copy New Software to the Distribution Node

In this procedure we will copy the new software to a local LightStream node from the distribution disk set. This local node will be referred to as the distribution node. Procedure 3: Copy New Software to Remote Nodes describes how to copy the software over the network from the distribution node, rather than copying files from the distribution disk set at each node site in turn. In Procedure 3: Copy New Software to Remote Nodes, we will use the distribution node as the source from which we will copy the software to other nodes in the network.

The steps for upgrading the distribution node (or any local node) to Release 2.0.7 node software are as follows:

- Connect to the active NP.
- Free up disk space, if necessary.
- Copy Release 2.0.7 software to the node.

To perform this procedure, use a terminal connected to the console port of the distribution node. The system should be running with no one logged in.

Connect to the Active NP

Step 1 Type `‘.` (backquote plus dot).

Step 2 At the TCS HUB prompt, use the **connect** command to connect to the NP in slot 1, as follows:

```
TCS HUB <<A>> connect 1
```

Step 3 The `login:` prompt should appear. Log in as root. The `bash#` prompt appears.

If your system has only one NP, skip Step 4 and go to Step 11 now.

Step 4 On a system with redundant NPs, verify that you are connected to the active NP, as follows:

- At the bash prompt, enter the **cli** command to start the CLI.

  ```
  bash# cli
  ```

- At the CLI prompt, enter the **show chassis** command and examine the entries for `Primary NP` and `This NP`.

  If the two entries identify the same NP number, then you are connected to the active NP. Since you connected to slot 1 in Step 1 above, the following is true:

  `active_slot` `= 1`

  `backup_slot` `= 2`

  You will use the value **1** for the parameter *active_slot* in later procedures. Make a note of it.

  If the two entries do not identify the same NP number, then, then you are connected to the backup NP. Since you connected to slot 1 in Step 1 above, the following is true:

  `active_slot` `= 2`

  `backup_slot` `= 1`

You will use the value **2** for the parameter *active_slot* in Step 5, below, and in other procedures. Make a note of it.

- Use the **exit** or **quit** command to exit from the CLI.

Step 5 If you are connected to the backup NP, disconnect from it and connect to the active NP as follows:

- Type **‘.** (backquote plus dot) to return to the TCS HUB.
- Connect to the active slot by typing the following command:

```
TCS HUB<<A>> connect active_slot
```

- If necessary, log in to the NP as root.

Verify Backup NP

Skip Step 6 through Step 10 if there is only one NP on this system.

Step 6 If there is a redundant NP in this chassis, verify that the other NP is functioning as backup, as follows:

```
bash# ping other-np
```

If the other NP responds, skip Step 7 through Step 10.

Step 7 If the other NP does not respond, then reset it as follows:

- Return to the TCS by typing **‘.** (backquote plus dot)
- Reset the backup NP by typing the following:

```
TCS HUB<<A>>reset backup_slot
```

- Connect to the backup NP by typing the following:

```
TCS HUB<<A>>connect backup_slot
```

- Monitor the reboot, looking for the following two trap messages:

```
==> (OPER) NDD_2 at mm/dd/yy/ hh:mm:ss <time-zone> (mm/dd/yy hh:mm:ss GMT)
   Network Processor <node_name:slot> becoming backup np

==> (GENERIC) at mm/dd/yy/ hh:mm:ss <time-zone> (mm/dd/yy hh:mm:ss GMT)
  Cold Start Trap at mm/dd/yy hh:mm:ss <time-zone> (mm/dd/yy hh:mm:ss GMT)
```

Note You may have to wait about 5 minutes for these traps to appear.

Step 8 Connect to the active NP by typing **‘.** (backquote plus dot) to connect to the TCS hub and entering the following command:

```
TCS HUB<<A>> connect active_slot
```

Step 9 Verify that the other NP is now functioning as backup, as follows:

```
bash# ping other-np
```

Step 10 If the other NP still does not respond, call LightStream Customer Support.

Free Up Disk Space In the Root Partition

Step 11 Determine the available disk space in the root partition by entering the following command:

```
bash# df /
Filesystem    Blocks    Used    Free    %
/dev/sd0a      59690   13703   45987  22%
bash#
```

Examine the utilization value shown under the% column.

- If the% utilization value exceeds 65%, you must remove some old software files before proceeding; continue with Step 12, below.
- If the% utilization value is less than 65%, skip Step 12 and proceed with Step 13 now.

Step 12 In the root directory and its subdirectories, delete unneeded files such as core files and log files. There may be files in directories named lost+found, lost+foundA, etc. If you have trouble identifying files to be deleted, contact LightStream Customer Support.

Copy Release 2.0.7 Software

To copy Release 2.0.7 node software to the node, perform Step 13 and Step 14 below for each of the following diskette sets in turn:

- The System diskette set
- The Application diskette set
- The Diagnostic diskette set
- The Firmware diskette set

Step 13 Start the software installation utility. To do this, enter the following command at the bash# prompt:

```
bash# swinstall
```

If the **swinstall** program reports that there is not enough disk space for the installation, follow Procedure 7: Free Up Disk Space for deleting obsolete files before proceeding with Step 14, below.

Step 14 Take up the current set of diskettes to be installed. When the program prompts you for a diskette, insert the first diskette into the appropriate drive and press **[Return]**. Repeat as the program prompts you for more diskettes in the current set.

Note NP slot 1 is connected with the bottom disk drive, and NP slot 2 is connected with the top disk drive.

Activating the New Software

You have now copied the new software onto the distribution node. The distribution node is not yet running the new software. In Procedure 4: Change the Running Software Version, the **swchgver** program modifies the node's configuration to run the software that you have just installed.

- If you plan to install the new software locally by taking the distribution diskettes to each node site in turn and carrying out Procedure 2: Copy New Software to the Distribution Node, go now to Procedure 4: Change the Running Software Version. You will carry out Procedure 2: Copy New Software to the Distribution Node and Procedure 4: Change the Running Software Version on each node in turn.
- If you plan to remotely install the new software on other nodes, now carry out Procedure 3: Copy New Software to Remote Nodes on each remote node in turn. Then carry out Procedure 4: Change the Running Software Version on each remote node in turn. Only after all other nodes have the new software (Procedure 3: Copy New Software to Remote Nodes) and are running it (Procedure 4: Change the Running Software Version) should you carry out Procedure 4: Change the Running Software Version on the distribution node.

Procedure 3: Copy New Software to Remote Nodes

This procedure is to distribute new software from the distribution node to other LightStream nodes.

Note It is also possible to upgrade software directly from the distribution diskettes on each node in your LightStream network. To do this, carry out Procedure 2: Copy New Software to the Distribution Node and Procedure 4: Change the Running Software Version on each node in the network.

The following connectivity requirements apply:

Distribution Node	Remote Node
You should be logged in to the distribution node.	You need not be physically located at the remote node site.
No other user should be logged in.	However, you must be able to establish a **telnet** connection and a modem connection to each remote site.
The distribution node should be running the LightStream application software.	The remote node must be running the LightStream application software.

Overview

This procedure must be carried out for each node in your LightStream network. It has the following parts:

- Verify remote command execution
- Connect to the active NP.
- Free up disk space.
- Copy Release 2.0.7 software to the node.

Carry out the following steps for each node in your LightStream network in turn:

Verify Remote Command Execution

Step 1 Verify that it is possible to execute commands on the remote node from the distribution node. On *distribution-node*, execute the following command:

```
bash# rsh remotenode hostname
```

Type the name of the remote node in place of *remotenode*.

- If the command succeeds, it prints the name of *remotenode*. Continue to Step 2.
- If the command fails, it prints one of the following messages:

```
hostname: unknown host
hostname: Connection timed out
Permission denied.
```

Correct the problem as follows:

If You See the Error Message “Unknown Host”

- On the distribution node, examine the file /etc/hosts to verify that there is an entry for *remote-node* in it. You can use the **grep** command for this, as follows:

```
bash# grep distribution-node /etc/hosts
```

- If there is no entry for *distribution-node*, create a backup copy of the /etc/hosts file as follows:

```
bash# cp /etc/hosts /etc/hosts.bak
bash# echo "distribution_node Primary_IP_address" >> /etc/hosts
```

Type the name of the distribution node in place of *distribution-node*, and type the IP address of the distribution node in place of IP_address. You may also use the vi editor in place of the **echo** command, if you wish. See the *Command and Attribute Reference Guide*.

Note Be sure you type the redirect operator twice, with no space (>>), so as to append to the /etc/hosts file rather than overwriting it. If you make a mistake, enter the command **`cp /etc/hosts.bak /etc/hosts`** to recover the original file.

- Repeat Step 1.

If You See the Error Message “Connection Timed Out”

- The remote node or a link to it is down. Refer to the *Administration Guide*, Troubleshooting Procedures. When the problem is corrected, repeat Step 1.

If You See the Error Message “Permission Denied” or Any Other Message

- Make a telnet connection to *remotenode* and log in. Examine the file /.rhosts to see if it includes an entry for *distribution-node*. Use the following command:

```
bash# grep distribution-node /.rhosts
```

If the entry for *distribution-node* is not displayed, edit the file /.rhosts, adding to it a line consisting of the name of the distribution node followed by the word `root`. The following commands make the file writable, create a backup copy, add the entry for *distribution-node*, and make /.rhosts a read-only file again:

```
bash# chmod 644 /.rhosts
bash# cp /.rhosts /.rhosts.bak
bash# echo "distribution-node root" >> /.rhosts
bash# chmod 444 /.rhosts
```

Type the name of the distribution node in place of *distribution-node*. You may also use the vi editor in place of the **echo** command, if you wish. See the *Command and Attribute Reference Guide*.

Note It is very important to type the redirect operator twice (**>>**), because if you type it once (**>**) you will overwrite the existing file rather than appending to it. If you make a mistake, enter the command **`cp /.rhosts.bak /.rhosts`** to recover the original file.

- On the remote node, verify that the.rhosts file is a read-only file, as follows:

```
bash# ls -l /.rhosts
-r--r--r--   1 root         71 Aug 1 14:54 /.rhosts
bash#
```

If any value other than `-r--r--r--` appears at the beginning of the **ls** output, enter the following command:

```
bash# chmod 444 /.rhosts
bash#
```

This is a requirement of the **rdist** command, which is used by the installation script.

- On the remote node, examine the file /etc/hosts to verify that there is an entry for *distribution-node* in it. You can use the **grep** command for this, as follows:

```
bash# grep distribution-node /etc/hosts
```

If there is no entry for *distribution-node*, create one as follows:

```
bash# cp /etc/hosts /etc/hosts.bak
bash# echo "name Primary_IP_address" >> /etc/hosts
```

Type the name of the distribution node in place of *name*, and type the IP address of the distribution node in place of *IP_address*.

Note Be sure you type the redirect operator twice, with no space (>>), so as to append to the /etc/hosts file rather than overwriting it. If you make a mistake, enter the command **`cp /etc/hosts.bak /etc/hosts`** to recover the original file.

- Log out of the remote node and repeat Step 1.
- If the test in Step 1 fails again, contact LightStream Customer Support.

Connect to the Active NP

Step 2 Use the **telnet** command to connect to the remote node and log in as root.

Step 3 On a system with redundant NPs, verify that the other NP is functioning as backup, as follows:

```
bash# ping other-np
```

If the other NP does not respond, do the following:

- Attempt to connect to the other NP by a modem connection. Then follow Step 7 through Step 9 of Procedure 2: Copy New Software to the Distribution Node to try to revive the other NP.
- If resetting the NP fails to bring up the LightStream application software on the backup NP, someone physically at the node site must install software on the other NP as though this were a new NP/disk addition. Refer to the *Installation and Troubleshooting Guide*.

Free Up Disk Space

Step 4 On the remote node, determine the available disk space in the root partition by entering the following command:

```
bash# df /
Filesystem    Blocks    Used    Free%
/dev/sd0a      59690   13703   45987 22%
bash#
```

Examine the value shown under the% column.

- If this value exceeds 65%, you must remove some old software files before proceeding; continue with Step 5, below.
- If the `utilization` value is less than 65%, skip Step 5 and proceed with Step 6 now.

Step 5 On the remote node, in the root directory and its subdirectories, delete unneeded files such as core files and log files. If you have trouble identifying files to be deleted, contact LightStream Customer Support.

Copy Release 2.0.7

Step 6 Copy Release 2.0.7 files to *remotenode*. In a window running a login on *distribution-node*, execute the following command:

```
bash# swremoteinstall -h remotenode 2.0.7
```

Type the name of the remote node in place of *remotenode*.

The **swremoteinstall** process checks disk space and copies Release 2.0.7 to *remotenode*. It should take 5 to 10 minutes, depending upon bandwidth between the nodes.

If the **swremoteinstall** program reports that there is not enough disk space for the installation, connect to the remote node through a modem port or telnet connection, follow Procedure 7: Free Up Disk Space for deleting obsolete files on the remote node. Then repeat Step 6, above.

Procedure 4: Change the Running Software Version

With this procedure you activate the software that has been copied to the node, and the node begins running the new LightStream application software.

For each node in the network, do the following:

Step 1 Connect to the TCS hub on the node. Connect on site with a console terminal or remotely via dial-in modem.

Caution Do not use a network connection such as telnet to connect to the node for purposes of changing the running software version. During the procedure, a card may be reset, breaking your telnet connection and interrupting the change process.

Step 2 Connect to the active NP and log in as root.

Step 3 Use the **swchgver** program to modify the node's configuration to run the software that you have just installed, as follows:

```
bash# swchgver
```

The **swchgver** program produces the following results:

- The newly installed software is made the active version.
- Flash memory is reloaded (if appropriate).
- The line cards reload their software images.
- The network processor (NP) is rebooted, so that the above changes take effect.

Note You may see traps of the following form:

(OPER) NPTMM_*n* at 10/20/94 17:15:39 EDT (10/20/94 21:15:39 GMT)

```
Card 6 POST Failed; Download Is Not Initiated
```

The phrase `Download Is Not Initiated` in this trap message does not refer to the flash image, which is loaded.

Note The **swchgver** program ordinarily takes about a minute to run. However, it can take as much as an hour if it loads program images into flash memory on all the cards (about 7.5 minutes per card for 8 cards). The fault light comes on and stays on for the duration of flash loading.

Caution Do not interrupt the loading of flash memory, particularly on an NP. A card with partially loaded flash will not be able to complete its boot sequence until flash is reloaded. If you create this situation, call LightStream Customer Support.

Step 4 On a redundant NP system, the **swchgver** program automatically copies the new software from the currently active NP to the backup NP. This copy may fail—for example, if the other NP is not currently running application software. If the copy fails, the **swchgver** program prints a diagnostic message and either returns the bash prompt, or asks you to continue the installation by typing **c**.

- In the first case, the message is as follows:

```
WARNING: Unable to contact standby network processor:
 Use [-force] option to bypass standby network processor.
 [Consult your release note for advice on dealing with
   a failure distributing to the other network process.]
bash#
```

  If this occurs, repeat Step 3 of the present procedure, using the **-force** option on the **swchgver** command. This may be abbreviated **-f**, as follows:

```
bash# swchgver -f
```

- In the second case, the following message appears:

```
WARNING: distribution to standby network processor failed.
   Unable to contact standby network processor:
   [Consult your release note for advice on dealing with
   a failure distributing to the standby network processor.]
Please confirm receipt of warning. You should continue installation.
Proceed with installation? (Hit'c' to continue)
```

  If this occurs, type **c** as requested, to proceed with the installation on the active NP.

- In either case, someone physically at the node site must later install software on the other NP as though it were a new NP/disk addition. Refer to the *Installation and Troubleshooting Guide*.

Example

The following is an example of output seen during this upgrade procedure with the console trap level set to info:

```
bash# swchgver
Checking and downloading FLASH memory for all function cards
fcload: slot 1: begin load of flash image (/usr/fware/flash_np1.recec)
```

```
        [WARNING: DO NOT INTERRUPT]
fcload: slot 1: erasing flash (this may take several minutes).....
...
fcload: slot 1: writing flash (this may take several minutes)...
.....................................................................
.....................................................................
.......
fcload: slot 1: enabling POST.
fcload: slot 4: begin load of flash image (/usr/fware/flash_ls1.rec)
        [WARNING: DO NOT INTERRUPT]

fcload: slot 4: erasing flash (this may take several minutes)...
.............................................
fcload: slot 4: writing flash (this may take several minutes)...
==> (OPER) NPTMM_8 at 10/20/94 17:59:26 EDT (10/20/94 21:59:26 GMT)
      Card 4 POST Failed; Download Is Not Initiated
.....................................
.....................................................................
.....................................................................
.......

fcload: slot 4: enabling POST.
Checking and downloading files for standby network processor.
Rebooting standby network processor.
....
Forcing reset of line cards

==> (OPER) NDD_5 at 10/20/94 18:11:24 EDT (10/20/94 22:11:24 GMT)
      Line Card bilr8:3 (LS-EDGE) down (ERMP failure 0x401).

==> (GENERIC) at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT)
Link Down Trap at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT)
      Port 3002

==> (GENERIC) at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT
Link Down Trap at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT)
      Port 3003

==> (GENERIC) at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT)
Link Down Trap at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT)
      Port 3004
==> (GENERIC) at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT)
Link Down Trap at 10/20/94 18:11:28 EDT (10/20/94 22:11:28 GMT)
      Port 3005

Rebooting the network processor

NP040 POST Version 0.203 Jan 12 1994

4Meg Bit value = 1
Configuring Main Memory for 32 Megabytes
Clearing memory (32 Megabytes)...

booting: drive:0, partition:0, kernel:”lynx.os”, flags:0x4308
Resetting SCSI bus
Kernel linked for 0xea010000
LOAD AT 0x10000
        483328+49152+262504[+62736+51815]
TOTAL SIZE: 909536 at 0x1001c
```

```
START AT 0x10020
NP memory size: 32 MB
ILACC: EEPROM enet addr:8:0:8:0:14:6f, Silicon Rev:0x5, IB:0xea1dfce0
Old-style NP detected
virtual console: IB: 0xea1dfe68
NCR 53C710: Chip Revision: 0x2, IB: 0xec18e000

LynxOS/68040-MVME167 Version 2.1.0
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LynxOS release 2.1.0, level 1: NP-LynxOS #107: compiled Apr 17 1995 14:50:57

LynxOS Startup: ma
fsck /dev/sd0a
(all sizes and block numbers in decimal)
(file system creation time is Mon Apr 11 08:57:19 1994)
checking used files
recovering orphaned files
making free block list
making free inode list
40518 free blocks 3314 free inodes
fsck /dev/sd0b
(all sizes and block numbers in decimal)
(file system creation time is Mon Apr 11 08:57:52 1994)
checking used files
recovering orphaned files
making free block list
making free inode list
17838 free blocks 3426 free inodes

fsck /dev/sd0c
(all sizes and block numbers in decimal)
(file system creation time is Mon Apr 11 08:58:25 1994)
checking used files
recovering orphaned files
making free block list
making free inode list
8645 free blocks 3534 free inodes

fsck /dev/sd0d
(all sizes and block numbers in decimal)
(file system creation time is Mon Apr 11 08:58:58 1994)
checking used files
recovering orphaned files
making free block list
making free inode list
26597 free blocks 3601 free inodes

Mounting all filesystems
Starting VM system... Virtual Memory Engaged!
inetd started
Starting crond...
Initializing the switch hardware interface...
Using switch A, cards are NOT synchronized, fast cutover is supported
PCP version: 0x410, CMP version: 0x12, FSU version 0x109
Starting the switch software
LightStream 2020 Version 2.0.7
Copyright 1993 LightStream Corp. All rights reserved.
```

```
Portions copyright 1992 by Lynx Real-Time Systems Inc., 1983 by the Regents
of the University of California, 1988 and 1990 by Paul Vixie, and 1991 by
SNMP Research Inc.

This software contains unpublished proprietary and trade secret information
of LightStream Corp.

LightStream 2020 Software provided to the U.S. Government is subject to the
notices on the software and on the LightStream user documentation copyright
page.
PROGRAM: cbuf: (ls2_0) compiled Apr 26 1995 @ 21:49:18 [pid:48]

user name:root
password:
```

Procedure 5: Upgrade Switch Card Flash Memory

The flash memory on the switch card may need to be upgraded. There are slight differences if you have a Release 1 switch card rather than a Release 2 switch card. These differences are noted where relevant in the following procedure.

Note This procedure may be completed only through a console connection to the NP. This requires you either to use a console terminal located at the node site or to use a dial-in modem connected to the TCS HUB modem port.

Identify Type of Switch Card

To determine whether you have a Release 1 switch card or a Release 2 switch card, use either of the following two methods:

- On the bulkhead of a Release 2 switch card, a `BITS OK` LED and a `BITS CLK` connector are found. These are not present on the bulkhead of a Release 1 switch card.
- The release level of switch cards is identified in the output of the **sysver** command, issued at the bash# prompt.

In Step 2 of this procedure, you will verify whether or not flash has been upgraded.

Log in as Root

Step 1 We assume that you have completed Procedure 4: Change the Running Software Version and that you are still logged in as root on the primary NP. If you are not, repeat the steps for logging in on the active NP.

Verify Need to Upgrade Switch Card Flash

Step 2 Determine the checksum for the switch card flash image. To do this, enter the following LynxOS command (shown here for switch card A):

```
bash# sysver -s sa -all
```

- If the flash checksum is 0xD722 for a Release 2 switch card (0x8F88 for a Release 1 switch card), then the specified switch card already has the latest flash image.

Skip the remaining steps of this procedure (Step 3 through Step 14) for this card.

If there is a second Release 1 switch card, perform this step (Step 2) for the other Release 1 switch card, using the following command to determine the checksum for switch card B:

```
bash# sysver -s sb -all
```

- If the flash checksum is *not* 0xD722 for a Release 2 switch card (0x8F88 for a Release 1 switch card), then the specified switch card does not have the latest flash image. Perform Step 2 through Step 14 of this procedure for the card whose flash is out of date.

Note Alternatively, the checksum may be displayed at the HUB prompt with the following command (shown here for switch card A):

```
TCS HUB<A>read sa flash 0 word
```

Upgrade Flash

Step 3 If a new image is to be loaded into flash on a switch card, reboot the node as follows:

```
bash# reboot -n
```

This takes the node down.

The following display appears:

```
**** LynxOS [rebooted by /bin/reboot] is down ****

Memory autosizing... (32 Megabytes)... Done
Clearing memory (32 Megabytes)... Done


NP1POST Version 0.220 Nov 23 1994


                        NP1 POST Summary
                        ----------------

                        0 Tests Failed

Network Processor bootstrap (version 1.3: Sep 13 1993)
        1 - Boot ATM switch application
        2 - Begin full installation with boot from floppy disk
                Boot from floppy (read-only, single-user) for an
                installation from scratch
        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
                Allows specification of drive, application, and boot options
        7 - Extended help
                Give somewhat more information about options
Option>
```

Step 4 At the `Option>` prompt, select option 6, as follows:

```
Option> 6
```

The following display appears:

```
Network Processor bootstrap (version 1.3: Sep 13 1993)
Enter ”help” for documentation on extended bootstrap options
Default: (sd0a)lynx.os
Boot:
```

Step 5 At the `Boot:` prompt, enter the following command (the 0 in **sd0b** is a zero):

```
Boot: (sd0b)diag/sys_np1.aout
```

The node reboots using the system monitor (that is, diagnostic) image. The following display appears:

```
booting: drive:0, partition:1, kernel:”diag/sys_np1.aout”, flags:0x4201
Resetting SCSI bus
Diagnostic linked for 0x0
LOAD AT 0x0
        184552+102336+56408[+14748+17879]
START AT 0x5000
ACTIVE FABRIC ON SWA

 ****************************************
 * System Diagnostic Debug Monitor        *
 * Revision 1.305 (Oct 10 1994)           *
 * Type’help’ or?’ for help        *
 ****************************************
System Monitor->
```

Step 6 Load the switch card flash memory. There are slight differences between the Release 1 switch card and the Release 2 switch card.

Release 2 Switch Card

To do this for a Release 2 switch card, enter the following command (shown here for switch card A) at the System Monitor prompt (the 0 in **sd0b** is a zero):

```
System Monitor-> fload sa (sd0b)fware/flash_sc2.rec
Reading..............(230290 bytes)
Erasing..............
Loading.....................................................
    .....................................................
     .....................................................
   .....................................................
   .....................................................
   .....................................................
   .....................................................
   .....................................................
   ...........................
Load Statistics
Data bytes     = 81866
Overhead bytes = 40976
Messages sent  = 2561
S-records      = 5118
System Monitor->
```

If you see the following error message, repeat Step 6:

```
flash failed to erase or is not erased
ACTION_FLASH=0x45
```

If you do not see this message, and you do not see the `System Monitor->` prompt, go to Step 7.

If you do see the `System Monitor->` prompt, the flash load has completed successfully. Go on to Step 8.

Release 1 Switch Card

To do this for a Release 1 switch card, enter the following command at the System Monitor prompt (shown here for switch card A):

```
System Monitor-> fload sa (sd0b)fware/flash_sc1.rec
Reading.........(161718 bytes)
```

This is the same command as for the Release 2 switch card, except that the command argument has the string **`sc1`** in it in place of the string **`sc2`**. The 0 in **sd0b** is a zero. The program erases and then loads switch card flash. The process takes about two minutes.

Loading flash on a Release 1 switch card causes loss of display output. To recover from this condition, perform the following steps.

- Disconnect from the NP by typing **`‘.`** (backquote plus dot).
- Reconnect to the NP. For example, to connect to the NP in slot 1, type:

  ```
  TCS HUB<<A>> connect 1
  ```

  Depending upon how soon you accomplish this, you may see part of the full display, including the load statistics. You should see the `System Monitor->` prompt at the conclusion of the display.

  If you see the `System Monitor->` prompt, the flash load has completed successfully. Go on to Step 8.

If the Flash Load Fails

Step 7 If you do not see the `System Monitor->` prompt, the flash load has failed. Do the following:

- Disconnect from the NP by typing **`‘.`** (backquote plus dot).
- Reset the NP as follows (the NP in slot 1 in this example):

  ```
  TCS HUB<<A>>reset 1
  ```

- Reconnect to the same NP (the NP in slot 1 in this example):

  ```
  TCS HUB<<A>> connect 1
  ```

  The following display appears:

  ```
  Memory autosizing ... (32 Megabytes)... Done
  Clearing memory (32 Megabytes)... Done

  NP1POST Version 0.220 Nov 23 1994
  ```

```
                              NP1 POST Summary
                              ----------------

                              0 Tests Failed
```

- Press **[Return]** when the following prompt appears:

  ```
  System will boot in 5 seconds: hit <RETURN> to interrupt.
  ```

  The prompt is repeated once a second, giving you more than one opportunity to press the **[Return]** key and prevent a reboot. When you press **[Return]**, the boot menu appears:

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

  Network Processor bootstrap (version 1.3: Sep 13 1993)
          1 - Boot ATM switch application
          2 - Begin full installation with boot from floppy disk
                  Boot from floppy (read-only, single-user) for an
                  installation from scratch
          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
               Allows specification of drive, application, and boot options
          7 - Extended help
                  Give somewhat more information about options
  Option>
  ```

- Repeat the current procedure (Procedure 5: Upgrade Switch Card Flash Memory), starting at Step 4.

Repeat for Redundant Switch

Step 8 If there is no redundant switch, skip now to Step 10.

If there is a redundant switch, load the switch card flash memory. There are slight differences between the Release 1 switch card and the Release 2 switch card.

Release 2 Switch Card

To do this for a Release 2 switch card, enter the following command (shown here for switch card B) at the System Monitor prompt (the 0 in **sd0b** is a zero):

```
System Monitor-> fload sb (sd0b)fware/flash_sc2.rec
Reading.............(230290 bytes)
Erasing.............
Loading.....................................................
       .....................................................
```

```
     ..................................................
     ..................................................
     ..................................................
     ..................................................
     ..................................................
     ..................................................
     ..............................
Load Statistics
Data bytes     = 81866
Overhead bytes = 40976
Messages sent  = 2561
S-records      = 5118
System Monitor->
```

If you see the following error message, repeat Step 8:

```
flash failed to erase or is not erased
ACTION_FLASH=0x45
```

If you do not see this message, and you do not see the `System Monitor->` prompt, go to Step 7.

If you do see the `System Monitor->` prompt, the flash load has completed successfully. Go on to Step 9.

Release 1 Switch Card

To do this for a Release 1 switch card, enter the following command at the System Monitor prompt (shown here for switch card B):

```
System Monitor-> fload sb (sd0b)fware/flash_sc1.rec
Reading.............(161718 bytes)
Erasing.............
Loading.....................................................
     ..................................................
     ..................................................
     ..................................................
     ..................................................
     ..................................................
     ..................................................
     ..................................................
     ..............................
Load Statistics
Data bytes     = 57486
Overhead bytes = 28800
Messages sent = 1800
S-records      = 3594
System Monitor->
```

This is the same command as for the Release 2 switch card, except that the command argument has the string **`sc1`** in it in place of the string **`sc2`**. The 0 in **sd0b** is a zero. The program erases and then loads switch card flash. The process takes about two minutes.

The `System Monitor->` prompt should appear as shown. However, on a redundant Release 1 switch card, the following error message may be displayed instead:

```
System Monitor-> fload sb (sd0b)fware/flash_sc1.rec
Reading.........(161718 bytes)
Erasing.......
Loading.................................................
     ..................................................
     ..................................................
     ..................................................
```

```
     ................................................
     ................................................
Flash failure occurred when setting DONE bit...(timeout)
```

Despite this error message, the flash image successfully loads.

If you see the `System Monitor->` prompt or the above `DONE bit` error message, the flash load has completed successfully. Go on to Step 9.

If you do not see either the `System Monitor->` prompt or the above `DONE bit` error message, go back to Step 7.

Reset all Cards in Chassis

Step 9 If the system has a backup NP, reboot it as follows:

```
bash# reboot -n
```

This takes the backup NP down and synchronizes the disks. The following display appears:

```
**** LynxOS [rebooted by /bin/reboot] is down ****

Memory autosizing... (32 Megabytes)... Done
Clearing memory (32 Megabytes)... Done


NP1POST Version 0.220 Nov 23 1994


                      NP1 POST Summary
                      ----------------

                      0 Tests Failed

Network Processor bootstrap (version 1.3: Sep 13 1993)
        1 - Boot ATM switch application
        2 - Begin full installation with boot from floppy disk
                Boot from floppy (read-only, single-user) for an
                installation from scratch
        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
                Allows specification of drive, application, and boot options
        7 - Extended help
                Give somewhat more information about options
Option>
```

Step 10 Power off the chassis, wait 30 seconds, and power on the chassis. This resets all the cards in the chassis.

Step 11 If you wish to watch the progress of the boot process, reconnect to the NP as follows (shown here for NP 1):

```
TCS HUB<<A>> connect 1
```

Verify Flash Version

Step 12 Log in to the NP in slot 1 as root

Step 13 To see the current flash checksums of switch card A, enter the following command:

```
bash# sysver -s sa -all
```

To see the current flash checksums of switch card B, enter the following command:

```
bash# sysver -s sb -all
```

The correct checksum is as follows for Release 1 switch card:

```
Switch Card 1:          Flash Image Checksum: 0x8F88
```

The correct checksum is as follows for Release 2 switch card:

```
Switch Card 2:          Flash Image Checksum: 0xD722
```

Reload Flash If Necessary

Step 14 If the switch card has an incorrect flash checksum, load the flash again by executing Procedure 5: Upgrade Switch Card Flash Memory.

Verify flash again (Step 12 and Step 13 above).

If the card still has an incorrect flash checksum after loading flash a second time, contact LightStream Customer Support.

Procedure 6: Make New MAC Address Known

Beginning with Release 2.0.3, the software constructs a MAC address which is always used for the primary NP, regardless of which NP is primary and which is backup. To continue to be able to connect from the NMS to the primary NP, it may be necessary to delete the NMS ARP record associated with the primary NP. The steps are as follows:

Step 1 On the Sun SPARCstation that hosts the NMS, execute the following command:

ping *node_name*

If the **ping** command is successful, the node is reported to be alive. Skip the remaining steps of this procedure.

Step 2 If the **ping** command times out, execute the following command:

arp -d *node_name*

Step 3 Use the **ping** command to re-open the connection to the NP, as follows:

ping *node_name*

When the ping is successful, HP OpenView changes its topology map to mark the node as UP.

If the node or a link to it is down, the **ping** command may fail. Refer to the *Administration Guide*.

Procedure 7: Free Up Disk Space

Follow this procedure only if the **swinstall** program (Procedure 2: Copy New Software to the Distribution Node, Step 13) or the **swremoteinstall** program (Procedure 3: Copy New Software to Remote Nodes, Step 6) reports that there is not enough disk space for the installation.

Identify Files to Delete

Step 1 Log in on the target node as root.

Step 2 Identify the software to remove. To do this, enter the command **swdelete** with no argument, as in the following example:

```
bash# swdelete
Usage: swdelete version -f
           version:      version of software to delete (e.g. 2.0.7)
             -f:           remove even if currently running version
Description:
 Deletes the indicated release, first checking to make sure
 that the release is not currently in use. (For an update release,
 both the update and the underlying major release are in use.)
    VERSIONS ON DISK:
                         2.0.3
                         2.0.5
                         2.0.6
    CURRENTLY RUNNING VERSIONS:
                         2.0.6
                         2.0.3
bash#
```

Step 3 If the shell reports that **swdelete** is not found, go now to Step 7, substituting **other-np** in place of *distribution-node*. Then resume this procedure at Step 2.

Delete Obsolete Version Files

Step 4 Use the **swdelete** command to delete obsolete version files, as follows:

```
bash# swdelete 2.0.5
Deleting version 2.0.5
bash#
```

Caution Do not delete the currently running software versions (2.0.6 *and* 2.0.3 in the example above).

Step 5 If the target node has a redundant NP, do the following:

- connect to the backup NP with the **telnet** command, as follows:

  ```
  bash# telnet other-np
  ```

- Log in as root and repeat Step 2 and Step 4. If **swdelete** is not present on the backup NP, carry out Step 7, substituting **other-np** in place of *distribution-node*.
- Log out of the backup NP.

Step 6 Resume Procedure 2: Copy New Software to the Distribution Node or Procedure 3: Copy New Software to Remote Nodes at the point at which you interrupted it because of insufficient disk space:

- If the **swinstall** program reported the lack of disk space in Procedure 2: Copy New Software to the Distribution Node, resume Procedure 2: Copy New Software to the Distribution Node with Step 13.

- If the **swremoteinstall** program reported the lack of disk space in Procedure 3: Copy New Software to Remote Nodes, log out of the remote node. On the distribution node, resume Procedure 3: Copy New Software to Remote Nodes with Step 6.

If the swdelete Command Cannot be Executed

Step 7 If you see an error message that says the **swdelete** command was not found, enter the following command:

```
bash# ls -l /bin/swdelete
```

Examine the output of this command and take the corresponding action indicated in the following table:

Output of ls -l begins with …	**swdelete file is** …	**then take the following action:**
/bin/swdelete not found	Missing	Perform the steps below, then resume Step 2.
Something other than `-rwx`	Not executable	Execute the following command: `bash# chmod 744 /bin/swdelete` Then resume Step 2.
-rwx	Executable	The /bin directory may be missing from your search path. See the *LightStream 2020 Administration Guide* for information about setting up user accounts. Call Customer Support if you need help setting up this account properly.

In a remote installation, the **swdelete** utility may missing from *remote-node*. You can copy it from *distribution-node* to *remote-node* as follows:

- In the window running a login on *remotenode*, make an FTP connection from *remotenode* to *distribution-node* as follows:

```
bash# ftp distribution-node
Name (remote-node:root): root
331 Password required for root.
Password:
230 User root logged in.
ftp>
```

- Copy the swdelete executable from *distribution-node* to *remotenode* as follows:

```
ftp>get /bin/swdelete /bin/swdelete
```

If the command fails, carry out Step 4 and Step 5 of Procedure 3: Copy New Software to Remote Nodes and make sure there is enough file space in the root partition on *remotenode*.

- Close the FTP connection as follows:

```
ftp> bye
```

- Make the copied file executable, as follows:

```
bash# chmod 744 /bin/swdelete
```

Procedure 8: Fall Back to the Prior Version

Use this procedure if you wish to revert to the prior version of software. The steps are as follows:

Step 1 Log into the LightStream node as root if you have not already done so.

Step 2 Use Procedure 4: Change the Running Software Version to revert to the prior version, giving the earlier version number as the argument of the **swchgver** command. For example, if the prior version is 2.0.6, enter the command as follows:

```
bash# swchgver 2.0.6
```

Step 3 If, after falling back to a prior version of software, you wish to re-install a new copy of Release 2.0.7, first delete the old copy of the software, as follows:

```
bash# swdelete 2.0.7
Deleting version 2.0.7
```

Then follow the instructions in this chapter for upgrading to Release 2.0.7.

Note Under some circumstances, you may wish to switch between the old and new releases with **swchgver**, for test and verification purposes. In such a case, you do not need to delete and re-install the new software. However, you must specify the desired release number as an argument to **swchgver**, as shown in Step 2, above, and in the following example:

```
bash# swchgver 2.0.7
```

Note The fallback procedure does not reload old flash versions in cards.

Procedure 9: Upgrade Workstation Software

Note If you are installing StreamView software on this node for the first time, do not use these instructions. Refer instead to the section Installing Management Software on a Sun, in the *LightStream 2020 Installation and Troubleshooting Manual*.

The procedures in this section tell you how to load Release 2.0.7 network management software onto your workstation from the quarter-inch tape provided with this release.

Two upgrade procedures are given, as follows:

Procedure
1 Upgrading Management Software Under HP OpenView
2 Upgrading Management Software Without HP OpenView

When you complete the appropriate upgrade procedure, you will be able to run the StreamView management software on your Sun workstation.

For information on …	**See** …
Running the configuration program	*LightStream 2020 Configuration Guide*
Running the CLI and the monitor	*LightStream 2020 Operations Guide*
CLI commands, the MIB, and LynxOS commands	*LightStream 2020 Command and Attribute Reference Guide*

Note Refer to the *LightStream 2020 Site Planning and Cabling Guide* for a list of hardware and software requirements the network management workstation must meet.

Procedure 9a: Upgrading Management Software Under HP OpenView

Follow all the procedures in this subsection if you are installing LightStream management software on a Sun SPARCstation running HP OpenView (version 3.3). In these procedures, we assume that HP OpenView is installed and functioning properly.

Note If you are installing the LightStream management software without HP OpenView, go now to Procedure 9b: Upgrading Management Software Without HP OpenView.

Note LightStream software is installed under HP OpenView using the HP Openview OVIC utility. The installation procedure requires Version 1.4 or later of this utility. To verify the version number, execute the following command at the `bash#` prompt:

```
bash# cat /usr/OV/install/system/OVIC/ovindex
```

Release 1.4 is indicated by the line `cid: ov1.4` in this file.

Loading the Management Software for HP Openview

This portion of the LightStream software is provided in two pieces called LS-Configure and LS-Monitor. HP OpenView documentation refers to software packages of this kind as “products.” Note that the CLI and the LightStream enterprise-specific MIB are packaged with both LS-Configure and LS-Monitor.

In this procedure, you use the **ovinstall** command. The **ovinstall** programs do the following things:

- Update several HP OpenView directories with LightStream registration and bit map files
- Load the LightStream enterprise-specific MIB into the directory /usr/OV/snmp_mibs, and install it under HP OpenView

The steps of the procedure are as follows:

Step 1 Log in to the Sun as root.

Step 2 Ensure that /usr/OV/bin is in your path. The installation procedure uses this directory. To display your path, use the command **echo $PATH** at the SunOS prompt. To set your path in a Bourne shell or a bash shell, use the following command:

```
PATH=$PATH:/usr/OV/bin
```

To set your path in a csh shell, use the following command:

```
setenv PATH ${PATH}:/usr/OV/bin
```

Step 3 Stop any running OpenView processes. Enter the following command:

```
ovstop
```

Step 4 Insert the tape of LightStream software into the Sun's quarter-inch tape drive.

Step 5 Use the HP OpenView **ovinstall** command to extract the LS-Configure software from the tape. For example, you might type the following command:

```
ovinstall -r -p LS-CONFIGURE -- -d <tape-drive>
```

Here, <tape-drive> is /dev/rst0, unless your tape drive has been configured to use a different port (for example, /dev/rst1 or /dev/rst2). The command takes 5 to 15 minutes to run. It installs the configuration utilities and associated files. The **-r** switch allows the program to overwrite an existing installation.

Step 6 Use the HP OpenView **ovinstall** command to extract the LS-Monitor software from the tape. For example, you might type the following command:

```
ovinstall -r -p LS-MONITOR -- -d <tape-drive>
```

Here, <tape-drive> is, for example, /dev/rst0, /dev/rst1, or /dev/rst2, depending on which port your tape drive uses. The command takes 5 to 15 minutes to run. It installs the monitor utility and associated files. The **-r** switch allows the program to overwrite an existing installation.

Step 7 To ensure that the LightStream applications have been installed correctly, type

```
ovw -verify
```

This program takes less than a minute to run and prints the names of the objects it verifies. (If the verification fails, you'll see a message on the screen. Call your LightStream service representative for assistance.)

Step 8 Start OV daemons. Enter the following command:

```
ovstart
```

Step 9 Restart HP OpenView. Enter the following command:

```
ovw
```

You may run this command in the background (type **&** at the end of the command line) if you wish to use the parent window for other purposes while HP OpenView is running. If you need help, refer to the HP OpenView documentation.

Note LightStream applications inherit the privileges of the user account from which HP OpenView was started. For example, the access permissions for the database file created by the LightStream configurator correspond to the access rights of the user who started HP OpenView with the ovw command.

Example

The following example shows the sort of output that may be expected when you install HP OpenView:

```
sun# ovinstall -r -p LS-CONFIGURE -- -d /dev/rst1
Installing product definition for LS-CONFIGURE.
Running command: ″ovupdate -d /dev/rst1 -p LS-CONFIGURE″
====================================
====================================
Installing filesets:
LSCFG
LSMIN
Running command: ″ovupdate -d /dev/rst1 -l ovi.install″
====================================
====================================
NOTE:    Installation completed successfully.
Beginning configuration.
Customize script for fileset LSCFG succeeded.
Customize script for fileset LSMIN succeeded.
Customize script for fileset OVIC succeeded.
Configuration completed successfully. Examine /tmp/update.log for
details.
Restarting ovspmd.
sun# ovinstall -r -p LS-MONITOR -- -d /dev/rst1
Installing product definition for LS-MONITOR.
Running command: ″ovupdate -d /dev/rst1 -p LS-MONITOR″
====================================
====================================
Stopping ovspmd.
Installing filesets:
LSMIN
LSMONITOR
Running command: ″ovupdate -d /dev/rst1 -l ovi.install″
====================================
====================================
NOTE:    Installation completed successfully.
Beginning configuration.
Customize script for fileset LSMIN succeeded.
Customize script for fileset LSMONITOR succeeded.
Customize script for fileset OVIC succeeded.
Configuration completed successfully. Examine /tmp/update.log for
details.
Restarting ovspmd.
sun#
```

To re-examine this output and other information in the update log, use the following command:

```
sun# cat /tmp/update.log
```

To examine the SNMP entries in your Sun system's internet services file, use the following command:

```
sun# grep snmp /etc/services
snmp            161/udp     # Simple Network Management Protocol
snmp-traps      162/udp     # SNMP Traps
sun#
```

Procedure 9b: Upgrading Management Software Without HP OpenView

Carry out this procedure to install LightStream management software on a Sun workstation that is *not* running HP OpenView.

Loading the Management Software Without HP Openview

Step 1 Log in to the Sun as root.

Step 2 Use the following command to change to the root directory:

```
cd /
```

Step 3 Insert the tape of LightStream software into the Sun's quarter-inch tape drive.

Step 4 Type the following commands in the order shown to extract the files from the tape:

```
mt -f <tape-drive> rew
mt -f <tape-drive> fsf 4
tar xvf <tape-drive>
```

Here, <tape-drive> is almost always /dev/nrst0, unless your tape drive has been configured to use a different port (for example, /dev/nrst1 or /dev/nrst2).

Note It is important to include the letter **n** before the tape drive designation (i.e. nrst0 for device rst0). The **n** means "no rewind;" if you omit the **n**, you will not be able to read from the tape.

The process of extracting files from the tape takes 10 to 20 minutes to complete. This procedure creates the following directory structure:

```
/usr/LightStream-2.0
/usr/LightStream-2.0/bin
/usr/LightStream-2.0/db
/usr/LightStream-2.0/log
/usr/LightStream-2.0/mib
/usr/LightStream-2.0/templates
```

Step 5 While logged in as root, remove the directory **`ovsnmp.conf_db`** that is created when the LightStream applications run. Enter the following command:

```
rm -r /usr/LightStream-2.0/templates ovsnmp.conf_db
```

After you modify your environment, the LightStream applications create this directory with new information.

Procedure 10: Enable Secure Single-User Mode

Secure single-user operation prevents unauthorized super-user access to the NP. The steps to enable or disable this feature are as follows:

Step 1 Log in to the active NP as root.

Step 2 Back up the /etc/starttab file as follows:

```
cp /etc/starttab /etc/starttab.bak
```

Step 3 Using the vi editor, search for the following comment line:

```
#Name of single-user shell
```

- To enable secure single-user operation, change the line that follows this comment line to read as follows:

  ```
  /bin/singleuser_login
  ```

- To disable secure single-user operation, change the line that follows this comment line to read as follows:

  ```
  /bin/bash
  ```

This feature is disabled by default, in conformity with earlier releases and with other UNIX-based systems, such as Sun workstations. Whenever the System diskette set is installed, the default /etc/starttab file is written to disk. Consequently, if this feature is desired, it must be re-enabled with each new software release. The feature may be enabled with any release.

If this feature is enabled, and the root password is lost, boot the NP from the Boot diskette. Keep the boot diskette in a secure place.

To restore multi-user operation after running in single-user mode, log out (for example, by typing [^**D**]). The NP comes up in multi-user mode after the following sequence of events:

Step 1 The fsck program runs a check on all file systems.

Step 2 The following prompt appears:

```
Mount all filesystems (y/n) [n]
```

Step 3 Type **y**. The NP comes up and runs the LS2020 application software.

Distribution Media

Below is a list of the LightStream 2020 Release 2.0.7 node software distribution diskettes and workstation software distribution tape.

LightStream Release 2.0.7 Distribution Media
Boot Disk
System Disk 1
System Disk 2
System Disk 3
Application Disk 1
Application Disk 2
Application Disk 3
Application Disk 4
Application Disk 5
Application Disk 6
Diagnostic Disk 1
Diagnostic Disk 2
Firmware Disk 1
Firmware Disk 2
Software for Release 2.0.7 Workstation Tape