

Enterprise™ Tape Library 4/1000 Installation Guide for Sun™ Systems



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Enterprise Tape Library 4/1000

Installation Guide for Sun Systems



The Enterprise™ Tape Library (ETL) 4/1000 (Figure 1 and Figure 2) comes preconfigured with four DLT™ 4000 drives and 52 cartridge slots. It includes a robotic handling mechanism that moves cartridges between the slots and the drives. The ETL 4/1000's native capacity is 1,040 Gbytes with 52 DLTtape IV cartridges at 20 Gbytes each.

This booklet explains how to install the ETL 4/1000 with your Sun™ system.

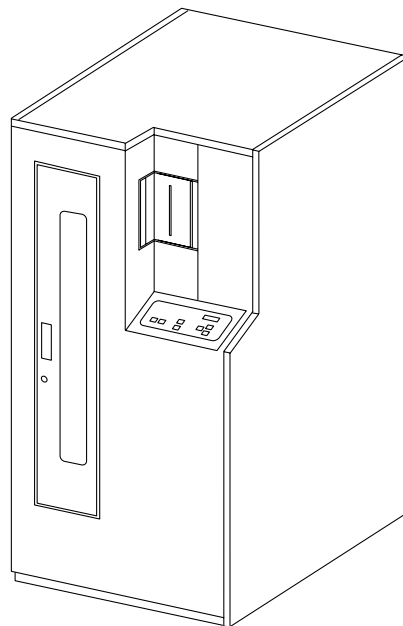


Figure 1 Front View of the Enterprise Tape Library 4/1000

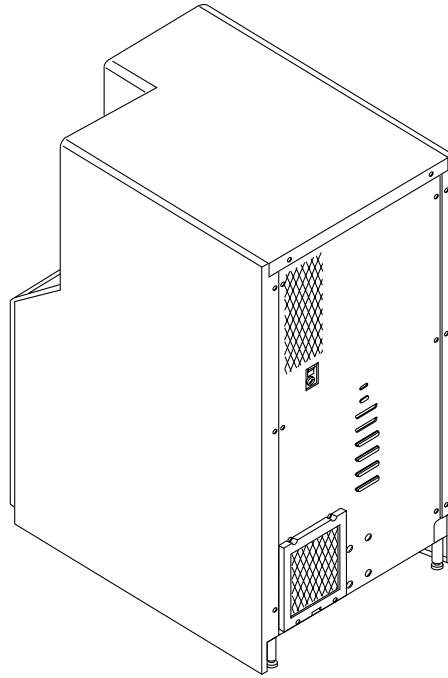


Figure 2 Rear View of the Enterprise Tape Library 4/1000

The ETL 4/1000 comes with the following items:

- Four DLT 4000 drives
- 48 slots (fixed)
- Four mailbox slots (load port)
- Bar-code reader
- Seven blank DLTtape IV cartridges and a cleaning cartridge
- Two 4-meter 68-pin-to-68-pin differential SCSI cables
- SCSI jumper cable (.8 m)
- Two differential SCSI terminators
- U.S. power cable
- Bar-code labels
- Cleaning cartridge bar-code labels
- CD-ROM with diagnostic software



Installation Overview

You must perform the following steps to install the tape library. These are detailed in the following pages.

Getting Ready

1. Modify the `st.conf` file.
2. Determine the SCSI ID (address) for the library and the tape drives.
3. Shut down the operating system.
4. Turn off the power to your Sun system and peripherals.

Connecting the Tape Library

5. Determine the SCSI bus length.
6. Connect the tape library.
7. Turn on the power to the tape library.

Configuring the Tape Library

8. Set the SCSI ID for the tape library and drives.
9. Turn off the power to the tape library. Wait 30 seconds and then turn the power back on.

Starting Up Your Sun System

10. Turn on the power to any peripherals and to your Sun system.
11. Verify the configuration of the `st.conf` file is correct.
12. Reboot your Sun system using the `boot -r` command.
13. Load the tape library with cartridges.



Getting Ready

Modifying the `st.conf` File

You must modify the `st.conf` file so your Sun system will recognize the tape library.

Read this entire procedure before editing the `st.conf` file.

Note – Syntax is critical. You must type commas, semicolons, and beginning and ending quotation marks exactly as shown. Some numerical fields are preceded by `0x`. Lines preceded with a `#` character are comment lines and are not read by the system. Do *not* type in a `#` character with any of the following lines you enter in the `st.conf` file.

- 1. Become superuser and make a copy of the original `st.conf` file `/kernel/drv/st.conf` as a backup (`st.conf.old`).**

```
%su
Password:

#cp /kernel/drv/st.conf st.conf.old
```

- 2. Edit the `st.conf` file.**

Using an editor, scroll through the `st.conf` file to the following line:

```
#tape-config-list=
```

- a. Delete the `#` character that begins the line, if it hasn't already been removed.**
- b. Using the editor, continue to scroll until you come to the following line entry:**

```
# "EXABYTE EXB8500C", "Exabyte 8500C Helical Scan", "EXB-850X",
```



c. On the next line, add the following entry exactly as shown:

```
"Quantum DLT4000", "Quantum DLT 4000", "QDLT";
```

Note – This is called a *recognition* line and will enable the library and drives to be recognized by the system. There may be other recognition lines listed for other devices. All recognition lines end in a comma *except* for the last one, which must end in a semicolon.

d. Using the editor, continue to scroll until you come to the following line entry:

```
"EXB-850X = 1,0x29,0,0xce39,4,0x14,0x15,0x8c,0x8c,1;
```

e. On the next line, add the following entry exactly as shown:

```
QDLT =1,0x36,0,0xD639,4,0x80,0x81,0x82,0x83,2;
```

Note – This is called a *parameter* line and describes the attributes of the device to the system. All parameter lines *must* end with a semicolon.

f. Save the file as `st.conf`.

Determining the SCSI IDs

Under the Solaris 2.x software environment, you can set the SCSI IDs (addresses) for the tape library and tape drives to any SCSI ID available from 0 to 7. SCSI ID 7 is reserved for the host or the SCSI host adaptor card.



Caution – The tape library and each installed tape drive must have a unique SCSI ID.

♦ **Type `probe-scsi-all` at the `ok` prompt to determine the SCSI IDs that are currently set.**



Table 1 shows the default SCSI IDs for the ETL 4/1000, the tape drives, and your Sun system.

Table 1 Default SCSI IDs for the ETL 4/1000, Tape Drives, and Sun System

Device/Unit	SCSI ID	Description
Robotics Controller	0	Tape library
Tape drive #0	2	Top drive
Tape drive #1	3	Second drive
Tape drive #2	4	Third drive
Tape drive #3	5	Bottom drive
Computer system (host) or SCSI host adapter SBus card	7	Allows the host to act as the initiator of commands on the SCSI bus.

You will set the IDs when you configure the tape library.

Shutting Down the Operating System

Before you can install the ETL 4/1000, you must shut down the operating system. If you leave out a step, the system may fail to boot or to correctly configure the library and tape drives.



Caution – The system will not recognize the new device unless you follow the shutdown procedures for your operating system. Specifically, only Solaris 2.x software uses the `touch /reconfigure` command to ensure autoconfiguration when the system is powered on.

1. Become superuser by typing `su` and pressing Return.

```
% su
Password: superuser password
#
```

The root prompt (#) is displayed.



2. Type `touch /reconfigure`.

```
# touch /reconfigure
```

This command ensures that the operating system checks for the presence of any newly installed devices when you power on or boot your system.

Note – If your system is acting as a server, inform the mounted users that the system will be going down. If your system is a standalone system, use the `halt`, `shutdown` or `init0` commands.

3. Type `/usr/sbin/shutdown -y -g30 -i0` and press Return.

```
# /usr/sbin/shutdown -y -g30 -i0
.
.
.
.
ok
```

The 0 in `g30` and `i0` is a zero.

A message is sent notifying all users who are logged in that they have 30 seconds (`-g30`) before the system begins to shut down. The `ok` or `>` prompt is displayed once the operating environment is shut down.

4. At the `ok` **or** `>` **prompt, power off the system.**



Powering Off Your Sun System

Turn the on/off switch to the off (O) position for each device of your Sun system in the following order:

1. Any peripheral drive units
2. Sun system
3. Monitor



Warning – After the power switches are turned to the off (O) position, the green light-emitting diodes (LEDs) on all units should not be lit and the fans should not be running. All power cords should remain plugged into each unit and wall outlets to prevent damage to the equipment by static electricity from your body.



Caution – Always wait 30 seconds between turning off the power and turning it back on again. This pause prevents possible damage to power supply components.



Connecting the Tape Library

The ETL 4/1000 is supported on the following SCSI host adapters:

- DSBE - Differential, Fast SCSI-2, Buffered Ethernet (X1052A)
- DWIS - Differential, Fast-Wide Intelligent SCSI (X1062A)

The tape library uses a single wire SCSI configuration as the default. See the *Facilities Planning and Installation Guide* for information on how to connect the tape library to your Sun system.

Determining the SCSI Bus Length

SCSI Bus Length

A *bus* is a signal route to which several parts of a computer system can be connected so that signals can pass between them. The total length of a SCSI bus includes:

- The length of the external SCSI cable *plus*
- The length of the internal SCSI buses for the device and the system

Your Sun system performance is reliable with a maximum differential SCSI bus length of 72 feet (24 meters), shown in Figure 3. The internal signal path of your system unit and the external SCSI cables must not exceed this maximum length. If this length is exceeded, the system will not run in a reliable manner.

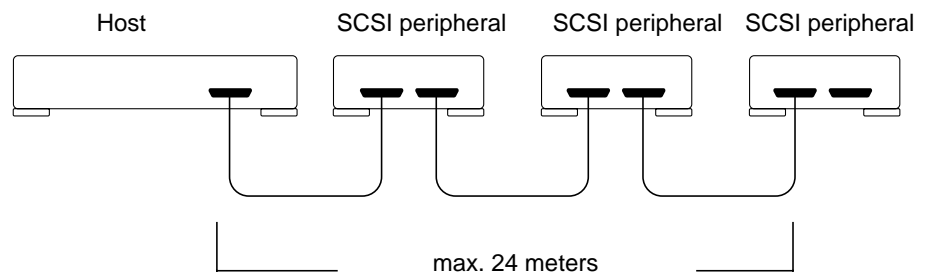


Figure 3 Maximum Differential SCSI Bus Length

Computing SCSI Bus Lengths

When connecting the ETL 4/1000 to your system, find the total SCSI bus length for your configuration. To do this, add the length of the internal bus lengths of each device of the system to the length of the external SCSI cable. The length of the SCSI bus inside the ETL 4/1000 is 2 meters.

If the SCSI bus length exceeds 24 meters, or you have to install more than 15 SCSI devices, you can install some of the devices on additional SCSI buses by installing a DWIS SCSI Host Adapter card with desktop systems or with deskside systems. The SCSI Host Adapter card provides an additional SCSI port (SCSI bus) for your system.

Terminating SCSI Devices

You must attach a regulated SCSI terminator to the SCSI port at the end of the SCSI bus. A terminator holds the bus at a predetermined signal level when the bus is not active and maintains impedance matching.

All SCSI daisy chains must be terminated at the last unit attached to the SCSI bus. Also, a terminator is built in to all SBus SCSI cards and to all host systems to terminate that end of the bus. The regulated terminators must be used for all 68-pin SCSI buses having fast SCSI drives on a fast SCSI host.

SCSI Termination Guidelines

- The SCSI device at the end of a daisy chain *must* be electrically terminated.
- Only the last device in a SCSI daisy chain is terminated.

If the tape library is not the last physical device on the SCSI bus, plug a SCSI cable into each connector. If the tape library is the last physical device on the SCSI bus, plug a SCSI cable into one of the connectors and the appropriate SCSI external terminator into the other connector.

If you are connecting the tape library to a single SCSI bus, you must install the SCSI bus jumper block into the middle two connectors. If you are installing the tape library on two SCSI buses, the SCSI bus jumper cable is not needed.

Powering on the Tape Library

After connecting the tape library to your Sun system, turn the power on to the tape library. See the *Facilities Planning and Installation Guide* for information on how to power on the tape library.

Configuring the Tape Library

You should next configure the tape library by setting the SCSI IDs (addresses) for the library and drives.

Setting the SCSI IDs for the Tape Library and Drives

See the *Facilities Planning and Installation Guide* for information on how to set or change the SCSI IDs for the ETL 4/1000 library and drive.



Cycling Power to the Tape Library

After setting the SCSI IDs for the tape library and drives, follow these steps:

1. **Turn the power off to the tape library.**
2. **Wait 30 seconds.**
3. **Turn the power back on to the tape library.**

Starting Up Your Sun System

After you have finished configuring the tape library, turn the power on to any peripherals and to your Sun system.

Verifying the `st.conf` File Configuration

Halt the operating system by following the normal procedure.

1. **Reboot the system with the `-r` option to recognize the tape library:**

```
%boot -r
```

Watch the boot messages for any indications of problems with the `st.conf` entry.

Note any indicated line numbers. If any error messages occur, edit the `st.conf` file again (see page) and then reboot.

2. **Install a tape cartridge in the tape drive and wait for the drive to fully load the cartridge.**
3. **Verify that the `st.conf` entry is correct.**

```
%mt -f /dev/rmt/0 status
```

You may need to replace the 0 with 1, 2, and so on, until you find the number that the system has identified for the new device.



Table 2 Possible Returned Messages

Message	Meaning
Other tape drive	Indicates that the library is correctly recognized.
Specific Sense Key returned	Not usually an issue.
No Additional Sense	Indicates that there are no error conditions.
Unit Attention	Indicates that the drive has just been powered on or that a tape has been inserted.

Undesired Responses From the Tape Library

- SCSI tape drive indicates the `st.conf` entry is incorrect. You must edit the `st.conf` file and reboot until you no longer see SCSI Tape Drive.
- No tape loaded or drive offline indicates there is no cartridge in the drive or that the cartridge is not yet loaded. Install a cartridge or wait for the cartridge load to complete and retry the `mt status` command.
- No such file or directory indicates there is no tape drive attached to that `rmt` (remote) number. Try another `rmt` number.

For Information on Software Commands

- Check the man pages for additional information on software commands. Type `man mt` to get a listing of numerous helpful commands.

Rebooting the System

Reboot the system so that it will recognize the new tape library:

```
boot -r
```



Loading the Tape Library With Tape Cartridges

See the *Facilities Planning and Installation Guide* for information on how to load the ETL 4/1000 with tape cartridges.

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Luxembourg	32-2-720-09-09	32-2-725-88-50
Germany	01-30-81-61-91	01-30-81-61-92
The Netherlands	06-022-34-45	06-022-34-46
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