

Purpose and Scope

This application note explains how to add a Qualstar 1054, 1260S or 34XXS tape drive to an IBM- compatible personal computer running under SCO UNIX Version 5 or SCO ODT 2.0, 3.0. For detailed information on performing the operations described in this note, refer to your *SCO UNIX Operating System System Administrator's Guide*, and to the *SCO UNIX Operating System Release Notes*.

The information presented in this application note applies to all Qualstar SCSI tape drives, and this installation procedure was verified using a 486-based personal computer, an Adaptec 1542C host adapter, and a Qualstar 3410S tape drive.

Prerequisites

- IBM-compatible personal computer (386 or better);
- SCO UNIX Version 5 or SCO ODT 2.0, 3.0;
- SCO enhanced SCSI tape driver with Support Level Supplement (SLS) UOD376A;
- An Adaptec 1542C or other supported SCSI host adapter;
- A Qualstar model 1054, 1260S, or 34XXS tape drive;
- A working knowledge of the UNIX system and the tape drive.

Configuring the Tape Drive

The Qualstar tape drive is a nine-track, half-inch tape drive configured as a SCSI sequential access device and is to be connected to the SCSI host adapter in the system. Information on how to connect and configure the tape drive is given in the appropriate Qualstar User's Guide:

- Document #500100, 105X User's Guide
- Document #500250, 1260 User's Guide
- Document #500300, 34XX User's Guide

Before connecting the tape drive to the system, configure the tape drive as follows:

1. Verify the correct SCSI bus configuration.
 - a. Models 1054, 1260S, and 34XXS support the single-ended SCSI bus configuration;
 - b. Model 34XXSD supports the differential SCSI bus configuration. Do not connect a differential device to a single-ended bus, or a single-ended device to a differential bus.
2. The tape drive is shipped from the factory with passive internal SCSI bus terminators installed. If you are not going to connect your tape drive to the physical end of the SCSI cable, or if you are going to install an external termination pack on the tape drive, you must remove the internal terminators. Failure to do so may result in improper system operation. Refer to the *Supplemental SCSI Drive Information* chapter of the appropriate Qualstar User's Guide for more information on SCSI termination.

NOTE

If using a Fast SCSI host adapter, we recommend you install an active external terminator in place of the passive internal terminator.

3. Reset the SCSI configuration parameters (and drive configuration parameters, if using a 34XXS or 34XXSD tape drive) to their factory defaults. Instructions for doing this are given in the *Supplemental SCSI Drive Information* chapter of the appropriate Qualstar User's Guide.

NOTE

The factory default SCSI Device ID for all Qualstar tape drives is 5.

The 34XXS does not provide a write capability at 800 cpi, and the FPT indicator on the tape drive front panel will be illuminated whenever the drive is configured for 800 cpi. If the drive receives a Write command while it is configured for 800 cpi, it will return a CHECK CONDITION status with ILLEGAL REQUEST set. To write on the tape, the operating density must be other than 800 cpi.

Connecting the Tape Drive to the System**NOTE**

All system components and SCSI devices in a system should be connected to a common electrical circuit. To avoid electrical noise from being injected into the system, high current devices such as copying machines, air conditioners, and industrial equipment should not be connected to this circuit.

1. Follow the system logoff and shutdown procedure, and then power the system down.
2. Turn off the peripheral devices (i.e., tape drives, printers, and other devices connected to the system).

CAUTION

Do not connect (or disconnect) any SCSI device to the SCSI bus while power is applied to the system or the device.

3. Attach one end of the SCSI cable to the SCSI connector on the tape drive. The total length of the SCSI cable should be at least 0.5 meter and must not exceed six meters (single-ended versions) or 25 meters (differential versions).
4. Attach the other end of the SCSI cable to the Host Adapter card in the computer.
5. Power the system up but do not turn on the tape drive. Continue on *with Configuring the System*.

Configuring the System when Running Under SCO UNIX Version 5

Before the tape drive can be used, UNIX must be told that a new device exists. This is done by first making a special device file and then rebuilding the kernel using the following procedure. The Installation and Configuration section of the *SCO System Administrator's Guide* may be used for reference. The tape drive does not need to be on.

1. Make the device file using the following procedure:
 - a. Boot the system using the normal start up option. When LOGIN appears, type **root**. Then type in your password.

NOTE

Do not allow any other users to log in until the procedure is complete.

- b. At the # sign, enter
scoadmin
- c. At the SCOadmin screen select **Hardware/Kernel Manager**.



- d. At the Hardware/Kernel Manager screen select **Tape Drive** from the list of drivers.
- e. When Tape Drive Configuration Program appears, type:
1 (Configure a SCSI or Enhanced IDE tape drive)
- f. When SCSI Tape Drive Configuration Program appears, type:
1 (Install a SCSI tape drive)
- g. The system will ask for the prefix of the SCSI host adapter. For choices, type:
h (List of host adapters)
- h. When the list appears, make the appropriate selection. Note that whatever host adapter is currently installed is the default.
- i. When prompted, type in the host adapter number which supports the tape drive (refer to the *SCO Systems Administrator's Guide* if necessary). The first host adapter is 0.
- j. What SCSI Bus is the drive attached to?
- k. When prompted, enter the target ID number of the SCSI tape drive (factory default SCSI ID = 5 for Qualstar tape drives).
- l. When prompted for the LUN, type the number **0**.
- m. The choices you have selected will now be presented on the screen for your confirmation. If you are satisfied with the configuration as displayed, type **y** at the update SCSI configuration? prompt. Otherwise, type **n** and follow the prompts.
- n. After a few moments, the system will display a list of operations that have been completed. At the Enter Vendor Identification string or press <Return> to use default press Return.
- o. Enter the SCSI version that the device. Press Enter for the list of defaults.
- p. At the Enter Response Data Format that device uses or press <Return> to use default press Return.
- q. When The following tape drives are supported:" appears, type:
1 (generic SCSI-1 / SCSI-2 tape drive)
- r. When Do you wish to set this drive as the default drive?" appears, type:
y
- s. When SCSI Tape Drive Configuration Program appears, type:
q
- t. When Tape Drive Configuration Program appears, type:
q

2. Add the driver to the kernel as follows:

- a. At the Do you wish to create a new kernel now? prompt, type:
y
- b. When the question, Do you want this kernel to boot by default? appears, type
y
- c. At the Do you want the kernel environment rebuilt? prompt, type:
y
- d. If the kernel was successfully rebuilt, the message The kernel has been successfully linked and installed will appear. If unsuccessful, an error message will appear.
- e. Shut down and reboot the system.
- f. Perform a normal start up and login procedure. The tape drive does not have to be turned on until you are ready to use it.

Configuring the System when Running Under SCO ODT 2.0 or 3.0

Before the tape drive can be used, UNIX must be told that a new device exists. This is done by first making a special device file and then rebuilding the kernel using the following procedure. The Installation and Configuration section of the *SCO System Administrator's Guide* may be used for reference. The tape drive does not need to be on.

1. Make the device file using the following procedure:

- a. Boot the system using the normal start up option. When LOGIN appears, type **root**.

NOTE

Do not allow any other users to log in until the procedure is complete.

- b. At the # sign, enter:
mkdev tape
- c. Select **Install a Tape Drive** (option 1).
- d. Select **Install SCSI Tape Drive** (option 4).
- e. Select **Install SCSI 9-Track Tape Drive**.
- f. When Do you wish to configure the SCSI 9-Track Tape Drive now? appears, type:
y
- g. The system will ask for the prefix of the SCSI host adapter. For choices, type:
h
- h. When the list appears, make the appropriate selection. Note that **ad** (Adaptec 154x/164x) is the default. If you are using an Adaptec 2742, you must enter **ARAD**. This is missing from the menu.

- i. When prompted, type in the host adapter number which supports the tape drive (refer to the *SCO Systems Administrator's Guide* if necessary). The first host adapter is 0.
 - j. When prompted, enter the target ID number of the SCSI tape drive (factory default SCSI ID = 5).
 - k. When prompted for the LUN, type the number **0**.
 - l. The choices you have selected will now be presented on the screen for your confirmation. If you are satisfied with the configuration as displayed, type **y**. Otherwise, type **n** and follow the prompts.
 - m. After a few seconds, the system will display a list of special devices which have been created. Press ENTER.
 - n. Follow the prompts and type **y** for the high density defaults.
 - o. Type **q** to leave the current string as is.
 - p. Type **q** when the Tape Drive Configuration Program menu appears.
2. Add the driver to the kernel as follows:
- a. Type **y** to create a new kernel. The UNIX operating system will be rebuilt, a process which will take a few minutes.
 - b. When the question, Do you want this kernel to boot by default? appears, type **y**.
 - c. If the kernel was successfully rebuilt, the **#** sign will appear. If unsuccessful, an error message will appear.
 - d. Shut down and reboot the system.
 - e. Perform a normal start up and login procedure. The tape drive does not have to be turned on until you are ready to use it.

Checking the Installation

1. Verify the device is correctly installed by checking the boot message for SCSI device and ID number.
2. Test the UNIX driver with your tape subsystem as follows:
 - a. Mount a blank tape with a write enable ring on the tape drive and place the drive online.
 - b. Write to tape using the following tar command, which copies the files in directory `/usr/tmp` to tape (blocking factor of 20) with device file name `/dev/rStp1`:

```
#tar cvfb /dev/rStp1 20 /usr/tmp/*
```
 - c. Verify the files were written using the following tar command, which lists the files on the tape to the screen:

```
#tar tvf /dev/rStp1
```
 - d. Read from the tape using the following tar command, which copies the files on the tape to the disk:

```
#tar xvf /dev/rStp1
```
3. You may access your tape drive using available UNIX commands such as tar, cpio, dd and cat.



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**Application
Note #009**

Subject: **Installing a Qualstar SCSI
Tape Drive with SCO Software**

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System Limitations

UNIX uses a default blocksize of 512K bytes. To select another block size, use the following command first:

```
tape -a BLOCKSIZE setblk /dev/rStp1
```

where **BLOCKSIZE** = the new block size, and **/dev/rStp1** = the tape device file.

Examples:

1. To set the tape driver to a fixed block mode with 1024 bytes per block:

```
tape -a 1024 setblk /dev/rStp1
```

2. To set the tape driver to a variable block mode:

```
tape -a 0 setblk /dev/rStp1
```

NOTE

You must issue the `tape -a setblk` command while the tape is at BOT and the drive is online. The block size will remain in effect until you either reinitialize the tape drive or issue another `tape -a setblk` command.