Field Tool Utilities for Windows

Installation and Support Guide for SMclient version 8.30, 8.33, and 8.36

TS1273G-E1, First Edition

LSI LOGIC

STORAGE SYSTEMS

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Document Description

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This document describes version 8.30 of LSI Logic Corporation's Field Tool Utilities and will remain the official reference source for all revisions/releases of this product until rescinded by an update.

Intended Readers

This book is intended for experienced field engineers who are responsible for providing technical support for storage arrays and storage management software. Readers should have knowledge about hardware installation and operation and understand Redundant Array of Independent Disks (RAID), Small Computer System Interface (SCSI), and Fibre Channel (FC) technologies.

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Chapter 1

Overview

This book is written for experienced field engineers. Use this book to install and run the Serial Connection Utility and Serial Download Utility. In addition to these packages, information is included for downgrading the B-Series or D-Series Storage Manager and for setting up a modem for remote storage array connections.

This chapter provides overview information about requirements for installing the software packages in a Microsoft® Windows® 98, 98 SE, NT, or 2000 operating environment. Read all the information in this chapter before installing the software to ensure you understand what is needed to complete the installation.

If unfamiliar with concepts or terms used in this book, refer to the B-Series or D-Series *Storage Manager Concepts Guide* included on the product CD, Docs on CD, and CRC.

About the Software

Use these SANtricity (or BladeStore) Storage Manager tasks to manage B or D-Series solutions.

About the Serial Connection Utility

The Serial Connection Utility is a program that can configure a computer's serial port for connection to a storage array's serial port. Once the computer is cabled to the storage array and the serial connection is properly configured, your storage management software can be used with the connection to troubleshoot problems on the storage array or to download firmware.

Use the Serial Connection Utility when a storage array or controller is not responding to your storage management software and you cannot manage the storage array through normal network connections. If a storage management station is down, you can connect a computer to a controller tray (via a serial port) and check the status of a storage array. The serial connection can be used with your storage management software to capture a text file containing information about the state of the storage array or can be used to download firmware or NVSRAM files.

About the Serial Download Utility

The Serial Download Utility is a stand-alone program used to download NVSRAM settings or firmware to the controllers in a storage array via a serial cable connection. Refer to Appendix B, "Downgrading Storage Manager" for more information about using the serial download utility. Note: Storage Manager references made in this manual include BladeStore.

The serial download utility should only be used if downgrading the firmware on a controller from 4.00 to 3.x.

Operating Considerations

The serial connection feature results in slower response times than normal operation over network connections. Also, two serial connections are required to communicate with both controllers simultaneously. If using a computer with only one serial port you will be running the software in a partially managed configuration, meaning the computer can communicate with only one controller in a pair. This will cause errors when doing some storage management functions. Refer to "Using SYMplicity Storage Manager in a Partially Managed Configuration" in Chapter 3 for more information about partially managed conditions. Refer to "Understanding the Restrictions" on page 1-4 for more information about errors you can expect when using only one serial connection.

IMPORTANT A null modem cable is required to establish a serial connection to the controller tray.

Serial synchronization cables must also support null modem functionality.

The cable used for the serial connection on a 2772 model controller is not standard. Ensure you have all cables necessary for a proper serial connection. Contact your storage supplier for a cable, if necessary.

Understanding the Restrictions

NOTE Always check for a readme file on any installation media. Readme files may contain important, late-breaking information that was not available when this book was written.

Table 1-1 lists the restrictions for releases up to 8.30.

Table 1-1 Restrictions for the Windows Operating Environment (1 of 2)

Restriction	Workaround
The automatic discovery feature in SYMplicity (aka SANtricity and BladeStore) Storage Manager does not work via a serial connection.	Add devices manually if using SYMplicity Storage Manager over a serial connection in Windows 98.
The serial connection appears in the SYMplicity Storage Manager Enterprise Management Window as Unresponsive.	This is normal behavior if the device remains in the configuration file after disconnecting. Remove the device from the Enterprise Management Window and add it again manually.
The serial connection is dropped if multiple tasks are done at one time, such as multiple volume creations.	Perform only one operation at a time to keep the serial connection from timing out.
Cannot successfully download firmware, ESM firmware, or drive firmware through host-agent software version 7.02 or earlier.	Upgrade the host-agent software to version 7.10 or later, or download firmware through a direct or serial connection.
The following errors occur if connecting a cable from the serial port on the computer running the Serial Connection Utility to only one controller in a dual controller configuration.	
An error occurs in the storage management software stating the operation cannot be completed until the management connection to the non-connected controller is defined.	The software is operating under a *partially managed* condition, which means it is connected to only one controller in a dual-controller configuration. To finish the operation, connect to the second controller and perform the operation a second time. Refer to the final entry in this table for specific restrictions when this method will *not* work.
Running Configure >> Reset Configuration in SYMplicity Storage Manager produces an error stating the operation cannot be completed until the management connection to the non-connected controller is defined.	This operation will fail if the serial cable is connected to controller B. Connect the cable to controller A and try again.

Table 1-1 Restrictions for the Windows Operating Environment (2 of 2)

Restriction	Workaround
Selecting either of the following options in SYMplicity Storage Manager produces an error stating the operation cannot be completed until the management connection to the non-connected controller is defined: • Storage Array >> Monitor Performance • Storage Array >> Set Controller Clocks	The operation cannot be completed without connections to both controllers.

Installation Requirements

The following hardware and software components are required to install the SMclient Field Tool Utilities software (part of SANtricity SM8.3 and BladeStore SM 8.36). Additionally, if connecting via serial port, one or two null modem serial cables will be needed for the serial connections.

Hardware Requirements

- Storage arrays with 4774, 4884, 5884, or 2772 controllers
- A desktop or laptop computer with the components described in Table 1-2 (below) and Table 1-3

Desktop Computers

NOTE Desktop computers that use a part of the system memory for video memory are not recommended for use with this software.

Table 1-2 Recommendations for Desktop Computers

Component	Recommended
Pentium® or Pentium equivalent CPU	333 MHz or higher processor
CDROM drive	No minimum requirement
Mouse or similar pointing device	If using the Serial Connection Utility or Serial Download Utility, use of a serial mouse is not recommended.
Color monitor	1024 x 768 pixels with 64k colors (or better)
A PCI- or AGP-based video card (ISA-based cards are not supported)	• AGP-based card preferred • 1024 x 768 pixels with 64k colors (or better) • Hardware-based Windows acceleration
Installed Ethernet network interface card	No minimum requirement
System memory	96 to 128 MB (Windows 98 or 98 SE) 128 MB (Windows NT) 256 MB (Windows 2000)

Laptop Computers

IMPORTANT Refer to "Operating System Requirements" on page 1-8 for operating system-specific laptop requirements.

Table 1-3 Recommendations for Laptop Computers

Component	Recommended
Pentium® or Pentium equivalent CPU	350 MHz, minimum
CDROM drive	No minimum requirement
Mouse or similar pointing device	If using the Serial Connection Utility or Serial Download Utility, a serial mouse cannot be used.
Video display	Minimum 1024 x 768 pixels and 64k colors (or better)
Integrated 128-bit video chip	Hardware-based Windows® acceleration
Installed Ethernet network interface card	No minimum requirement
Installed system memory	Minimum 64 MB
COM Port	Minimum of one free for serial connections

Cables

StorageTek field service personnel use the Diagnostic Serial Cable 24100134 with a DB9 serial adaptor 10402019. If connecting to a 2772 controller (used in a D173 Disk Subsystem), use a RJ45 to RJ11 serial adaptor 24100205. Refer to the Preconfiguration Instructions (95966) for more information.

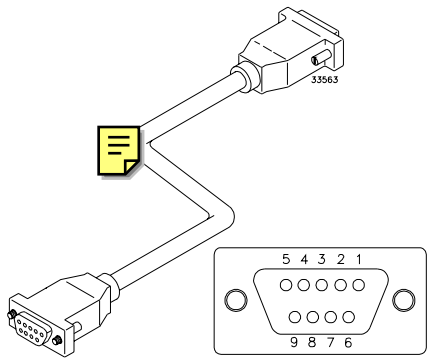

Figure 1-1 Null Modem Cable (used by LSI only)

Software Requirements

The Field Tool Utilities requires 5 MB of free disk space. The Serial Download Utility requires an additional 15 MB of disk space. Ensure you have at least 20 MB of free disk space before installing these packages.

Operating System Requirements

IMPORTANT The Field Tool Utilities run only on Windows platforms. Ensure you are running one of the following operating systems.

The preferred operating systems for laptops are Windows 98, Windows 98 Second Edition, and Windows 2000. If you are using Windows NT on a laptop, you may experience serial connection problems.

- Windows NT Server 4.0 with Service Pack 4, 5, or 6a
- Windows NT Workstation 4.0 with Service Pack 4, 5, or 6a
- Windows 98
- Windows 98 Second Edition
- Windows 2000

Firmware Requirements

The latest version of the Field Tool Utilities operates with only 4774, 4884, 5884, and 2772 controllers using firmware version 4.00 or later. The latest firmware version is 5.3x.

Chapter 2

Installing and Configuring the Serial Connection Utility

This chapter contains *only* information about the Serial Connection Utility. Information about installing and using the Serial Download Utility can be found in "Using the Serial Download Utility" on page B-13.

This chapter includes information and procedures for the Serial Connection Utility software. The installation sections consist of an overview and procedure. Configuration sections are broken into sections with tasks for three different Windows platforms.

Installation Overview

The Serial Connection Utility is used when usual connections to a storage array or controller are down, so it is usually installed on a different computer, such as a laptop. The computer is connected to the storage array via a serial connection. Figure 2-1 illustrates a possible configuration using a laptop.

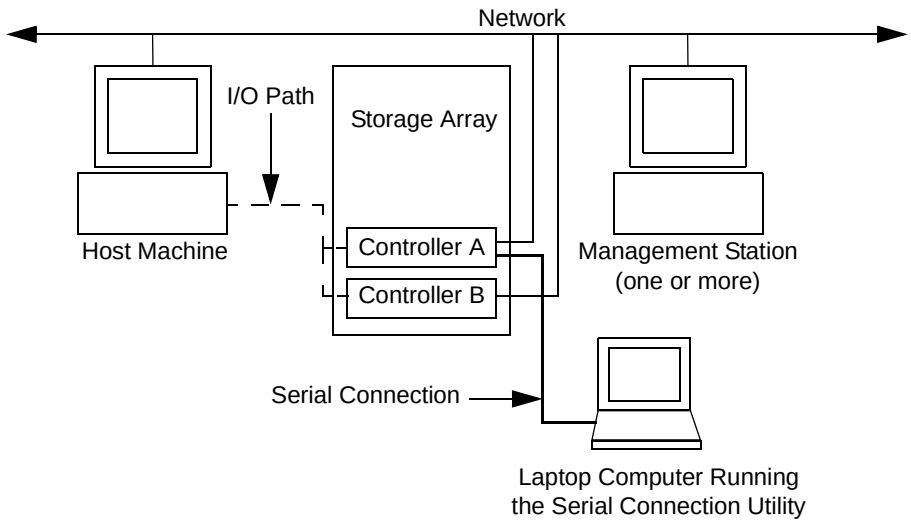

Figure 2-1 Running the Serial Connection Utility on a Laptop

IMPORTANT The software on the laptop shown in Figure 2-1 is running in a partially managed condition.

A partially managed condition occurs when a storage array has two controllers, but only one controller is defined or can be reached when the storage array is added or detected. This condition is normal when running SYMplicity/SANtricity/BladeStore Storage Manager over a serial connection, because there may be only one cabled connection, especially if using a laptop. Typically, laptops have only one serial port and must operate in a partially managed configuration. Again, all reference to SYMplicity, also include SANtricity and BladeStore.

Because communication is possible with only one of the controllers in a partially managed storage array, volume management operations can be performed only on volumes owned by the connected controller. Most of these operations can be completed normally using the procedure in “Using SYMplicity Storage Manager in a Partially Managed Configuration” on page 3-6. For a list of operations that cannot be completed normally, refer to “Understanding the Restrictions” on page 1-4.

Installing the Serial Connection Utility

IMPORTANT Some of the Windows components required for the serial connection may not be loaded on the computer. If the components have not been previously loaded, a Windows CD may be needed to complete these procedures.

1 Ensure that:

- The computer meets requirements listed in "Installation Requirements" on page 1-6
- All other programs are closed

2 Ensure the computer used for the serial connection has the following components:

- One or more COM ports
- An installed TCP/IP network protocol
- A generic Unimodem Telephony Driver

3 Insert the SYMplicity Storage Manager installation CD in the CDROM drive.

4 Select Start >> Settings >> Control Panel >> Add/Remove Programs.

The Add/Remove Programs Properties dialog appears.

NOTE Later versions of Windows 2000 have an Installation Wizard to Add or Remove programs. If you are using this version of Windows, select the CD or Floppy button on this dialog and then Next to start the Wizard. Follow the instructions below to finish the installation.

5 Select Install and perform the procedures on the screen.

6 Select Browse.

The Browse dialog box appears.

7 Select the CDROM drive.

8 Select the \ftutils directory.

9 Select the setup.exe file, then select Open.

10 Select Finish.

The setup program's Welcome screen appears.

11 Select Next.

The Choose Destination Location window appears.

12 Select Next to accept the default directory or type in a directory of your choice and select Next to begin the installation.

13 When the installation is complete, select Finish to exit the installation program.

14 Navigate to the installation you specified during the installation process. Ensure that the directory was created and has the connection and setup programs in it.

15 Choose one of the following, based on your operating system, to configure the Serial Connection Utility:

- Windows 98 – Go to "Windows 98 Configuration."
- Windows NT – Go to "Windows NT Configuration" on page 2-9.
- Windows 2000 – Go to "Windows 2000 Configuration" on page 2-13.

Windows 98 Configuration

Use the procedures in this section to configure the Serial Connection Utility for Windows 98. Follow all these procedures in the order given.

IMPORTANT The following procedures describe how to set up only one serial connection. If the computer has more free communications (COM) ports to use, repeat all these procedures for each serial connection.

Configuring COM Ports

1 From the Start Menu, select Settings >> Control Panel >> System >> Device Manager.

A list of devices in the computer is shown.

2 Select Ports (COM & LPT) to expand the list and highlight the COM port you want to use.

The Communications Port Properties dialog opens.

3 Ensure the following items are set as shown:

- Baud Rate – 115200
- Data Bits – 8
- Parity – None
- Stop Bits – 1

4 Select OK on the dialog boxes to save any changes.

5 Go to "Verifying TCP/IP."

Verifying TCP/IP

IMPORTANT If the TCP/IP protocol is not installed, load it from the Microsoft Windows CD. From the Network Configuration tab, select Add >> Protocol and select TCP/IP from the list.

---

1 From the Start Menu, select Settings >> Control Panel >> Network.

2 Select the Configuration tab.

If TCP/IP is installed, it will be listed in the component window as TCP/IP -> Dial-Up Adapter.

3 Go to "Verifying Telephony Driver" on page 2-6.

Verifying Telephony Driver

IMPORTANT If the Unimodem Service Provider driver is not installed, load it from the Microsoft Windows CD. Select the Add button, select Unimodem Service Provider from the Telephony drivers list, and select Add again to finish.

1 From the Start Menu, select Settings >> Control Panel >> Telephony.

2 Select the Telephony Drivers tab.

If the Unimodem Service Provider driver is installed, it will be listed.

3 Go to "Setting Up the Serial Connection Utility."

Setting Up the Serial Connection Utility

Use the following procedure to set up the serial connection that will be used to connect with the controller.

IMPORTANT The procedures in this section must be done twice for each COM port to set up serial connection files for both hardware and software flow control. Failure to set up both may result in connection problems.

1 From the Start Menu, select Settings >> Control Panel >> Add/Remove Programs to verify all communication components are installed.

2 Select the Windows tab and ensure there is a check mark next to Communications.

3 Select a free COM port to use for your serial connection.

- On most computers, this will be COM 1 or 2 but it could go up to COM 9.
- If connecting to both controllers, there must be two free COM ports available on the computer.

4 From the Start Menu, select Settings >> Control Panel >> Modems.

5 In the Modem Properties dialog box, select Add.

The Install New Modem dialog appears.

6 At the "What type of modem do you want to install?" prompt, select Other; then select Next.

A dialog for detecting modems appears.

7 Select "Don't detect my modem; I will select it from a list;" then select Next.

A list of manufacturers and models appears.

8 Select the “Have Disk. . .” button.

The Install from Disk dialog appears.

9 Under “Copy manufacturer’s files from:” type the name of the directory where you installed the Serial Connection Utility. For example, if you elected to keep the default settings, you would type `c:\connections` in the dialog box.

The Install New Modem dialog appears.

IMPORTANT If you have already set up one modem file, select the second modem file in the pair when completing step 10. For example, if you selected COM 1, Hardware, IP 192.168.1.1 the first time, select COM 1, Software, IP 192.168.1.1 the second time. Both files must be installed for the serial connection to function correctly.

---

10 Select the modem file that corresponds to the COM port you will be using for the serial connection; then select Next. For example, if you will be using COM Port 1, select COM 1, Hardware, IP 192.168.1.1 in the dialog.

IMPORTANT When choosing a COM port, verify that the COM port number on both the serial connection file and the COM Port are identical. If they are not, select Back and choose the serial connection file that corresponds to the number on the COM Port.

---

11 Under “On which ports do you want to install it?” select the serial COM port that corresponds to the free COM port you want to use (COM1, for example); then select Next.

A dialog displays: Your modem has been set up successfully.

12 Select Finish.

The Modem Properties dialog box appears and the serial connection file just installed should be listed.

13 Do you need to set up another serial connection?

- Yes – Repeat steps 5 through 12 to set up the second of two serial connection files.
- No – Go to step 14.

14 Navigate to the Serial Connection Utility installation directory (c:\connections, by default) and run the program named FTsetup.exe.

The Field Tool Utilities’ Dial-up Device Setup dialog appears.

IMPORTANT Placing a check next to Verbose Installation on the Dial-up device setup dialog will create a list of all the hardware and software connections created after the Create Serial Dial-Up Connections button is pressed. Use this if you are having difficulties configuring the files or if you would like to see which connections are being configured.

15 Select Create Serial Dial-Up Connections to finish configuring the files needed for the serial connections (Figure 2-2).

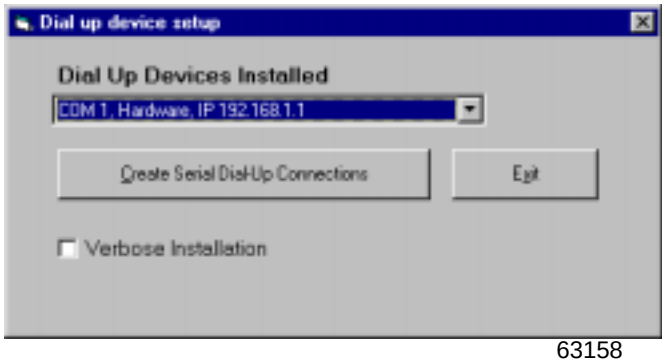

Figure 2-2 Dial-Up Device Setup

16 Go to Chapter 3, “Using the Serial Connection Utility.”

Windows NT Configuration

Use the procedures in this section to configure the Serial Connection Utility for Windows NT. Follow all these procedures in the order given.

IMPORTANT To complete the following procedures, the Remote Access Service (RAS) software must be installed on the computer. If RAS is not installed, load it from the Microsoft Windows CDROM. After RAS has been installed, reload the current Service Pack to fully update all RAS components. The serial connection may not function if the Service Pack is not re-installed.

IMPORTANT The following procedures describe how to set up only one serial connection. If the computer has more free COM ports to use, repeat all these procedures for each serial connection.

Configuring COM Ports

1 From the Start Menu, select Settings >> Control Panel >> Ports.

A list of COM Ports available on the computer appears.

2 Select one of the COM Ports listed and select Settings. Ensure the following items are set as shown in Figure 2-3:

- Baud Rate – 115200
- Data Bits – 8
- Parity – None
- Stop Bits – 1

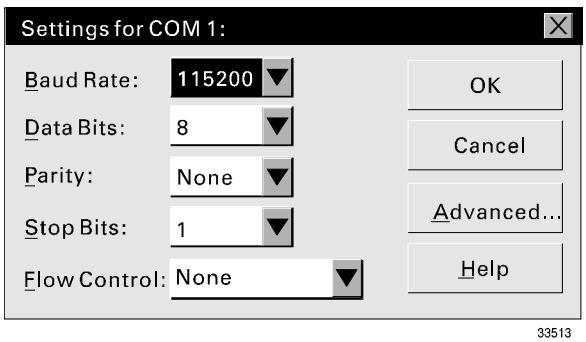

Figure 2-3 COM Port Settings (Windows NT)

3 Select OK to save any changes.

4 Go to "Verifying TCP/IP."

Verifying TCP/IP

IMPORTANT If the TCP/IP protocol is not installed, load it from the Microsoft Windows CDROM. From the Protocols tab, select Add >> Protocol and select TCP/IP from the list.

1 From the Start Menu, select Settings >> Control Panel >> Network.

2 Select the Protocols tab.

If TCP/IP is installed, it will be listed in the component window as TCP/IP Protocol.

3 Go to "Verifying Telephony Driver."

Verifying Telephony Driver

IMPORTANT If the Unimodem Service Provider driver is not installed, load it from the Microsoft Windows CDROM. Select the Add button, select Unimodem Service Provider from the Telephony drivers list, and select Add again.

1 From the Start Menu, select Settings >> Control Panel >> Telephony.

2 Select the Telephony Drivers tab.

If the Unimodem Service Provider driver is installed, it will be listed.

3 Go to "Setting Up the Serial Connection Utility."

Setting Up the Serial Connection Utility

Use the following procedure to set up the serial connection that will be used to connect with the controller.

IMPORTANT The procedures in this section must be done twice for each COM port to set up serial connection files for both hardware and software flow control. Failure to set up both may result in connection problems.

1 From the Start Menu, select Settings >> Control Panel >> Add/Remove Programs to verify all communication components are installed.

2 Select the Windows tab and ensure there is a check mark next to Communications.

3 From the Start Menu, select Settings >> Control Panel >> Modems.

4 In the Modem Properties dialog box, select Add.

The Install New Modem dialog appears.

5 At the "What type of modem do you want to install?" prompt, select Other; then select Next.

A dialog for detecting modems appears.

6 Check "Don't detect my modem; I will select it from a list" then select Next.

A list of manufacturers and models appears.

7 Select the "Have Disk. . ." button.

The Install from Disk dialog appears.

8 Under "Copy manufacturer's files from:" type the name of the directory where you installed the Serial Connection Utility. For example, if you elected to keep the default settings, you would type `c:\connections` in the dialog box.

The Install New Modem dialog appears.

IMPORTANT If you have already set up one modem file, select the second modem file in the pair when doing step 9. For example, if you selected COM 1, Hardware, IP 192.168.1.1 the first time, select COM 1, Software, IP 192.168.1.1 the second time. Both files must be installed for the serial connection to function correctly.

---

9 Select the modem file that corresponds to the COM port you will be using for the serial connection; then select Next. For example, if you will be using COM Port 1, select COM 1, Hardware, IP 192.168.1.1 in the dialog.

IMPORTANT When choosing a COM port, verify that the COM port number on both the serial connection file and the COM port are identical. If they are not, select Back and choose the serial connection file that corresponds to the number on the COM port.

---

10 Under "On which ports do you want to install it?" select the serial COM port that corresponds to the free COM port you want to use (COM1, for example); then select Next.

A dialog displays: Your modem has been set up successfully.

11 Select Finish.

The Modem Properties dialog box appears and the serial connection file just installed should be listed.

12 Do you need to set up another serial connection?

- Yes – Repeat steps 4 through 11 on page 2-11 to set up the second of two serial connection files.
- No – Go to step 13.

13 Navigate to the Field Tool Utilities installation directory (c:\connections, by default) and run the program named FTsetup.exe.

The Field Tool Utilities' Dial-up Device Setup dialog appears.

IMPORTANT Placing a check next to Verbose Installation on the Dial-up device setup dialog will create a list of all the hardware and software connections created after the Create Serial Dial-Up Connections button is pressed. Use this if you are having difficulties configuring the files or if you would like to see which connections are being configured.

---

14 Select Create Serial Dial-Up Connections to finish configuring the files needed for the serial connections (Figure 2-4).

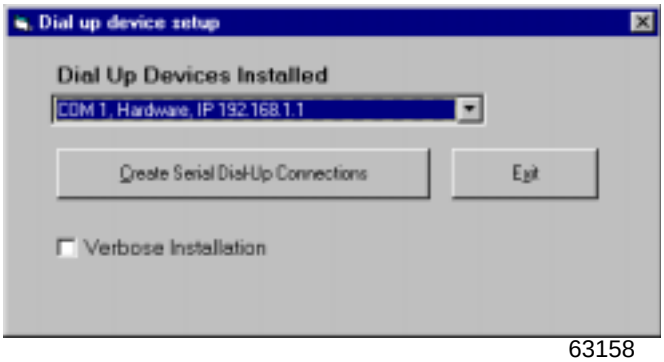

Figure 2-4 Dial-Up Device Setup

15 Go to Chapter 3, "Using the Serial Connection Utility."

Windows 2000 Configuration

Use the procedures in this section to configure the Serial Connection Utility for Windows 2000. Follow all these procedures in the order given.

IMPORTANT The following procedures describe how to set up only one serial connection. If the computer has more free COM ports to use, repeat all these procedures for each serial connection.

Configuring COM Ports

1 From the Start Menu, select Settings >> Control Panel >> Administrative Tools >> Computer Management.

The Computer Management dialog is displayed.

2 Select System Tools to display a list of devices and select Device Manager.

3 Select Ports to expand the items under it; then, select a free Communications Port.

4 Right-click the Communications Port and select Properties.

The Communications Port (COM “X”) Properties dialog appears.

5 Select the Port Settings tab. Ensure the following items are set (Figure 2-5):

- Bits per second – 115200
- Data Bits – 8
- Parity – None
- Stop Bits – 1

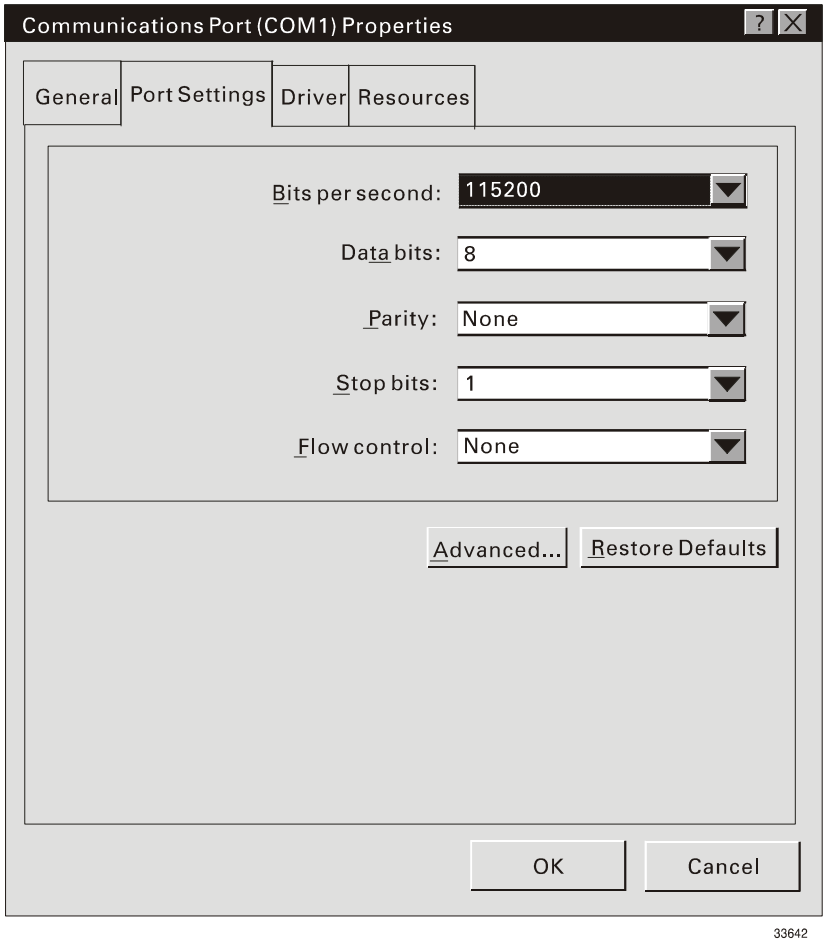

Figure 2-5 COM Port Settings (Windows 2000)

6 Select Advanced.

The advanced settings for the COM port appear.

7 Ensure Use FIFO buffers (requires 16550 compatible UART) is checked (Figure 2-6) and select OK.

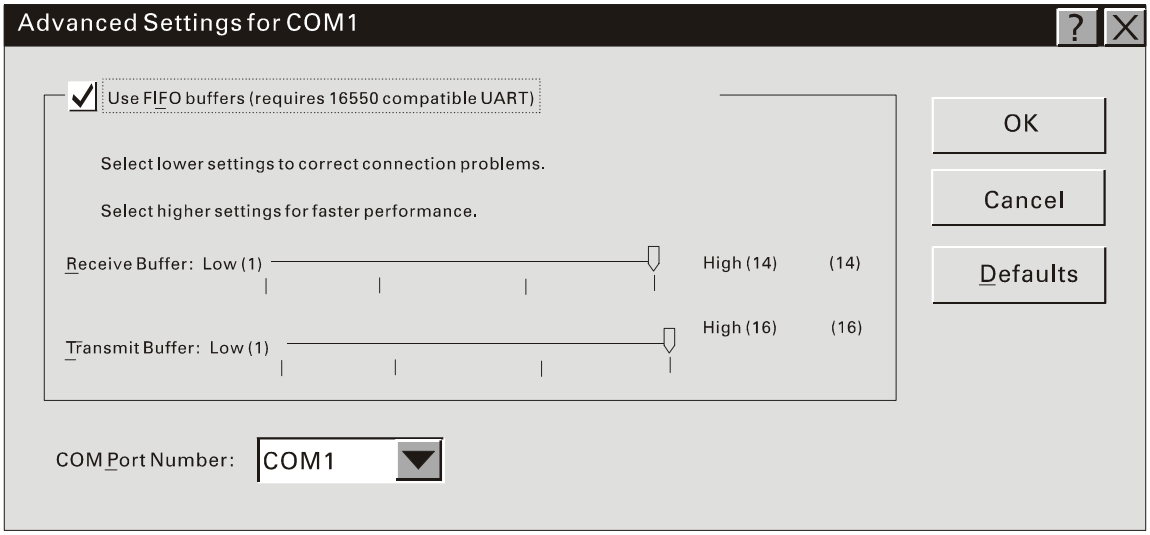

Figure 2-6 Advanced Port Settings (Windows 2000)

8 Select OK to save any changes.

9 Go to "Verifying Telephony Driver."

Verifying Telephony Driver

IMPORTANT If the Unimodem Service Provider driver is not installed, load it from the Microsoft Windows CDROM. Select the Add button, select Unimodem Service Provider from the Telephony drivers list, and select Add again.

1 From the Start Menu, select Settings >> Control Panel >> Phone and Modem Options.

2 Select the Advanced tab.

If the Unimodem Service Provider driver is installed, it will be listed.

3 Go to "Setting Up the Serial Connection Utility" on page 2-16.

Setting Up the Serial Connection Utility

Use the following procedure in to set up the serial connection that will be used to connect with the controller.

IMPORTANT The procedures in this section must be done twice for each COM port to set up serial connection files for both hardware and software flow control. Failure to set up both may result in connection problems.

---

1 From the Start Menu, select Settings >> Control Panel >> Add/Remove Programs to verify all communication components are installed.

2 Select the Windows tab and ensure there is a check mark next to Communications.

3 From the Start Menu, select Settings >> Control Panel >> Phone and Modem Options.

4 In the Phone and Modem Options dialog box, select the Modem tab; then select Add.

The Add/Remove Hardware Wizard appears.

5 Select "Don't detect my modem; I will select it from a list;" then select Next.

A list of manufacturers and models appears.

6 Select the "Have Disk. . ." button.

The Install from Disk dialog appears.

7 Under "Copy manufacturer's files from:" type the name of the directory where you installed the Serial Connection Utility. For example, if you elected to keep the default settings, you would type `c:\connections` in the dialog box.

The Install New Modem dialog appears.

IMPORTANT If you have already set up one modem file, select the second modem file in the pair when doing step 8. For example, if you selected COM 1, Hardware, IP 192.168.1.1 the first time, select COM 1, Software, IP 192.168.1.1 the second time. Both files must be installed for the serial connection to function correctly.

---

8 Select the modem file that corresponds to the COM port you will be using for the serial connection; then select Next. For example, if you will be using COM Port 1, select COM 1, Hardware, IP 192.168.1.1 in the dialog.

IMPORTANT When selecting a COM port, verify that the COM port number on both the serial connection file and the COM Port are identical. If they are not, select Back and choose the serial connection file that corresponds to the number on the COM Port.

9 Under “On which ports do you want to install it?” select the serial COM port that corresponds to the free COM port you want to use (COM1, for example); then select Next.

A Digital Signature not Found dialog appears.

10 Select Yes to continue the installation without a Digital Signature.

A dialog displays: Your modem has been set up successfully.

11 Select Finish.

The Modem Properties dialog box appears and the serial connection file just installed should be listed.

12 Do you need to set up another serial connection?

- Yes – Repeat steps 4 through 11 to set up the second of two serial connection files.
- No – Go to step 13.

13 Navigate to the Serial Connection Utility installation directory (c:\connections, by default) and run the program named FTsetup.exe.

The Dial-Up Device Setup dialog appears.

14 Select Create Serial Dial-Up Connections to finish configuring the files needed for the serial connections (Figure 2-4).

IMPORTANT Placing a check next to Verbose Installation on the Dial-up device setup dialog will create a list of all the hardware and software connections created after the Create Serial Dial-Up Connections button is pressed. Use this if you are having difficulties configuring the files or if you would like to see which connections are being configured.

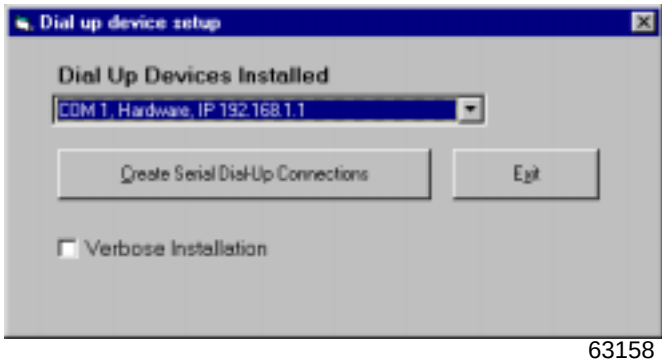

Figure 2-7 Dial-Up Device Setup

15 Go to Chapter 3, “Using the Serial Connection Utility.”

Chapter 3

Using the Serial Connection Utility

After the Serial Connection Utility has been installed and configured, the cable connections can be made between the computer and the controller. Once the hardware connections are made, use the Serial Connection Utility to establish a connection with the controller. Then, start SYMplicity Storage Manager to manage your storage array across the serial connection.

Connecting the Hardware

Before connecting the hardware, ensure the Serial Connection Utility software is installed on the computer used for the serial connection and the computer is configured according to Chapter 2, "Installing and Configuring the Serial Connection Utility."

CAUTION If you are using the RS-232 connector (2772 controller models) ensure you are putting the cable into the RS-232 connection port. If the RS-232 cable is inserted into an Ethernet port by mistake, the pins inside the Ethernet port will be damaged.

1 Attach one end of the serial cable to the serial port on the back of the computer.

2 Attach the other end of the serial cable to the controller in slot A.

IMPORTANT Ensure you have configured the software for a second serial connection before connecting a second cable. The connection will fail if you have not properly configured the second serial connection.

3 Do you have more than one serial connection?

- Yes – Repeat steps 1 and 2, connecting the second serial cable to the controller in slot B.
- No – Go to "Starting the Serial Connection Utility."

Starting the Serial Connection Utility

IMPORTANT Before using the Serial Connection Utility, ensure you have set it up according to the procedures in Chapter 2, "Installing and Configuring the Serial Connection Utility." The serial connection will not work if this has not been done.

1 Navigate to the directory where the Serial Connection Utility files are installed. The default directory is c:\connections.

2 Run the "Connection" file that corresponds to the COM port being used. For example if using COM port 1 to connect to the controller, select `Connection1.exe` and press Enter.

3 Select "Connect" on the Serial Connection Utility dialog to connect to the controller.

4 If necessary, enter your controller's password if a dialog appears. Press Enter to dismiss the dialog if no password has been set on the controller.

The Serial Connection Utility shows "Running" in its information box while it is connecting. When a successful connection occurs, you will refer to a confirmation dialog.

IMPORTANT If a connection cannot be made, run the Connection program again and select Debug to write a text file to the installation directory that details the connection information for troubleshooting.

5 Did you receive the confirmation dialog?

- Yes – Go to step 6.
- No – There may be a problem. Ensure Enable Automatic Dial-Up is selected on the dialog and select the Debug button. The connection utility writes a text file to the installation directory named "COMxDebug.txt" (where "x" is the number of the COM port). This file can be used to troubleshoot problems with the Serial Connection Utility.

6 If you are connecting over a second COM port, run the Connection program associated with that port.

7 Run the storage management software using the procedures in "Starting the Storage Management Software" on page 3-4.

8 When you are finished using the Serial Connection Utility, close the storage management software and then select Disconnect on each Serial Connection Utility window.

Starting the Storage Management Software

Use the following procedure to start the storage management software *after* establishing the serial connection.

1. Select Start >> Programs.
2. Select SYMplicity Storage Manager.

   The software displays the Enterprise Management Window and the Confirm Initial Discovery dialog.
3. Select No.
4. Select Edit >> Add Device.

   The Add Device dialog box is displayed.
5. Type 192.168.x.1 where x equals the COM port being used for the serial connection; then select Add. For example, if using COM port 1, type 192.168.1.1 (the IP address assigned to the serial connection) (Figure 3-1).

   The storage management software connects to the controller. Another blank Add Device dialog appears after a successful connection.

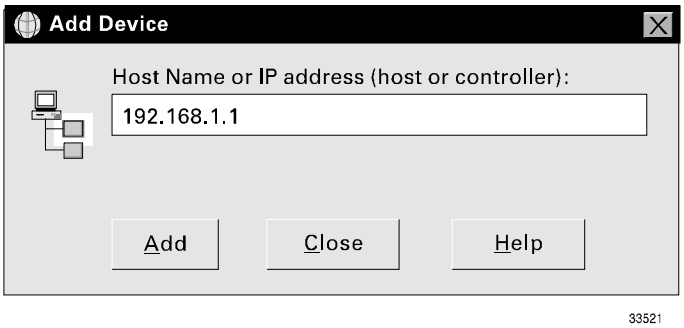

Figure 3-1 Add Device Dialog

6. If using a second serial connection, repeat step 5. The COM port number must be changed for the second connection.
7. Select Close.

   - If connected to only one controller tray in a dual-controller configuration, the Partially Managed Devices dialog box is displayed (Figure 3-2).
   - If connected to both controllers, the Enterprise Management Window is displayed. For more information, refer to "Using SYMplicity Storage Manager in a Partially Managed Configuration" on page 3-6.

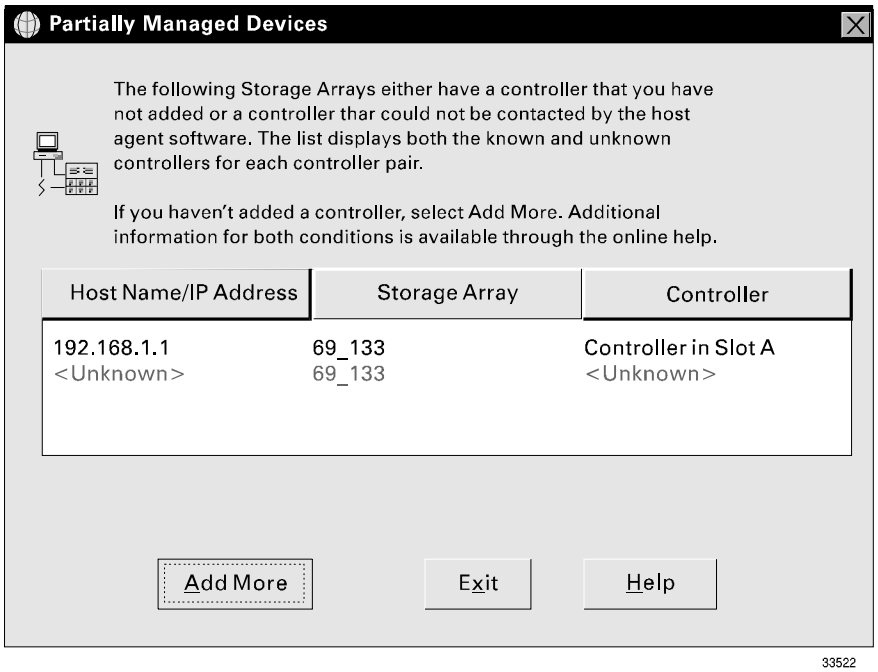

Figure 3-2 Partially Managed Devices Dialog

8 Select Exit to return to the Enterprise Management Window.

End Of Procedure

Using SYMplicity Storage Manager in a Partially Managed Configuration

A partially managed configuration occurs when only one controller is defined or can be contacted when the storage array is added or detected. This is normal when running the storage management software over a serial connection because there may be only one cable connection, especially if using a laptop. Typically, laptops have only one serial port and must operate in a partially managed configuration.

Because communication is possible with only one of the controllers in a partially managed storage array, volume management operations can be performed only on volumes owned by the connected controller. Most of these operations can be completed normally using the following procedure. For a list of operations that cannot be completed, refer to "Understanding the Restrictions" on page 1-4.

1. Establish a serial connection with the controller according to "Starting the Serial Connection Utility" on page 3-3 and "Starting the Storage Management Software" on page 3-4.
2. Select the operation to perform with the storage management software. For example, if you want to change ownership of a volume group, select Volume Group >> Change Ownership.

   An error message will display stating that the operation cannot be completed until the management connection to the non-connected controller is defined.
3. Minimize the storage management software and close the dial-up connection.
4. Unplug the serial cable from controller A and move it to the serial port on controller B.
5. Establish a serial connection with the controller by repeating the procedures in "Starting the Serial Connection Utility" on page 3-3 and "Starting the Storage Management Software" on page 3-4.
6. Restore the storage management software window and repeat the operation on the second controller.

End Of Procedure

Appendix A

Troubleshooting

Use the information in this chapter to find solutions to problems you may encounter while using the Field Tool Utilities. You may want to use the procedures in "Enabling Logs" on page A-6 to generate text files for your operating system's serial or PPP connections.

Troubleshooting Problems

Use the following table to diagnose and correct many common problems that can occur when using the Field Tool Utilities.

Table A-1 Troubleshooting Problems (1 of 4)

Problem	Solution
Error numbers between 600 and 752 occur during connection.	These errors are associated with the Remote Access Service (RAS) in Windows NT. Please refer to Microsoft's documentation or support Web site for more information about the errors. The following steps may keep these errors from re-occurring: 1 Reinstall RAS. 2 After RAS is installed, reinstall the latest Service Pack for Windows.
Error number 650 (The Remote Access server is not responding.) occurs when using the Serial Connection Utility.	This error may occur because of cable problems or because of an incorrect setting on the controller. Try the following steps to troubleshoot this problem: 1 Open the controller boot menu in the controller shell. 2 Select option 10, Serial Interface Mode Menu, and ensure the entry is set to SRM and console. 3 Exit the controller boot menu. The connection will fail if the menus are not shut down. 4 Double-check all cable connections and try dialing the controller again. If the connection continues to fail, you might have a defective cable. Try another serial cable.
Run-time error 53 occurs when trying to run FTsetup.exe.	This error usually occurs because the Remote Access Service (RAS) has not been installed on Windows NT. The following steps may keep this error from re-occurring: 1 Reinstall RAS. 2 After RAS is installed, reinstall the latest Service Pack for Windows.
The Serial Connection Utility returns error 97 while attempting to download ESM firmware.	Reset the controllers and retry the download. The download should complete successfully on the second or third attempt.

Table A-1 Troubleshooting Problems (2 of 4)

Problem	Solution
The serial port is in use by a serial mouse or other device, or the device has been unplugged but there are still problems with the port.	Ensure the device is unplugged. The drivers for the serial device may still be loaded even though the device has been unplugged. Uninstall the drivers for the device and reboot the computer. If the device is a mouse, add the following line to the boot.ini file and reboot the computer: `/NoSerialMice`
Cannot connect to a 2772 controller via a serial connection.	When connecting to a 2772 controller, the Serial Connection Utility will not connect unless you have set up a dial-up script for software flow control. For more information about setting up a dial-up script for software flow control, refer to the procedure "Installing and Configuring the Serial Connection Utility" in Chapter 2 for your specific operating system.
The dialer consistently fails and will not connect.	Depending on the hardware configuration, the serial connection may not connect on the first try. Dial the controller once or twice more. If the connection still cannot be made, there may be an incorrect setting on the controller. Use the following to reset the information for the serial connection: 1 Open the controller boot menu in the controller shell. 2 Select option 10, Serial Interface Mode Menu, and ensure the entry is set to SRM and console. 3 Exit the controller boot menu. The connection will fail if the menus are not shut down.
The connection keeps failing because the terminal window menus are running.	The controller boot menu cannot be active while the Serial Connection Utility is trying to connect. The connection will fail if the menu is running. To ensure the controller boot menu is off, type q in the terminal window and press Enter.
The serial connection keeps failing because debug is enabled on the controller	The debug functions on the controller MUST be turned off during any serial connections. A connection cannot be guaranteed if debug functions are on.

Table A-1 Troubleshooting Problems (3 of 4)

Problem	Solution
Receive Error 1005 - Download may not have completed when downloading firmware.	This is a timing issue. The storage management software did not get a notification of download within the timeout period. However, it is likely that the firmware download succeeded. To find out, wait a few minutes for any activity to complete on the controllers and then check the firmware number. (It may be necessary to reboot the controllers.)
The serial connection was working properly but now fails because a new NVSRAM file was downloaded.	It is possible that a setting in the Serial Connection Boot Menu on the controller was changed. Use the following to reset the information for the serial connection: 1 Open the controller boot menu in the controller shell. 2 Select option 10, Serial Interface Mode Menu, and ensure the entry is set to SRM and console. 3 Exit out of the controller boot menu. The connection will fail if the menus are not shut down.
Everything seems to be configured correctly, but the connection always fails the first time.	Depending on the hardware configuration, the serial connection may not connect on the first try. Dialing the controller a second time might be necessary to get a connection.
While downloading new firmware to the Environmental Services Monitor (ESM) via the serial connection, the download fails and an error message is displayed.	Errors will occur if any configuration changes are done to the storage array during the download. Ensure no other storage management stations are performing configuration changes to the storage array before a download, and do not start any others until the download completes.

Table A-1 Troubleshooting Problems (4 of 4)

Problem	Solution
Configuration seems correct but the connection still will not work.	It is possible the Visual Basic Runtime files are not installed. These files are necessary for the serial connection to work. Use the following procedure to install the correct files: 1 Navigate to the directory where you installed the Serial Connection Utility files. The default directory is c:\connections. 2 Run the file named vbrun60sp5.exe. 3 Select Yes when asked if you would like to install the Visual Basic files. The files are installed. 4 Select Yes to reboot the computer.
The serial connection does not work or is unstable in Windows 98.	The Dial-Up Networking files on the computer may need to be updated to stabilize the PPP connection. Use the following procedure to install the correct files: 1 Navigate to the directory where you installed the Serial Connection Utility files. The default directory is c:\connections. 2 Run the file named dun1498.exe. 3 Follow the instructions on the dialogs to install the necessary files. 4 Reboot the computer.
The serial connection does not work or is unstable in Windows 98 SE.	The Dial-Up Networking files on the computer may need to be updated to stabilize the PPP connection. Use the following procedure to install the correct files: 1 Navigate to the directory where you installed the Serial Connection Utility files. The default directory is c:\connections. 2 Run the file named dun14SE.exe. 3 Perform the procedure on the dialogs to install the necessary files. 4 Reboot the computer.

Enabling Logs

If experiencing problems connecting to the controller tray via the serial connection, the following log files can be enabled: Serial Connection log and PPP log. These log files are used to record the activity associated with the serial or PPP connections. The files will be written locally, but can be sent to a technical support representative if a connection problem occurs.

NOTE The logs will keep growing larger until turned off. To conserve disk space, turn these features off when you have finished using them.

Enabling the Serial Connection Log

Windows 98 or Windows NT

1 Select Start >> Settings >> Control Panel >> Modems.

The Modem Properties dialog appears.

2 Select the serial connection in the modem list and select Properties.

3 Select the Connection tab and Advanced.

The Advanced Connection Settings dialog is displayed (Figure A-1).

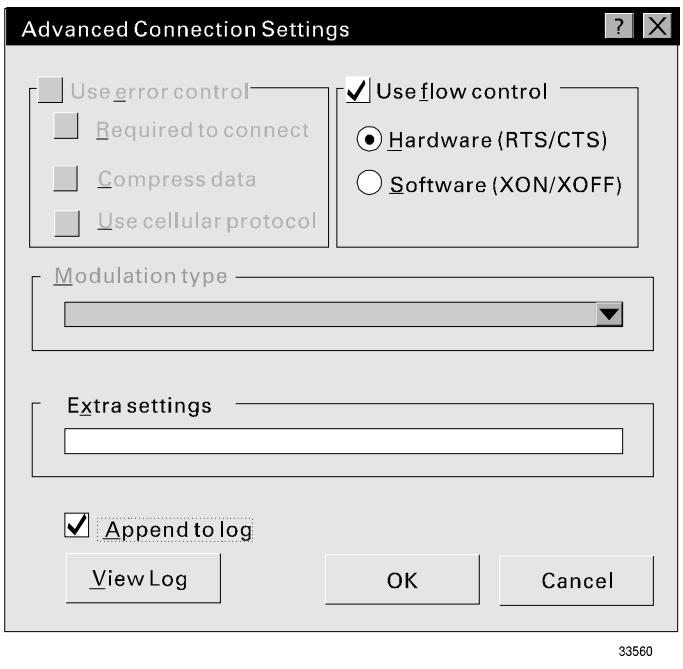

Figure A-1 Enabling the Serial Connection Log (Windows 98 or NT)

4 Select Append to log (Windows 98) or Record a log file (Windows NT) to enable the serial connection log.

5 Select OK to save the changes and return to the Modem Properties dialog.

Windows 2000

1 From the Start Menu, select Settings >> Control Panel >> Phone and Modem Options.

2 Select the Modems tab.

3 Select the serial connection in the modem list and then select Properties.

4 Select the Diagnostics tab.

5 Under Logging, select Record a Log as shown in Figure A-2.

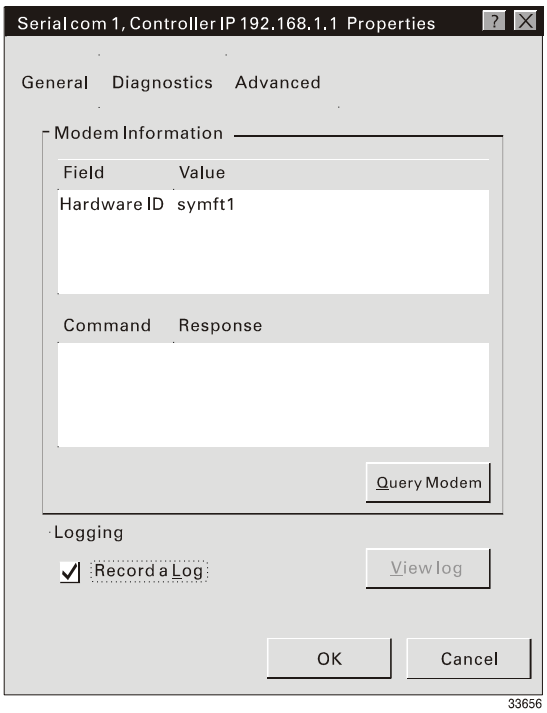

Figure A-2 Enabling Modem Log (Windows 2000)

Enabling the PPP Log

Windows 98

1 On the desktop, open My Computer >> Dial-Up Networking.

The Dial-Up Networking dialog appears.

2 Right-click the serial connection set up in Chapter 2, “Installing and Configuring the Serial Connection Utility” and select Properties.

The Properties dialog for that connection appears.

3 Select the Server Types tab (Figure A-3) and select Record a Log File for this Connection.

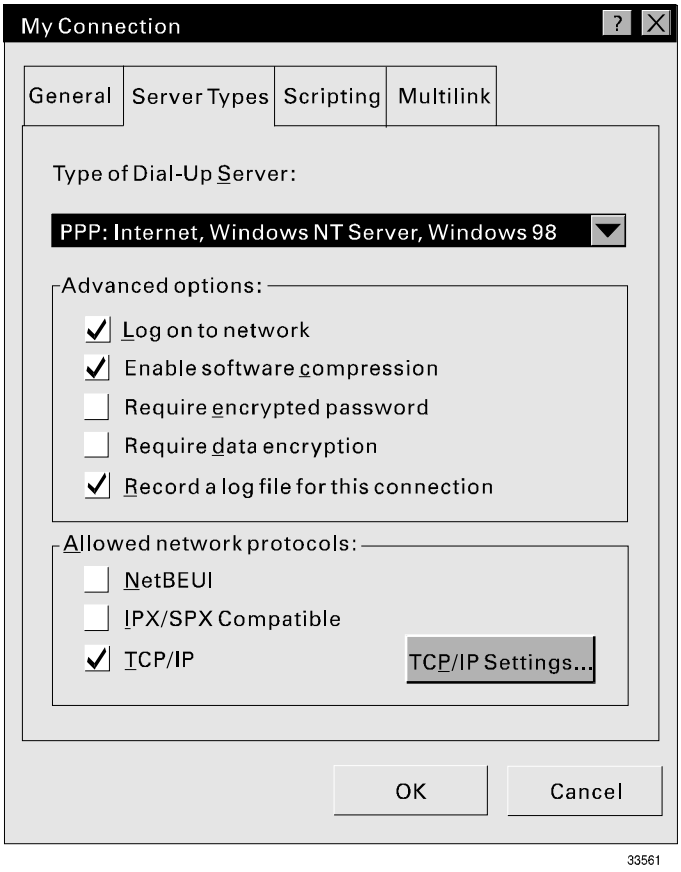

Figure A-3 Dial-Up Connection Properties (Windows 98)

4 Select OK to save the changes and return to the Dial-Up Networking screen.

Windows NT or 2000

To enable the PPP log in Windows NT, an entry must be edited in the Windows Registry.

CAUTION Incorrectly editing the Windows Registry can cause serious problems with the operating system. Before making any changes, back up the Registry in case it must be restored. Refer to your Windows documentation for more information.

---

1 Run the Registry Editor:

   a Select Start >> Run.

   b Type `regedt32.exe` in the Run dialog.

   c Select OK.

   The Registry Editor appears.

2 Select the pane in the Registry titled HKEY_LOCAL_MACHINE and, in the left-hand pane, open SYSTEM\CurrentControlSet\Services\RasMan\PPP.

   The Registry keys for PPP are displayed in the right-hand pane.

3 Select the Logging value and select Edit >> DWORD.

   The DWORD Editor is displayed with the current value for Logging in the Data box.

4 Enter one of the following values:

   - 0 to disable PPP logging
   - 1 to enable PPP logging

5 Close the Registry Editor.

Appendix B

Downgrading Storage Manager

CAUTION Potential data loss – The procedures in this chapter must be done *only* under the guidance of a technical support representative.

Downgrading controller firmware levels on a storage array can be accomplished using the tools and procedures listed in Table B-1.

Table B-1 Firmware Downgrade Levels and Tools

Current Firmware Level	Target Firmware Level	Use	Procedure	Comments
5.3x	5.00 through 5.20	SYMplicity Storage Manager version 8.3x Script Editor or Command Line Interface	"Downgrading from 5.3x to 5.00 or 5.20" on page B-2	*Only* the Script Engine or command line interface in SYMplicity Storage Manager 8.3x can be used to downgrade from 5.3x to 5.00 or 5.20.
5.x	4.01/4.02[1]	No tool. Refer to "Downgrading from 5.x to 4.01/4.02" on page B-2	"Downgrading from 5.x to 4.01/4.02" on page B-2	Downgrade erases *all* volume data on the storage array. Back up all data fully before proceeding.
4.01/4.02	4.00	SYMplicity Storage Manager Field Tool version 7.10 or higher	"Downgrading from 4.01/4.02 to 4.00" on page B-4	Differences in maximum numbers of volumes and storage partitions. Resolve conflict before proceeding.
4.00	3.x[2]	Serial Download Utility	"Installing the Serial Download Utility" on page B-13	*Only* the Serial Download Utility can be used to downgrade from 4.00 to 3.x.

[1]Use 4.02 code for *only* 4884 controllers.

[2]If downgrading from 4.00 to 3.0, a downgrade to 3.1.3 must be made first. For example, you must downgrade from 4.00 to 3.1.3, then downgrade from 3.1.3 to 3.0.

Downgrading from 5.3x to 5.00 or 5.20

This downgrade can be performed with either the Script Engine or the command line interface in SYMplicity Storage Manager.

For more information about using the command line interface commands and parameters, refer to the Enterprise Management Window online help in SYMplicity Storage Manager.

IMPORTANT This procedure will not work unless you have installed SYMplicity Storage Manager version 8.3x or later.

Using the Script Engine

IMPORTANT The downgrade can also be performed from the command line interface. While the commands and parameters are the same, the syntax differs for each operating system. Please refer to the online help in SYMplicity Storage Manager for syntax examples.

---

1. Open the Script Editor from the Enterprise Management Window in SYMplicity Storage Manager.
2. Type the following information into the Script Editor and press Enter:

   ```
   download storagearray file=<“filename”> content=firmware
   downgrade=true;
   ```

   where `storagearray` equals the name of the storage array and `<“filename”>` equals the name of a valid firmware file enclosed in double quotes.

   Valid filenames for downloadable packages end with a `.dlp` extension. Double quotes are required around the filename.

   Result – the package is downloaded to the controller.

Downgrading from 5.x to 4.01/4.02

Because of the complexity of this procedure, this controller firmware downgrade should be performed only by a technical support representative.

CAUTION Data loss – This procedure will delete all volume data on the storage array. Perform a full backup before proceeding or you will lose ALL data.

---

1. Stop all I/O to the storage array.

2 Back up all the data on the volumes.

3 Open the terminal window menus in the controller shell.

4 Select option 12, Change Hardware Configuration, and then set Autoload disable to "on."

   Setting this option ensures that no 5.x code will load when rebooting.

5 Press "q" to quit the boot menu but stay in the controller shell.

6 At the prompt, type "`sysWipe`" to delete the firmware and volume information on the storage array. The command is case-sensitive.

   A message will display informing that you need to reboot and do a "sysWipe" on the second controller. Do NOT reboot until "sysWipe" commands have been run on both controllers.

7 Repeat step 6 to perform a "sysWipe" on the second controller in the pair.

8 Reboot both controllers.

9 Download the NVSRAM and firmware packages.

   This can be done via a serial or Ethernet connection. Serial downloads will be much slower.

10 After the code has downloaded to both controllers, open the terminal window menus in the controller shell.

11 Select option 12, Change Hardware Configuration, and then set Autoload disable to "off."

12 Press "q" to quit the boot menu but stay in the controller shell.

13 At the prompt, type "`sysWipe`" to ensure no 5.x data remains on the drives. The command is case-sensitive.

   A message will display informing that you need to reboot and do a "sysWipe" on the second controller. Do NOT reboot until "sysWipe" commands have been run on both controllers.

14 Repeat step 13 to perform a "sysWipe" on the second controller in the pair.

15 Reboot both controllers.

   After rebooting, you can re-create the volume configuration and re-load data on the storage array.

Downgrading from 4.01/4.02 to 4.00

CAUTION The tasks in this procedure must be performed exactly to ensure a successful downgrade without loss of data. Contact technical support if you need assistance backing up the data on your system before attempting this downgrade.

Downgrading the software may cause you to lose access to your volumes because different versions of this software support different *maximum* numbers of volumes. Be certain you understand the entire downgrade procedure before beginning. Contact technical support if you are unsure about how to proceed.

The controller firmware downgrade is only possible through the use of the SYMplicity Storage Manager Field Tool and should be performed by a technical support representative.

The downgrade is restricted by the SYMplicity Storage Manager software to reduce the chance of data loss/data corruption. Also, compared to the previous version of the software, SYMplicity Storage Manager 7.10 and 7.11 have four times the available number of volumes, a system-assigned Access Volume, user-controlled/software-based volume-to-LUN mappings, and double the number of storage partitions. If any of these advanced features have been used in the storage array environment, the storage array settings will have to be carefully rearranged or removed to perform a successful downgrade.

New Terminology

The following terminology is used later in the downgrade procedure. You should be familiar with these concepts before continuing:

Subsystem Identifier (SSID) – The SSID is the hard-coded address that the storage array uses to communicate with each volume. In the previous version of the software, the term SSID was interchangeable with Logical Unit Number (LUN). In SYMplicity Storage Manager 7.10 a new software layer was introduced, allowing the LUN to be the software description of the path to the volume, while the SSID remained the hard-coded address to the volume. By allowing the storage management software to control the relationship between the two, the end-user is able to change the volume-to-LUN mappings through the user interface.

Overview of tasks

The downgrade procedure is divided into a series of smaller tasks. Each task has its own set of procedures associated with it and should be performed in the following order:

- Back up the data on your volumes, if needed.
- Remove any volume that has a Subsystem Identifier (SSID) matching the SSID that will be used for the Access Volume in the target software version. Refer to "Resolving Access Volume Conflicts" on page B-6 for more information.
- Preserve data and remove storage partitions numbering more than eight. Refer to "Resolving Storage Partition Conflicts" on page B-7 for more information.
- Remove any volume that is mapped to the LUN that will be used with the Access Volume after the downgrade. Refer to "Resolving LUN Mapping Conflicts" on page B-8 for more information.
- Remove any volumes that have an SSID greater than 31. Refer to "Resolving Number of Volumes Conflicts" on page B-9 for more information.
- Review SYMplicity Storage Manager 7.02 operating system level restrictions, if applicable. Refer to "Reviewing Restrictions (HP-UX only)" on page B-10 for more information.
- Ensure all hosts are homogeneous. Refer to "Resolving Heterogeneous Host Conflicts" on page B-11 for more information.
- Back up your configuration files. Refer to "Saving Configuration Files" on page B-11 for more information.
- Downgrade the NVSRAM and controller firmware. Refer to "Performing the Downgrade" on page B-12 for more information.
- Restore your configuration files. Refer to "Restoring Configuration Files" on page B-12 for more information.

Resolving Access Volume Conflicts

In later versions of SYMplicity Storage Manager, the Access Volume is located at Subsystem Identifier (SSID) 128. This is different from earlier software versions, in which the Access Volume could reside between SSID 0 and 31. (Previous versions would usually reside at 7 or 31.) The SYMplicity Storage Manager 7.02 NVSRAM defines the SSID that the Access Volume will have. Therefore, a data volume cannot have the same SSID that the Access Volume will have after the downgrade.

CAUTION If the Access Volume and a data volume share an SSID number after the downgrade, volumes will be shifted to different SSIDs resulting in I/O errors and the possibility of data corruption.

To avoid problems, any volumes that have an Identifier equal to the SSID that *will be used* for the Access Volume must be removed before a downgrade.

1. From the Array Management Window, select Storage Array >> Profile, or select a volume and select Volume >> Properties. The Subsystem Identifier is listed in the detail description of each individual volume.
2. Back up the data on your Access Volume, if needed.
3. Identify any volumes with an SSID that will conflict with the LUN number that will be used for the Access Volume (usually 7 or 31). You must delete these volumes.
4. Delete the volumes. Select a volume; then select Volume >> Delete.
5. Is Storage Partitioning enabled on the storage array?
   - Yes – Go to "Resolving Storage Partition Conflicts."
   - No – Go to "Resolving LUN Mapping Conflicts" on page B-8.

Resolving Storage Partition Conflicts

A maximum of 16 storage partitions are supported in SYMplicity Storage Manager 7.10 and 7.11; only 8 storage partitions are supported in SYMplicity Storage Manager 7.02. Therefore, it is recommended that eight or fewer storage partitions be in use at the time of the downgrade. If more than eight partitions are in use, they will not be lost, but the premium feature will appear as "Out of Compliance." The partitions greater than eight can be modified and deleted, but no new partitions can be created.

Storage partitions are defined by mapping volumes to a host or host group. To disable a storage partition, all volumes that are mapped to a host or host group must be moved to another host or host group.

1. Determine which storage partitions need to be removed.
2. Stop I/O to all volumes that will have a mapping change.
3. Select Configure >> Storage Partitioning from the Array Management Window to open the Mappings Window.
4. Select the host or host group which is currently accessing the storage partition that needs to be removed.

   All volume mappings for that host or host group appear on the right.
5. Select the name in the Mappings View and select Configure >> Volume-To-LUN Mappings >> Change Mapping.
   a. Select a new host or host group to move the volume to.
   b. Select a LUN for the volume to be mapped to in the new host or host group.
   c. Select OK.
6. Repeat step 5 for all volumes in that host or host group.

   When the last volume has been moved from the host or host group, the number of partitions used should decrease by one. This number can be found at the top of the Mappings view.
7. Repeat step 2 through step 6 to delete another storage partition, if needed.
8. Do you have a volume mapped to the SSID you will use after the downgrade (usually 7 or 31)?
   - Yes – Go to "Resolving LUN Mapping Conflicts" on page B-8.
   - No – Go to "Resolving Number of Volumes Conflicts" on page B-9.

Resolving LUN Mapping Conflicts

If Storage Partitioning is enabled, you can choose the Access Volume's volume-to-LUN mapping. In version 7.02 of the storage management software, the Access Volume is not changeable, but instead is mapped to the LUN/SSID defined in the NVSRAM (usually 7 or 31).

NOTE In a new installation of SYMplicity Storage Manager, the Access Volume is mapped to LUN 7 by default and can be changed through the storage management software.

CAUTION Potential data loss – During a downgrade, if a data volume is mapped to the LUN that the Access Volume will use, that volume will be remapped. Other volumes may also be automatically remapped. All volumes that are remapped will result in I/O errors or data corruption and you may lose access to your data. To prevent I/O errors, ensure that the LUN associated with the Access Volume is not mapped to a data volume.

1. Stop I/O to the volume that requires a mapping change.
2. Select Configure >> Storage Partitioning from the Array Management Window to enter the Mappings Window.
3. Select the host or host group that contains the mapping to be changed.

   All volume mappings for that host or host group appear on the right.
4. Select the volume that is using the LUN you will use for your Access Volume, and select Configure >> Volume-To-LUN Mappings >> Change Mapping.
   a. Type a new LUN number.
   b. Select OK.
5. Go to "Resolving Number of Volumes Conflicts."

Resolving Number of Volumes Conflicts

SYMplicity Storage Manager versions 7.10 and higher support 128 volumes, and SYMplicity Storage Manager 7.02 supports 32 volumes, including the Access Volume. For this reason, only 31 volumes can be present before a downgrade to version 7.02.

The volumes that are present before the downgrade must have an SSID of 31 or less. The firmware cannot access any volumes that have an SSID of 32 or greater. To avoid loss of data, all volumes with a SSID of 32 or greater must be backed up, if needed, and deleted before a downgrade.

1 Do one of the following:

- From the Array Management Window select Storage Array >> Profile.
- Select a volume and choose Volume >> Properties.

The SSID is listed in the detailed description of each volume.

2 Back up the data on your volumes, if needed.

CAUTION Data loss – Perform a full backup before deleting any volumes or you will lose ALL data in those volumes.

---

3 Delete all volumes with an SSID of 32 or greater:

a Select a volume to delete.

b Choose Volume >> Delete.

c Type “yes” in the confirmation dialog and press Enter.

4 Are you using a host system with the HP-UX operating system?

- Yes – Go to “Reviewing Restrictions (HP-UX only)” on page B-10.
- No – Go to “Resolving Heterogeneous Host Conflicts” on page B-11.

Reviewing Restrictions (HP-UX only)

If you are using a host system with an HP-UX operating system, review the following information before going to "Resolving Heterogeneous Host Conflicts."

Table B-2 Restrictions for HP-UX Hosts

Restriction	Workaround
When the Auto-Volume Transfer feature is enabled, performing either of the following actions will eliminate controller redundancy in the storage array and may cause a data transfer error: • Using SYMplicity Storage Manager 7.02 to change a controller from active mode to passive mode • Using SYMplicity Storage Manager 7.02 to take a controller offline **Note** In SYMplicity Storage Manager 7.02 the default setting for the Auto-Volume Transfer feature is Enabled.	None
When the Auto-Volume Transfer feature is enabled, you can only create a single volume on a volume group. All available capacity of the volume group is automatically assigned to the single volume by default. **Note** In SYMplicity Storage Manager 7.02 the default setting for the Auto-Volume Transfer feature is Enabled.	None
There are limits to how much drive space capacity you can have in a single volume group. For example, with 73.4 GB drives, the maximum number of drives that can be configured in a single volume group is 29.	None

During the downgrade, the device node identifiers on an HP-UX system will return to their original (version 7.02) settings. For more information about this Device ID modification, go to "Identifying Device Names and Bus Numbers" in the SYMplicity Storage Manager 7.10 Installation Guide.

Resolving Heterogeneous Host Conflicts

Heterogeneous hosts are supported in SYMplicity Storage Manager 7.10 and 7.11 but not in previous versions of the storage management software. Therefore, all hosts must be changed to the same type (homogeneous) before you perform the downgrade if the Storage Partitioning feature is enabled.

1. Do the following to see if heterogeneous hosts have been defined.
   a. Select the storage array in the Mappings View.
   b. Select Configure >> Topology >> Show All Host Port Information or right-click the storage array and select Show All Host Port Information.)
2. Select Configure >> Storage Partitioning from the Array Management Window to open the Mappings Window.
3. Select the host port to be changed and select Configure >> Topology >> Change Host Type.
4. Select the host type that will be used in SYMplicity Storage Manager 7.02.
5. Repeat steps 3 and 4 for all host ports.
6. Go to "Saving Configuration Files."

Saving Configuration Files

Because of a directory structure change between the two versions of the storage management software, the configuration files belonging to them that contain information pertaining to your storage array will be deleted. If you wish to retain those settings after your downgrade, you will need to perform the following procedure.

1. Search the host system files for the configuration files named emwdata.bin and emwdata.bak.
2. Back up the configuration files to a safe location.
3. Go to "Performing the Downgrade" on page B-12.

Performing the Downgrade

1 Ensure the previously listed conflicts (refer to pages B-6 to B-11) have been properly resolved.

2 Download the SYMplicity Storage Manager 7.02 NVSRAM file. For detailed procedures on downloading NVSRAM and controller firmware, refer to the Array Management Window Help.

CAUTION Potential controller errors – If the NVSRAM configuration file settings are modified without rebooting the system, there may be a conflict between the current settings and the failover driver.

To avoid controller function errors after downloading the SYMplicity Storage Manager 7.02 NVSRAM, reboot the host system to reset the failover driver.

---

3 Reboot the host system.

4 Download the SYMplicity Storage Manager 7.02 firmware.

5 Go to "Restoring Configuration Files."

Restoring Configuration Files

If you backed up the configuration files belonging to the storage management software, perform the following steps to restore them.

1 Close the Enterprise Management Window, if it is open.

2 Search the host system files for the configuration files named emwdata.bin and emwdata.bak.

3 Copy the backup configuration files over the existing files.

4 Restart the Enterprise Management Window.

End Of Procedure

Using the Serial Download Utility

The Controller NVSRAM/Firmware Serial Download Utility has the ability to download controller firmware via a serial cable. Because the serial connection is much slower than a standard network connection, try downloading controller firmware via the standard connection first. If this is not possible, then install and run the serial download utility. Use the table below to determine if the serial download utility must be used.

If	And	Then
The network connections between the storage management station and the storage array are operational	The firmware will be *upgraded*[1] (4.x to 4.x or higher)	Use SYMplicity Storage Manager.
The network connections between the storage management station and the storage array are not functioning	The firmware will be *upgraded*[1] (4.x to 4.x or higher)	Use SYMplicity Storage Manager over a serial connection.
The network connections between the storage management station and the storage array are not functioning	The firmware will be *downgraded*[2] (4.x to 3.x)	Use the Serial Download Utility.

[1]SYMplicity Storage Manager can be used only with firmware numbered 4.0 or higher.
[2]If downgrading from 4.x to 3.0, a downgrade to 3.1.3 must be made first. For example, you must downgrade from 4.x to 3.1.3, then downgrade from 3.1.3 to 3.0.

Installing the Serial Download Utility

1 Contact technical support to obtain a copy of the Serial Download Utility.

2 Close all other programs.

3 Select Start >> Settings >> Control Panel >> Add/Remove Programs.

The Add/Remove Programs Properties dialog appears.

NOTE Later versions of Windows 2000 have an Installation Wizard to Add or Remove programs. If you are using this version of Windows, select the CD or Floppy button on this dialog and then Next to start the Wizard. Use the following steps to finish the installation.

4 Select Install and perform the procedures on the screen.

5 Select Browse.

The Browse dialog appears.

6 Browse to the location of the Serial Download Utility file.

7 Select the setup.exe file; then select Open.

8 Select Finish.

The setup program's Welcome screen appears.

9 Select Next.

The Choose Destination Location window appears.

10 Select Next to accept the default directory or type in a directory of your choice; then select Next to begin the installation.

11 When the installation is complete, select Finish to exit the installation program.

12 Verify that the installation was successful.

a Select Start >> Programs.

b Ensure that Serial Download Utility appears in the list of programs.

13 Go to "Running the Serial Download Utility."

Running the Serial Download Utility

CAUTION Use this procedure for both controllers in a controller-pair. If you do not download new firmware to both, they will be running with mismatched firmware and I/O errors could occur.

1. Install a serial cable between the computer and the controller tray to which you want to download a NVSRAM or firmware file.
2. Stop all I/O to the storage array receiving the download.
3. Select Start >> Programs.
4. Select Serial Download Utility.

   The serial download utility main screen appears (Figure B-1).

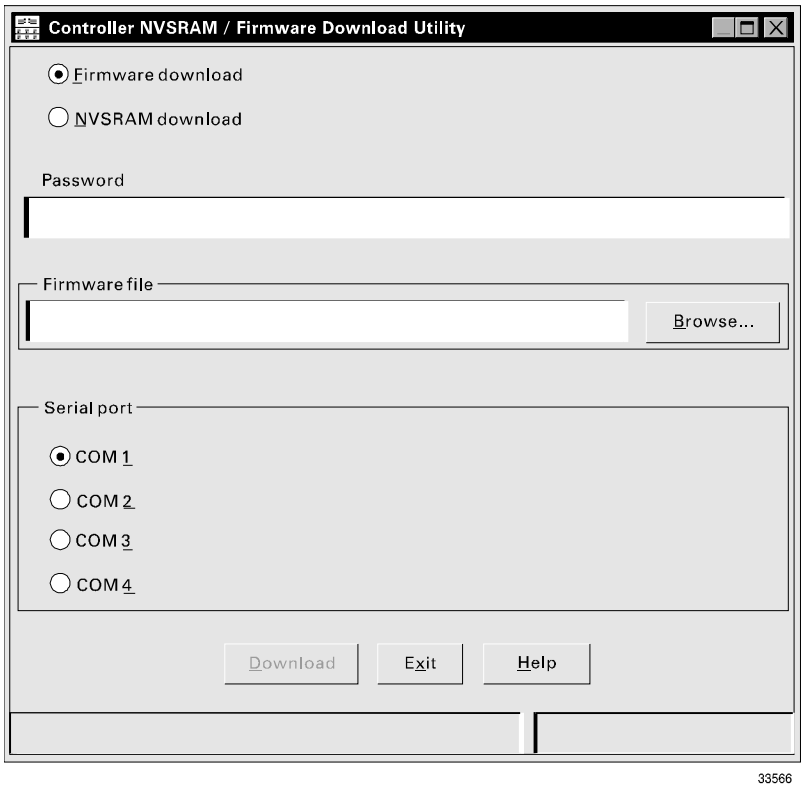

Figure B-1 Serial Download Utility

5 Select the following options to begin the download:

- File type (NVSRAM file or firmware file)
- Controller shell password
- Name and location of the file to download
- COM Port

6 Select Download.

The status line at the bottom displays the download progress.

7 Repeat this procedure for the second controller in the pair.

8 Select Exit to quit the Serial Download Utility.

End Of Procedure

Appendix C

Setup Procedures for Remote Modem Connections

These procedures can be used to set up a modem for remote connections with a storage array. To do this, you will need an external modem and a serial cable. Refer to "Installation Requirements" on page 1-6 for more information about cables. Additional hardware will be detailed in this procedure, where applicable.

Setting up a Modem for Remote Connections

Use the following procedure to connect an external modem directly to a storage array. The external modem must be capable of accepting Hayes compatible commands. Refer to your modem's documentation for more information.

IMPORTANT This procedure cannot be used with 2772 controllers. Refer to "Setting up a Modem for Remote Connections (2772 Controllers)" on page C-4 for instructions.

---

1. Connect an external modem to a computer with a terminal emulator installed on it, such as ProComm™ Plus or HyperTerminal®.
2. Turn on the power to the modem and boot-up the computer.
3. Connect to the modem using the terminal emulator of choice.
4. Check the default factory settings. In the terminal window, type the following and press Enter:

   ```
   AT&F
   ```

5. Assure CDC, CTS, and DSR are always ON and the DTR is ignored. Type the following and press Enter:

   ```
   AT&C0&D0&R1&S0
   ```

6. Set the modem to auto answer. Type the following and press Enter:

   ```
   ATS0=1
   ```

7. Assure no non-data information comes from the modem, including 'R'ing. Type the following and press Enter:

   ```
   ATE0
   ```

IMPORTANT Not all modems are capable of saving settings when they are powered down. Some have dip switches that must be set before configuration settings can be saved. If you must power the modem down before connecting it to the storage array, check the modem's documentation to find out how to save configuration settings.

---

8. If the modem will be shut off, save the configuration settings. Type the following and press Enter:

   ```
   AT&W
   ```

9 Disconnect the modem from the computer and connect it to the controller serial port on the storage array.

10 Connect a phone line to the modem.

End Of Procedure

Setting up a Modem for Remote Connections (2772 Controllers)

Use the following procedure to connect an external modem directly to a storage array containing 2772 controllers. The external modem must be capable of accepting Hayes compatible commands. Refer to your modem's documentation for more information.

IMPORTANT This procedure can only be used for 2772 controllers.

---

1 Connect an external modem to a computer with a terminal emulator installed on it, such as ProComm™ Plus or HyperTerminal®.

2 Turn on the power to the modem and boot-up the computer.

3 Connect to the modem using the terminal emulator of choice.

4 Check the default factory settings. In the terminal window, type the following and press Enter:

```
AT&F
```

5 Assure CDC, CTS, and DSR are always ON and the DTR is ignored. Type the following and press Enter:

```
AT&C0&D0&R1&S0
```

6 Set the modem to auto answer. Type the following and press Enter:

```
ATS0=1
```

7 Disable the flow control. Type the following and press Enter:

```
AT\Q0
```

8 Assure no non-data information comes from the modem, including 'R'ing. Type the following and press Enter:

```
ATE0
```

IMPORTANT Not all modems are capable of saving settings when they are powered down. Some have dip switches that must be set before configuration settings can be saved. If you must power the modem down before connecting it to the storage array, refer to the modem's documentation to find out how to save configuration settings.

---

9 If the modem will be shut off, save the configuration settings. Type the following and press Enter:

```
AT&W0
```

10 Check the configuration options. Type the following and press Enter:

```
AT&V0
```

The configuration options should match the following settings. Refer to your modem's documentation for information on changing any settings.

IMPORTANT The Async Data Rate will work at 9600 bps but will be very slow. It can be adjusted to a faster setting up to 115,200 bps. However, the speed at which the connection occurs can vary depending on the environment. Some modem/controller combinations will be capable of adjusting to the best possible speed automatically while others will need to be set manually. You may need to experiment with this setting if you would like a faster speed or are having connection problems at faster speeds.

	Option	Selection	AT Cmd
DTE_Interface	Async/Sync Mode	Async	&M,&Q
	Async Data Rate	9600 bps	(auto)
	Async Char Size	8 bits	(auto)
	Async Parity	None	(auto)
	DTR Action	Ignore	&D
	DSR Control	Forced On	&S
	RTS Action	Ignore	&R
	CTS Control	Forced On	\D
	RTS/CTS Delay	0 msec	S26=
	LSD Control	Forced On	&C
	DTE Rate=VF	Disable	S90=
Line_Dialer	AutoAnswerRing#	1	S0=
	Dialer Type	Tone	T,P
	Pulse Make	032 msec	&P
	Pulse Break	066 msec	&P
	DialTone Detect	Enable	X
	Blind Dial Pause	2 sec	S6=
	BusyTone Detect	Enable	X
	"," Pause Time	2 sec	S8=
	NoAnswer Timout	45 sec	S7=
	Fast Disconnect	Disable	S85=
	Long Space Disc	Enable	Y
	No Carrier Disc	2000 msec	S10=
	No Data Disc	Disable min	\T
	Flw Cntl of DTE	Disable	\Q
	Flw Cntl of Mdm	Disable	\Q
	XON/XOFF Psthru	Disable	\X
	Mdm/Mdm FlowCtl	Disable	\G
	Break Buffr Ctl	Keep Data	\K

```
Send Break Cntl   Data First        \K
Buffr Disc Delay  10 sec            S49=
Max Frame Size    256               \A
```

11 Disconnect the modem from the computer and connect it to the controller serial port on the storage array (Figure C-1).

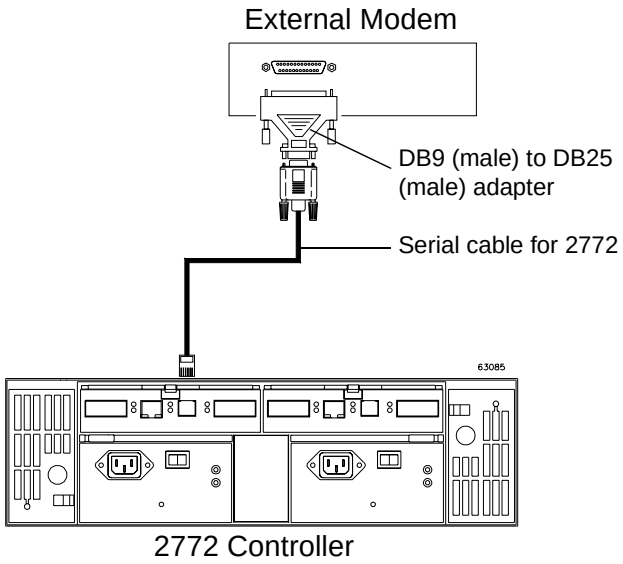

Figure C-1 External Modem to 2772 Controller Cabling

12 Connect a phone line to the modem.

End Of Procedure

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