



IBM Netfinity Fibre Channel Storage Manager  
for Windows NT

**Installation and Support Guide**





Netfinity Fibre Channel Storage Manager  
for Windows NT

## **Installation and Support Guide**

Before using this information and product it supports, be sure to read the general information under "Appendix A. Notices".

**First Edition (December 1999)**

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# Chapter 1. Introduction

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This *Installation and Support Guide* provides information about installing, setting up, and beginning to work with IBM® Netfinity® Fibre Channel Storage Manager in a Microsoft® Windows NT® operating environment. It is written for system administrators. Use this guide to:

- Determine the hardware and software required to install the storage management software
- Integrate the necessary hardware components into your network
- Install the storage management software
- Upgrade controller firmware, if necessary
- Identify storage management features unique to Windows NT

## Before You Begin

Before using this *Installation and Support Guide*, you should:

- Read the *Netfinity Fibre Channel Storage Manager Concepts Guide*. This book explains the terminology and features of the storage management software.
- Install all necessary hardware components, including storage subsystems, host adapters, hubs, switches, and so on. Refer to the appropriate hardware site preparation and installation guides for instructions.

## How to Use this Guide

The following sections provide overviews of the topics covered in this guide.

### Preparing for Installation

- Be sure to read the following information in this chapter:
  - "Finding More Information" on page 3
  - "About the Software" on page 3
  - "Configuration Types" on page 8

- "Types of Installation" on page 12
- "Understanding the Windows NT Restrictions" on page 14
- "Installation Requirements" on page 16

If there are concepts or terms that you do not understand, refer to the *Netfinity Fibre Channel Storage Manager Concepts Guide*.

- Start the preparation process with "Deciding How to Manage Storage Subsystems" on page 19.
- Read each section of "Chapter 2. Preparing for Installation" that applies to the method you plan to use to manage the storage subsystems.

### **If You Are Installing the Software in a Standard Configuration**

- Start with the "Installation Process" on page 37.
- Continue with "Installing SM7client" on page 40 and follow the process through "Downloading NVSRAM" on page 48.
- If you have existing storage subsystems with controllers that you want to manage with Netfinity Fibre Channel Storage Manager 7.x, you must upgrade the controller firmware from version 3.x to version 4.x. For more information, see "Upgrading Firmware" on page 49.
- Continue with "Chapter 5. Completing the Installation" on page 81.

### **If You Are Installing the Software in a Cluster Server Environment**

- Start with the "Installation Process" on page 53 and read all of the introductory information through "Installing the Hardware" on page 59.
- Continue with "Installing the Storage Management Software" on page 61 and follow the process through "Installing the Cluster Server Software" on page 77.
- If you have existing storage subsystems with controllers that you want to manage with Netfinity Fibre Channel Storage Manager 7.x, you must upgrade the controller firmware from version 3.x to version 4.x. For more information, see "Upgrading Firmware" on page 73.
- Continue with "Chapter 5. Completing the Installation" on page 81.

## After the Installation

- Complete all of the initial startup tasks in "Chapter 5. Completing the Installation".
- Next, go to the Enterprise Management and Subsystem Management online Help systems for complete information about how to use the software to manage the storage subsystem components.
- Be sure to read "Chapter 6. Operating System Support" for information about features and operations specific to Windows NT.

## Finding More Information

This *Installation and Support Guide* is part of a software documentation set that is provided on the Installation CD and on the World Wide Web at <http://www.pc.ibm.com/support>. The documentation is available in Portable Document Format (PDF) and is viewable with Adobe® Acrobat® Reader.

## Online Help

When you complete the tasks in this *Installation and Support Guide*, refer to the following online Help:

- *Enterprise Management window Help*. Use this online Help system for more information about working with the management domain.
- *Subsystem Management window Help*. Use this online Help system for more information about managing storage subsystems.

The Help systems contain operating information common to all operating environments. Refer to this *Installation and Support Guide* for information specific to Windows NT.

## About the Software

### Terms to Know

Throughout this guide, the term *storage management software* refers to the Netfinity Fibre Channel Storage Manager software. The term *SM7* refers to Storage Manager 7, which is a shortened name for Netfinity Fibre Channel Storage Manager 7. Individual components of the storage management software are identified by name.

If you are upgrading from a previous version of the storage management software, you will find that some of the terms you are familiar with have changed. It is important that you familiarize yourself with the new terminology. Table 1 provides a list of some of the old and new terms. For more information, refer to the *Netfinity Fibre Channel Storage Manager Concepts Guide*.

**Table 1: Old and New Terminology**

| Term Used in Previous Versions  | New Term          |
|---------------------------------|-------------------|
| RAID Module                     | Storage subsystem |
| Drive Group                     | Array             |
| Logical Unit (LUN) <sup>1</sup> | Logical drive     |
| Format                          | Initialize        |

<sup>1</sup> In Netfinity Fibre Channel Storage Manager, the term *logical unit number* (LUN) designates a logical address used by the host to access a particular logical drive.

## Software Components

Netfinity Fibre Channel Storage Manager 7.x contains the following software components:

- SM7client
- SM7agent
- RDAC
- SM7migrate

### SM7client

The SM7client component provides the graphical user interface for managing storage subsystems through the Ethernet network. The interface is completely new and streamlined from previous versions of the storage management software. The SM7client contains two main components:

- An Enterprise Management window for adding, removing, and monitoring storage subsystems within the management domain
- A Subsystem Management window for managing the components of an individual storage subsystem

## SM7agent

The SM7agent installation package consists of two software components:

- Host-agent software
- SM7devices utility

The host-agent software enables you to manage storage subsystems through the host's Ethernet connection. The host-agent software takes requests from a management station connected to the host via an Ethernet connection and passes the requests on to the storage subsystem controllers through the I/O path. For more information about managing storage subsystems through the host-agent, see "Management Methods" on page 6.

The SM7devices utility enables you to associate storage subsystem logical drives with operating system device names. For more information about using SM7devices, see "Using the SM7devices Utility" on page 93.

## RDAC

The Redundant Disk Array Controller (RDAC) installation package consists of two software components:

- RDAC multi-path driver
- Hot Add utility

The RDAC multi-path driver provides failover support to the other controller if a component along the I/O path fails.

The Hot Add utility lets you register newly-created logical drives with the operating system. For information on using the Hot Add utility, see "Using the Hot Add Utility" on page 93.

## SM7migrate

The SM7migrate utility enables you to upgrade controllers from firmware version 3.x to version 4.x and manage those storage subsystems with Netfinity Fibre Channel Storage Manager 7.x.

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**Important:** Netfinity Fibre Channel Storage Manager 7.x only operates with controllers using firmware versions 4.x. If you want to manage controllers with Netfinity Fibre Channel Storage Manager 7.x, you must upgrade the firmware to version 4.x. You must use version 6.22 of the storage management software to manage storage subsystems with controllers using firmware version 3.x. For more information, see "Types of Installation" on page 12.

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## Management Methods

Netfinity Fibre Channel Storage Manager 7.x provides two methods for managing storage subsystems:

- Host-agent managed
- Directly managed

### Host-Agent Managed

In this method, you manage storage subsystems through an Ethernet connection to a host rather than through direct Ethernet connections to each controller. The host-agent passes communications from the management station to the controllers in the storage subsystems through a fibre channel I/O path. To use this method, you must install the host-agent software, RDAC, and the Microsoft Virtual Machine (VM) on the host.

The advantages of managing storage subsystems through the host-agent include:

- You do not have to run Ethernet cables to the controllers.
- You do not need a BOOTP server to connect to the network.
- You do not need to perform most of the preparation tasks described in "Chapter 2. Preparing for Installation".
- When adding devices, you only have to specify a host name or IP address for the host rather than the individual controllers in a storage subsystem. Storage subsystems attached to the host are automatically discovered.
- You can add a host to the management domain and the attached storage subsystems are automatically discovered.

The disadvantages of using the host-agent method include:

- You are limited to configuring one less LUN than the maximum number allowed by the operating system and the host adapter you are using. The host-agent requires a special logical drive called an Access Volume to communicate with the controllers in the storage subsystem. This Access Volume uses one of the allowable logical unit numbers (LUNs). Windows NT allows a maximum number of LUNs depending on which Service Pack is installed and which host adapter you are using. For more information, see "Number of Logical Drives Supported" on page 91.
- If you are upgrading controllers from firmware version 3.x to version 4.x and your host system has already configured its maximum number of LUNs, you must give up a LUN to be used as an Access Volume.

Figure 1 shows a system in which storage subsystems are managed through the host-agent.

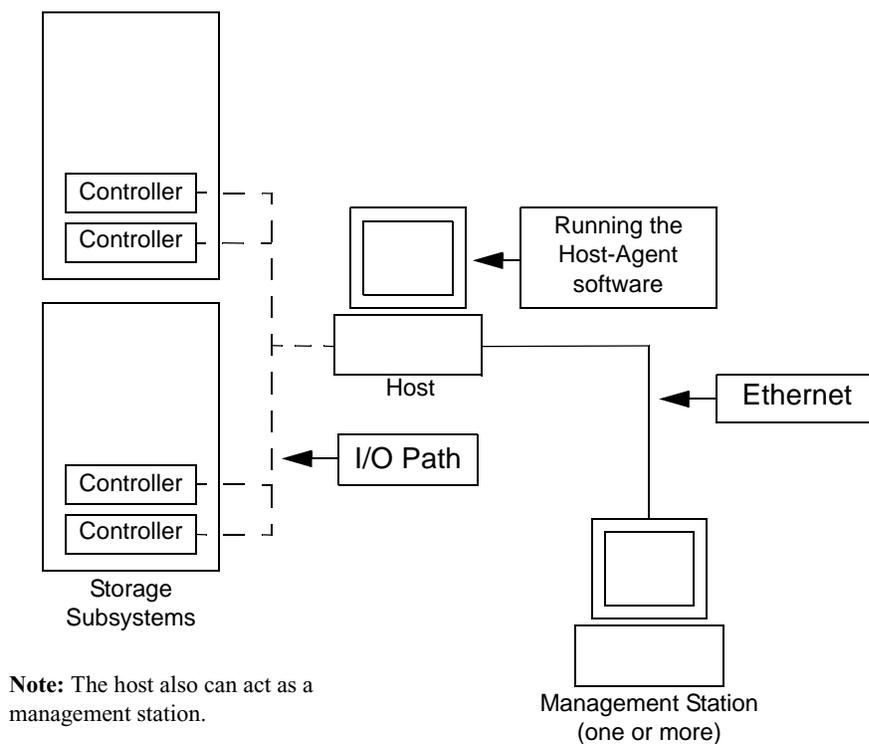


Figure 1. Host-Agent Managed Storage Subsystems

## Directly Managed

In this method, you manage storage subsystems directly over the network through each controller's Ethernet connection. To manage the storage subsystem through these Ethernet connections, you must define each controller's IP address and host name and attach a cable to the Ethernet connections on the storage subsystem controllers.

The advantages of managing storage subsystems directly include:

- The Ethernet connections to the controllers enable a management station running Windows NT to manage storage subsystems connected to a host with an operating system other than those supported by Netfinity Fibre Channel Storage Manager 7.x.
- You do not need to use an Access Volume to communicate with the controllers as you would if you were running the host-agent software. This means that you can configure the maximum number of LUNs supported by the operating system and the host adapter you are using.

The disadvantages of managing storage subsystems directly include:

- It requires two Ethernet cables to connect to both storage subsystem controllers.
- When adding devices, you must specify an IP address or host name for each controller.

**Note:** Each 4766 controller requires an AUI (Attachment Unit Interface) transceiver to attach to an RJ-45 connector.

- This method requires a number of network preparation tasks. For a summary of the preparation tasks, see Table 6 on page 21.

Figure 2 shows a system in which storage subsystems are managed directly.

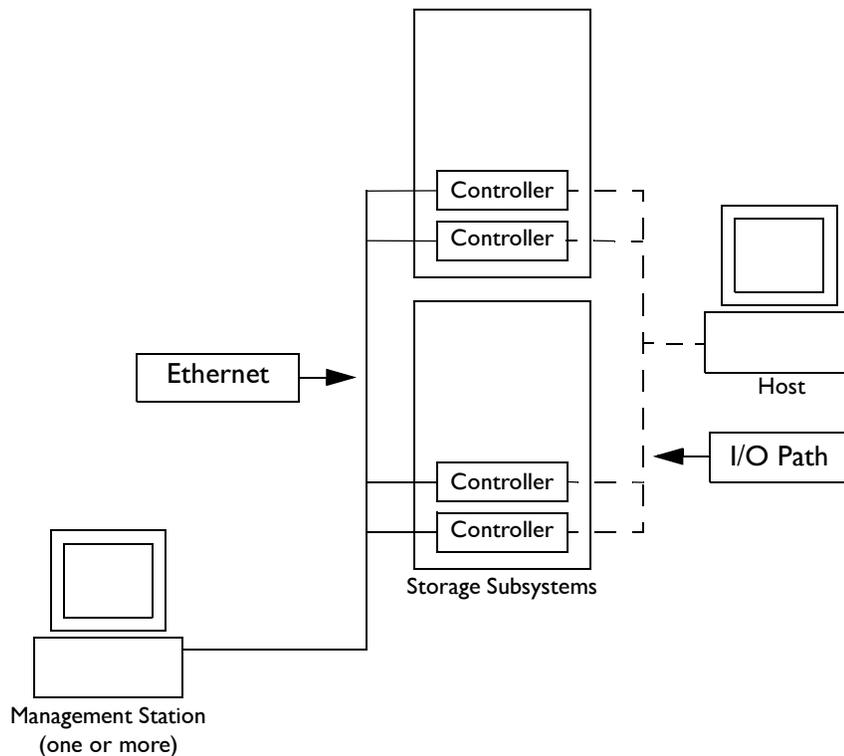


Figure 2. Directly Managed Storage Subsystems

## Configuration Types

You can install Netfinity Fibre Channel Storage Manager 7.x in one of two configurations:

- Standard (unclustered) configuration
- Cluster server configuration

## Standard (Unclustered) Configuration

Table 2 describes the storage management software components that you can install in a standard configuration (not a cluster server environment).

**Table 2: Standard Configuration Installation**

| Software Component        | Installed On   | Notes   |
|---------------------------|--|---|
| SM7agent                  | Host machine   | You must install the SM7agent package even if you choose not to manage storage subsystems with the host-agent software. The host-agent package contains important utilities necessary for operating the storage management software.  |
| Microsoft Virtual Machine | Host machine   | The Microsoft Virtual Machine is a required component for installing and using the host-agent software and the SM7devices utility.  |
| RDAC                      | Host-machine   | The RDAC component is required for controller failover support. It is also a required component for using the host-agent software.  |
| SM7client                 | <p>You can install the SM7client package on any of the following:</p> <ul style="list-style-type: none"> <li>• Management Station (for direct or host-agent management)</li> <li>• File Server (to allow one or more management stations to map to the file server and use one instance of the SM7client for direct or host-agent management)</li> <li>• Host machine (for a non-networked configuration similar to previous versions of the storage management software)</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Management stations and file servers</b><br/>If you install the SM7client on a file server or on one or more management stations, you can choose to manage storage subsystems directly through Ethernet connections to the controllers, over the network through the host-agent, or a combination of both methods.</li> <li>• <b>Host machines</b><br/>If you install the SM7client on the host machine, you do not need to be connected to a network. However, the host machine must have TCP/IP Protocol software installed and you must assign a static IP address to the host.</li> </ul> |

Figure 3 shows an example of a standard configuration, including management stations and a file server. You can install the SM7client on the host machine if it has the TCP/IP Protocol software installed. If you want to manage storage subsystems with the host-agent software, you also must install the Microsoft Virtual Machine (VM) on the host.

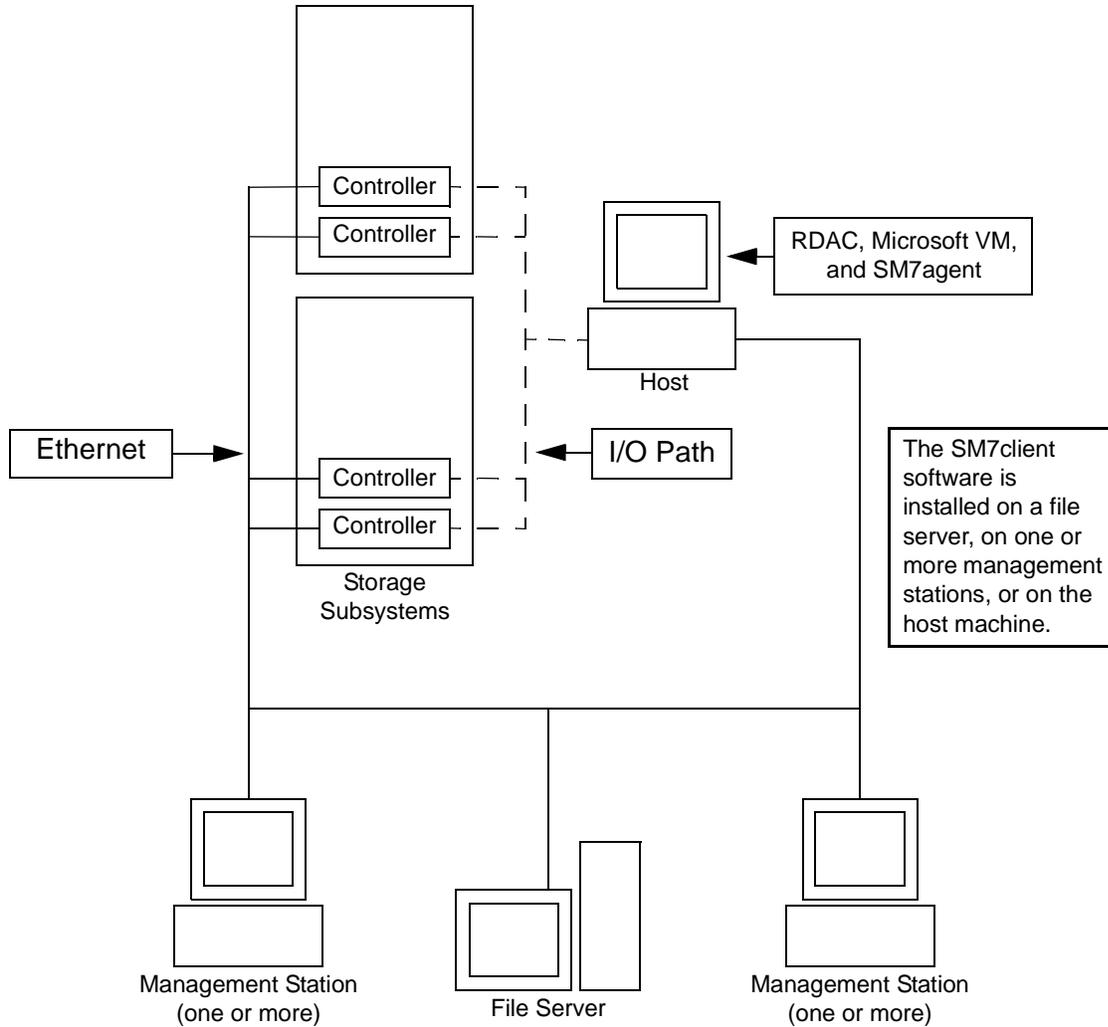


Figure 3. Sample Standard (Unclustered) Configurations

## Cluster Server Configuration

Table 3 describes the storage management software components that you can install in a cluster server environment.

**Table 3: Cluster Server Installation**

| Software Component        | Installed On  | Notes  |
|---------------------------|---|--|
| SM7agent                  | Nodes A and B   | You must install the host-agent package even if you choose not to manage storage subsystems with the host-agent software. The host-agent package contains important utilities necessary for operating the storage management software.   |
| Microsoft Virtual Machine | Nodes A and B   | The Microsoft Virtual Machine is a required component for installing and using the host-agent software and the SM7devices utility.   |
| RDAC                      | Nodes A and B   | The RDAC component is required for controller failover support and is a required component for using the host-agent software.  |
| SM7client                 | <p>You can install the SM7client package on the following:</p> <ul style="list-style-type: none"> <li>• Management station (for direct or host-agent management)</li> <li>• File server (to allow one or more management stations to map to the file server and use one instance of the SM7client for direct or host-agent management)</li> <li>• Nodes A and B (for direct or host-agent management).</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Management stations and file servers</b><br/>If you install the SM7client on a file server or on one or more management stations, you can choose to manage storage subsystems directly through Ethernet connections to the controllers, over the network through the host-agent, or a combination of both methods.</li> <li>• <b>Nodes A and B</b><br/>If you install the SM7client on the cluster servers (Nodes A and B), you do not need to be connected to a network. However, the host machine must have the TCP/IP Protocol software installed.</li> </ul> |

Figure 4 shows an example of a cluster server configuration.

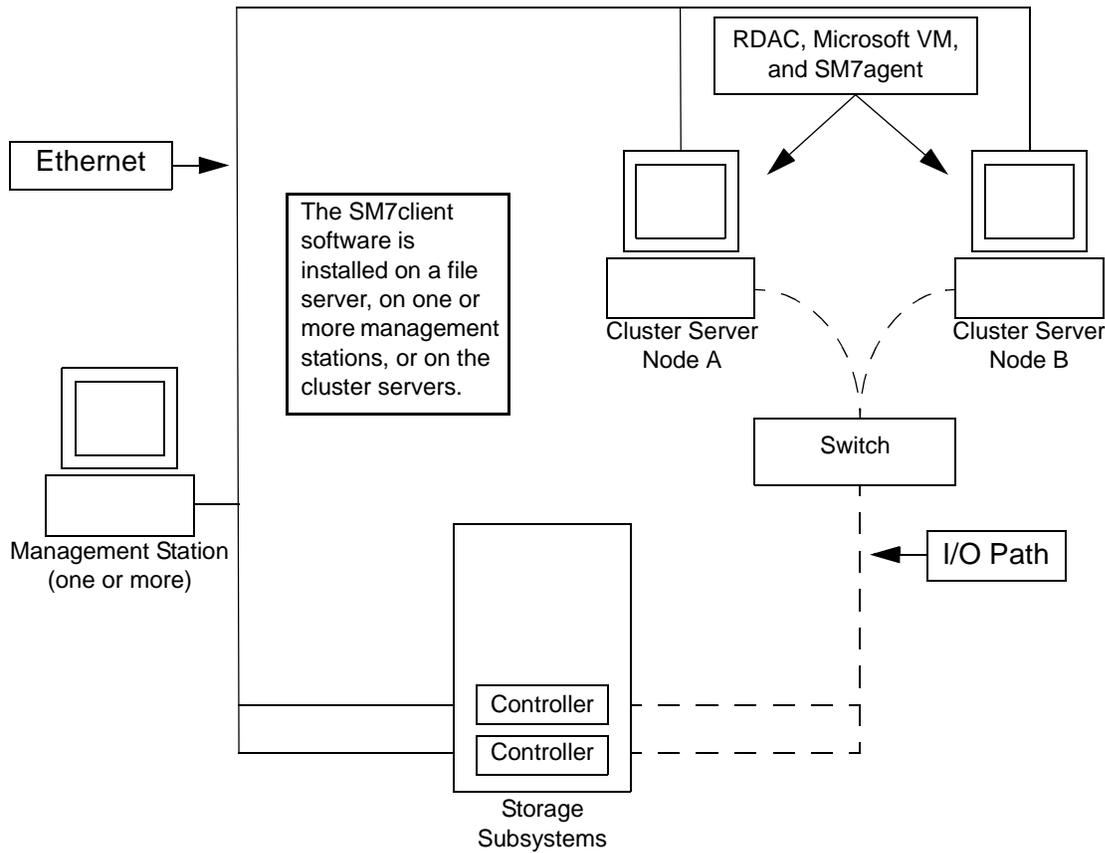


Figure 4. Sample Cluster Server Configuration

## Types of Installation

This *Installation and Support Guide* provides instructions for three types of installations:

- A first-time installation in which you are installing new storage subsystems with controllers using firmware version 4.x.
- An installation that upgrades all controllers from firmware version 3.x to version 4.x so you can manage them with Netfinity Fibre Channel Storage Manager 7.x. In this guide, this type of installation is referred to as *firmware migration*.
- An installation that enables you to use Netfinity Fibre Channel Storage Manager 7.x to manage storage subsystems with controllers using firmware version 4.x on the same network with storage subsystems with controllers using firmware version 3.x and managed with storage management software version 6.22. This type of installation is called *coexistence*. Both versions of the storage management software use the newly installed RDAC.

Figure 5 shows an example of a coexistence installation.

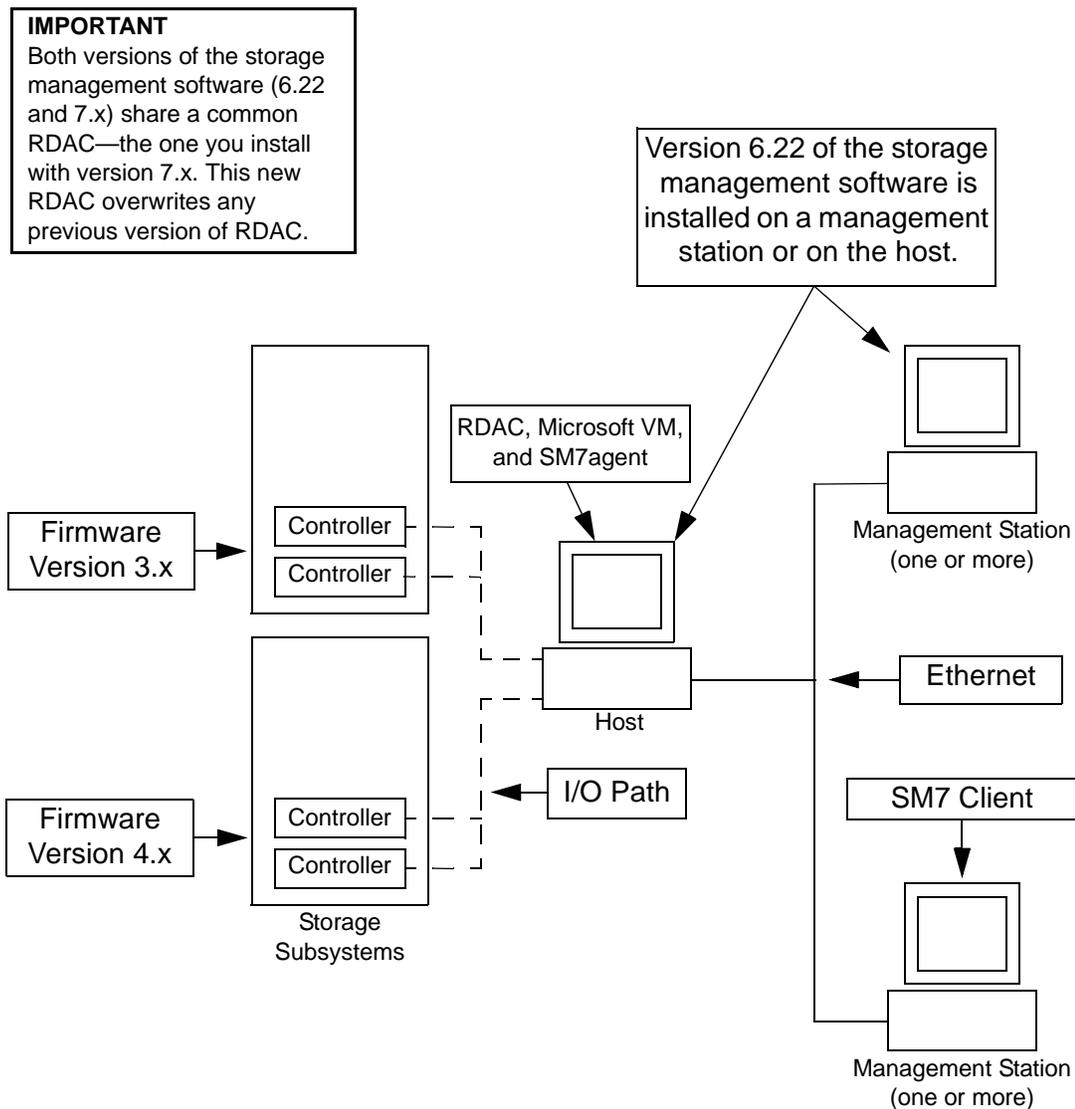


Figure 5. Sample Coexistence Installation

# Understanding the Windows NT Restrictions

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**Important:** Always check for a README file on any installation media. This README file might contain important information that was not available at the time this *Installation and Support Guide* was prepared.

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Table 4 explains the restrictions that apply when using the Netfinity Fibre Channel Storage Manager with Windows NT.

**Table 4: Windows NT Restrictions and Notes**

| Restriction   | Workaround  |
|---|---|
| You cannot print from the online Help systems.  | The Help systems were developed with JavaHelp™ 1.0, which does not support printing. Printable versions of the Help systems are available on the installation CD in Adobe Acrobat Portable Document Format (PDF).   |
| The storage management software does not support logical drive migration because it can result in data corruption.  | Call your customer service representative for guidance in migrating logical drives.   |
| <p>Do not use a configured drive as a spare unless you delete its logical unit (LUN).</p> <p>Because of the way controllers with firmware levels of 3.0 or greater write logical unit (LUN) information on the drives, you might have problems if you use previously configured drives as spares. For example, if you take a drive from one storage subsystem and use it as a spare in another storage subsystem, and that drive was part of a LUN when you removed it, the drive will have a status of Needs Attention after you install it in the second storage subsystem.</p> | <p>If you cannot delete the LUNs, you can use configured drives as spares, but you should insert them into the storage subsystem one at a time. When the drive status goes to Needs Attention, you can then revive the drive using the procedure in Recovery Guru before inserting the next drive.</p> <p><b>Note:</b> This procedure is possible only if the drives were part of a LUN that contained at least two drives.</p> |

**Table 4: Windows NT Restrictions and Notes (continued)**

| <b>Restriction</b>  | <b>Workaround</b> |
|---|-------------------|
| If you manage storage subsystems through the host-agent software and use the storage management software to download controller firmware, the download process can take up to ten minutes to complete.  | None.             |
| If you configure a new storage subsystem with a single controller, you must place the controller in the top slot (slot A). The controller firmware cannot recognize or communicate with a single controller until slot A is populated. The storage management software assumes that the controller in slot A is the active controller and owns the default LUN. If there is no controller in slot A, the storage management software is not able to find the default LUN. This restriction does not apply to storage subsystems that were originally configured with two controllers. | None.             |

# Installation Requirements

You must install the hardware and software components that are listed in the following sections before installing the storage management software.

## Hardware Requirements

The following hardware is required:

- For directly-managed storage subsystems, you must have *one* of the following types of BOOTP servers installed on the network:
  - UNIX<sup>®</sup> BOOTP server (usually provided with the UNIX operating system)
  - Microsoft BOOTP-compatible DHCP server for Windows NT Server 4.0 with Service Pack 4 or 5
- Storage subsystems with controllers using firmware version 4.x. For information about managing storage subsystems with controllers using firmware version 3.x on the same network, by using version 6.22 of the storage management software in coexistence, see "Types of Installation" on page 12.
- Compatible host adapters, hubs, and fabric switches, depending on the type of configuration you want.

## Installation Requirements for the Software Packages

Table 5 contains the installation requirements for each of the software packages.

**Table 5: Installation Requirements by Software Package**

| Requirement              | Software Package             |   |   |   |   |
|--------------------------|------------------------------|---|---|---|---|
|                          | SM7client                    | RDAC                                      | Microsoft VM                              | SM7agent                                  | SM7migrate                                |
| Available disk space     | 20 MB                        | 1 MB                                      | 1 MB                                      | 1 MB                                      | 10 MB                                     |
| Administrator privileges | Not required                 | Required                                  | Required                                  | Required                                  | Required                                  |
| Minimum display settings | 800 x 600 pixels, 256 colors | 640 x 480 pixels, 256 colors <sup>1</sup> |

<sup>1</sup> These settings are for the InstallShield installation of the software package.

## Operating System Requirements

- *Management stations* – install one of the following operating systems:
  - Windows NT Server 4.0 with Service Pack 4 or 5
  - Windows NT Workstation 4.0 with Service Pack 4 or 5
  - Windows® 98
  - Windows 98 Second Edition
- *Hosts* – install one of the following operating systems:
  - Windows NT Server 4.0 with Service Pack 4 or 5
  - Windows NT Workstation 4.0 with Service Pack 4 or 5
- *Cluster servers* – install the following operating systems:
  - Windows NT 4.0 Enterprise Edition with Service Pack 4 or 5.

## Other Software Requirements

- *Coexistence installation* – If you are planning a coexistence installation (see "Types of Installation" on page 12), you must use version 6.22 of the storage management software to manage the controllers using firmware version 3.x.

## Firmware Requirements

Netfinity Fibre Channel Storage Manager 7.x only operates with controller models 4766 or later and firmware version 4.00 or later. If you want to manage controllers with Netfinity Fibre Channel Storage Manager 7.x, you must upgrade the firmware to version 4.00 or later.

**Note:** You can use Netfinity Fibre Channel Storage Manager 7.x in coexistence with controllers using firmware version 3.x; however, you must use version 6.22 of the storage management software to manage these controllers and their associated storage subsystems.

## Cluster Server Requirements

The following cluster server components are required for installing storage subsystems and the storage management software. For more information, see "Hardware Requirements" on page 16 and "Operating System Requirements" on page 17.

- Two nodes (A and B) with at least one PCI Ethernet adapter installed on each node

Microsoft recommends two Ethernet adapters in each node (one for inter-communication between the nodes and one for client access over the network).

You must configure both nodes to use the TCP/IP Protocol software over all interconnects. However, routers can be placed between the cluster and its clients. If all interconnects must run through a hub, isolate each interconnect by using separate hubs. Also, make sure that both nodes on the cluster are in the same domain (not workgroup).

- One interconnect (cross-over) cable installed between each node's PCI Ethernet adapter

## What's Next?

Go to "Chapter 2. Preparing for Installation" on page 19.

# Chapter 2. Preparing for Installation

---

This chapter helps you plan and prepare for installing the storage management software.

## **Deciding How to Manage Storage Subsystems**

If you have not already done so, see "Management Methods" on page 6 for information about the following two methods for managing storage subsystems:

- Direct management through Ethernet connections to each controller on a storage subsystem
- Host-agent management through the host-agent software installed on the host machine connected to the storage subsystem

You can use one or both methods. However, because many of the preparation tasks for installation depend on which method you use, you should now decide how you want to manage the storage subsystems on your network.

Continue with the next section, "Reviewing a Sample Network" on page 20.

## Reviewing a Sample Network

Figure 6 shows a sample network setup. Network A contains a BOOTP server, a host connected to a storage subsystem through a Fibre Channel I/O path, and a management station connected by Ethernet cables to the storage subsystem controllers. This is an example of a directly managed storage subsystem. Network B contains a host connected to a storage subsystem through a Fibre Channel I/O path, and a management station. This is an example of a host-agent managed storage subsystem.

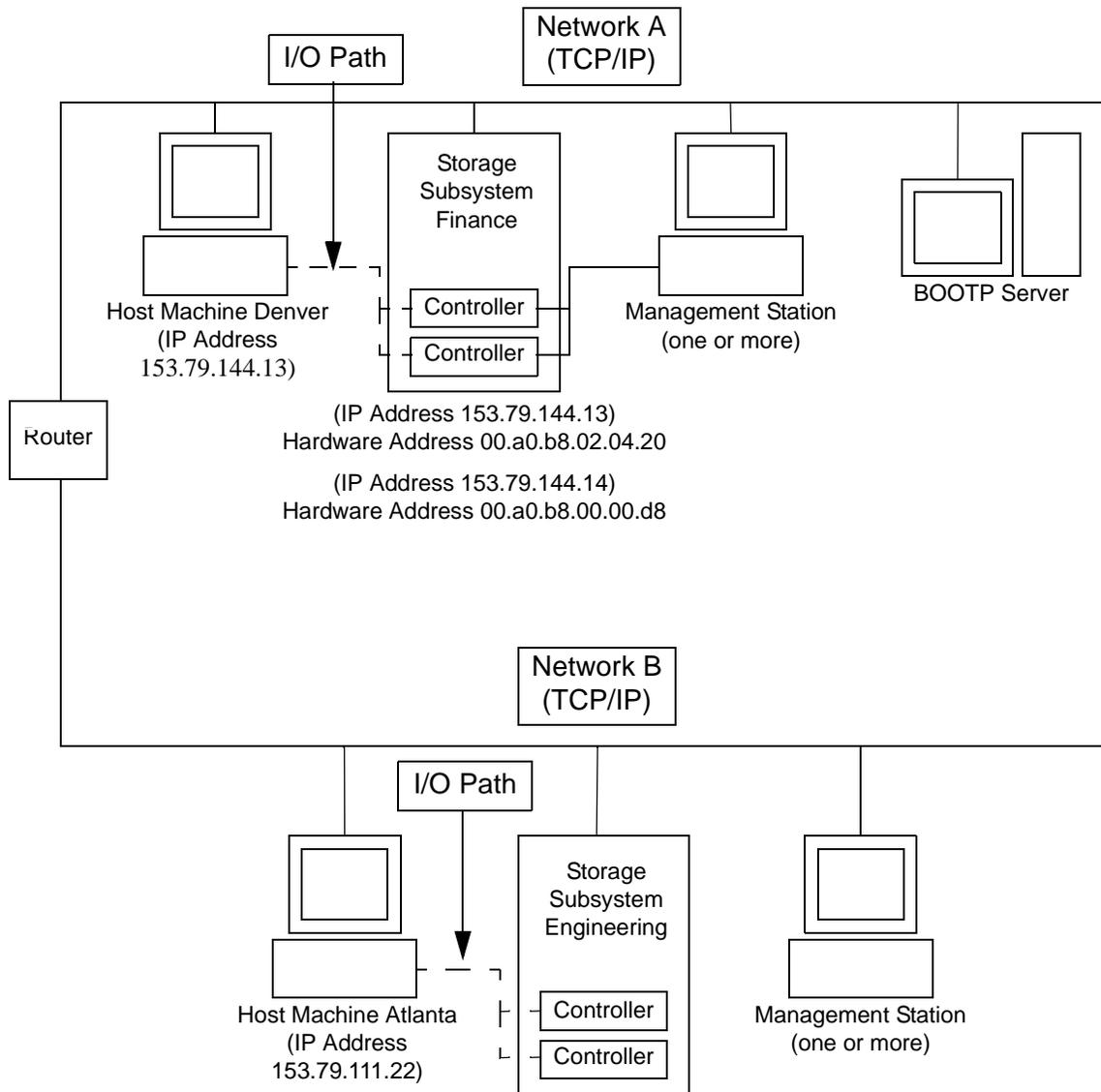


Figure 6. Sample Network

Continue with the next section, "Setting Up an Information Record" on page 21.

## Setting Up an Information Record

Before you install the storage management software, make sure that the network components are set up and operating properly, and that you have all of the host and controller information needed for the software to operate correctly. To do this, perform the tasks summarized in Table 6 (referring to the appropriate procedures). Use Table 7 on page 23 as a data sheet to record storage subsystem and controller information.

**Table 6: Network Preparation Task Summary**

| <b>Task to Perform</b>  | <b>For Direct or Host-Agent?</b> | <b>Why Perform this Task?</b>  | <b>For instructions, see:</b>  |
|---|----------------------------------|--|--|
| <b>1</b> Install all hardware components (host machines, storage subsystems, cables, and so on) that you want to be connected to the network. | Both                             | To ensure that the network hardware is present.  | <i>The Installation Guide</i> specific to the hardware components.       |
| <b>2</b> Establish and record a naming convention for the storage subsystems connected to the network.  | Both                             | To add the storage subsystems to the management domain after installing the software.  | "Decide How to Name the Storage Subsystems" on page 24.                  |
| <b>3</b> Determine the hardware Ethernet address for each controller in all storage subsystems connected to the network.                      | Direct                           | To configure the BOOTP server on the network.  | "Identify the Hardware Ethernet Address for Each Controller" on page 25. |
| <b>4</b> Obtain IP addresses and host names from the network administrator  | Both                             | For host-agent management, you need the IP addresses/ host names of the host on which the host-agent software will run.<br><br>For direct management, you need the IP addresses of each controller in the storage subsystems to configure the BOOTP server on the network and to set up the host (or DNS) table. | "Obtain IP Addresses for Hosts and Controllers" on page 26.              |

**Table 6: Network Preparation Task Summary (continued)**

| <b>Task to Perform</b>  | <b>For Direct or Host-Agent?</b> | <b>Why Perform this Task?</b>  | <b>For instructions, see:</b>   |
|---|----------------------------------|--|---|
| <b>5</b> Associate hardware addresses and configure IP addresses on the network's BOOTP server. | Direct                           | To set up the network address information for the BOOTP server.                                | "Set Up the BOOTP Server" on page 27.                                     |
| <b>6</b> Verify that the TCP/IP Protocol is installed and set up the host (or DNS) table.       | Direct                           | To verify that the management station is configured to reach the controllers over the network. | "Verify the TCP/IP Protocol and Set Up the Host or DNS Table" on page 34. |
| <b>7</b> Power on the devices connected to the network.   | Both                             | To ensure that all devices and links are operational.  | The Installation Guide specific to the hardware components.               |

Table 7 on page 23 provides a data sheet on which you can record storage subsystem names, management types, hardware Ethernet addresses, and IP addresses. Make a copy of this table and complete the information for your storage subsystems and controllers. Use the information recorded in Table 6 to set up the BOOTP table for the network server and the host or DNS (Domain Name Service) table. The information in Table 6 helps you add storage subsystems after initial installation. The column headings show a page reference for detailed instructions about obtaining the information. For a sample information record, see Table 8 on page 24.

**Table 7: Storage Subsystem and Controller Information Record**

| Storage Subsystem Name<br>(See page 24) | Management Type<br>(See page 19) | Controllers—Ethernet and IP Addresses, and Host Name<br>(See pages 25 and 26) | Host—IP Address and Host Name<br>(See page 26) |
|---|----------------------------------|---|--|
| Storage Subsystem Name:                 |                                  |   |  |

Table 8 provides samples for a directly managed storage subsystem and a host-agent managed storage subsystem.

**Table 8: Sample Information Record**

| Storage Subsystem Name<br>(See page 24) | Management Type<br>(See page 19) | Controllers—Ethernet and IP Addresses, and Host Name<br>(See pages 25 and 26) |  | Host—IP Address and Host Name<br>(See page 26) |
|---|----------------------------------|---|--|--|
| Storage Subsystem Finance               | Direct                           | Hardware Ethernet Address = 00a0b8020420                                      | Hardware Ethernet Address = 00a0b80000d8 |  |
|   |                                  | IP Address = 153.79.144.13  | IP Address = 153.79.144.14               |  |
|   |                                  | Host = Denver_a   | Host = Denver_b                          |  |
| Storage Subsystem Engineering           | Host-agent                       |   |  | IP Address = 153.79.111.22                     |
|   |                                  |   |  | Host = Atlanta                                 |
|   |                                  |   |  |  |

Continue with the next section, "Completing the Preparation Tasks" on page 24.

## Completing the Preparation Tasks

### Decide How to Name the Storage Subsystems

As you set up your network, decide the naming convention for the storage subsystems. After you install the storage management software and start it for the first time, all storage subsystems in the management domain display as <unnamed>. Use the Subsystem Management window to rename the individual storage subsystems.

The following list provides tips for naming storage subsystems:

- There is a 30 character limit. All leading and trailing spaces are deleted from the name.
- Use a unique, meaningful naming scheme that is easy to understand and remember.
- Avoid arbitrary names or names that would quickly lose their meaning in the future.

- The software displays storage subsystem names with the prefix “Storage Subsystem.” Therefore, if you rename a storage subsystem “Engineering,” it displays as “Storage Subsystem Engineering.”

Use the following procedure to record the names of the storage subsystems:

1. Decide on a storage subsystem naming scheme that makes sense for your enterprise.
2. Record the storage subsystem names in the information record (Table 7 on page 23).
3. Continue with the next section, "Identify the Hardware Ethernet Address for Each Controller" on page 25.

## Identify the Hardware Ethernet Address for Each Controller

Use the following procedure if you will directly manage storage subsystems through Ethernet connections to each controller. If you plan to manage storage subsystems using the host-agent software, skip this procedure and go to "Obtain IP Addresses for Hosts and Controllers" on page 26.

1. Remove the front panel from the controller enclosure, as shown in Figure 7.

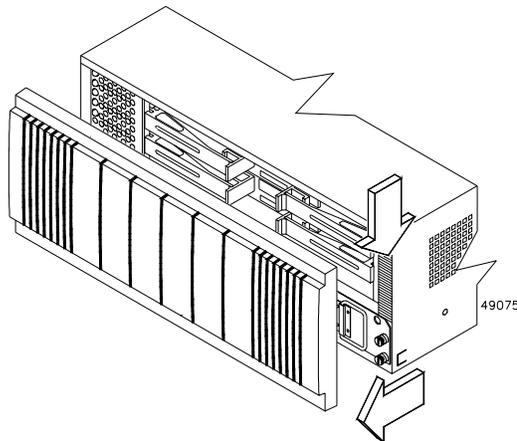


Figure 7. Removing the Front Panel from the Controller Enclosure

2. Look on the front of the controller canister for a label with each controller's hardware Ethernet address, as shown in Figure 8.

The number will be in the form *xx.xx.xx.xx.xx.xx* (for example, 00.a0.b8.00.00.d8).

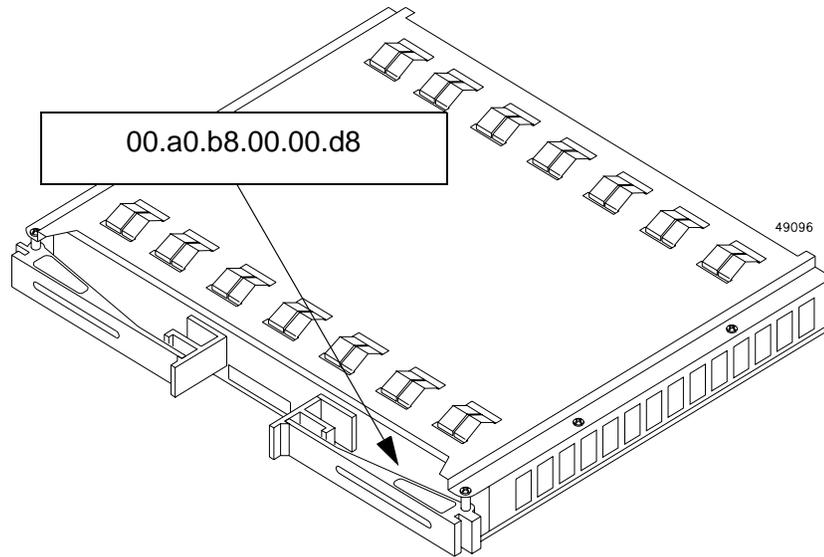


Figure 8. Location of Ethernet Address Label

3. Record each Ethernet address in the information record (Table 7 on page 23).
4. Continue with the next section, "Obtain IP Addresses for Hosts and Controllers" on page 26.

## Obtain IP Addresses for Hosts and Controllers

| If you want to                                | Go To         |
|---|---------------|
| Manage storage subsystems directly            | Step 1        |
| Manage storage subsystems with the Host-Agent | Step 2        |
| Use both methods                              | Steps 1 and 2 |

1. Assign (or obtain from the network administrator) the unique IP addresses and associated host names for each controller in every storage subsystem on the network. Record the IP addresses and host names for each controller in the information record (Table 7 on page 23).

2. Contact the network administrator to obtain the IP addresses and host names for each host on which you plan to install the host-agent software for managing storage subsystems. Record the IP addresses and host names for the host in the information record (Table 7 on page 23).
3. Do you want to manage storage subsystems directly or through the host-agent software?

| Direct  | Host-Agent                       |
|---|----------------------------------|
| Continue with "Set Up the BOOTP Server" on page 27. | Go to "What's Next?" on page 35. |

## Set Up the BOOTP Server

Use the following procedure if you will directly manage storage subsystems through the Ethernet connection to each controller. If you plan to manage storage subsystems using the host-agent software, go to "What's Next?" on page 35.

Table 9 contains the required entries for setting up a UNIX BOOTP server or a BOOTP-compatible DHCP server. Review the entries and then select the correct procedure for the type of BOOTP server you are using.

**Table 9: Required Entries for Setting Up the BOOTP Server**

| Entry                        | Description   | Sample Format in BOOTP Server             |
|------------------------------|---|---|
| Subnet mask                  | Mask used to route packets to defined subnets.                                | dot notation<br>(sm=255.255.248.0)        |
| Router                       | IP address of the machine that routes packets to other locations or networks. | dot notation<br>(gw=153.79.144.2)         |
| Host name for the controller | Host name associated with the controller (see Table 7 on page 23).            | host name<br>(Denver_a)                   |
| IP address                   | IP address of the controller (see Table 7 on page 23).                        | dot notation<br>(ip=153.79.144.13)        |
| Ethernet address             | Controller's hardware Ethernet address (see Table 7 on page 23).              | hexadecimal notation<br>(ha=00a0b8020420) |

Select the appropriate procedure for setting up the BOOTP server.

| UNIX BOOTP  | BOOTP-Compatible DHCP   |
|---|---|
| Continue with "Using a UNIX BOOTP Server" on page 28. | Go to "Using Microsoft DHCP as a BOOTP-Compatible Server" on page 29. |

### Using a UNIX BOOTP Server

1. Use Table 7 on page 23 and Table 9 on page 27 to set up the BOOTP table and make the required entries for supporting the controllers in the network storage subsystems.

For more information, see "Example for Editing a UNIX BOOTP Table" on page 28.

**Note:** To set up this BOOTP server, use a text editor to edit the *bootptab* file in the */etc* directory.

2. Turn on power to the storage subsystems so the parameters in the BOOTP table take effect.
3. When you finish setting up the BOOTP table, continue with "Verify the TCP/IP Protocol and Set Up the Host or DNS Table" on page 34.

### Example for Editing a UNIX BOOTP Table

The following example of a BOOTP table assumes you are configuring a UNIX BOOTP server, such as a server on Network A, as shown in Figure 6 on page 20. The `s4.default:\` entry denotes settings that are common to all controllers. The `tc=s4.default:\` entry associates this common setting group to a specific controller.

```
s4.default:\ (common settings)  
  
    ht=ether:\  
  
    sm=255.255.248.0:\  
  
    gw=153.79.144.2:\  
  
    hn:  
  
denver_a:\  
  
    tc=s4.default:\ (refers to common settings)  
  
    ip=153.79.144.13:\  
  
    ha=00a0b8020420:
```

```
denver_b:\  
  
    tc=s4.default:\  
  
    ip=153.79.144.14:\  
  
    ha=00a0b80000d8:
```

## **Using Microsoft DHCP as a BOOTP-Compatible Server**

You must use a version of DHCP that supports BOOTP static addressing. To use a DHCP server, you must have a DHCP Manager installed. If a DHCP Manager is installed on the system, continue with "Setting Up a DHCP Server" on page 30. If a DHCP Manager is not installed, use the following installation procedure.

**Note:** The following steps and screen examples assume you are configuring a Windows NT DHCP server using its DHCP Manager.

### **Installing the DHCP Manager**

Use the following procedure to install the DHCP Manager:

1. Select Start → Settings → Control Panel.
2. Double-click the Network icon.
3. In the Network window that displays, select the Services tab.
4. Select DHCP Server Network Services → Add.
5. Reinstall Service Pack 4 or 5.
6. Continue with the next section, "Setting Up a DHCP Server" on page 30.

## Setting Up a DHCP Server

Use the following procedure to set up the DHCP server. For more information, see Table 7 on page 23 and Table 9 on page 27.

1. Select Start → Programs → Administrative Tools → DHCP Manager.

The DHCP Manager Screen appears.

2. Create a scope.

A scope defines a group of controllers you want to configure using the DHCP server.

- a. Select Local Machine.
- b. Select Scope → Create.

The Create Scope screen appears.

The screenshot shows the 'Create Scope - (Local)' dialog box. The 'IP Address Pool' section has the following values: Start Address: 153.79.144.1, End Address: 153.79.144.50, Subnet Mask: 255.255.248.0. The 'Lease Duration' section has 'Unlimited' selected. The 'Name:' and 'Comment:' fields are empty. The 'OK', 'Cancel', and 'Help' buttons are visible at the bottom.

- c. Enter the starting and ending IP addresses of the controllers you are configuring on the network.

For example, if you are configuring 50 controllers on a 153.79.144.0 subnet, the starting address should be set to 153.79.144.1 and the ending address should be set to 153.79.144.50.

**Note:** If each field does *not* contain at *least* three characters, press the Period key to advance to the next field. If you have only one controller, add its address for both the starting and ending addresses.

- d. Enter the subnet mask (obtained from your network administrator).

- e. Set the Lease Duration to Unlimited. This makes the DHCP connection permanent.
- f. If you want, add a Scope Name and Comment.
- g. Select OK.
- h. When the scope has successfully completed, select Yes to activate it.

You return to the DHCP Manager screen.

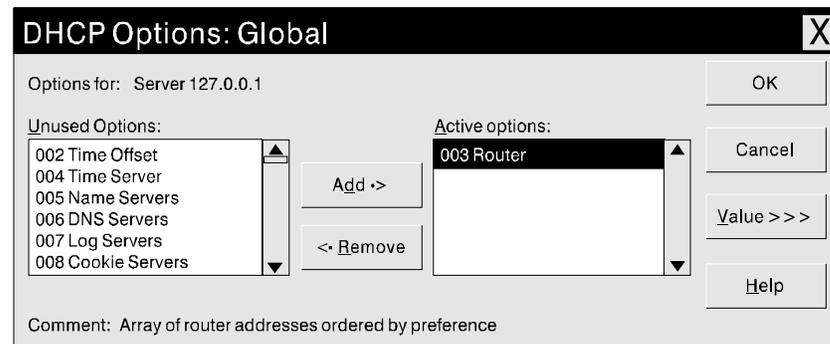
**3. Configure global scope options.**

The scope options enable you to configure settings applicable to all controllers. To determine which parameters to apply to the entire group, see Table 9 on page 27.

**Note:** You can apply some options to specific controllers later using Step 5 on page 33.

- a. Select DHCP Options → Global.

The DHCP Options: Global screen appears.



- b. Highlight an entry in the Unused Options list and select Add to move it to the Active options list.

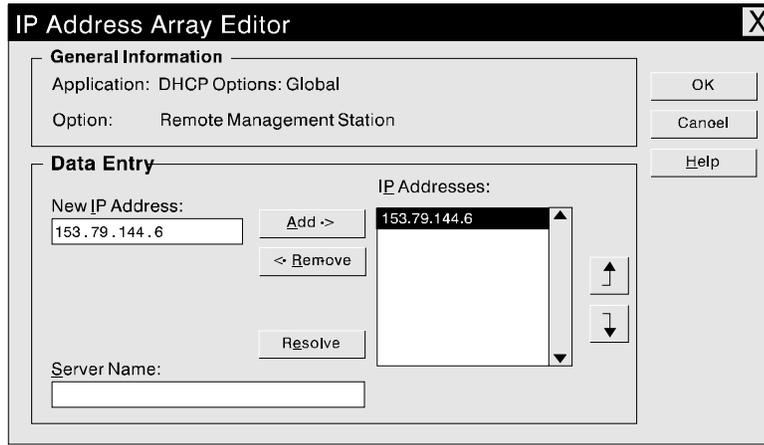
Each option is preceded by its tag number.

- c. Select Value to assign a value to the active option.

The Value option is not selectable then and the Edit Array option box appears in the lower part of the screen.

- d. Select Edit Array if the value you need to add is an IP address.

The IP Address Array Editor screen appears.



- e. Enter the unique IP address for the option you added.
- f. Select Add to move the New IP Address to the IP Addresses list.
- g. Select OK.

You return to the DHCP Options: Global screen.

- h. Repeat Step b through Step g until all global options are added.
- i. When you finish adding the Global Scope Options, select OK at the DHCP Options: Global screen.

You return to the DHCP Manager screen.

#### 4. Create a reservation for each controller.

Use the data sheet you created in Table 7 on page 23 to make sure you include all of the controllers for every storage subsystem on the network.

- a. Select Scope → Add Reservations.
- b. In the IP Address field, enter the IP address for the first controller on your data sheet.
- c. In the Unique Identifier field, enter the controller's hardware Ethernet address.
- d. In the Client Name field, enter the controller's eight-character name.
- e. Select Add.

The screen is reset and ready for the next entry.

- f. Repeat Step b through Step e for each controller listed in Table 7 on page 23.
- g. When you finish entering the information for all of the controllers, select Close.

You return to the DHCP Manager screen.

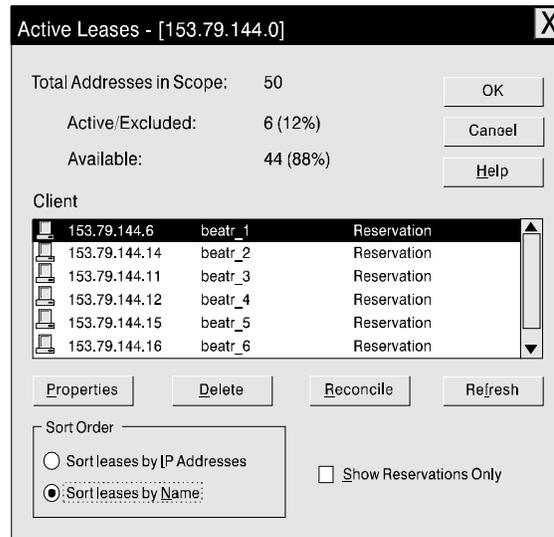
5. Configure controller-specific options.

Creating a controller-specific option enables you to associate a controller configuration entry with a specific controller added in Step 4.

**Note:** If you set an option as Global Scope, it applies to every controller in this group and does not need to be added again.

a. Select Scope → Active Leases.

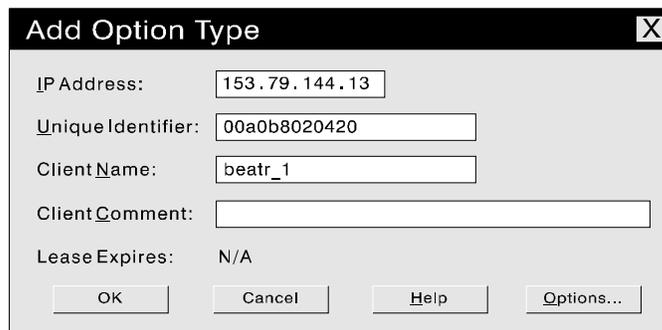
The Active Leases screen appears.



b. Highlight a controller in the list.

c. Select Properties.

The Add Option Type screen appears. The Unique Identifier is the hardware Ethernet address you recorded earlier in Table 7 on page 23.



d. Select Options.

The DHCP Options: Reservations screen appears.

e. Highlight an entry in the Unused Options list and select Add to move it to the Active Options list.

- f. Select Value to assign a value to the active option.
  - g. Enter the information for the value of the option.  
For example, for Host Name, enter the host name for the controller (from Table 7 on page 23) in the String box. Select Edit if the value you need to add is an IP address (such as for a router, RMS, or NMS).
  - h. Repeat Step e through Step g until you finish adding specific options for this controller.
  - i. Select OK.  
You return to the Add Option Type screen.
  - j. Select OK.  
You return to the Active Leases screen.
  - k. Repeat Step b through Step j until you finish adding controller-specific options for every controller.
  - l. When you finish adding specific options for all controllers, select OK at the Active Leases screen.  
You return to the DHCP Manager screen.
6. Continue with "Verify the TCP/IP Protocol and Set Up the Host or DNS Table" on page 34.

## Verify the TCP/IP Protocol and Set Up the Host or DNS Table

Make sure that the host names for the controller correspond to the appropriate IP addresses for the controllers. Use the following procedure to verify that the TCP/IP protocol is installed and to set up the host or DNS (Domain Name Service) table.

1. Select Start → Settings → Control Panel → Network → Protocols to verify that the TCP/IP protocol is installed and configured properly.  
**Note:** If the TCP/IP protocol is not installed, load it from the Windows NT Installation CD. Select Start → Settings → Control Panel → Network → Protocols → Add.
2. You must edit either the DNS (Domain Name Service) or the host table to add the IP address and host name for each controller on the network. Edit the two host tables found in the following directories:

| Windows NT                            | Windows 98               |
|---------------------------------------|--------------------------|
| c:\winnt\system32\drivers\etc\hosts   | c:\windows\hosts         |
| c:\winnt\system32\drivers\etc\lmhosts | c:\windows\hosts\lmhosts |

For example, to set up the host tables for the controllers connected to Network A (Figure 6 on page 20), use a text editor to create the following IP address and controller name entries:

| IP Address    | Host Name for the Controller |
|---------------|------------------------------|
| 127.0.0.01    | localhost                    |
| 153.79.144.13 | denver_a                     |
| 153.79.144.14 | denver_b                     |

Will you manage storage subsystems through a firewall?

| Yes   | No                               |
|---|----------------------------------|
| Continue with "Enable Ports for Operation through a Firewall" on page 35. | Go to "What's Next?" on page 35. |

## Enable Ports for Operation through a Firewall

If you plan to manage storage subsystems through a packet-filtering firewall, configure the firewall to open port 2463 to TCP data.

Continue with the next section, "What's Next?" on page 35.

## What's Next?

You have completed the preparations tasks and are now ready to install the storage management software. The installation process you follow depends on how you want to configure the system.

| If you want to   | Go to  |
|--|--|
| Install the software in a standard (non-clustered) configuration | "Chapter 3. Installing Software in a Standard Configuration" on page 37.     |
| Install the software in a cluster server environment             | "Chapter 4. Installing Software in a Cluster Server Environment" on page 53. |



# Chapter 3. Installing Software in a Standard Configuration

---

This chapter describes how to install or upgrade the storage management software in a standard configuration.

---

**Important:** Always check for a README file on any installation media. This README file might contain important information that was not available at the time this *Installation and Support Guide* was prepared.

---

## Installation Process

There are three ways to install the storage management software in a standard (non-clustered) configuration:

- First-time installation in which you are installing new storage subsystems with controllers using firmware version 4.x.
- Installation that upgrades existing storage subsystems with controllers from firmware version 3.x to version 4.x so you can manage them with Netfinity Fibre Channel Storage Manager 7.x. In this guide, this type of installation is referred to as *firmware migration*.
- Installation that enables you to use Netfinity Fibre Channel Storage Manager 7.x to manage storage subsystems with controllers using firmware version 4.x on the same network with storage subsystems with controllers using firmware version 3.x that are managed with storage management software version 6.22. This type of installation is called *coexistence*. Both versions of the storage management software use the newly installed RDAC.

All three types of installation require that you install the following software components:

- SM7client
- RDAC
- Microsoft Virtual Machine
- SM7agent

## First-Time Installation

Begin the first-time installation with "Installing SM7client" on page 40. Continue the process until you complete "Installing SM7agent" on page 44. You do not need to install SM7migrate, download NVSRAM, or migrate controller firmware.

## Firmware Migration

Begin the firmware migration installation with "Installing SM7client" on page 40. Continue the process through "Installing SM7migrate" on page 47 and then use SM7migrate for "Downloading NVSRAM" on page 48 and "Upgrading Firmware" on page 49.

## Coexistence

The installation process for controller coexistence is the same as a first-time installation; however, you must have version 6.22 of the storage management software installed on the host managing storage subsystems containing controllers using firmware version 3.x.

---

**Important:** The RDAC software packaged with Netfinity Fibre Channel Storage Manager 7.x will overwrite the RDAC driver associated with version 6.22 of the storage management software. Both versions of the software will use the same RDAC package.

---

Begin the coexistence installation with "Installing SM7client" on page 40. Continue the process until you complete "Installing SM7agent" on page 44. You do not need to install SM7migrate, download NVSRAM, or migrate controller firmware.

Figure 9 shows a flowchart of the installation process.

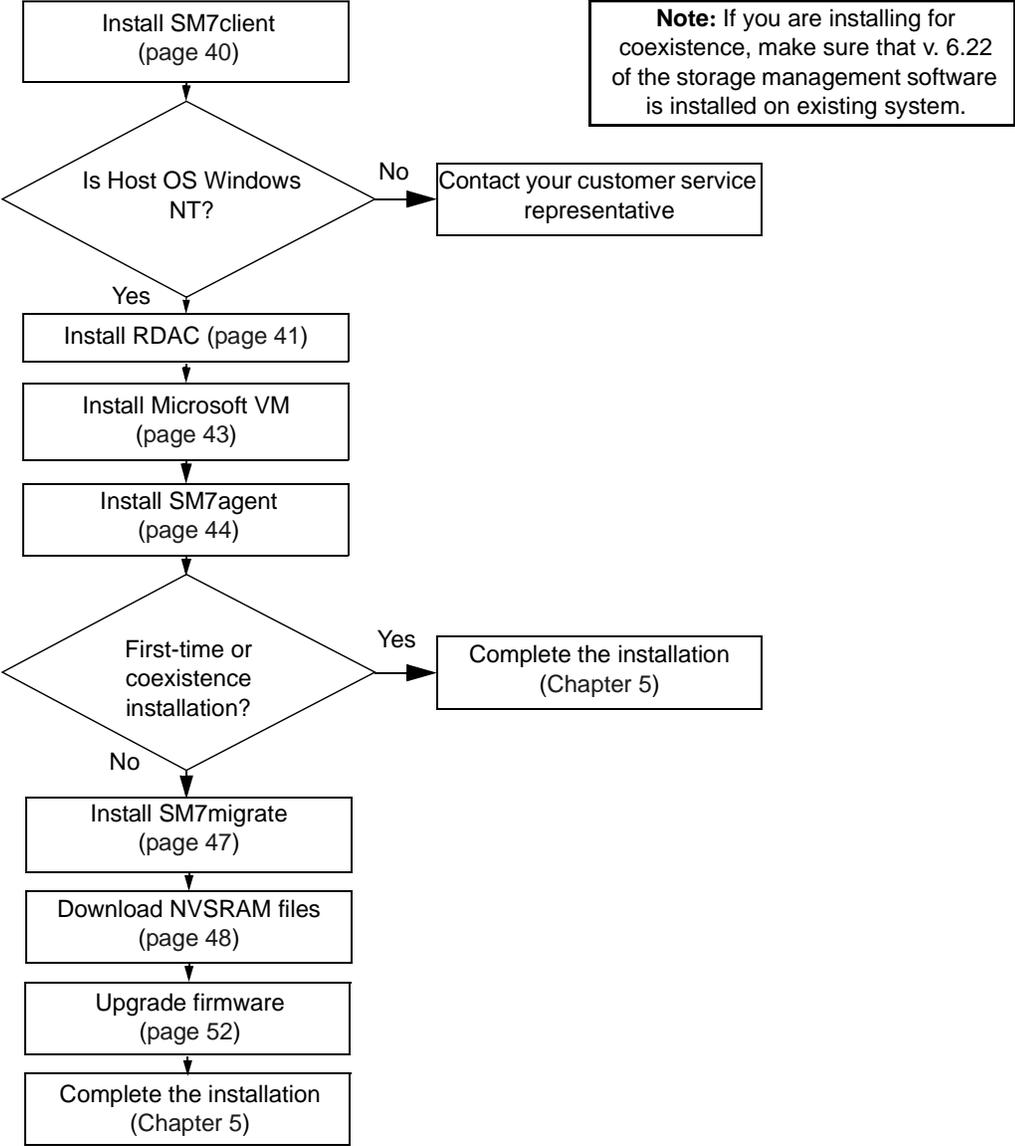


Figure 9. Installation Flowchart

## Installing SM7client

Use the following procedure to install the SM7client package on a management station or file server configured with one of the following operating systems:

- Windows NT Server 4.0
- Windows NT Workstation 4.0
- Windows 98
- Windows 98 Second Edition

**Note:** If you want to install SM7client on a host and manage storage subsystems through the I/O path rather than over the network, you must install the TCP/IP Protocol software on the host and assign a static IP address to the host. The host operating system must be Windows NT Server 4.0 or Windows NT Workstation 4.0.

### Before You Begin

Before you install the software, make sure that:

- The management station has at least 20 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 800 x 600 pixels and a palette of 256 colors.
- You have closed all other programs.

### Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */SM7client* directory.
7. Select the *setup.exe* file, and then select Open.

8. Select Next.

The setup program's Welcome screen appears.

9. Select Next.

The Choose Destination Location window appears.

10. Select Browse if you want to change the destination location.

11. Select Next to begin the installation.

12. When the installation is complete, select Finish.

## Verifying the Installation

Use the following procedure to verify that the installation was successful.

1. Select Start → Programs.
2. Verify that Netfinity Fibre Channel Storage Manager 7 client appears in the list of programs.

## What's Next?

Is the host machine operating system Windows NT?

| Yes   | No   |
|---|--|
| Go to the next section, "Installing RDAC" on page 41. | RDAC only runs on a Windows NT host. Do <i>not</i> install RDAC. |

## Installing RDAC

Use the following procedure to install the RDAC package on a host machine connected to one or more storage subsystems.

The RDAC package contains the following components:

- The multi-path driver necessary for controller failover support
- The Hot Add utility for dynamically adding logical drives to the operating system (see "Using the Hot Add Utility" on page 93)

---

**Important:** You must install the RDAC package before installing the SM7agent package.

---

## Before You Begin

Before you install the software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 1 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 640 x 480 pixels and a palette of 256 colors.
- You close all other programs.

## Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.

The Add/Remove Programs Properties window appears.

3. Select Install and follow the instructions on the screen.
4. Select Browse.

The Browse dialog box appears.

5. Select the CD-ROM drive.
6. Select the */RDAC* directory.
7. Select the *setup.exe* file, and then select Open.
8. Select Next.

The setup program's Welcome screen appears.

9. Select Next to begin the installation.

When RDAC is installed, the Setup Complete screen appears.

**Note:** You must restart the host to ensure that all changes take effect.

10. Select Finish to restart the host.

## Verifying the Installation

Use the following procedure to verify that the installation was successful.

1. Select Start → Settings → Control Panel → Devices.

The Devices dialog box appears.

2. Scroll through the list of devices until you find symarray.
3. Make sure that the status of the symarray device is Started.

## What's Next?

Continue with "Installing the Microsoft Virtual Machine (VM)" on page 43.

## Installing the Microsoft Virtual Machine (VM)

Use the following procedure to install the Microsoft Virtual Machine (VM) on a host machine connected to one or more storage subsystems.

**Note:** You must install the Microsoft Virtual Machine (VM) before installing the SM7agent package.

## Before You Begin

Before you install the software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 1 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 640 x 480 pixels and a palette of 256 colors.
- You close all other programs.

---

**Important:** The Netfinity Fibre Channel Storage Manager 7.x Installation CD contains a version of the Microsoft VM, which was tested with the storage management software. Before you install this version, go to the Web site at <http://www.pc.ibm.com/support> to see if a newer version of the software is available. Also, check the Web site for the latest support information.

---

## Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */SM7agent* directory.
7. Select the *msjavx86.exe* file, and then select Open.
8. Select Next and then follow the instructions on the screen.  
When the software is installed, the Setup Complete screen appears.  
**Note:** You must restart the host to ensure that all changes take effect.
9. Select Yes to restart the host.

## What's Next?

Continue with "Installing SM7agent" on page 44.

## Installing SM7agent

Use the following procedure to install the SM7agent package on a host machine connected to one or more storage subsystems.

The SM7agent package contains the following components:

- The host-agent software necessary for host-agent management of the storage subsystems
- The SM7devices utility necessary for relating logical drives to operating system device names. For more information, see "Using the SM7devices Utility" on page 93.

---

**Important:** You cannot install the SM7agent package unless the RDAC package is installed. The Microsoft Virtual Machine is also a required component for installing the SM7agent package and using the software contained in it.

You must install the SM7agent package even if you do not want to manage storage subsystems through the host-agent software.

---

## Before You Begin

Before you install the software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 1 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 640 x 480 pixels and a palette of 256.
- You installed the RDAC driver and the Microsoft Virtual Machine (VM).
- You close all other programs.

## Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */SM7agent* directory.
7. Select the *setup.exe* file, and then select Open.
8. Select Next.

The setup program's Welcome screen appears.

9. Select Next to begin the installation.

When the SM7agent package is installed, the Setup Complete screen appears.

**Note:** You must restart the host to ensure that all changes take effect.

10. Select Finish to restart the host.

## Verifying the Installation

Use the following procedure to verify that the installation was successful.

1. Select Start → Settings → Control Panel → Services.

The Services dialog box appears.

2. Scroll through the list of services until you find the storage management agent.
3. Make sure that the status of the agent service is Started.

**Note:** If the host-agent does not find controllers connected that have firmware version 4.x installed, the following Service Control Manager message appears:

```
At least one service or driver failed during system
startup. Use Event Viewer to examine the event log for
details.
```

When the host is connected to a storage subsystem with firmware version 4.x installed, the host-agent starts automatically after the system is restarted.

**Note:** If you are not using the host-agent software to manage storage subsystems, you can stop the host-agent service. Select the agent from the list of displayed services, and then select Stop.

## What's Next?

Answer the following questions:

1. Do you have a previous installation of storage subsystems containing controllers that you are managing with version 6.22 of the storage management software?

| Yes           | No   |
|---------------|--|
| Go to Step 2. | Go to "Chapter 5. Completing the Installation" on page 81. |

2. Do you want to manage those storage subsystems with Netfinity Fibre Channel Storage Manager 7.x?

| Yes                                       | No   |
|---|--|
| Go to "Installing SM7migrate" on page 47. | Go to "Chapter 5. Completing the Installation" on page 81. |

## Installing SM7migrate

Use the following procedure to install SM7migrate on a host machine connected to one or more storage subsystems. SM7migrate is necessary for downloading NVSRAM files and for upgrading controller firmware.

**Note:** Install and use SM7migrate if you have existing storage subsystems with model 4766 or later controllers that you want to manage with Netfinity Fibre Channel Storage Manager 7.x.

### Before You Begin

Before you install the software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 10 MB of available disk space.
- You close all other programs.

### Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */SM7migrate* directory.

7. Select the *setup.exe* file, and then select Open.

8. Select Next.

The setup program's Welcome screen appears.

9. Select Next.

The Choose Destination Location window appears.

10. Select Browse if you want to change the destination location.

11. Select Next to begin the installation.

12. When the installation is complete, select Finish.

## What's Next?

Continue with the next section, "Downloading NVSRAM" on page 48.

## Downloading NVSRAM

If you are upgrading previously installed storage subsystems for management with Netfinity Fibre Channel Storage Manager 7.x, you must use SM7migrate to download a default NVSRAM file. The default settings enable the network bit and the bit for creation of an Access Volume.

---

**Important:** The host-agent management method requires an Access Volume for communication with the controllers. The Access Volume uses one of the allowable logical unit numbers (LUNs). If the host system has already configured its maximum number of LUNs, you must give up a possible LUN to be used by the Access Volume.

---

1. Stop all applications of version 6.22 of the storage management software.
2. From a DOS command prompt, change to the *\Program Files\SM7migrate\native* directory.

### 3. Type:

```
SM7migrate NV4766WNT856000.dlp
```

The software displays information on each RAID Module (storage subsystem) connected to the host machine on which you are running SM7migrate. For example, you might see:

- 1) JASON\_001:Drive8Drive0
- 2) MAGGIE\_01:Drive16Drive32
- 3) FRED\_001:Drive9Drive1

**Note:** The first part of the displayed information refers to the RAID Module name (for example, JASON\_001). The second part of the displayed information refers to the controllers in the RAID Module (for example, Drive8Drive0).

The software displays the following options:

```
Make Selection: (A)ll Modules, E(x)it, or Module Index Number
```

### 4. Select an option and press Enter.

---

**Important:** There are two files to choose from. The file you download depends on how many logical drives your operating system and host adapter support. Service Pack 4 supports up to eight logical drives, while Service Pack 5 supports up to 32 logical drives. Consult the README file in the *WVSRAM* directory on the Installation CD for information on which file to download for your configuration.

---

Continue with the next section, "Upgrading Firmware" on page 49.

## Upgrading Firmware

Netfinity Fibre Channel Storage Manager 7.x only manages storage subsystems with controllers using firmware version 4.x. If you have controllers and want to manage them with Netfinity Fibre Channel Storage Manager 7.x, use SM7migrate to upgrade the firmware on those controllers from version 3.x to version 4.x. Depending on the version of firmware currently installed on the controllers, this might be a two-part process:

- Upgrading from version 3.x to version 3.1.3 (the “stepping stone” for upgrade to version 4.x)
- Upgrading from version 3.1.3 to version 4.x

## Upgrading from Version 3.x to Version 3.1.3

Use the following procedure to use the SM7migrate utility to upgrade controller firmware from version 3.x to version 3.1.3. (This is the “stepping stone” for upgrading to version 4.x.)

---

**CAUTION**      **Do not use SM7migrate to upgrade firmware directly from version 3.x to version 4.x because you might lose communication with the controllers in the storage subsystem.**

---

1. Stop all applications of version 6.22 of the storage management software.
2. From a DOS command prompt, change to the `\Program Files\SM7migrate\native` directory.
3. Type:

```
SM7migrate firmware_03010300.dlp
```

The software displays information on each RAID Module (storage subsystem) connected to the host machine on which you are running SM7migrate. For example, you might see:

- 1) JASON\_001:Drive8Drive0
- 2) MAGGIE\_01:Drive16Drive32
- 3) FRED\_001:Drive9Drive1

**Note:** The first part of the displayed information refers to the RAID Module name (for example, JASON\_001). The second part of the displayed information refers to the controllers in the RAID Module (for example, Drive8Drive0).

The software displays the following options:

```
Make Selection: (A)ll Modules, E(x)it, or Module Index Number
```

4. Select an option and press Enter.

---

**Important:** After the firmware is downloaded and the controllers restart, the World Wide Name (WWN) of each controller changes to avoid duplicating names. If the Fibre Channel host adapter driver you are using tracks controllers by PortName or NodeName, the host machine might not see the controllers. Restart the host to restore the connection.

---

---

**Important:** If you receive an error message that the filename you typed is not a downloadable file, check to make sure that the .dlp file is in the `\Program Files\SM7migrate\native` directory. If you placed the file in another directory, move it to the `\Program Files\SM7migrate\native` directory and try the migration procedure again.

---

5. Run the ClearLocks script located in the `\SM7migrate\native` directory to clean up unnecessary files generated by the firmware migration.
6. Continue with the next section, "Upgrading from Version 3.1.3 to Version 4.x" on page 51.

## Upgrading from Version 3.1.3 to Version 4.x

Use the following procedure to use the SM7migrate utility to upgrade controller firmware from version 3.1.3 to version 4.x.

1. Stop all applications of version 6.22 of the storage management software.
2. From a DOS command prompt, change to the `\Program Files\SM7migrate\native` directory.
3. Type:

```
SM7migrate firmware_04000003.dlp
```

The software displays information on each RAID Module (storage subsystem) connected to the host machine on which you are running SM7migrate. For example, you might see:

- 1) JASON\_001:Drive8Drive0
- 2) MAGGIE\_01:Drive16Drive32
- 3) FRED\_001:Drive9Drive1

**Note:** The first part of the displayed information refers to the RAID Module name (for example, JASON\_001). The second part of the displayed information refers to the controllers in the RAID Module (for example, Drive8Drive0).

The software displays the following options:

```
Make Selection: (A)ll Modules, E(x)it, or Module Index Number
```

4. Select an option and press Enter.

---

**Important:** If you receive an error message that the filename you typed is not a downloadable file, check to make sure that the .dlp file is in the *\Program Files\SM7migrate\native* directory. If you placed the file in another directory, move it to the *\Program Files\SM7migrate\native* directory and try the migration procedure again.

---

5. Run the ClearLocks script located in the *\SM7migrate\native* directory to clean up unnecessary files generated by the firmware migration.
6. Continue with the next section, "What's Next?".

## What's Next?

Go to "Chapter 5. Completing the Installation" on page 81.

# Chapter 4. Installing Software in a Cluster Server Environment

---

This chapter describes how to install or upgrade the storage management software in the multi-host configuration, using Cluster Server software.

---

**Important:** Always check for a README file on any installation media. This README file might contain important information that was not available at the time this *Installation and Support Guide* was prepared.

---

## Installation Process

There are three ways to install the storage management software in a cluster server configuration:

- First-time installation in which you are installing new storage subsystems with controllers using firmware version 4.x.
- Installation that upgrades existing storage subsystems with controllers from firmware version 3.x to version 4.x so you can manage them with Netfinity Fibre Channel Storage Manager 7.x. In this guide, this type of installation is referred to as *firmware migration*.
- Installation that enables you use Netfinity Fibre Channel Storage Manager 7.x to manage storage subsystems with controllers using firmware version 4.x on the same network with storage subsystems with controllers using firmware version 3.x that are managed with storage management software version 6.22. This type of installation is called *coexistence*. Both versions of the storage management software use the newly installed RDAC.

Table 10 on page 55 summarizes the overall installation process.

## First-Time Installation

Begin the first-time installation with "Installation Task Summary" on page 55. Continue the process until you complete "Installing the SM7agent" on page 68. You do not need to install SM7migrate, download NVSRAM, or migrate controller firmware.

## Firmware Migration

Begin the firmware migration installation with "Installation Task Summary" on page 55. Continue the process through "Installing SM7migrate" on page 70 and then use SM7migrate for "Downloading NVSRAM" on page 72 and "Upgrading Firmware" on page 73.

## Coexistence

The installation process for controller coexistence is the same as a first-time installation; however, you must have version 6.22 of the storage management software installed on the host managing storage subsystems with controllers using firmware version 3.x.

---

**Important:** The RDAC software packaged with Netfinity Fibre Channel Storage Manager 7.x will overwrite the RDAC driver associated with version 6.22 of the storage management software. Both versions of the software use the same RDAC package.

---

Begin the coexistence installation with "Installing the SM7client" on page 62. Continue the process until you complete "Installing the SM7agent" on page 68. You do not need to install SM7migrate, download NVSRAM, or migrate controller firmware.

Continue with the next section, "Installation Task Summary" on page 55.

## Installation Task Summary

Table 10 summarizes the tasks required to install the storage management software in a cluster server environment. For detailed procedures, see the appropriate sections in this chapter.

**Note:** The management station column in Table 10 lists steps for installing the storage management software to manage storage subsystems directly. For information on preparing for direct storage subsystems management, see "Chapter 2. Preparing for Installation" on page 53.

**Table 10: Cluster Server Environment Installation Summary (1 of 4)**

| Step | Remote Management Station  | Node A  | Node B | Refer To  |
|------|--|---|--------|---|
| 1    |  | Install the nodes and network environment (Ethernet adapters, interconnect cables, TCP/IP protocol).  |        | Appropriate hardware guides                             |
| 2    |  | Install Windows NT Server Enterprise Edition 4.0 (including Microsoft Service Pack 4 or 5).<br><b>Important:</b> Do <i>not</i> install the Cluster Server software yet. |        | Windows NT installation guide                           |
| 3    |  | Install the host adapters and drivers.  |        | "Host Adapters" on page 59                              |
| 4    |  | Install the storage subsystems between Nodes A and B.   |        | "Storage Subsystems" on page 59                         |
| 5    | If you want to manage storage subsystems directly, set up the management station and install the storage management software packages necessary for your type of installation (new, firmware migration, or coexistence). Do not install the RDAC package (see Step 9). |   |        | "Installing the Storage Management Software" on page 61 |

**Table 10: Cluster Server Environment Installation Summary (2 of 4)**

| Step | Remote Management Station | Node A   | Node B   | Refer To   |
|------|---------------------------|--|--|--|
| 6    |                           |  | Turn on Node B, but <i>do not</i> allow Windows NT to start.<br><br><b>Note:</b> To suspend Windows NT startup, press the spacebar at the operating system (OS) loader screen. | "Installing the Storage Management Software" on page 61. |
| 7    |                           | Turn on Node A and start Windows NT.   |  |  |
| 8    |                           | Assign "sticky" drive letters to the drives on Node A.   |  |  |
| 9    |                           | If you want to manage storage subsystems through the host-agent, install the storage management software packages necessary for your type of installation (new, firmware migration, or coexistence).<br><br>If you are managing storage subsystems directly, install the RDAC package on Node A. |  |  |

**Table 10: Cluster Server Environment Installation Summary (3 of 4)**

| Step | Remote Management Station  | Node A  | Node B  | Refer To   |
|------|--|---|---|--|
| 10   | Verify the controller firmware version for the storage subsystem and upgrade if necessary. |   |   | "Setting Up the Storage Subsystems" on page 76.          |
| 11   | Set NVSRAM values for the cluster server environment.                                      |   |   |  |
| 12   | Use the storage management software to create logical drives.                              |   |   |  |
| 13   |  | Use the Windows NT Disk Administrator to partition storage subsystem logical drives and assign drive letters. |   |  |
| 14   |  | Shut down Windows NT but leave Node A running (do <i>not</i> turn off the node).                              |   | "Shutting Down Node A" on page 76.                       |
| 15   |  |   | Start Windows NT.   | "Installing the Storage Management Software" on page 61. |
| 16   |  |   | Assign "sticky" drive letters to the drives on Node B.  |  |
| 17   |  |   | <p>If you want to manage storage subsystems through the host-agent, install the storage management software packages necessary for your type of installation (new, firmware migration, or coexistence).</p> <p>If you are managing storage subsystems directly, install the RDAC package on Node B.</p> |  |

**Table 10: Cluster Server Environment Installation Summary (4 of 4)**

| Step | Remote Management Station  | Node A   | Node B   | Refer To   |
|------|----------------------------|--|--|--|
| 18   |                            |  | Use the Windows NT Disk Administrator to verify that the drive letters of the logical drive are the same as those assigned to Node A (in Step 13). | "Verifying Drive Letters" on page 77.                |
| 19   |                            |  | Shut down Windows NT but leave Node B running (do <i>not</i> turn off the node).   | "Shutting Down Node B" on page 77.                   |
| 20   |                            | Start Windows NT and insert the CD containing the Cluster Server software.       |  | "Installing the Cluster Server Software" on page 77. |
| 21   |                            | Install the Cluster Server software and <b>form a new cluster.</b>               |  |  |
| 22   |                            | Keep Windows NT running on Node A.   |  |  |
| 23   |                            |  | Start Windows NT and insert the CD containing the Cluster Server software.   | "Installing the Cluster Server Software" on page 77  |
| 24   |                            |  | Install the Cluster Server software and <b>join the existing cluster.</b>  |  |
| 25   |                            |  | Keep Windows NT running on Node B.   |  |
| 26   |                            | Test the Cluster Server software installation by starting Cluster Administrator. |  | "Chapter 5. Completing the Installation" on page 81  |
| 27   | Complete the installation. |  |  |  |

Continue with the next section, "Installing the Hardware" on page 59.

## Installing the Hardware

The hardware installation involves installing host adapters and storage subsystems.

### Host Adapters

Refer to the appropriate host adapter documentation for specific installation requirements and procedures. The following considerations apply:

- You can install two host adapters in each node to run two cables from each node to both controllers in a storage subsystem. For example, if you are using single-channel host adapters and want the dual bus configuration, you *must* install two host adapters in each node. However, some host adapters have two channels; therefore, you only need one in each node for this configuration.
- Each host adapter and controller must have a unique ID.
- If you install two host adapters in each node for the dual bus configuration, select the same Host-Side ID in each node to help prevent conflicts.
- Install the correct driver for the host adapter. Refer to the README file on the Installation CD for the latest information on supported host adapters and drivers.

Continue with the next section, "Storage Subsystems" on page 59.

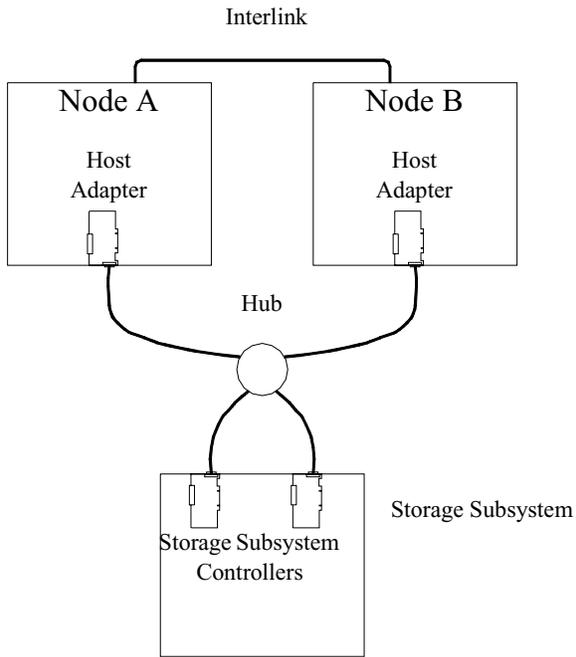
### Storage Subsystems

Refer to the appropriate hardware documentation to install the storage subsystems. The following considerations apply:

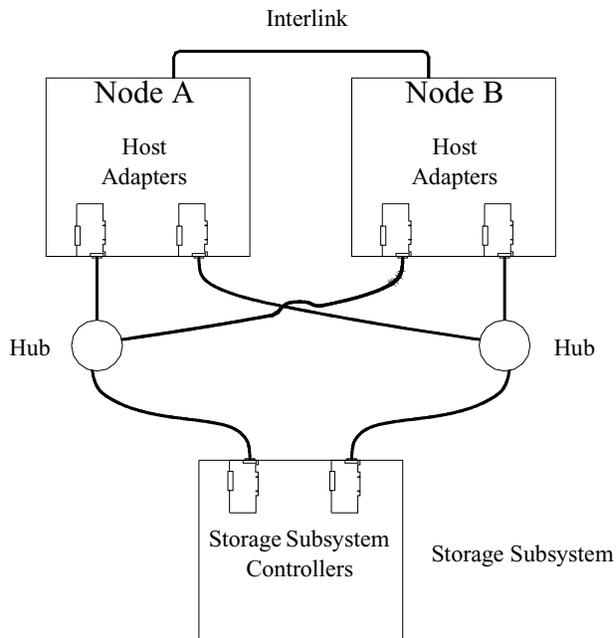
- If you are managing storage subsystems directly, you must install Ethernet cables to both controllers in each storage subsystem.
- Check each controller to make sure it has a unique Host-Side ID setting.
- Note that unless you are using dual-channel host adapters, you need two host adapters per node to use the dual bus configuration.

**Note:** Use the dual bus configuration for the fullest RDAC protection in the event there is a problem with the connection.

Figure 10 shows a Fibre Channel connection using either a single or dual bus configuration.



Fibre Channel connection  
(single bus)



Fibre Channel connection  
(dual bus)

Note: Other hub configurations are possible.

Figure 10. Installing the Storage Subsystem on a Fibre Channel Network

Continue with "Installing the Storage Management Software" on page 61.

# Installing the Storage Management Software

---

**CAUTION** After you connect the storage subsystems to both nodes, *do not* start Windows NT on both nodes at the same time until you have installed the Cluster Server software on *at least one* node. To suspend the starting of Windows NT, press the spacebar at the operating system (OS) loader screen.

*Do not* install the Cluster Server software until you are instructed to in this chapter.

---

## Assigning Drive Letters

The installation procedure loads the RDAC driver before the native Windows NT class driver. This is necessary to enable RDAC functionality. However, this means that the system sees the storage subsystem's logical drives before it sees any local drives, and assigns drive letters accordingly. Therefore, *before* you install this software (even if you are upgrading from a previous version), you *must* have "sticky" drive letters assigned to the existing local drives.

---

**CAUTION** You must assign sticky drive letters to existing drives *before* you can install the storage management software.

---

Use the following procedure to determine if you need to assign sticky drive letters and to assign them, if necessary.

1. Select Start → Programs → Administrative Tools → Disk Administrator to view the disk configuration and to check the number of partitions.

| <b>If you have <i>two</i> or more partitions:</b> | <b>If you have only <i>one</i> partition:</b> |
|---|---|
| Continue with Step 2.                             | Go to Step 3.                                 |

2. Do you have *at least two* partitions (the boot partition and one other partition) and *both* of the following conditions apply:
  - The last partition you created was created with Disk Administrator
  - The partition has a drive letter assigned and has a status of Unknown or has a file system on it (that is, it has a status other than Unformatted).

| Yes   | No            |
|---|---------------|
| You have completed this procedure. Continue with "Installing the SM7client" on page 62. | Go to Step 3. |

3. Create a new partition.

---

**Important:** If you have no room for a second partition on the local system, you can use a storage subsystem logical drive for the second partition. The storage subsystem should have at least one logical drive configured on it. You can access the logical drive without having installed the storage management software. Connect the storage subsystem to the system and then restart the system. Configured logical drives appear in Disk Administrator and you can create a second partition on a logical drive using the following procedure. You can delete or modify the logical drive later without causing the boot partition drive letter to be reassigned.

---

- a. Select a drive containing free disk space.
  - b. Select Partition → Create. The partition is created (a drive letter is assigned and the partition status is Unformatted).
  - c. Select Partition → Commit Changes Now. The partition status changes to Unknown, and sticky drive letters are assigned to all existing partitions.
4. Continue with the next section, "Installing the SM7client" on page 62.

## Installing the SM7client

Use the following procedure to install the SM7client package. You can install the package on a management station or file server configured with one of the following operating systems:

- Windows NT Server 4.0
- Windows NT Workstation 4.0

- Windows 98
- Windows 98 Second Edition

You also can install the *SM7client* package on one or both of the cluster server nodes, either for direct management through Ethernet connections to the controllers in the storage subsystem, or through the I/O path. If you want to manage storage subsystems through the I/O path rather than over the network, you must install the TCP/IP Protocol software on the nodes and assign a static IP address to the nodes. The host operating system must be Windows NT Server 4.0 or Windows NT Workstation 4.0.

### **Before You Begin**

Before you install the software, make sure that:

- The management station has at least 20 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 800 x 600 pixels and a palette of 256 colors.
- You close all other programs.

### **Installation Instructions**

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */SM7client* directory.
7. Select the *setup.exe* file, and then select Open.
8. Select Next.  
The setup program's Welcome screen appears.
9. Select Next.  
The Choose Destination Location window appears.
10. Select Browse if you want to change the destination location.

11. Select Next to begin the installation.

12. When the installation is complete, select Finish.

### Verifying the Installation

Use the following procedure to verify that the installation was successful.

1. Select Start → Programs.
2. Verify that Netfinity Fibre Channel Storage Manager 7 Client appears in the list of programs.

### What's Next?

Answer the following question:

- 1 Is the host machine operating system Windows NT?

| Yes  | No   |
|--|--|
| Go to the next section, "Installing RDAC." | Contact your customer service representative for assistance. |

## Installing RDAC

Use the following procedure to install the RDAC package on a host machine connected to one or more storage subsystems.

The RDAC package contains the following components:

- The multi-path driver necessary for controller failover support
- The Hot Add utility for dynamically adding logical drives to the operating system (see "Using the Hot Add Utility" on page 93)

---

**Important:** You must install the RDAC package before installing the SM7agent package.

---

## Before You Begin

Before you install the software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 1 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 640 x 480 pixels and a palette of 256 colors.
- You close all other programs.

## Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */RDAC* directory.
7. Select the *setup.exe* file, and then select Open.
8. Select Next.  
The setup program's Welcome screen appears.
9. Select Next to begin the installation.  
When RDAC is installed, the Setup Complete screen appears.  
**Note:** You must restart the host to ensure that all changes take effect.
10. Select Finish to restart the host.

## Verifying the Installation

Use the following procedure to verify that the installation was successful.

1. Select Start → Settings → Control Panel → Devices.

The Devices dialog box appears.

2. Scroll through the list of devices until you find the symarray.
3. Make sure that the status of the symarray is Started.

## What's Next?

Continue with the next section, "Installing the Microsoft Virtual Machine (VM)" on page 66.

## Installing the Microsoft Virtual Machine (VM)

Use the following procedure to install the Microsoft Virtual Machine (VM) on a host machine connected to one or more storage subsystems.

---

**Important:** You must install the Microsoft Virtual Machine (VM) before installing the SM7agent package.

---

## Before You Begin

Before you install the software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 1 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 640 x 480 pixels and a palette of 256 colors.
- You close all other programs.

---

**Important:** The Netfinity Fibre Channel Storage Manager 7.x Installation CD contains a version of the Microsoft VM, which was tested with the storage management software. Before you install this version, go to the Web site at <http://www.pc.ibm.com/support> to see if a newer version of the software is available. Also, check the Web site for the latest support information.

---

## Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */SM7agent* directory.
7. Select the *msjavx86.exe* file, and then select Open.
8. Select Next and follow the instructions on the screen.  
When the software is installed, the Setup Complete screen appears.  
**Note:** You must restart the host to ensure that all changes take effect.
9. Select Yes to restart the host.

## What's Next?

Continue with "Installing the SM7agent" on page 68.

## Installing the SM7agent

Use the following procedure to install the SM7agent package on a host machine connected to one or more storage subsystems.

The SM7agent package contains the following components:

- The host-agent software necessary for host-agent management of the storage subsystems
- The SM7devices utility necessary for relating logical drives to operating system device names (see "Using the SM7devices Utility" on page 93)

---

**Important:** You cannot install the SM7agent package unless the RDAC package is installed. The Microsoft Virtual Machine is also a required component for installing the SM7agent package and using the software contained in it.

You must install the SM7agent package even if you do not want to manage storage subsystems through the host-agent software.

---

### Before You Begin

Before you install the host-agent software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 1 MB of available disk space.
- The video monitor is set to a minimum screen resolution of 640 x 480 pixels and a palette of 256 colors.
- The RDAC driver and the Microsoft Virtual Machine (VM) are installed.
- You close all other programs.

### Installation Instructions

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.

The Add/Remove Programs Properties window appears.

3. Select Install and follow the instructions on the screen.

4. Select Browse.

The Browse dialog box appears.

5. Select the CD-ROM drive.

6. Select the */SM7agent* directory.

7. Select the *setup.exe* file, and then select Open.

8. Select Next.

The setup program's Welcome screen appears.

9. Select Next to begin the installation.

When the SM7agent package is installed, the Setup Complete screen appears.

**Note:** You must restart the host to ensure that all changes take effect.

10. Select Finish to restart the host.

### Verifying the Installation

Use the following procedure to verify that the installation was successful.

1. Select Start → Settings → Control Panel → Services.

The Services dialog box appears.

2. Scroll through the list of services until you find the storage management agent.

3. Make sure that the status of the agent service is Started.

**Note:** If the host-agent does not find controllers connected that have firmware version 4.x installed, the following Service Control Manager message appears:

```
At least one service or driver failed during system
startup. Use Event Viewer to examine the event log for
details.
```

When the host is connected to a storage subsystem with firmware version 4.x installed, the host-agent starts automatically after the system is restarted.

**Note:** If you are not using the host-agent software to manage storage subsystems, you might want to stop the host-agent service. Select the agent from the list of displayed services, and then select Stop.

## What's Next?

Answer the following questions:

1. Do you have a previous installation of storage subsystems containing controllers that you are managing with version 6.22 of the storage management software?

| Yes           | No            |
|---------------|---------------|
| Go to Step 2. | Go to Step 3. |

2. Do you want to manage those storage subsystems with Netfinity Fibre Channel Storage Manager 7.x?

| Yes                                       | No            |
|---|---------------|
| Go to "Installing SM7migrate" on page 70. | Go to Step 3. |

3. Did you install the storage management software on Node A or on Node B?

| Node A  | Node B                                |
|---|---------------------------------------|
| Go to "Setting Up the Storage Subsystems" on page 76. | "Verifying Drive Letters" on page 77. |

## Installing SM7migrate

Use the following procedure to install SM7migrate on a host machine connected to one or more storage subsystems. SM7migrate is necessary for downloading NVSRAM files and for upgrading controller firmware.

**Note:** Install and use SM7migrate if you have existing storage subsystems with model 4766 or later controllers that you want to manage with Netfinity Fibre Channel Storage Manager 7.x.

## **Before You Begin**

Before you install the migration software, make sure that:

- You have Administrator privileges on the host machine.
- The host machine is configured with Windows NT 4.0 and Service Pack 4 or 5.
- The host machine has at least 10 MB of available disk space.
- You close all other programs.

## **Installation Instructions**

1. Insert the Installation CD into the CD-ROM drive.
2. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
3. Select Install and follow the instructions on the screen.
4. Select Browse.  
The Browse dialog box appears.
5. Select the CD-ROM drive.
6. Select the */SM7/migrate* directory.
7. Select the *setup.exe* file, and then select Open.
8. Select Next.  
The setup program's Welcome screen appears.
9. Select Next.  
The Choose Destination Location window appears.
10. Select Browse if you want to change the destination location.
11. Select Next to begin the installation.
12. When the installation is complete, select Finish.

## **What's Next?**

Continue with the next section, "Downloading NVSRAM" on page 72.

## Downloading NVSRAM

If you are upgrading previously installed storage subsystems for management with Netfinity Fibre Channel Storage Manager 7.x, you must use SM7migrate to download a default NVSRAM file. The default settings enable the network bit and the bit for creation of an Access Volume.

---

**Important:** The host-agent management method requires an Access Volume for communication with the controllers. The Access Volume uses one of the allowable logical unit numbers (LUNs). If the host system has already configured its maximum number of LUNs, you must give up a LUN to be used by the Access Volume.

---

1. Stop all applications of version 6.22 of the storage management software.
2. From a DOS command prompt, change to the *\Program Files\SM7migrate\native* directory.
3. Type:

```
SM7migrate NV4766WNT856000.dlp
```

The software displays information on each RAID Module (storage subsystem) connected to the host machine on which you are running SM7migrate. For example, you might see:

- 1) JASON\_001:Drive8Drive0
- 2) MAGGIE\_01:Drive16Drive32
- 3) FRED\_001:Drive9Drive1

**Note:** The first part of the displayed information refers to the RAID Module name (for example, JASON\_001). The second part of the displayed information refers to the controllers in the RAID Module (for example, Drive8Drive0).

The software displays the following options:

```
Make Selection: (A)ll Modules, E(x)it, or Module Index Number
```

4. Select an option and press Enter.

---

**Important:** There are two files to choose from. The file you download depends on how many logical drives your operating system and host adapter support. Service Pack 4 supports up to eight logical drives, while Service Pack 5 supports up to 32 logical drives. Consult the README file in the `\VSRAM` directory on the Installation CD for information on which file to download for your configuration.

---

Continue with the next section, "Upgrading Firmware" on page 73.

## Upgrading Firmware

Netfinity Fibre Channel Storage Manager 7.x only manages storage subsystems with controllers using firmware version 4.x. If you have controllers and want to manage them with Netfinity Fibre Channel Storage Manager 7.x, use SM7migrate to upgrade the firmware on those controllers from version 3.x to version 4.x. Depending on the version of firmware currently installed on the controllers, this can be a two-part process:

- Upgrading from version 3.x to version 3.1.3 (the “stepping stone” for upgrade to version 4.x)
- Upgrading from version 3.1.3 to version 4.x

### Upgrading from Version 3.x to Version 3.1.3

Use the following procedure to use the SM7migrate utility to upgrade controller firmware from version 3.x to version 3.1.3. (This is the “stepping stone” for upgrading to version 4.x.)

---

**CAUTION**      **Do not use SM7migrate to upgrade firmware directly from version 3.x to version 4.x because you might lose communication with the controllers in the storage subsystem.**

---

1. Stop all applications of version 6.22 of the storage management software.
2. From a DOS command prompt, change to the `\Program Files\SM7migrate\native` directory.

3. Type:

```
SM7migrate firmware_03010300.dlp
```

The software displays information on each RAID Module (storage subsystem) connected to the host machine on which you are running SM7migrate. For example, you might see:

- 1) JASON\_001:Drive8Drive0
- 2) MAGGIE\_01:Drive16Drive32
- 3) FRED\_001:Drive9Drive1

**Note:** The first part of the displayed information refers to the RAID Module name (for example, JASON\_001). The second part of the displayed information refers to the controllers in the RAID Module (for example, Drive8Drive0).

The software displays the following options:

```
Make Selection: (A)ll Modules, E(x)it, or Module Index Number
```

4. Select an option and press Enter.

---

**Important:** After the firmware is downloaded and the controllers restarts, the World Wide Name (WWN) of each controller changes to avoid duplicating names. If the Fibre Channel host adapter driver you are using tracks controllers by PortName or NodeName, the host machine might not see the controllers. Restart the host to restore the connection.

---

---

**Important:** If you receive an error message that the filename you typed is not a downloadable file, check to make sure that the .dlp file is in the *\Program Files\SM7migrate\native* directory. If you placed the file in another directory, move it to the *\Program Files\SM7migrate\native* directory and try the migration procedure again.

---

5. Run the ClearLocks script located in the *\SM7migrate\native* directory to clean up unnecessary files generated by the firmware migration.
6. Continue with the next section, "Upgrading from Version 3.1.3 to Version 4.x" on page 75.

## Upgrading from Version 3.1.3 to Version 4.x

Use the following procedure to use the SM7migrate utility to upgrade controller firmware from version 3.1.3 to version 4.x.

1. Stop all applications of version 6.22 of the storage management software.
2. From a DOS command prompt, change to the *\Program Files\SM7migrate\native* directory.
3. Type:

```
SM7migrate firmware_04000003.dlp
```

The software displays information on each RAID Module (storage subsystem) connected to the host machine on which you are running SM7migrate. For example, you might see:

- 1) JASON\_001:Drive8Drive0
- 2) MAGGIE\_01:Drive16Drive32
- 3) FRED\_001:Drive9Drive1

**Note:** The first part of the displayed information refers to the RAID Module name (for example, JASON\_001). The second part of the displayed information refers to the controllers in the RAID Module (for example, Drive8Drive0).

The software displays the following options:

```
Make Selection: (A)ll Modules, E(x)it, or Module Index Number
```

4. Select an option and press Enter.

---

**Important:** If you receive an error message that the filename you typed is not a downloadable file, check to make sure that the .dlp file is in the *\Program Files\SM7migrate\native* directory. If you placed the file in another directory, move it to the *\Program Files\SM7migrate\native* directory and try the migration procedure again.

---

5. Run the ClearLocks script located in the *\SM7migrate\native* directory to clean up unnecessary files generated by the firmware migration.

6. Are you installing the storage management software on Node A or Node B?

| <b>Node A</b>   | <b>Node B</b>                               |
|---|---|
| Go to "Setting Up the Storage Subsystems" on page 76. | Go to "Verifying Drive Letters" on page 77. |

## Setting Up the Storage Subsystems

Use the procedures in "Chapter 5. Completing the Installation" on page 81 to perform the following tasks:

- Start the Enterprise Management window and perform an Initial Automatic Discovery of storage subsystems on the local subnetwork.
- Add other storage subsystems as necessary.
- Make sure that the status of each storage subsystem is Optimal.
- Start a Subsystem Management window for each storage subsystem and configure the storage subsystem as much as possible. You do not have to completely configure the storage subsystems. However, any changes you make later on must also be made known to Node B.
- Update NVSRAM.

After you have completed the procedures in "Chapter 5. Completing the Installation", return here and answer the following question:

Did you install the storage management software on Node A or Node B?

| <b>Node A</b>                            | <b>Node B</b>                               |
|--|---|
| Go to "Shutting Down Node A" on page 76. | Go to "Verifying Drive Letters" on page 77. |

## Shutting Down Node A

1. Shut down Windows NT, but leave Node A running (do *not* turn off the node).
2. Go to "Assigning Drive Letters" on page 61 and repeat the installation procedures to install the necessary software components on Node B.

## Verifying Drive Letters

1. Use the Windows NT Disk Administrator to verify that the drive letters assigned to the configured logical drives are the same as those assigned to Node A.
2. Continue with the next section, "Shutting Down Node B" on page 77.

## Shutting Down Node B

1. Shut down Windows NT, but leave Node B running (do *not* turn off the node).
2. Continue with the next section, "Installing the Cluster Server Software" on page 77.

## Installing the Cluster Server Software

If you are using a cluster server configuration, use this procedure to install the Cluster Server software on Nodes A and B.

If you are using a standard (non-clustered) configuration, skip this section and go to "Completing Final Tasks" on page 87.

1. Install the Cluster Server software on Node A, as follows:
  - a. Refer to the appropriate Microsoft Cluster Server documentation for the correct procedure to install the Cluster Server software.  
**Note:** During installation, specify that you want to **Form A New Cluster**.
  - b. After the system restarts, leave Node A up and running.
2. Install the Cluster Server software on Node B.
  - a. Refer to the appropriate Microsoft Cluster Server documentation for the correct procedure to install the Cluster Server software.  
**Note:** During installation, specify that you want to **Join The Existing Cluster**.
  - b. After the system restarts, leave Node B up and running.

---

**Important:** When the installation of the MSCS is complete, be sure to reinstall the latest supported service pack.

---

3. Verify the software installation, as follows:
  - a. On either node (A or B), select Start → Programs → Administrative Tools (Common).
  - b. Click on Cluster Administrator.
  - c. In the Cluster or Server Name field, enter either the name of the cluster or the name or IP address of one of the nodes.
  - d. If the installation is successful, the computer names of both nodes appear on the left side of the Cluster Administrator window.
4. Do both node names appear?

| Yes  | No   |
|--|--|
| Go to "Chapter 5. Completing the Installation" and follow the procedures in "Completing Final Tasks" on page 87. | Go to "Cluster Server Troubleshooting" on page 79. |

# Cluster Server Troubleshooting

Table 11 contains problems you might have in the Microsoft Cluster Server environment.

**Table 11: Cluster Server Troubleshooting**

---

|   |
|---|
| <b>Both node names do <i>not</i> appear in the Cluster Administrator window.</b>  |
| <b>CAUSE</b> The storage management software was not installed correctly.   |
| <b>ACTION</b>   |
| <b>1</b> Select Control Panel → Add/Remove Programs to uninstall the storage management software on both systems.         |
| <b>2</b> Verify that there is not an IP conflict on the network and that all cabling is installed correctly and securely. |
| <b>3</b> Begin the installation procedure again, starting with "Installing the Storage Management Software" on page 61.   |

---

|   |
|---|
| <b>Groups do <i>not</i> revert back to the preferred node after the Cluster Service is resumed.</b>                                     |
| <b>CAUSE</b> Most likely, the Groups are not set to a preferred node.   |
| <b>ACTION</b> Do <i>one</i> of the following:   |
| • Set the preferred node option:  |
| <b>a</b> Select the node.   |
| <b>b</b> Select Group → Properties.   |
| <b>c</b> Set the Preferred Node option for the desired node.  |
| • Manually move the Groups back to the node:  |
| <b>a</b> Select the node.   |
| <b>b</b> Select File → Pause Node.  |
| <b>c</b> Select the Group you want the node to own, and select File → Move Group. Repeat for every group that you want the node to own. |
| <b>d</b> Select the node again.   |
| <b>e</b> Select File → Resume Node.   |

---

|   |
|---|
| <b>Drive letters of shared logical drives do <i>not</i> match in Disk Administrator on both nodes.</b>  |
| <b>CAUSE</b> The wrong letters were assigned during installation.   |
| <b>ACTION</b> Use the Tools → Assign Drive Letters in the Disk Administrator on the appropriate node to ensure that the drive letters are the same as those assigned to Node A.   |
| For example, if Node A had an internal hard disk at drive letter c: and Node B had two internal hard disks at c: and d:, then the shared disk letters would not match (Node A would start at drive d: and Node B would start at drive e:; therefore, you would have to change the drive letter at Node A to start at drive e:). |

---

## **What's Next?**

Go to "Chapter 5. Completing the Installation" on page 81.

# Chapter 5. Completing the Installation

---

This chapter contains procedures for starting the Enterprise Management window and the Subsystem Management window and for completing the installation tasks.

## Starting the Enterprise Management Window

The Enterprise Management window is the first window to appear when you start the software. Use the Enterprise Management window to:

- Add and discover the storage subsystems you want to manage.
- Provide a comprehensive view of all storage subsystems in your management domain.
- Perform batch storage subsystem management tasks using the Script Editor.

Use the following procedure to start the Enterprise Management window:

1. Select Start → Programs.
2. Select Netfinity Fibre Channel Storage Manager 7 Client.

The client software starts, displaying the Enterprise Management window and the Confirm Initial Automatic Discovery dialog box, as shown in Figure 11 on page 82.

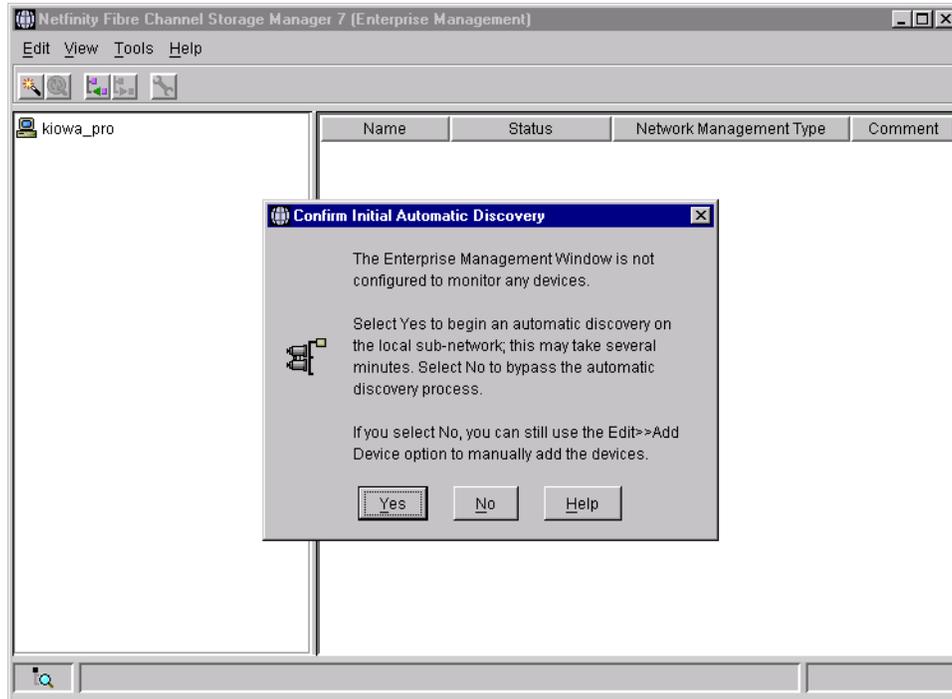


Figure 11. Confirm Initial Automatic Discovery dialog box

**Note:** The Enterprise Management window can take several minutes to open. No wait cursor (such as an hourglass) is displayed.

3. Select Yes to begin an initial automatic discovery of hosts and storage subsystems attached to the local subnetwork.

The software sends a broadcast message across the local subnetwork. It discovers host-agent managed storage subsystems by discovering the hosts that provide network management connections to the storage subsystems. The software discovers directly managed storage subsystems by discovering the controllers connected to the Ethernet network.

---

**Important:** It can take up to a minute for the Enterprise Management window to refresh after an initial automatic discovery.

---

If you need to stop the automatic discovery operation, close the Enterprise Management window.

When the initial automatic discovery is complete, you can see all of the hosts and storage subsystems attached to the local subnetwork, as shown in Figure 12.

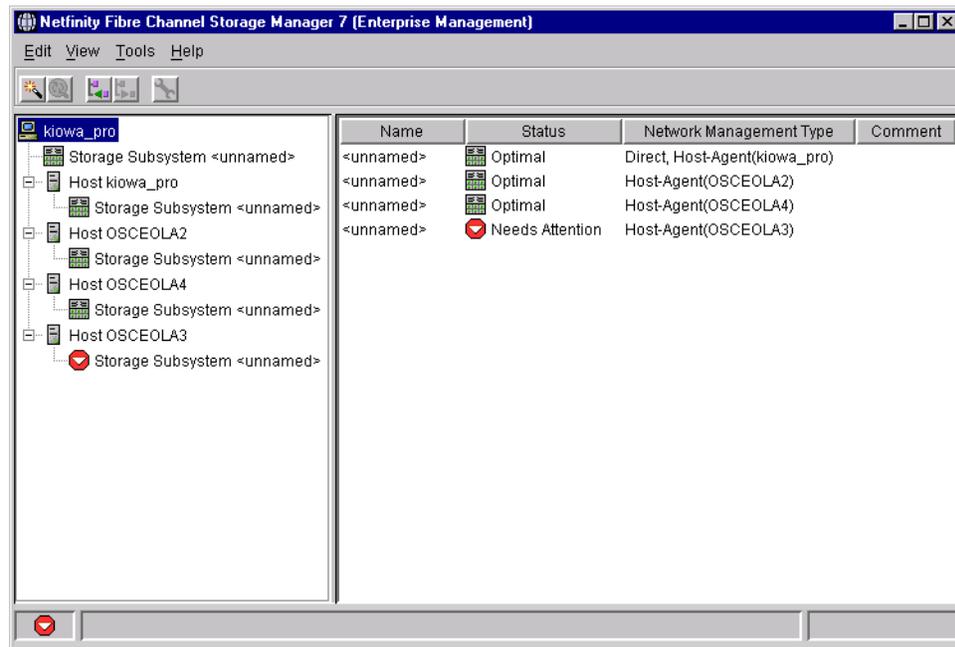


Figure 12. Enterprise Management Window

If you do not see all of the hosts and storage subsystems, do the following:

- Check the hardware and connections for possible problems (refer to the hardware documentation for specific procedures)
- Refer to the Enterprise Management window Help topic about discovering storage subsystems
- Make sure that the device is on the local subnetwork. If it is not, you must use the Add Device option.

**Note:** If any device shows a status of Unresponsive, use the software to remove the device from the management domain and then add it again. Refer to the Enterprise Management window Help for instructions on removing and adding devices.

4. Continue with "Adding Devices."

## Adding Devices

You can add more hosts or storage subsystems outside the local subnetwork. For more information about this option, refer to the Enterprise Management window online Help.

## **Monitoring Storage Subsystems**

To monitor the condition of storage subsystems in your management domain, you must open the Enterprise Management window. For more information about monitoring storage subsystems, refer to the Enterprise Management window online Help.

## **Setting Up Alert Notifications**

After you add devices to the management domain, you should set up alert notification options to report critical events on the storage subsystems. For more information about setting up alert notifications, refer to the Enterprise Management window online Help.

## **What's Next?**

Continue with the next section, "Starting the Subsystem Management Window" on page 85.

## Starting the Subsystem Management Window

Use the Subsystem Management window to manage (configure, monitor, recover, and tune) the logical and physical components comprising a storage subsystem. The Subsystem Management window is specific to an individual storage subsystem.

Use the following procedure to start a Subsystem Management window for a selected storage subsystem:

1. In the Enterprise Management window, select a storage subsystem.
2. Select Tools → Manage Device.

The software displays the Subsystem Management window for the selected storage subsystem, as shown in Figure 13.

**Note:** The Subsystem Management window you opened enables you to manage only the selected storage subsystem. However, you can open multiple Subsystem Management windows to manage other storage subsystems.

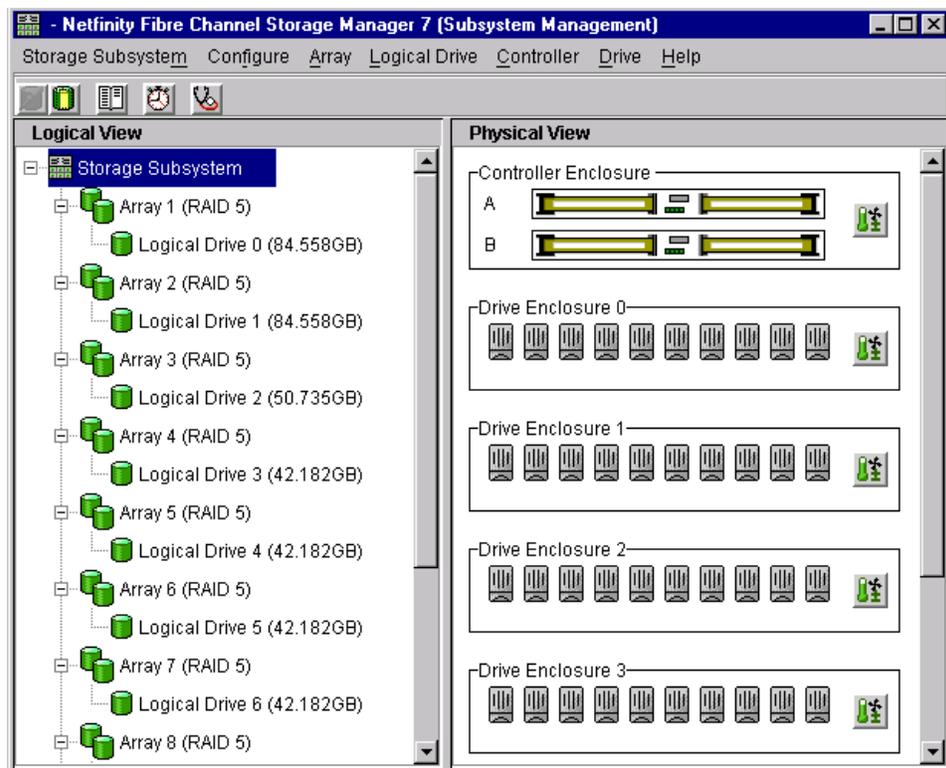


Figure 13. Subsystem Management Window

3. Continue with the next section, "Renaming Storage Subsystems" on page 86.

## Renaming Storage Subsystems

When you start Netfinity Fibre Channel Storage Manager 7.x for the first time, the storage subsystems are unnamed. You must use the Subsystem Management window to rename each storage subsystem from <unnamed> to the name you want. Refer to the names you entered in the information record you created using Table 7 on page 23. Then, refer to the renaming storage subsystems topic in the Subsystem Management window online Help. The Help topic provides detailed instructions for renaming storage subsystems.

## Performing Other Storage Subsystem Management Tasks

The storage subsystem management tasks you can perform include the following:

- Locating a storage subsystem
- Viewing a storage subsystem profile
- Entering or changing a storage subsystem password
- Creating and managing logical drives and arrays
- Using the Performance Monitor
- Creating storage partitions (if applicable)

For more information about these and other storage subsystem management tasks, refer to the appropriate topics in the Subsystem Management window online Help.

## What's Next?

Continue with the next section, "Updating NVSRAM" on page 86.

## Updating NVSRAM

Depending on the management method and configuration you selected, you might need to run some scripts to update NVSRAM settings.

Use the following procedure to update NVSRAM settings.

1. Insert the Installation CD into the CD-ROM drive.
2. Go to the `\Scripts` directory and read the README file in that directory.

3. Are you managing storage subsystems through the host-agent software?

| Yes                                   | No            |
|---------------------------------------|---------------|
| Run the script to disable networking. | Go to Step 4. |

4. Did you install the storage management software in a cluster server environment?

| Yes   | No   |
|---|--|
| Run the cluster server script. If you need to install storage management software components on Node B of the cluster server, go to "Assigning Drive Letters" on page 61. | Go to "Completing Final Tasks" on page 87. |

## Completing Final Tasks

To complete the installation, do the following:

- Stop the host-agent service if you want to manage storage subsystems using the direct method.
- Uninstall version 6.22 of the storage management software if you are not managing storage subsystems in coexistence.
- Uninstall the SM7migrate if you installed and used it.

Answer the following questions.

1. Are you managing storage subsystems using the direct method?

| Yes   | No            |
|---|---------------|
| Go to "Stopping the Host-Agent Service" on page 88. | Go to Step 2. |

2. Do you need to uninstall version 6.22 of the storage management software?

| Yes  | No            |
|--|---------------|
| Go to "Uninstalling Version 6.22 of the Storage Management Software" on page 89. | Go to Step 3. |

3. Did you install SM7migrate and successfully use it to download NVSRAM and controller firmware files?

| Yes   | No                               |
|---|----------------------------------|
| Go to "Uninstalling SM7migrate" on page 90. | Go to "What's Next?" on page 90. |

## Stopping the Host-Agent Service

If you are not managing storage subsystems through the host-agent software, you should stop the host-agent service. If you are managing storage subsystems through the host-agent software, you must stop the service if you want to add storage subsystems. When you restart the service, the host-agent discovers the new storage subsystems and adds them to the management domain.

If you are not managing storage subsystems through the host-agent, you should stop the service using the following procedure:

1. Select Start → Settings → Control Panel → Services.
2. Select Netfinity Fibre Channel Storage Manager 7 Agent.
3. Select Stop.

When the status changes to Stopped, select Close.

4. Answer the following questions:

- a. Do you need to uninstall version 6.22 of the storage management software?

| Yes  | No            |
|--|---------------|
| Go to "Uninstalling Version 6.22 of the Storage Management Software" on page 89. | Go to Step b. |

- b. Did you install SM7migrate and successfully use it to download NVSRAM and controller firmware files?

| Yes   | No                               |
|---|----------------------------------|
| Go to "Uninstalling SM7migrate" on page 90. | Go to "What's Next?" on page 90. |

## Uninstalling Version 6.22 of the Storage Management Software

Use the following procedure to uninstall version 6.22 of the storage management software that is not needed.

**Note:** Do not uninstall version 6.22 of the storage management software if you are using it to manage storage subsystems with controllers using version 3.x firmware in coexistence with Netfinity Fibre Channel Storage Manager 7.x and storage subsystems with controllers using firmware version 4.x.

1. Select Start → Settings → Control Panel → Add/Remove Programs.

The Add/Remove Programs Properties window appears.

2. Select version 6.22 of the storage management software from the list of programs.
3. Select Add/Remove.

The Confirm File Deletion dialog box appears.

4. Select Yes to start the uninstall process.
5. When the uninstall is completed, select OK.
6. Did you install SM7migrate and successfully use it to download NVSRAM and controller firmware files?

| Yes   | No                               |
|---|----------------------------------|
| Go to "Uninstalling SM7migrate" on page 90. | Go to "What's Next?" on page 90. |

## Uninstalling SM7migrate

After you complete the installation of Netfinity Fibre Channel Storage Manager 7.x and used SM7migrate to update NVSRAM and controller firmware, you can delete SM7migrate. Use Netfinity Fibre Channel Storage Manager 7.x to perform any future upgrades for NVSRAM or controller firmware.

Use the following procedure to uninstall SM7migrate.

1. Select Start → Settings → Control Panel → Add/Remove Programs.

The Add/Remove Programs Properties window appears.

2. Select the firmware migration tool from the list of programs.

3. Select Add/Remove.

The Confirm File Deletion dialog box appears.

4. Select Yes to start the uninstall process.
5. When the uninstall is complete, select OK.
6. Continue with the next section, "What's Next?" on page 90.

## What's Next?

Go to "Chapter 6. Operating System Support" on page 91.

# Chapter 6. Operating System Support

---

This chapter contains information related to operating the storage management software with Windows NT. For other important notes about using the Netfinity Fibre Channel Storage Manager 7.x software in a Windows NT environment, see "Understanding the Windows NT Restrictions" on page 14.

## Number of Logical Drives Supported

The supported logical drive limits are as follows:

- Windows NT with Service Pack 4 supports up to 8 logical drives per storage subsystem (0-7).
- Windows NT with Service Pack 5 supports up to 32 logical drives per storage subsystem (0-31).
- Host adapters support a maximum number of logical drives. Refer to the host adapter documentation for specific information.
- The host-agent management method uses a special logical drive, called an Access Volume, to communicate with the controllers on the storage subsystem. The Access Volume uses one of the allowable logical drives. Therefore, managing storage subsystems with the host-agent software limits you to one less logical drive than the maximum number supported by Windows NT and the host adapter.

## Creating and Deleting Logical Drives

### Creating Logical Drives

When you create new logical drives with the storage management software, you must add the new logical drives to Windows NT. Refer to the Windows NT documentation for details about adding a drive. Remember that each logical drive (not array) is seen by Windows NT as *one* drive. After creating logical drives, you should run two utilities provided with the storage management software. The Hot Add utility adds newly created logical drives to the operating system, and the SM7devices utility identifies logical drives by their associated operating system device names. For information about using these utilities, see "Using the Hot Add Utility" on page 93 and "Using the SM7devices Utility" on page 93.

## Deleting Logical Drives

*Before* either deleting logical drives with the storage management software or using Configure → Reset Configuration, stop I/Os to the affected storage subsystem. Then use Disk Administrator to delete any partitions and to unassign drive letters associated with the logical drives. If you do *not* use Disk Administrator first, registry information will be corrupted.

## Creating and Deleting Logical Drives in a Cluster Server Environment

When you create logical drives on one node in a cluster server environment, you must assign the same drive letter on the other node as well. After creating logical drives, you should run two utilities provided with the storage management software. The Hot Add utility adds newly created logical drives to the operating system, and the SM7devices utility identifies logical drives by their associated operating system device names. For information about using these utilities, see "Using the Hot Add Utility" on page 93 and "Using the SM7devices Utility" on page 93.

When creating and deleting logical drives, you must restart both nodes in the cluster. Before you restart a node, you must move all cluster resources from the node you are going to restart to the other node. Use the Cluster Administrator to move resources between nodes.

---

**Important:** *Never* perform a managed shutdown or a restart on a cluster server node if it currently owns cluster resources.

---

For example, after you create a new logical drive on Node A, you must perform the following steps:

1. Move *all* cluster resources from Node A to Node B.
2. Restart Node A.
3. Assign a drive letter to the new logical drive on Node A.
4. Move *all* cluster resources from Node B to Node A.
5. Restart Node B.
6. Assign the same drive letter to the new logical drive on Node B.
7. Move any cluster resources belonging to Node B from Node A back to Node B.

---

**Important:** If the Disk Administrator shows abnormal information (for example, disks offline, missing drive letters, partitions not shown, and so on), restart the host system.

---

8. Use the same procedure if you delete a logical drive from Node A, but omit Step 3 and Step 6.

## Using the Hot Add Utility

The RDAC software package includes a utility called Hot Add that enables you to add new logical drives dynamically without restarting your system. The utility registers the new logical drives with the operating system so you can use Disk Administrator to create partitions, add device names, and so on. The Hot Add utility is installed as part of the RDAC package.

After you finish creating the logical drives on a particular storage subsystem, go to the host attached to that storage subsystem and perform the following steps to use the Hot Add utility:

1. From a DOS command prompt, type:

```
hot_add
```

2. Press Enter.

The new logical drives are available through the Disk Administrator.

## Using the SM7devices Utility

The SM7agent software package includes a utility called SM7devices that enables you to view the storage subsystem logical drive that is associated with a particular operating system device name. This capability is helpful when you want to create drive letters or partitions for the logical drive using Disk Administrator.

After you finish creating the logical drives on a particular storage subsystem, go to the host attached to that storage subsystem and perform the following steps to use SM7devices:

1. From a DOS command prompt, change to the *\Program Files\SM7agent* directory.
2. Type:

```
SM7devices
```

3. Press Enter.

The software displays device identification information. For example, you might see:

```
disk1 [Storage Subsystem Finance, logical drive VOLA,  
LUN 0, wwn <wwn/>}
```

where disk 1 = the operating system device name

Storage Subsystem = the storage subsystem name

logical drive = the logical drive name

LUN = the logical unit number associated with the logical drive

wwn = the world wide name for the volume

## Stopping and Starting the Host-Agent Service

Use the following procedures to stop and start the host-agent service installed on the host machine or cluster server.

### Stopping the Host-Agent Service

If you are not managing storage subsystems through the host-agent software, you should stop the service. If you are managing storage subsystems through the host-agent software and you physically add new storage subsystems, you must stop and restart the host-agent service so it can recognize the new storage subsystems. You must then go to the Enterprise Management Window and select Tools → Rescan to add the new storage subsystems to the management domain.

Use the following procedure to stop the host-agent service:

1. Select Start → Settings → Control Panel → Services.
2. Select Netfinity Fibre Channel Storage Manager 7 Agent.
3. Select Stop.

When the status changes to Stopped, select Close.

## Starting the Host-Agent Service

The host-agent service automatically starts after you restart the host. However, you must start the service manually if you stop it.

1. Select Start → Settings → Control Panel → Services.
2. Select Netfinity Fibre Channel Storage Manager 7 Agent.
3. Select Start.

When the status changes to Started, select Close.

## Accessing Raw Partitions

Many database applications address raw partitions for their data. In the Disk Administrator utility, the partition information is shown as Unknown. When there is a failed logical drive and the system is started without restoring the logical drive (the same in Windows NT as removing a physical drive and starting), the order of these partitions can be rearranged. This can cause data corruption.

Data corruption occurs because the raw partition's namespace in the registry that the application is addressing has changed or moved. However, the application will continue to write to that partition or device as if it were the correct one. To work around this problem, be sure that all logical drives are Optimal and fully reconstructed before running any utilities that re-address the raw partition namespaces (that is, rearrange their ordering in Disk Administrator).

# Uninstalling Storage Management Software Components

Use the following procedure if you need to uninstall one or more of the components of Netfinity Fibre Channel Storage Manager 7.x.

---

**CAUTION**      **Do not uninstall the RDAC component unless instructed to do so by a customer service representative. The host-agent package requires RDAC to function properly. Also, if you uninstall RDAC in a coexistence environment, you will lose I/O path failover support for both the version 7.x and version 6.22 systems.**

---

1. Select Start → Settings → Control Panel → Add/Remove Programs.  
The Add/Remove Programs Properties window appears.
2. Select the component you want to uninstall from the list of programs.  
For example, Netfinity Fibre Channel Storage Manager 7 Client.
3. Select Add/Remove.  
The Confirm File Deletion dialog box appears.
4. Select Yes to start the uninstall process.
5. When the uninstall is completed, select OK.

# Appendix A. Notices

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Part Number: 09N7670

Printed in U.S.A.

December 1999

