grass valley

Network Attached Storage

Fibre Channel Network

User Guide

SOFTWARE VERSION 1.0.04

071831900
APRIL 2004

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Revision Status

Rev Date	Description
April 5, 2004	Release for software version 1.0.04

Contents

Grass Valley Product Support

To get technical assistance, check on the status of problems, or report new problems, contact Grass Valley Product Support via e-mail, the Web, or by phone or fax.

Web Technical Support

To access support information on the Web, visit the product support Web page on the Grass Valley Web site. You can download software or find solutions to problems by searching our Frequently Asked Questions (FAQ) database.

World Wide Web: http://www.thomsongrassvalley.com/support/
Technical Support E-mail Address: gvgtechsupport@thomson.net.

Phone Support

Use the following information to contact product support by phone during business hours. Afterhours phone support is available for warranty and contract customers.

United States	(800) 547-8949 (Toll Free)	France	+33 (1) 34 20 77 77
Latin America	(800) 547-8949 (Toll Free)	Germany	+49 6155 870 606
Eastern Europe	+49 6155 870 606	Greece	+33 (1) 34 20 77 77
Southern Europe	+33 (1) 34 20 77 77	Hong Kong	+852 2531 3058
Middle East	+33 (1) 34 20 77 77	Italy	+39 06 8720351
Australia	+61 3 9721 3737	Netherlands	+31 35 6238421
Belgium	+32 2 3349031	Poland	+49 6155 870 606
Brazil	+55 11 5509 3440	Russia	+49 6155 870 606
Canada	(800) 547-8949 (Toll Free)	Singapore	+656379 1390
China	+86 106615 9450	Spain	+ 34 91 512 03 50
Denmark	+45 45968800	Sweden	+46 87680705
Dubai	+ 971 4 299 64 40	Switzerland	+41 (1) 487 80 02
Finland	+35 9 68284600	UK	+44 870 903 2022

Authorized Support Representative

A local authorized support representative may be available in your country. To locate the support representative for your country, visit the product support Web page on the Grass Valley Web site.

Profile Users Group

You can connect with other Profile XP Media Platform users to ask questions or share advice, tips, and hints. Send e-mail to profile-users@thomson.net to join the community and benefit from the experience of others.

Safety Summaries

General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

Review all system operator manuals, including manuals in electronic format on the system hard drive.

Injury Precautions

Use Proper Power Cord

To avoid fire hazard, use only the power cord specified for this product.

Ground the Product

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Do Not Operate Without Covers

To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.

Do Not Operate in Wet/Damp Conditions

To avoid electric shock, do not operate this product in wet or damp conditions.

Do Not Operate in an Explosive Atmosphere

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Avoid Exposed Circuitry

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Product Damage Precautions

Use Proper Power Source

Do not operate this product from a power source that applies more than the voltage specified.

Provide Proper Ventilation

To prevent product overheating, provide proper ventilation.

Do Not Operate With Suspected Failures

If you suspect there is damage to this product, have it inspected by qualified service personnel.

Battery Replacement

To avoid damage, replace only with the same or equivalent type recommended by the circuit board manufacturer. Dispose of used battery according to the circuit board manufacturer's instructions.

Safety Terms and Symbols

Terms in This Manual

These terms may appear in this and other product manuals:

WARNING: Warning statements identify conditions or practices that can result in personal injury or loss of life.

CAUTION: Caution statements identify conditions or practices that can result in damage to the equipment or other property.

Terms on the Product

These terms may appear on the product:

DANGER indicates a personal injury hazard immediately accessible as one reads the marking.

WARNING indicates a personal injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product

The following symbols may appear on the product:

DANGER high voltage

Protective ground (earth) terminal

ATTENTION – refer to manual

Service Safety Summary

Do Not Service Alone

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid and resuscitation is present.

No Power Switch

To avoid electric shock, disconnect the main power by means of the power cord. The power cord is the main power disconnect. Ensure that the power cord is easily accessible at the rear of the product or at the power receptacle.

Use Care When Servicing With Power On

Dangerous voltages or currents may exist in this product. Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Certifications and Compliances

Canadian Certified Power Cords

Canadian approval includes the products and power cords appropriate for use in the North America power network. All other power cords supplied are approved for the country of use.

FCC Emission Control

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Grass Valley Group can affect emission compliance and could void the user's authority to operate this equipment.

Canadian EMC Notice of Compliance

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Canadian Certified AC Adapter

Canadian approval includes the AC adapters appropriate for use in the North America power network. All other AC adapters supplied are approved for the country of use.

EN55022 Class A Warning

For products that comply with Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Laser Compliance

Laser Safety Requirements

The device used in this product is a Class 1 certified laser product. Operating this product outside specifications or altering its original design may result in hazardous radiation exposure, and may be considered an act of modifying or new manufacturing of a laser product under U.S. regulations contained in 21CFR Chapter 1, subchapter J or CENELEC regulations in HD 482 S1. People performing such an act are required by law to recertify and reidentify this product in accordance with provisions of 21CFR subchapter J for distribution within the U.S.A., and in accordance with CENELEC HD 482 S1 for distribution within countries using the IEC 825 standard.

Laser Safety

Laser safety in the United States is regulated by the Center for Devices and Radiological Health (CDRH). The laser safety regulations are published in the "Laser Product Performance Standard," Code of Federal Regulation (CFR), Title 21, Subchapter J.

The International Electrotechnical Commission (IEC) Standard 825, "Radiation of Laser Products, Equipment Classification, Requirements and User's Guide," governs laser products outside the United States. Europe and member nations of the European Free Trade Association fall under the jurisdiction of the Comité Européen de Normalization Electrotechnique (CENELEC).

FCC Emission Limits

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation.

Certification

Category	Standard
Safety	*Designed/tested for compliance with:* **ANSI/UL60950-2000** - Safety of Information Technology Equipment **IEC 60950** - Safety of Information Technology Equipment (3rd edition, 1999) **CAN/CSA C22.2, No. 60950-00** - Safety of Information Technology Equipment **EN60950:2000** - Safety of Information Technology Equipment (3rd edition)

Environmental Criteria

The following table lists the environmental criteria for the NewsShare NAS system.

Characteristics	Description	
Operating Temperature	*Requirement:*	10° to 40°C
Storage Temperature	*Requirement:*	-40° to 65°C
Operating Altitude	*Requirement:*	To 10,000 feet
	Supplemental Data:	IEC 60950 compliant to 2000 meters
Storage Altitude	*Requirement:*	To 40,000 feet
Mechanical Shock	*Supplemental Data:*	Class 5 (30G) Grass Valley 001131500
Random Vibration	*Requirement:*	Operational: Class 6 Thomson Grass Valley 001131500
	Requirement:	Non-Operational: Class 5 Thomson Grass Valley 001131500
Transportation	*Requirement:*	Thomson Grass Valley 001131500
Equipment Type	*Supplemental Data:*	Information Technology
Equipment Class	*Supplemental Data:*	Class 1
Installation Category	*Requirement:*	Category II Local level mains, appliances, portable equipment, etc.
Pollution Degree	*Requirement:*	Level 2 operating environment, indoor use only.
Relative Humidity	*Requirement:*	Operating 80% from +30° to +40°C Non-Operating 90% from +30° to +60°C Do not operate with visible moisture on the circuit boards

Chapter 1

Overview

This chapter presents an overview of the NewsShare NAS storage system. Neither this book nor the software teaches you about networks. Understand the type, extent, and basic functions of the network environment in which NewsShare NAS will operate.

This chapter discusses:

- What the NewsShare NAS does
- What you get
- What to do

What NewsShare NAS Does

Thomson Grass Valley NewsShare NAS is a storage appliance that combines storage area network (SAN) performance with network attached storage (NAS) ease-of-use. It consists of server nodes, disk arrays, and a software utility that supports the storage appliance.

NewsShare NAS supports centralized file sharing in a multi-platform, multi-vendor environment. It provides up to seven terabytes (assuming you use 146 gigabyte disk drives) of user storage and allows for up to 16 file systems. NewsShare NAS allows multiple users to simultaneously capture and process large files among workstations, servers, back-up, and archival systems.

NewsShare NAS has no single point of failure. All active components — NAS server nodes, RAID controllers, disks, power supplies, and fans — are high-availability and redundant.

>>> ***CAUTION: Before replacing any component, back up all array data.***

Optionally, NewsShare NAS offers bandwidth management and storage quotas. These features provide differentiated network storage services based on the needs of a specific application or client.

Network Architecture

NewsShare NAS server nodes relate to a network in either of these ways:

- Attach NewsShare NAS server nodes to a switch, and then directly attach each PC, Mac, or Unix workstation to the switch. The connections form the network. Set up user and group permissions to specify each client's access to files on the disk array.
- Attach NewsShare NAS server nodes to an existing network by defining the mount point and gateway of the server nodes on the network.

File System Management

To increase speed, file system management can be distributed between the NewsShare NAS server nodes. Specify which server node will manage each file system. If a server node fails, the surviving server node assumes management of all file systems. When the failed server node is replaced, it automatically resumes control of its original file system.

What You Get

NewsShare NAS consists of hardware, software, and the accessories needed to configure the system.

Hardware

The NewsShare NAS system consists of the following components:

- One or two server nodes, providing high-availability. In a dual-node system, if one node fails, the second node takes over all file systems.
- Between one and seven PFR-600 arrays. At least one of the arrays must be a PFR-600 RAID system, containing one or two RAID controllers. A PFR-600 without a RAID controller (called a JBOD array) contains an Enclosure Services (ESI) board to monitor its redundant components.
- Database System Manager

Server Nodes

NewsShare NAS operates on one or two servers that manage the network file systems. In a dual node system, the two server nodes are cabled to:

- Each other for redundant, failover protection.
- The first PFR-600 array.
- A switch, which generally is connected via Fibre Channel.
- A hub connected via an Ethernet cable.

For information about cabling NewsShare NAS, refer to Chapter 2, “Physical Setup”. The hub or switch is cabled to the network or to a workstation on the network. Use this workstation to access the NewsShare NAS software. NewsShare NAS browser-based software resides on the server nodes.

PFR-600 Arrays

The PFR-600 array provides the disk storage for the NewsShare NAS system. One PFR-600 can be stacked with one or two servers to form a desktop unit. Up to six PFR-600 arrays can be racked.

Each PFR-600 enclosure contains redundant fans, power supplies, and drives. The NewsShare NAS PFR-600 RAID system contains one or two RAID controllers to stripe data across the high-speed drives connected via a Fibre Channel loop. If the PFR-600 RAID system contains two controllers, it provides redundancy. A PFR-600 array with a controller can be looped to and manage additional PFR-600 array JBODs without controllers.

>>> ***CAUTION: Do not remove a drive unless the controller failed it (light on drive blinks an alternate blue), or you disable it through the NewsShare NAS software. Removing a drive without following the drive failure procedure can cause loss of data.***

For more information about installing and cabling PFR-600 arrays, refer to the PFR-600 Installation Manual (Part No. 071826600).

>>> ***CAUTION: Although NewsShare NAS can create logical units, the NewsShare NAS system is already configured with the logical units you requested. Do not re-configure logical units. Re-configuring logical units erases all data, including the NewsShare NAS system configuration.***

Database System Manager

The Database System Manager (DSM) contains the Operating System and the Sequel Server for the NewsShare NAS system.

Software

Use the NewsShare NAS browser-based graphical user interface (GUI) to set up, expand, and monitor the network and its file systems. A wizard guides you through setup. You can set up NewsShare NAS and deliver shared file services to the client workstations in less than half an hour. Initial server node names and IP addresses are assigned at the factory.

Accessories

Accessories include:

- NewsShare NAS cables.
- PFR-600 array cables.
- PFR-600 Installation Manual (Part No. 071826600).
- Serial adapters.
- The NewsShare NAS Fibre Channel Network User Guide (this manual).
- Desktop system includes:
  - Rubber feet.
  - Desktop cover and screws.

What To Do

NewsShare NAS gives you all the tools you need to configure NewsShare NAS in your network, including security, event notification, permissions, file systems, disk arrays, bandwidth management, and storage quotas. (An additional software license is required to use bandwidth management or storage quotas.)

Installing NewsShare NAS consists of the following steps, described in subsequent chapters:

1. Unpack NewsShare NAS components. Move them to the place of operation. Assemble and cable the components. The physical setup of NewsShare NAS is described in Chapter 2, “Physical Setup”.
2. Set up NewsShare NAS to operate in your environment. Open NewsShare NAS software in a Web browser, such as Netscape, Internet Explorer, or Mozilla. The software setup is described in Chapter 3, “Software Setup”.
3. When setup is complete, create file systems on the PFR-600 array logical units, as described in Chapter 4, “File Systems and Shares”.

All other NewsShare NAS software functions are optional. Whether you perform them or not depends on the needs of your particular environment.

Chapter 2

Physical Setup

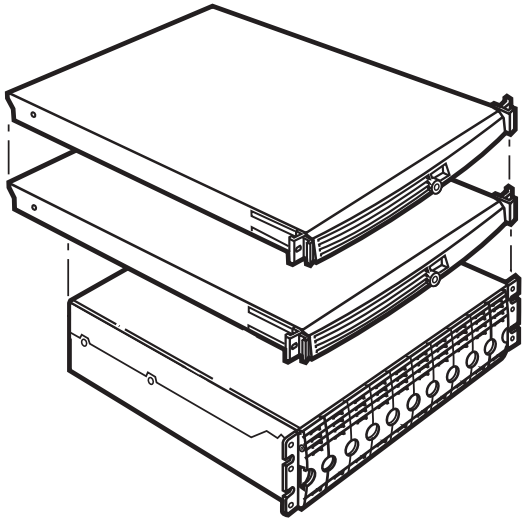
This chapter explains the physical setup of the NewsShare NAS system with two server nodes. (The NewsShare NAS system is available with one server node as well. Setup for one server node is similar.) The steps listed below are described in detail on the following pages:

1. Unpack the PFR-600 array. Refer to the PFR-600 Instruction Manual, Part No. 071826600.
2. Attach the sever nodes, as described in “Server Nodes” on page 26.
3. Attach the Database System Manager.
4. Cable the system as follows:
   - Cable the PFR-600 to the NewsShare NAS servers.
   - Cable the DSM to the servers.
   - Cable the server nodes to a switch or a hub that is attached to a host system.
   - Cable the NewsShare system to a NewsEdit workstation.
5. Power up the NewsShare NAS components.

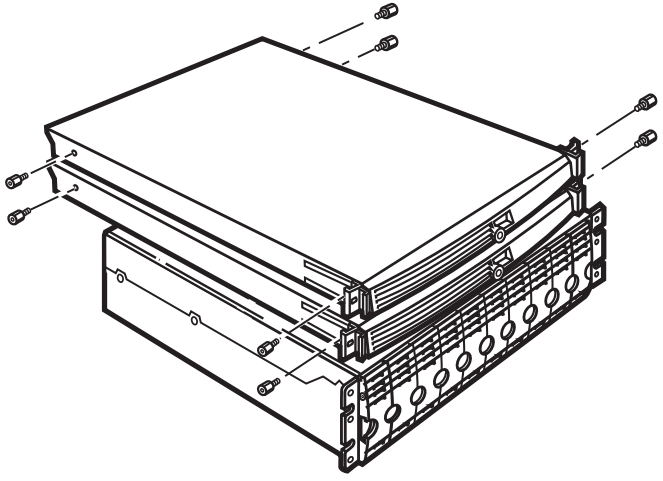
Server Nodes

Desktop System

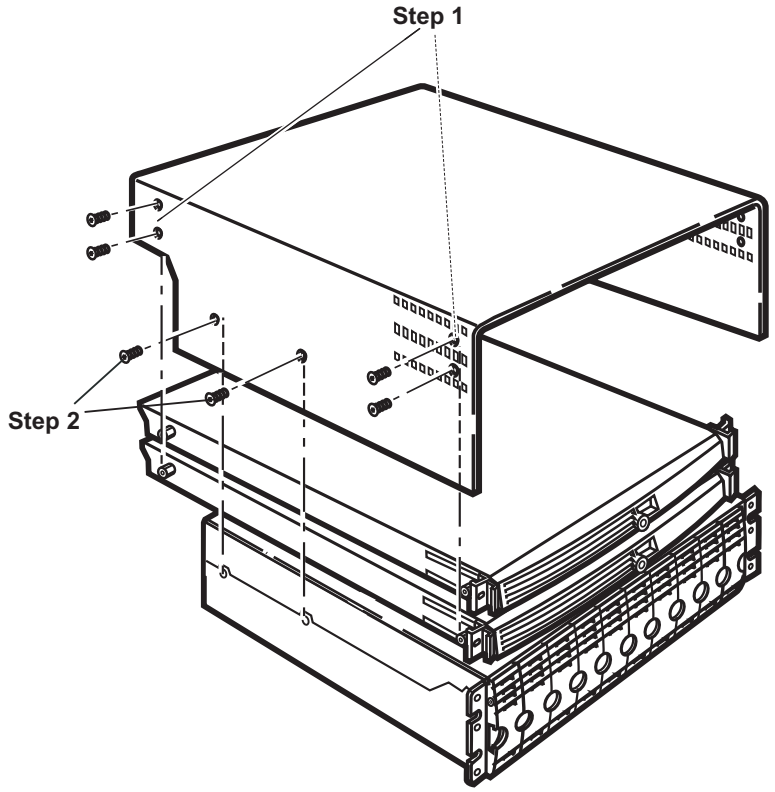
1. Stack the two server nodes on top of the NewsShare NAS. Make the fronts of the three modules flush; the backs of the server nodes extend past the back of the arrays.



2. Screw the stand-offs to each server node.

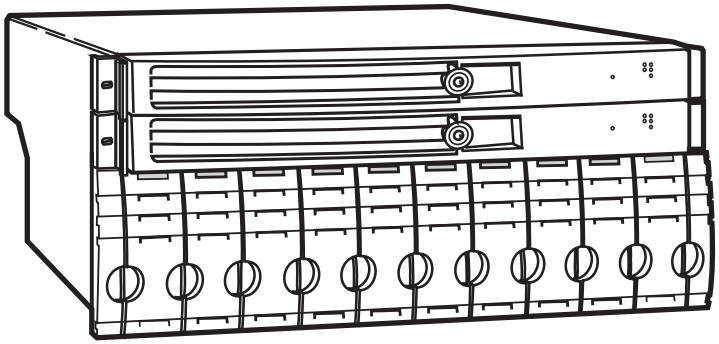


3. Put the desktop cover over the stacked components, aligning the stand-off screws and the holes in the NewsShare NAS.

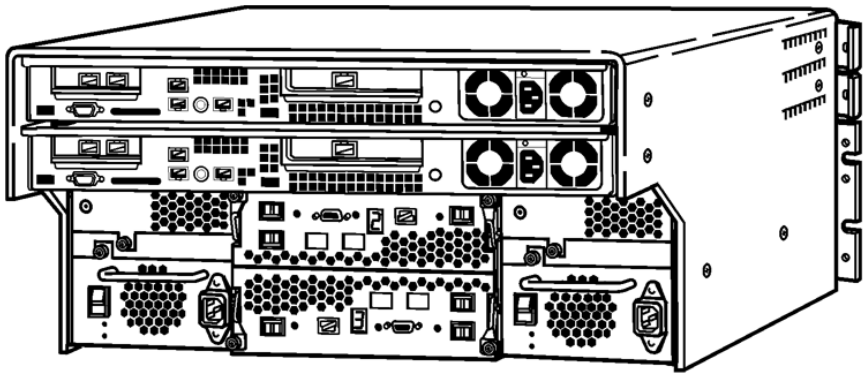


4. Screw the desktop cover to the server node stand-offs with eight 8-32 Phillips screws, as shown in Step 1 above.
5. Screw the desktop cover to the NewsShare NAS with four 8-32 Phillips screws (two on each side), as shown in Step 2 above.
6. Stack the DSM on top of the desktop cover.

The front of an assembled desktop NewsShare NAS two server system is shown below.



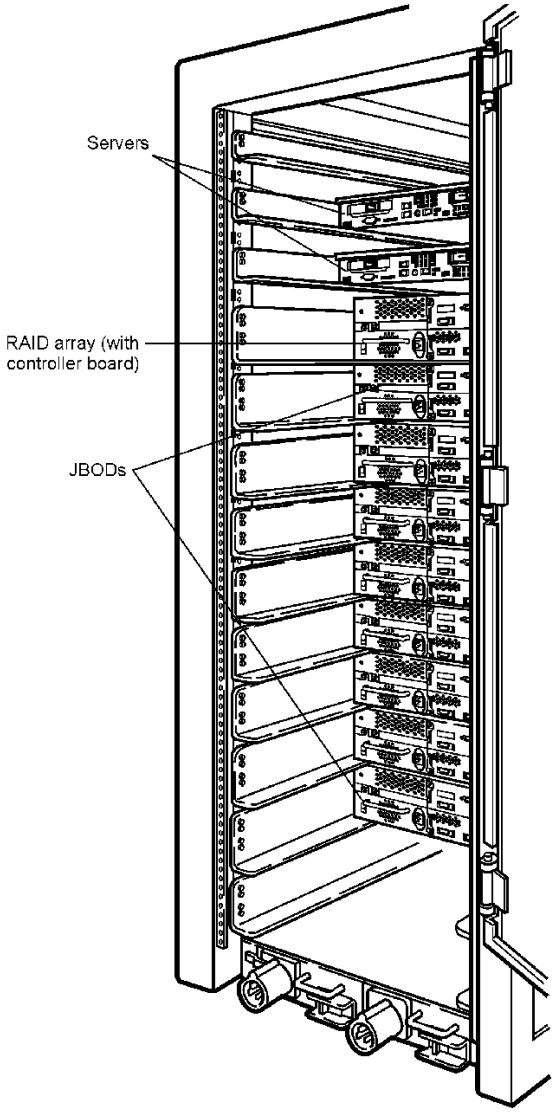
The rear of a desktop two-server system is shown below.



For airflow and vibration, the components are offset by the rubber feet you attached as shown in the PFR-600 Instruction Manual.

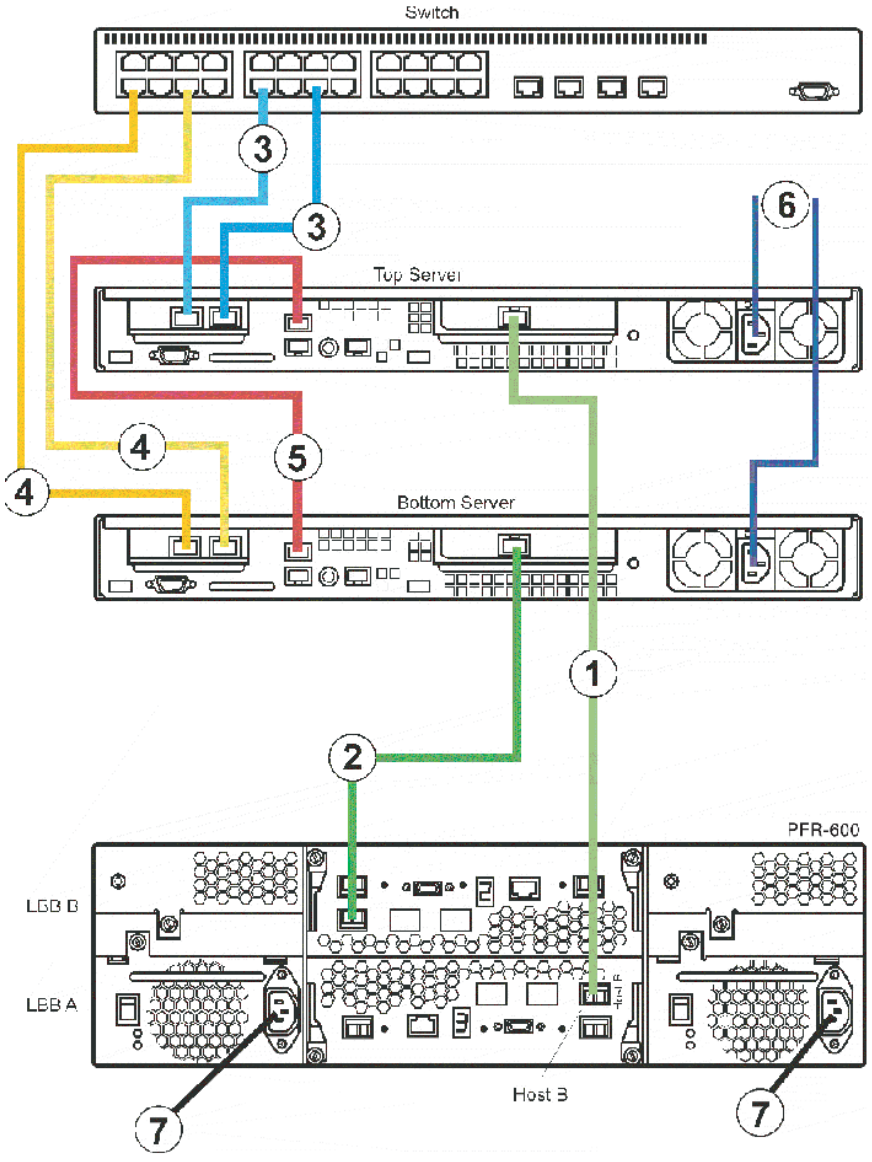
Optional Racked System

Thomson Grass Valley does not provide a racked configuration for the NewsShare NAS. If it is necessary to rack mount the NewsShare NAS system, use the configuration shown below.



Cabling

The numbers in this diagram correspond to the steps described on page 31.



Use these cables to cable NewsShare NAS.

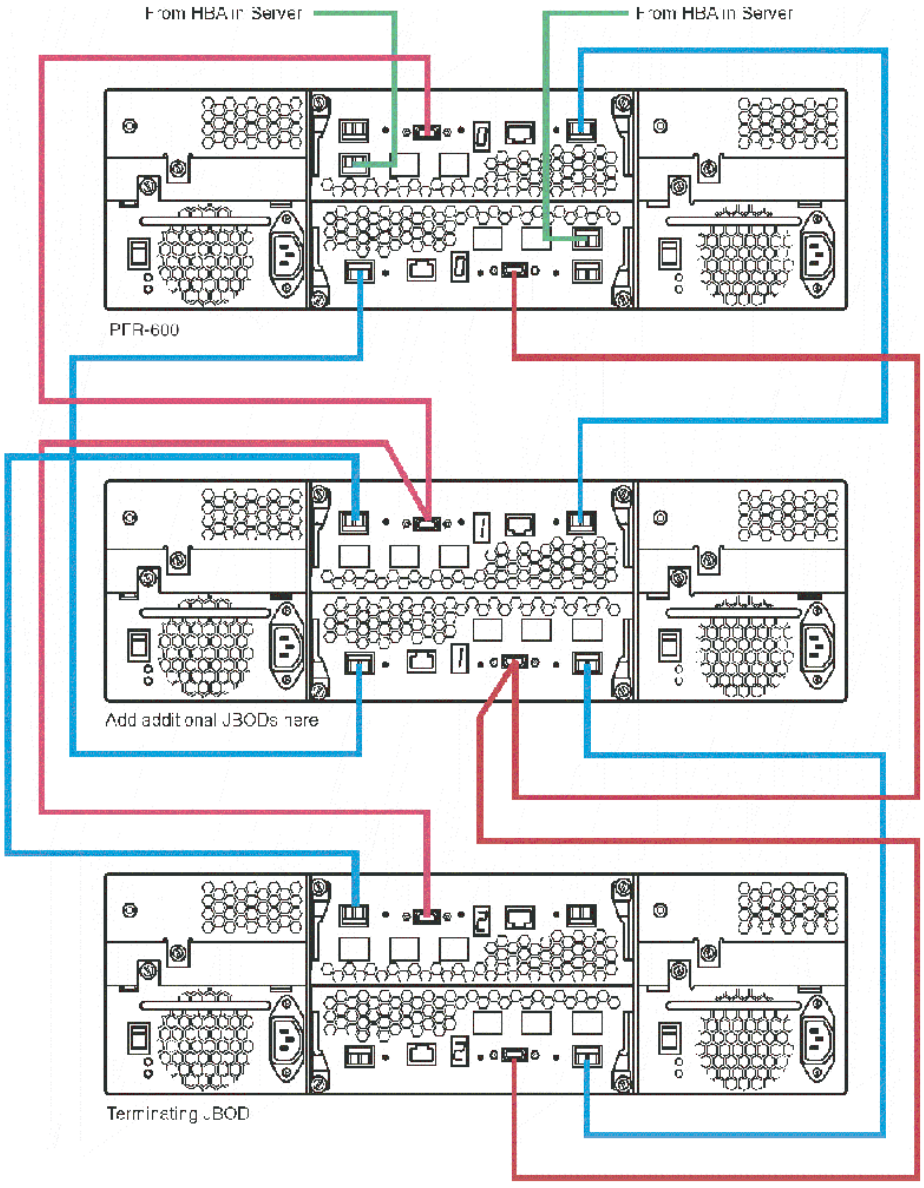
Color Code	Description	Connector Type	Connection points
	Copper Fibre Channel DB-9		From top server to LBB A. From bottom server to LBB B
	CAT-5 E Ethernet Cable		NIC ports from top server to network switch
	CAT-5 E Ethernet Cable		NIC ports from bottom server to network switch
	RJ-45 Ethernet Crossover Cable		Crossover cable between two servers
	Electrical cables		

NOTE: Colors in the diagram may not match the color of the actual cable. Crossover cables are labeled, "CROSS."

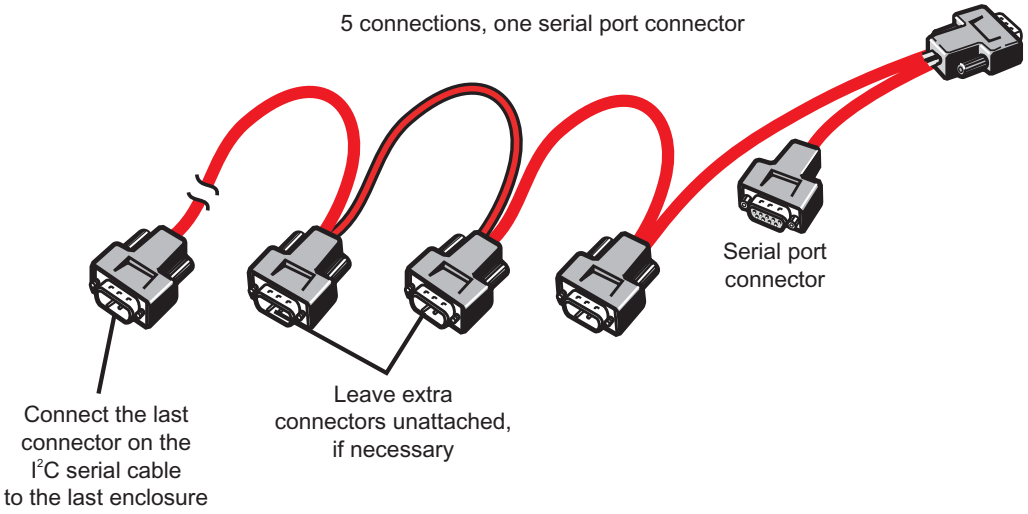
The cabling steps described below correspond to the numbers in the diagram shown in page 31.

1. Using an optical Fibre Channel cable, connect the host port B of the bottom board, LBB A, to the host bus adapter (HBA) on the top server node.
2. Using an optical Fibre Channel cable, connect the host port B of the top board, LBB B, to the host bus adapter (HBA) on the top server node.
3. Using two CAT-5 E Ethernet cables, connect the Gigabit NIC ports from the top server nodes to one set of aggregated ports on the network switch.
4. Using two CAT-5 E Ethernet cables, connect the Gigabit NIC ports from the bottom server nodes to another set of aggregated ports on the network switch.
5. Using a CAT-5 E Ethernet crossover Ethernet cable, connect the NIC2 ports of both servers.
6. Using the electrical cables, plug the two server nodes into separate power circuits for power redundancy.
7. Using the electrical cables, plug the two array power supplies into separate power circuits for power redundancy.

To cable a PFR-600 array to multiple PFR-600 JBOD arrays, use the diagram shown below.

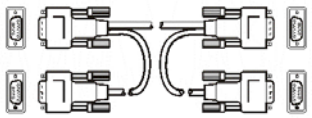


The I-Squared C serial cable (shown red in the diagram on page 32) can have 3, 5, or 10 connections. This illustration shows a five-connector cable.



Cable the first connection to first enclosure. Cable the last connector to the last enclosure. If you have more connectors than ports, leave the middle connectors uncabled. It is important that the first and last connector are cabled to the first and last enclosures.

To cable a PFR-600 array to multiple PFR-600 JBOD arrays, use the cables illustrated below.

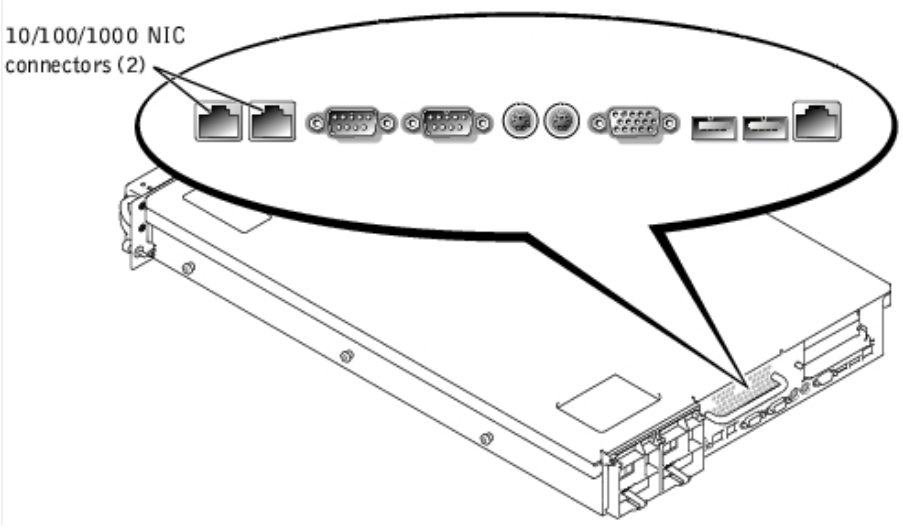
Color Code	Description	Connector Type
	Optical Fibre Channel Cable	
	I² C Serial cable	

(For more information on cabling PFR-600 arrays, refer to the PFR-600 array Instruction Manual, Part No. 071826600.)

Cabling the Database System Manager

To cable the DSM to the Server:

- Connect the Gigabit NIC port 1 to the network switch, using a standard CAT-5e Ethernet cable.



Cabling a NewsEdit Workstation to the NewsShare NAS

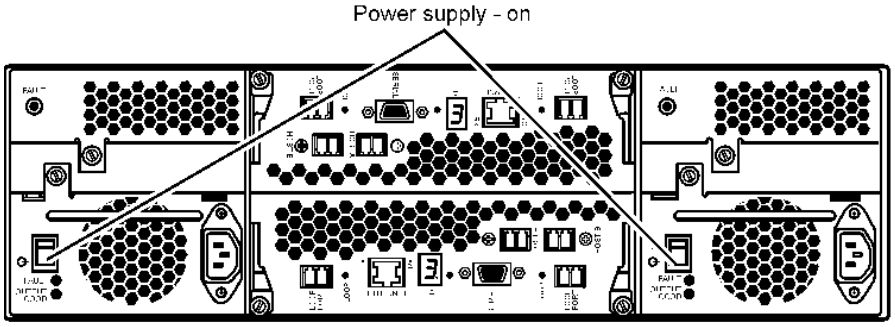
To connect a NewsEdit workstation to the NewsShare NAS:

- Connect the Gigabit NIC port from the Gigabit card on the back of the NewsEdit workstation to the network switch, using a standard CAT-5e Ethernet cable.

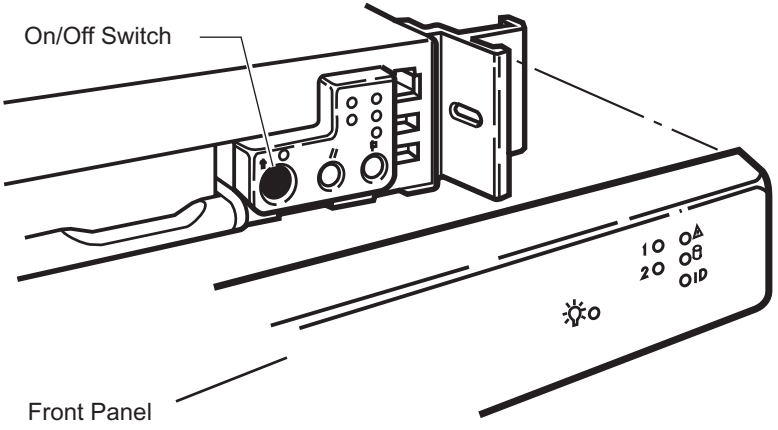
Power Up

Once the NewsShare NAS system is cabled, power on the system:

1. Power up the controllers by pressing the power switches as shown.

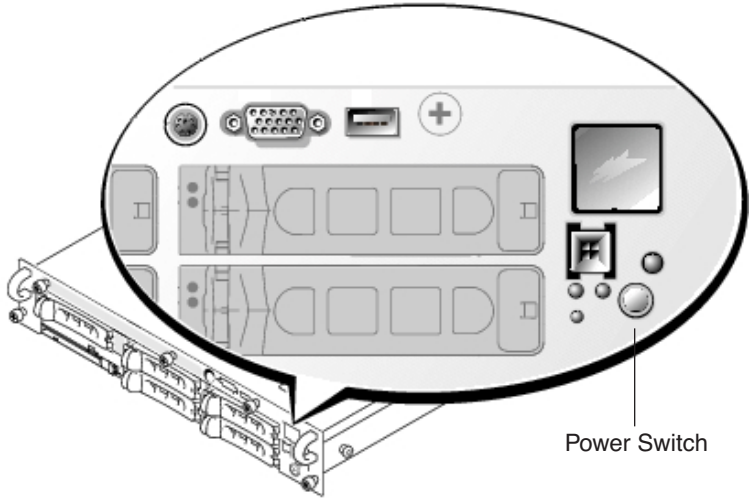


2. To power up the server nodes, remove the front panel, and press the On/Off switch.



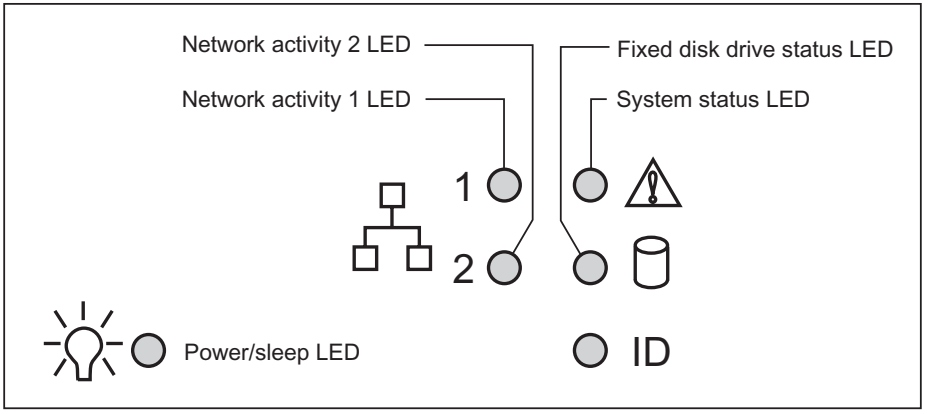
3. When the server nodes are powered up, replace the server node front panels.

4. Press the power switch on the front of the DSM to turn it on:



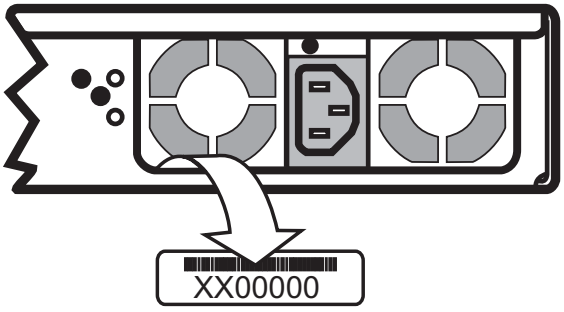
Lights on Server Node

This illustration shows the light signals on the front of the server node. The signals are located on the front of the server node.



Server Node Serial Number

Although you do not need the server node serial numbers for Setup, you may need to refer to the number in the future for upgrades. The server nodes serial number is located at the back of the server node next to the electrical outlet.



Chapter 3

Software Setup

This chapter describes how to begin configuring the network, using NewsShare NAS software. Follow the steps listed below.

1. The workstation must be on the same network as NewsShare NAS. Make sure you have an Ethernet hardware path that does not require a router to the NewsShare NAS server.
2. To ensure that the cabling is correct, ping NewsShare NAS.
3. Fill in the worksheet on page 40.
4. Review the information found in “Using the Software” on page 42.
5. Power up NewsShare NAS. On a client PC or workstation, open a Web browser and enter the address of the NewsShare NAS software.
6. Read and accept the license agreement, as shown on page 44.
7. Enter the initial password, as shown in “Entering Initial Password” on page 45.
8. Run the Setup wizard, which guides you through a few essential functions. The components of Setup are described on page 46.
9. Save the new settings and reboot the software, as described in “Save and Reboot” on page 57.

Worksheet

Before running NewsShare NAS setup, understand your network configuration. Determine what values you want for the fields shown in the worksheet.

Fields in the worksheet depend on the existing configuration of the network to which you are attaching NewsShare NAS. When planning NewsShare NAS setup, enter the values for the network functions (listed in the first column of the table) that the network uses. Your Network Administrator is the best person to specify these values. If the network does not use a function (or NewsShare NAS is not attached to a network), leave the fields blank on the worksheet table. When Setup displays the window supporting that function, click on **Next** to bypass function options

The serial number is found on the NewsShare NAS Software Certificate, which is located in the Accessories package. It is unique to your NewsShare NAS system. After the initial login, the serial number can also be found on the status bar at the top of any NewsShare NAS window, as shown on page 59.

Field	Default Value	(Optional) Change To
IP address of NewsShare NAS software	https://192.168.50.20:9890	
Security password	Appliance serial number	
Domain name (NIS)	Default.domain	
Gateway IP address	0.0.0.0	
Netmask	255.255.0.0	
Node 1 name	nashead1	
Node 2 name	nashead2	
Node 1, Port 0, Public IP address	192.168.50.20	
Node 1, Port 0, Private IP address	192.168.50.21	
Node 1, Port 2, Private IP address	192.168.0.20	
Node 2, Port 0, Public IP address	192.168.50.22	
Node 2, Port 0, Private IP address	192.168.50.23	
Node 2, Port 2, Private IP address	192.168.0.20	
SNMP	Community name	
	Version 1 or 2, or SNMP server	
	Host 1 address of SNMP server	
	Host 2 address of SNMP server	
SMTP	SMTP server address	
	Name of event notification contact	
	E-mail address for event notification contact	

Using the Software

This section provides information that applies to many NewsShare NAS functions.

Basics of IP Addresses

An Internet Protocol (IP) address is a unique identification for any machine on the Internet. An IP address has the form: **216.27.72.326**

Each of the four groups of numbers separated by a period is called an octet (because internally they are represented by 8 binary numbers). An IP address has two components:

- The net portion of an IP address always includes the first octet. The net portion identifies the network to which the computer belongs.
- The host (or server node) portion always includes the last octet. The host portion of an IP address identifies the specific computer within the network.

The Default Network has 0.0.0.0 for an IP address. IP addresses are grouped by class. A NewsShare NAS system might use any of the following classes:

- Class A is for very large networks. The net portion of all IP addresses in this class of networks is the first octet, which can be between 1 and 126. The last three octets are used for host nodes. An example of a Class A IP address is net = 124. and host = 24.53.107
- Class B is for medium-sized networks. The net portion of all IP addresses in this class of networks is the first two octets, where the first octet is between 128 and 191. (The first octet 127. is reserved for a special purpose.) The last two octets are used for the host nodes. An example of a Class B IP address is net = 144.24. and host = 53.107
- Class C is for small to mid-sized networks. The net portion of all IP addresses in this class of networks is the first three octets, where the first octet is between 192 and 223. The last octet is used for the host nodes. An example of a Class C IP address is net = 195.24.53. and host = 107

The gateway for a network controls messages into and out of that network. The gateway uses a netmask to filter out IP addresses that are not appropriate for the class of the network. For example, the netmask 255.255.0.0 is commonly used for a gateway on a Class B network. This tells the gateway which part of the IP address to pay attention to and which to ignore.

Allow Cookies

When the browser does not allow cookies, or cookies do not work well in the browser, the following symptoms appear:

- A timed GUI session does not work correctly. The session expires before the specified time. To work around this browser problem, set the session expiration on the Login window to Connection is Broken. The downside of doing this is that session protection is lost.
- Setting the refresh interval on a View Information window to a non-default interval does not work correctly.

To avoid these problems, make sure you allow cookies. For information on cookies, refer to the browser Online Help.

Enable Java

Make sure you enable Java script or JIT. For information on enabling Java, refer to the browser Online Help.

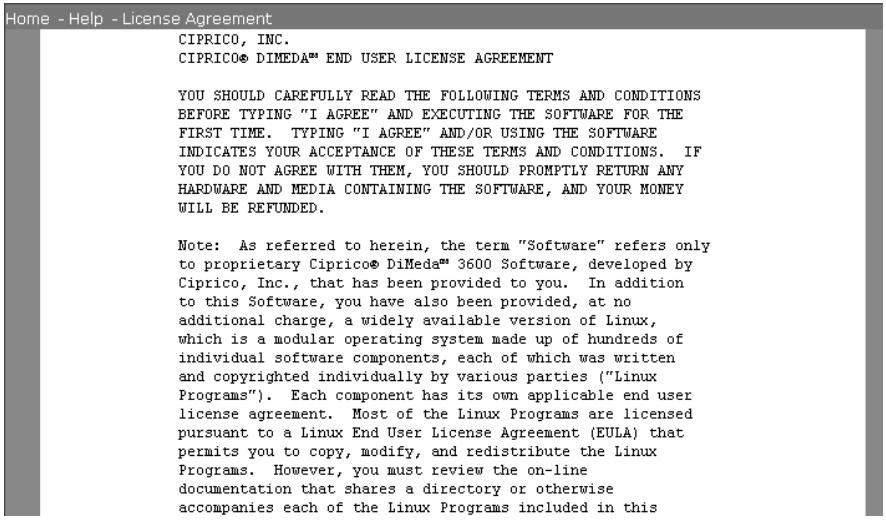
If Java is not enabled in the browser, the icon that displays status does not refresh automatically. In this case, the only window that periodically refreshes status is the View Status window.

Invalid Input Characters

Many fields do not accept the set of characters listed in the Appendix on page 169. Whenever the field is said to accept *valid characters*, do not use any of the characters in Appendix A.

Start the Software

1. Using a Web browser, enter the Internet Protocol (IP) address of the NewsShare NAS software. Use the IP address of NewsShare NAS software entered in the “Worksheet” on page 40. The License Agreement window appears the first time you open the software.

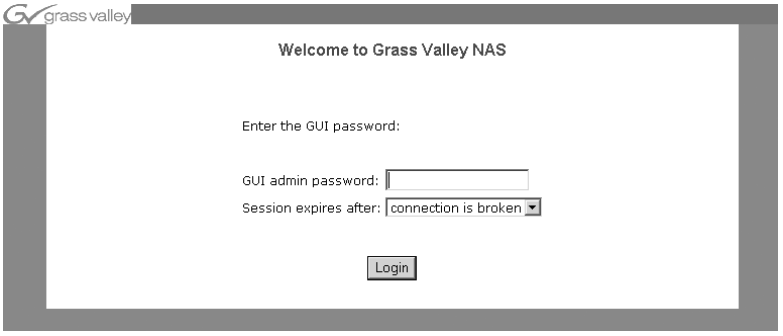


2. Make sure to read and agree to the NewsShare NAS license agreement. If you agree to this contract, you will be held liable to its terms.
3. Click **I Agree**.

   The password entry window appears.

Entering Initial Password

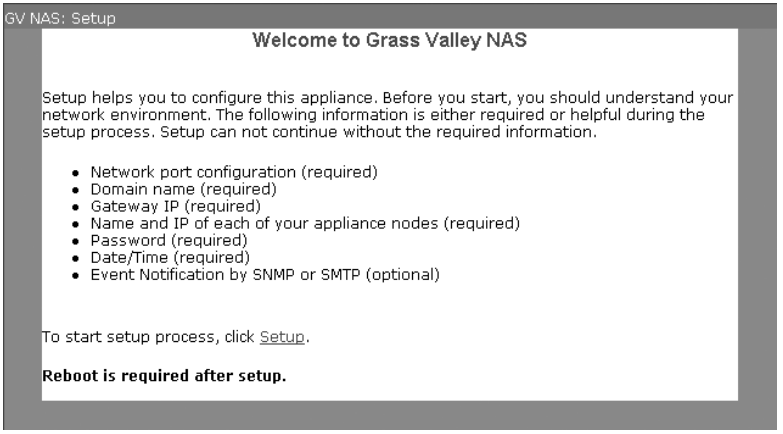
1. For the initial admin password, enter the appliance serial number, located on the NewsShare NAS Software Certificate license.



2. You may want to change the length of time after which a session expires. Or you can choose **Connection is Broken** if security is not an issue.
3. Click **Login**.

Welcome

The Welcome window appears as shown.



A default configuration was entered at Thomson Grass Valley. The first time you log in, NewsShare NAS steps you through the Setup procedures.

Click **Setup**.

Running the Setup Wizard

The rest of this chapter describes how to complete the setup and initial configuration of NewsShare NAS. Refer to the "Worksheet" on page 40 to determine what values to enter in the fields.

After setup is complete, you can reconfigure any part of NewsShare NAS at any later time. Setup takes less than half an hour.

NOTE: Changes do not take effect until you reboot this software. At the end of Setup, you will be asked to reboot.

Setting Up Network Ports

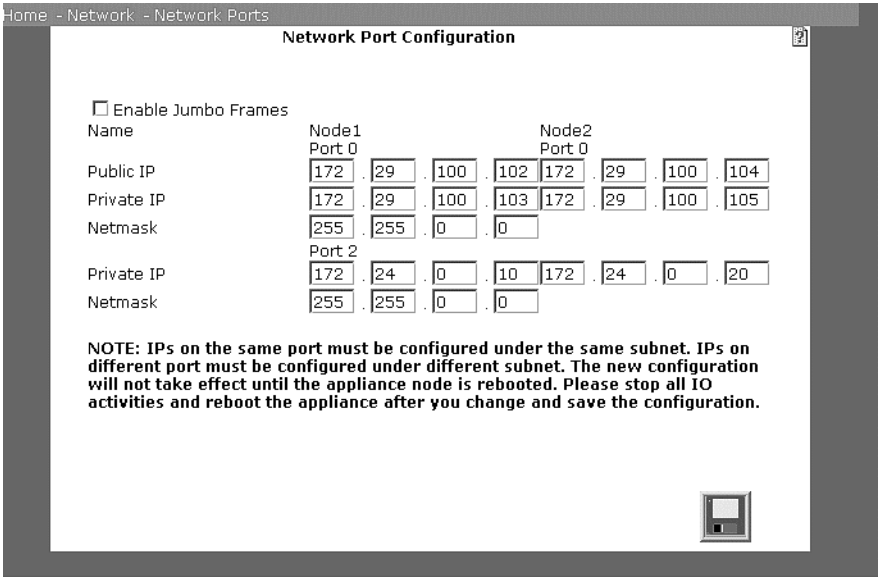
If NewsShare NAS is not attached to an existing network, you can accept all the default values for the network configuration by clicking on **Next** until you reach the Password window.

If NewsShare NAS is attached to a pre-existing network, reconfigure NewsShare NAS network ports to work in your environment. As NewsShare NAS starts up, it determines if the system has one or two server nodes and displays one of these windows:

- "Configuring Dual Node Network Ports" on page 46.
- "Configuring Single Node Network Ports" on page 49.

Configuring Dual Node Network Ports

The Network Port Configuration window lets you view and modify the network port configuration for a dual node NewsShare NAS system. The window appears after you initially login to NewsShare NAS, or by choosing **Network | Configure Network Ports**. Enter the IP address that attaches NewsShare NAS to the existing network. (If NewsShare NAS is not attached to an existing network, do not change the values on this window.)



Step A. Enabling Jumbo Frames

(Optional) Click on the check box to **enable jumbo frames** (or to disable them when already enabled). Using standard frames, packet size is 1.5K. Using jumbo frames, the packet-size is 9K. Jumbo frames improve performance.

> ***NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.***

When setting new IP addresses, the following requirements must be met:

For Port 0, these addresses must be on the same subnet:

- Node 1, Public IP address
- Node 1, Private IP address
- Node 2, Public IP address
- Node 2, Private IP address

For Port 2, these addresses must be on the same subnet:

- Node 1, Private IP address
- Node 2, Private IP address

Port 0 and Port 2 IP addresses cannot conflict. They must be in different subnets.

Step B. Configuring Node 1

1. Enter the Port 0 **Public IP** address. This is the address of the network server node.
2. Enter the Port 0 **Private IP** address. The Private IP address is the address that server nodes use to query each other.
3. Enter the Port 0 **Netmask**. This is also the Port 0, Node 2, netmask.
4. Enter the Port 2 **Private IP** address. The Private IP address is the address that server nodes use to query each other.
5. Enter the Port 2 **Netmask**. This is also the Port 2, Node 2, netmask.

Step C. Configuring Node 2

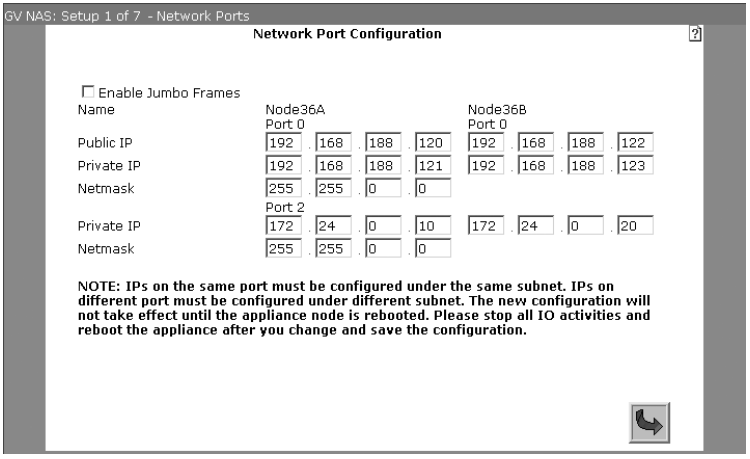
1. Enter the Port 0 **Public IP** address. The Public IP address is the address of the server node on the network.
2. Enter the Port 0 **Private IP** address. The Private IP address is the address that server nodes use to query each other.
3. Enter the Port 2 **Private IP** address. The Private IP address is the address that server nodes use to query each other.

Step D. Saving the Configuration

To save the changes, click **Next**.

Configuring Single Node Network Ports

This window lets you view and modify a single node network port configuration. The Single Node Network Port Configuration window appears after you initially login to NewsShare NAS, or by choosing **Network | Configure Single Node Network Ports**. (If NewsShare NAS is not attached to an existing network, do not change the values on this window.)



Step A. Configuring the Node

1. (Optional) Enable jumbo frames. Click on the check box to **enable jumbo frames** (or to disable them when already enabled). Using standard frames, the packets sent through the network are 1.5K. Using jumbo frames, the packets sent through the network are 9K. Jumbo frames improve performance.

   NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

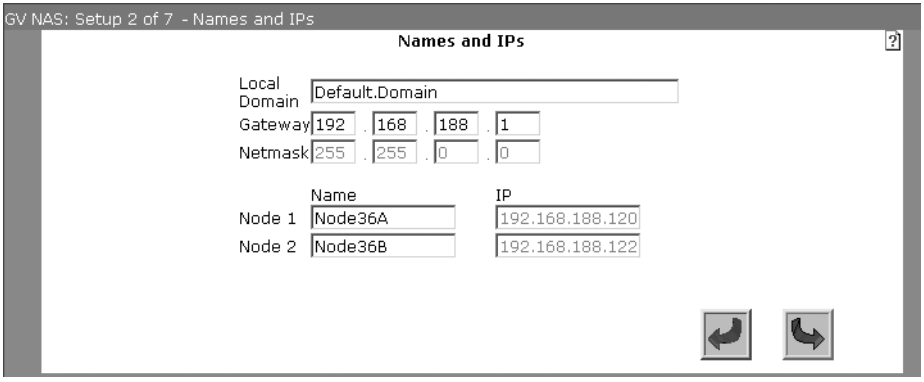
2. (Optional) Enter a new value for the **Public IP** for port 0. Port 0 is the external or data port. This is the address of the server nodes on the network.
3. (Optional) For port 0, enter the value for **Netmask**.

Step B. Saving the Configuration

To exit the window, click **Next**.

Setting Up Names and IPs

Setup includes the Names and IPs window. Access is after Setup by choosing **Network | Names and IPs**. When setting up NewsShare NAS on an existing network, change the values in this window to suit your network. When not setting up NewsShare NAS on an existing network, use the default values set at Thomson Grass Valley.



1. Review or change the **domain** name for the NewsShare NAS network. If Domain Name Service (DNS) is going to be used, this entry is the Local Domain Name on DNS. It cannot be changed in the DNS window. If changing, use a maximum of 64 characters, which can be alphanumeric, and underscore (_), or a period. The first character must be alpha. Blanks are not accepted.

2. Review or change the **gateway address**. The gateway IP address links NewsShare NAS to public networks. Use a gateway that is used by another computer in the network. This address might be the address of your corporate LAN.

   NOTE: For information on using IP addresses in a network, see "Basics of IP Addresses" on page 42.

3. You cannot change the netmask. This is the class (A, B, or C) of the public IP addresses used by the appliance The netmask filters incoming messages, determining which are accepted and which are rejected by the appliance. (The preset netmask is 255.255.0.0.)

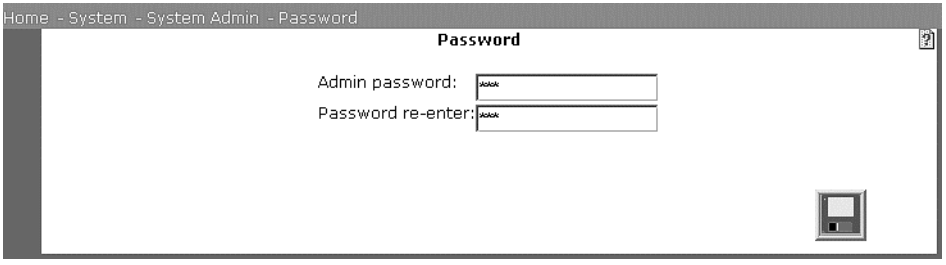
4. Enter the **host name** for each NewsShare NAS server node in the system.

Use a maximum of 64 characters. The first character must be alpha. The others must be alphanumeric or an underscore (_). Blanks are not accepted.

5. Click **Next** to proceed or **Back** to return to the previous window.

Changing the Password

The password window appears either as part of the Setup review or by choosing **System | System Administration | Password**.



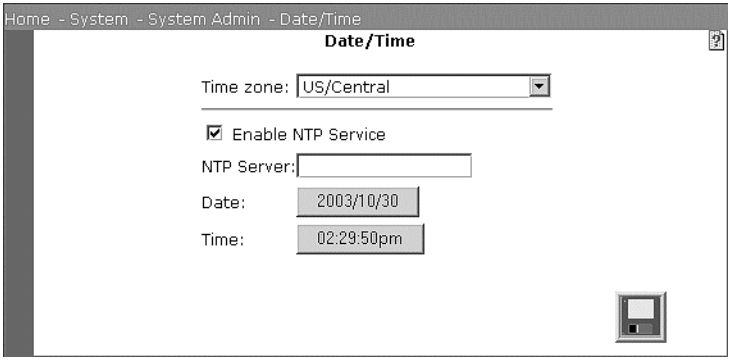
To start running NewsShare NAS Setup, you entered the default password in the window shown on page 45. Now you can specify a unique password for NewsShare NAS. This password controls who can change the configuration.

1. Enter a **password**. Use a maximum of 32 characters. The following characters are not accepted: ampersand (&), equal sign (=), tilde (~), semi-colon (;), asterisk (*), left or right parenthesis, single quote (‘), double quote (“), perpendicular line (|), apostrophe (’), left or right angle brackets, and back slash (\).
2. Re-enter the **password**.

3. Click **Next** to proceed or **Back** to return to the previous window.

Setting the Date and Time

The Date/Time window that appears as part of Setup does not support Network Time Protocol (NTP). You can only configure NTP after Setup is complete and you have rebooted. If you want to configure NTP, see “Setting the Date and Time (Option To Use NTP)” on page 112. During Setup, use the window shown to review the date and time.



1. Select the correct **time zone** for the site.

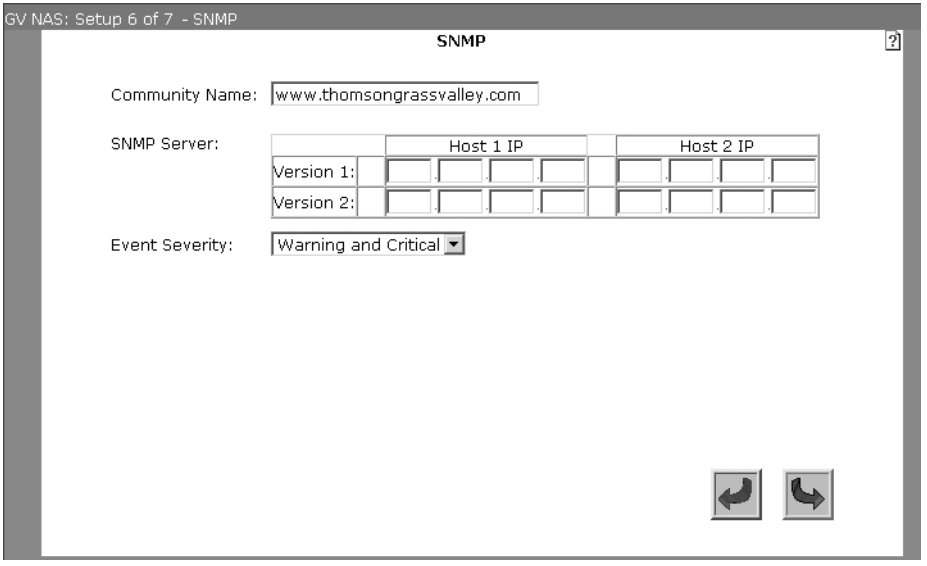
   NOTE: To automatically update scheduled time changes such as Daylight Savings Time, use a city time zone rather than a regional time zone.

2. Specify the current **date**, using the drop-down arrows.
3. Specify the current **time**, using the drop-down arrows.
4. Click **Next** to proceed or **Back** to return to the previous window.

SNMP

The SNMP window appears either as part of Setup, or by choosing **System | System Services | SNMP**. Simple Network Management Protocol (SNMP) is the Internet standard protocol for network management software. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network.

SNMP-compliant devices store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters. This data is used to make sure that all devices on the network are operating properly. NewsShare NAS can act as an SNMP agent. The window shown configures the SNMP community for NewsShare NAS. No special installation for SNMP is required on NewsShare NAS.



1. Enter a **community name**. An SNMP community is a group of one or more hosts. The community name is a string that identifies the community and acts like a password that authenticates the SNMP manager to the agent. Keep the community name secret, just as you would a password. Use a maximum of 128 characters, which can be alphanumeric, underscore (_), or period.

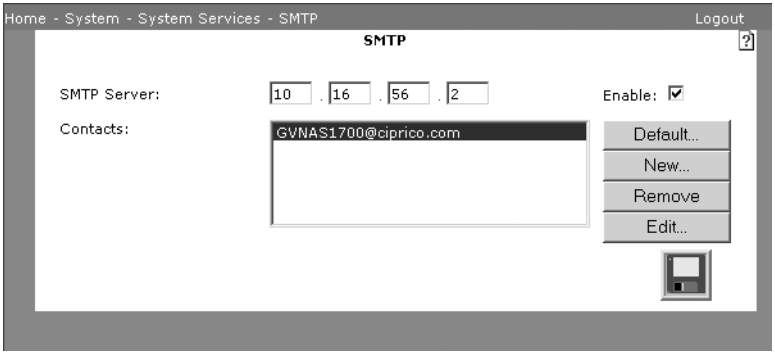
   NOTE: For information on using IP addresses in a network, see "Basics of IP Addresses" on page 42.

2. If you have an SNMP manager running on a host, enter the IP address of the **SNMP server** for Host 1 and/or 2 for either SNMP Version 1 or SNMP Version 2. Both versions of SNMP report error conditions. SNMP2 is an updated version that has better security, automatic continuous feedback, and potentially provides more error information. NewsShare NAS will send event notices to that host.
3. Choose the **severity level** you want to trigger event notification:
   - Warning and Critical (default): A warning event is less serious than a critical event. The system is still operating. As soon as it is convenient, provide administrative attention.
   - Critical: A critical event may render the system inoperable. Immediate attention is required.

4. Click **Next** to proceed or **Back** to return to the previous window.

SMTP

The SMTP window appears either as part of Setup, or by choosing **System | System Services | SMTP**. Simple Mail Transfer Protocol (SMTP) is a protocol for sending e-mail messages between servers. Most e-mail systems that send mail over the Internet use SMTP to send messages from one server to another.



1. Enter the IP address of the mail **server**.

   NOTE: For information on using IP addresses in a network, see "Basics of IP Addresses" on page 42.

2. Enable or disable **SMTP**.

3. Maintain the list of those who will be responsible for receiving event notification e-mails for NewsShare NAS:

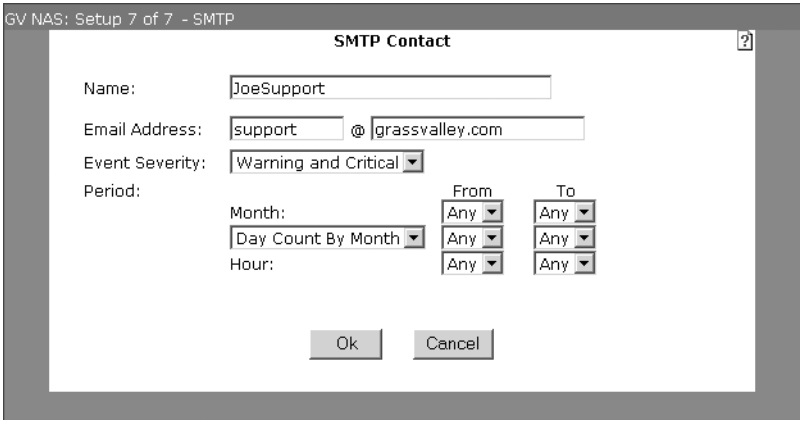
   - During periods that are not covered by any contacts, the event notification is sent to the Default SMTP contact. The default contact is set when you receive NewsShare NAS. Unless the default contact was deleted, clicking on **Default** does nothing. If the default contact was deleted, clicking on **Default** opens the SMTP Contact window. The only fields you can change on this window for the default contact are the Period settings.
     To make changes to the default contact, select GVNAS3600@ciprico.com<mailto:GVNAS3600@ciprico.com>, and click the **Edit...** button. The SMTP Contact window opens.
   - To add an new contact, click **New...**.
   - To remove a contact, select the name and click **Remove**.
   - To edit an existing contact, select the name and click **Edit...**.

4. When you are editing any contact (including the Default) or adding a new contact, the SMTP Contact window appears. After making entries in that window, you return to this window.

5. Click **Next** to proceed or **Back** to return to the previous window.

SMTP Contacts

The SMTP Additional Contact window appears when adding or editing an SMTP contact. When you add or edit a contact, you can specify the time period during which this person will receive the event notification.



1. Enter the name of the **contact**. Use a maximum of 32 alphanumeric characters, an underscore (_) or a period. No blanks are allowed. (This field is changeable only from the **New** or **Edit** button.)
2. Enter an **e-mail address** for receiving notification. Use a maximum of 64 valid characters (See "Restricted Input Characters" on page 169.) in this format: <*maximum 32 characters@maximum 31 characters*>. Include a period somewhere after the @ sign, and do not use a period as the first or last character. (This field is changeable only from the **New** or **Edit** button.)
3. Choose the **severity level** to trigger an event notification: (This field is changeable only from the **New** or **Edit** button.)
   - Warning and Critical (default): A warning event is less serious than a critical event. The system is still operational. As soon as it is convenient, provide administrative attention.
   - Critical: A critical event may render the system inoperable. Immediate attention is required.
4. Enter the times for event notification as follows:
   - **Months**: Range of months for event notification or Any, meaning all months. The range includes both the start and end months. For example, Feb. to Apr. includes all of February, March, and April.
   - **Days**: Range of days for event notification or Any, meaning all days. "Day count by month" means from day one of the month to the last day of the month (28 to 31 days). "Day count by week" means from Sunday to Saturday. The range includes both the start and end days. For example, Tues. to Thur. includes all of Tuesday, Wednesday, and Thursday.
   - **Hours**: Range of hours for event notification or Any, meaning all hours. The range includes both the start and end hours. For example, 10 to 13 begins at 10 am and ends at 1:59:59 pm.
5. Click **OK**. The SMTP window reappears.

Example 1

Contact Person 1 receives event notification only on Sundays, all day Sunday, from January to June. Select Jan. as the From month, June as the To month. Select Day Count by Week. Select From day to be Sunday and To day as Sunday. Select From hour and To hour as Any.

Example 2

Contact Person 2 receives event notification for all working hours on all working days, year round. Select From month and To month as Any. Select Day Count by Week: From day is Monday and To day is Friday. From hour is 8 (am) and To hour is 16 (4:59:59 pm.)

Save and Reboot

When Setup is complete, you must reboot NewsShare NAS with the values entered during Setup.

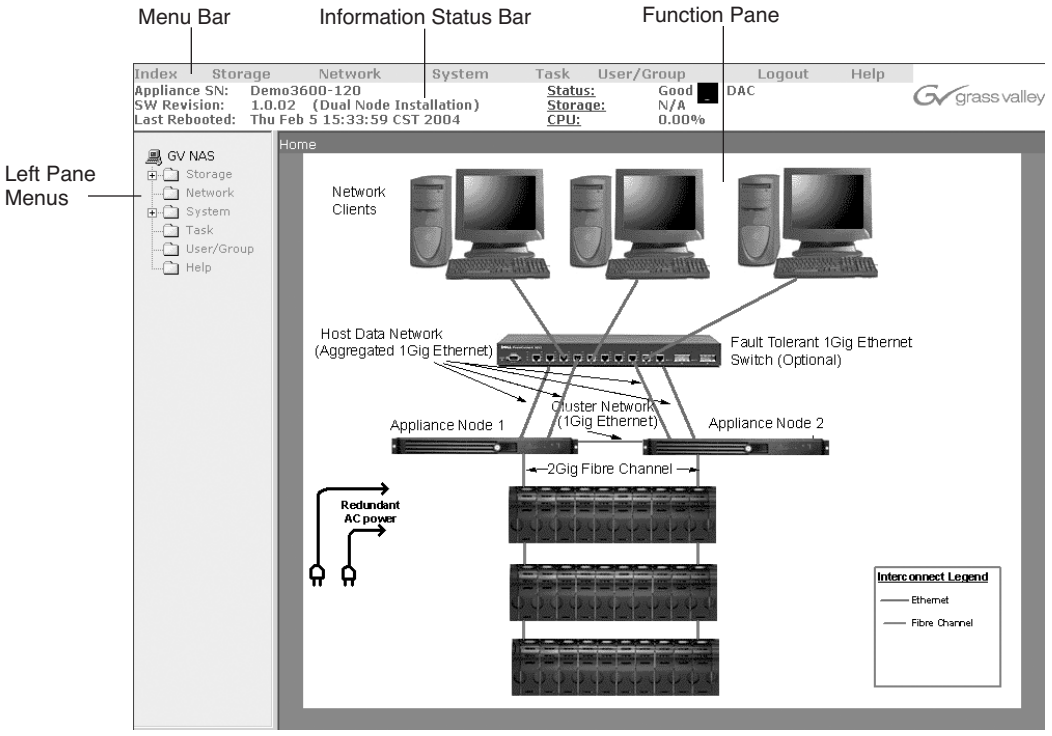
1. Select **Save**.

   NOTE: There is no need to power down. This will NOT save the new configuration. Only rebooting via the software saves the new configuration values.

2. Answer the questions to save the configuration and reboot NewsShare NAS. The reboot process can take up to 5-10 minutes. Verify it in Step 4.
3. **Exit** the browser on the client system.
4. Open a browser and enter the **address** of NewsShare NAS using the format https://.. :9890.

Components of the NewsShare NAS Window

These are the major components of a NewsShare NAS window.



Menu Bar

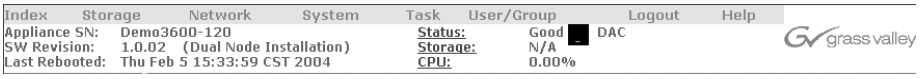
The items listed along the top of the window are:

- Index: Clicking this collapses all expanded menus in the left pane. No sub-menus are visible after clicking on Index.
- Storage: Clicking this expands a collapsed Storage menu in the left pane. It collapses an expanded Storage menu.
- Network: Clicking this expands a collapsed Network menu in the left pane. It collapses an expanded Network menu.
- System: Clicking this expands a collapsed System menu in the left pane. It collapses an expanded System menu.

- Task: Clicking this expands a collapsed Task menu in the left pane. It collapses an expanded Task menu.
- User/Group: Clicking this expands a collapsed User/Group menu in the left pane. It collapses an expanded User/Group menu.
- Logout: Click this to exit NewsShare NAS.
- Help: Click this to bring up Online Help.

Information Status Bar

The information status bar displays the serial number (the field Appliance SN just below Index menu and above SW Revision) that is the default password.



The items shown in the Information Status Bar include:

Field	Description
Appliance SN	Name assigned at the factory to this NewsShare NAS system.
SW Revision	NewsShare NAS software revision level.
Last Rebooted	Date and time NewsShare NAS was started.
Status	A green light means the device is a fully-functioning, dual-active controller. A yellow light means the device is degraded or has a fault, but it still functions. A read light means the device is down and not functioning.
Storage	Click here to view overall storage usage. For more information, refer to “Storage Usage” on page 99.
CPU	Click here to view overall CPU usage. For more information, refer to “CPU Usage” on page 100.

Left Pane Menus

The left pane contains the expandable/collapsible menus that provide access to all NewsShare NAS functions. The top level menus are: Storage, Network, System, Task, and User/Group. Click on the plus sign to display a submenu. Click on a minus sign to collapse all submenus. Click on the bottom level branch of these trees to access a NewsShare NAS function window.

Function Pane

All NewsShare NAS windows are displayed in the larger pane to the right of the Menu Pane.

What's Next?

After Setup completes, the NewsShare NAS system does not yet have file systems. When you re-log into NewsShare NAS, you are asked if you want to create files systems. Information on creating file systems is in Chapter 4. After creating file systems, perform these other tasks, depending on the environmental needs:

1. Configure the gateways and static routes. Refer to "Static Routes" on page 121.
2. Configure domain names. Refer to "Network Configuration - DNS" on page 81.
3. Configure security. Refer to "SMB/CIFS" on page 74.
4. Configure NIS naming service. Refer to "NIS" on page 80.
5. Resolve host names. Refer to "Host Name Resolution Order" on page 83.

Other functions are available. Some examples are RAID array configuration and viewing, storage quotas for NewsShare NAS clients (a premium service), and updating software or firmware to new versions.

Browse the NewsShare NAS menus to determine what features and functions you might find useful now or at a later date.

>>> ***CAUTION: Make sure your data is backed up before configuring the NewsShare NAS.***

Chapter 4

File Systems and Shares

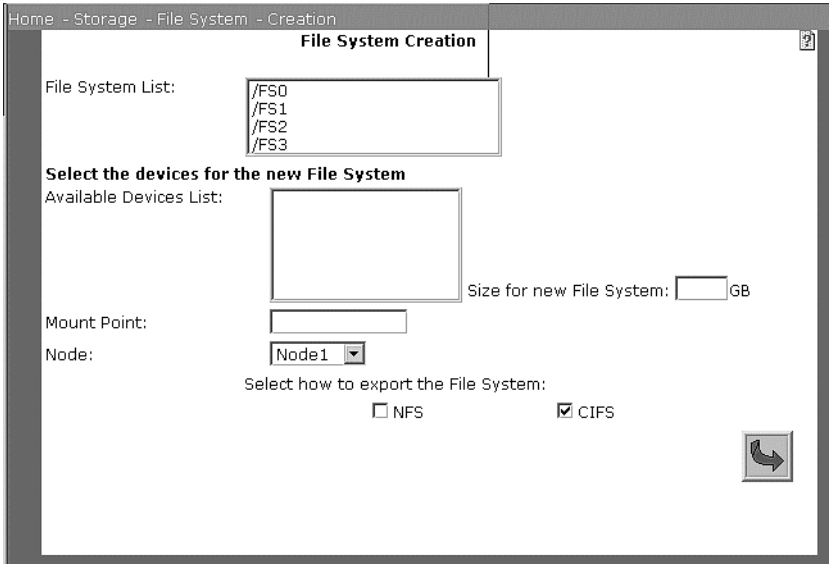
Storage consists of creating and maintaining file systems and CIFS shares.

This chapter describes the following tasks:

- Creating, deleting, or viewing a file system
- Moving a file System
- Extending a file system
- Creating, deleting, or viewing a share
- Modifying a share

Creating a File System

To create a new file system, choose **Storage | File System | Create**. The File System Creation window appears:



NOTE: A file system can be expanded later only if it is originally created on a single device. Data is striped across all drives of the device when a logical unit is created from multiple drives. A file system is expanded by integrating the additional device(s) to the original device, and when the original device is striped, no other device can be integrated with it.

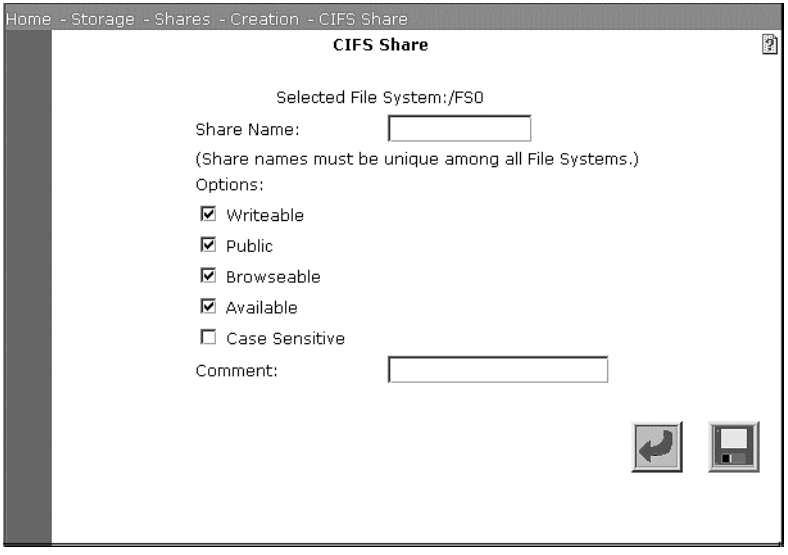
1. (Optional) If a link to Creating a Logical Unit is present, click on it to create a logical unit. After creating one or more logical units, they appear in the available devices list on this window.
2. From the list of available devices, click on one or more logical units. As you select logical units, the approximate total size of the file system appears in the **Size for new File System** field. The maximum size of a file system is two terabytes.
3. In the **Mount Point** field, enter the directory from which this NewsShare NAS file system is logically attached to the network. The field must start with a slash (/). It is limited to a maximum of 64 valid characters. (See

"Restricted Input Characters" on page 169.) This is where the file system gets mounted on the NewsShare NAS server.

4. If the drop-down **node** box is present, click on a node name. As long as this server node is functional, it controls the file system being created. If this node fails, the other node automatically takes over control of the file system.
5. Select the **File System export method**. Click one or both of the following:
   - **NFS**: Network File System, used in Unix systems.
   - **CIFS**: Common Internet File System, used in Windows systems.
6. Click **Next** to go to the next window: NFS Share or CIFS Share.

CIFS Share

A share is a file system that can be mounted by multiple client computers. This allows multiple users to access common files and file systems. If you chose CIFS when creating a file system, a share, or modifying a share, the CIFS share window appears:



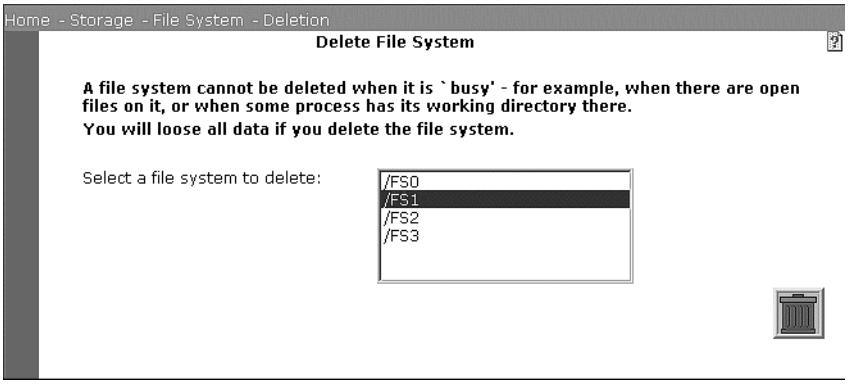
1. Enter the **share name**. Type in the name that Windows networks use to denote the share. Use a maximum of 32 characters. The first character must be alpha, and the others can be alphanumeric, underscore (_) or a period.

2. Choose settings from the following:
   - **Writable**: If set, users can write and read this share.
   - **Public**: If set, access by the user Guest is allowed, making the share public. The default Guest ID is nfsnobody. Select a different default Guest account on the **System | System Services | SMB/CIFS** window.
   - **Browseable**: If set, share name is visible using Microsoft Windows network.
   - **Available**: If set, clients can connect to the share or file system and access its resources. If not set, clients cannot access the share or file system.
   - **Case Sensitive**: If set, the system sees filenames as case sensitive.
3. (Optional) Enter a **comment**. Use a maximum of 32 valid characters (see "Restricted Input Characters" on page 169), excluding a hyphen (-) or an underscore (_). Type in any text that describes the share.

4. Click **Next** to proceed or **Back** to return to the previous window.

Deleting a File System

To delete a file system, choose **File System | Delete**. The Delete File System window appears. When a file system is deleted, all space allocated for it becomes available. All data in the file system is destroyed.



You cannot delete a file system that is in use or cannot be unmounted. Such file system conditions occur when:

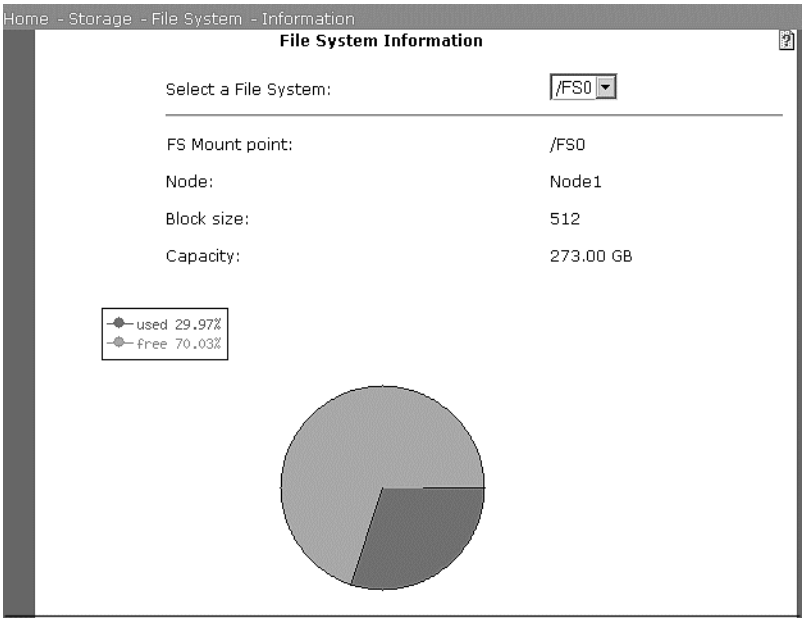
- Any client has a file within the file system open and is writing to it.
- The HTTP server has its root directory on the file system.
- Any ftp user has its home directory on the file system.

1. From the list of file systems, click on the name of each file system you want to delete. File systems that are being used cannot be deleted. When the file system is deleted, all files associated with it are automatically deleted.

2. Click the **Trashcan**. The system asks you to confirm the deletion.
3. Click **OK** to confirm the deletion.

Viewing File System Information

To view file system information, from the Storage menu, choose **File System | Information**. The File System Information window appears:



Use the drop-down box to select the file system for which you want information.

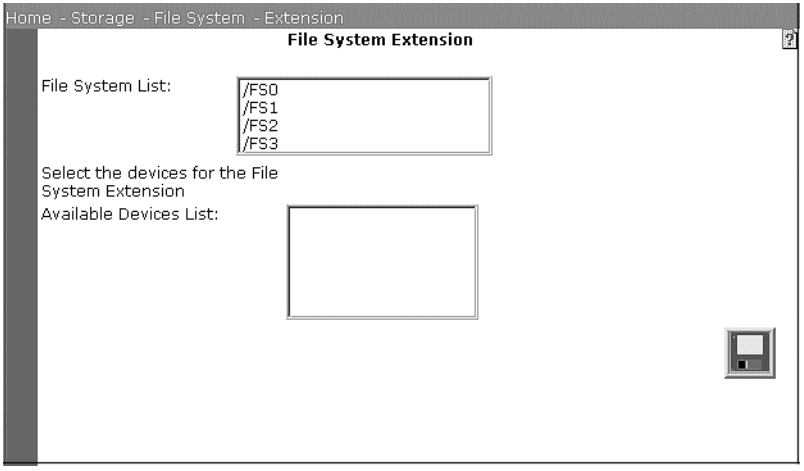
The File System Information window displays a pie chart showing free space and used space and other relevant information:

Field	Description
FS Mount point	Directory where this file system is mounted on the NewsShare NAS server node. The file system hierarchy begins at this directory.
Node	Server node on which file system resides.
Block size	Size of data that is processed or manipulated as a single unit.
Capacity	Number of gigabytes on the file system.
Used/Free	Percentage of the file system used or free.

Extending a File System

To expand an existing file system, choose **Storage | File System | Extend**. The File System Extension window appears. The new disk device is added to the end of the file system you are expanding. (A file system can be expanded only if it was originally created on a dingle disk device.) A file system can be expanded multiple times up to the limit of two terabytes.

Each disk device used to expand a file system must be at least as large as the disks already in the file system. Assume that the original disk drive is 200 GBs. The first disk device used for expansion must be at least 200 GBs. If this expansion disk drive is 3000 GBs, all subsequent expansion disk drives must be at least 300 GBs.

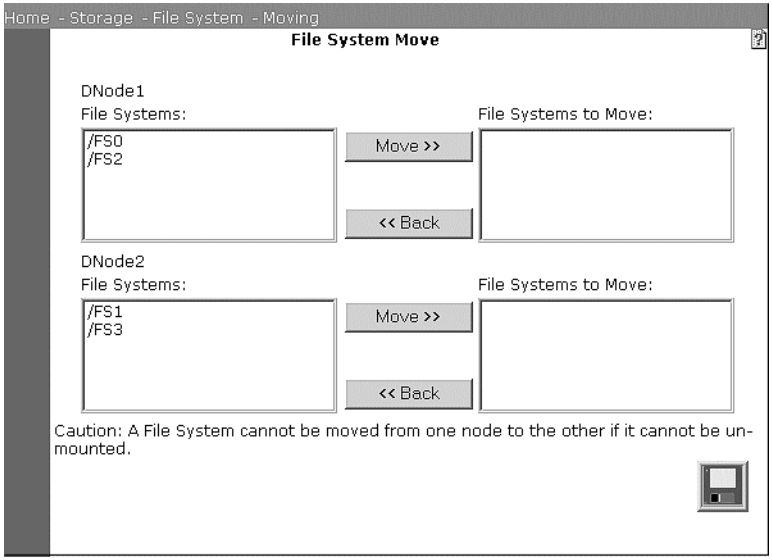


1. In the list of file systems, click on the one you want to expand.
2. In the list of available devices, click on the device you want to add onto the file system. This device is integrated onto the end of the existing file system.

3. Click **Save** to expand the file system.

Moving a File System

In a dual node system, all file systems are visible on both server nodes. Moving a file system from one node to another transfers internal control to the new node. It will still be visible by the original server node. To move a file system from one NewsShare NAS server node to another, choose **Storage | File System | Move**. The File System Move window appears:



You cannot move a file system that is in use or cannot be unmounted. Such file system conditions occur when:

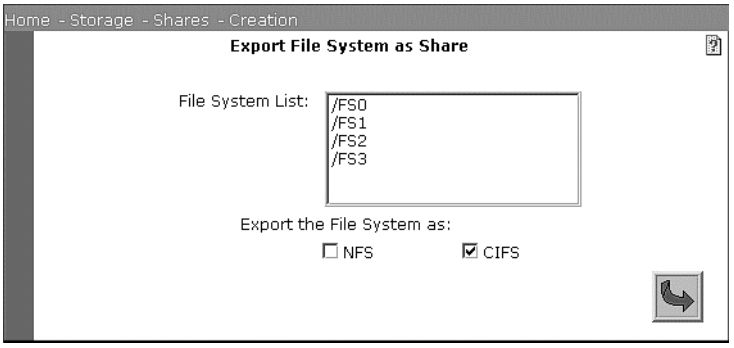
- Any client has a file within the file system open and is writing to it.
- The HTTP server has its root directory on the file system.
- Any ftp user has its home directory on the file system.

1. Click on a file system you want to move in either of the lists on the left, and click **Move**. Repeat this step for each file system you want moved. (If you selected a file system and decide not to move it, click on the name in the File System to Move list box, and click **Back**.)

2. Click **Save** to perform the file system move.

Creating a Share

To create a share, choose **Storage | Shares | Create**. The Export File System as Share window appears. Though you can create a file system as shared, you can also export a file system as a share after it is in use.



1. Choose a **file system**. In the list of file systems, click on the file system you want to export.
2. To specify the type of share to export, check the box next to one or both of these file systems:
   - **NFS**: Network File System is used in Unix systems.
   - **CIFS**: Common Internet File System is used in Windows systems. This is the default.

3. Click **Next** to proceed to the next Create Share page.

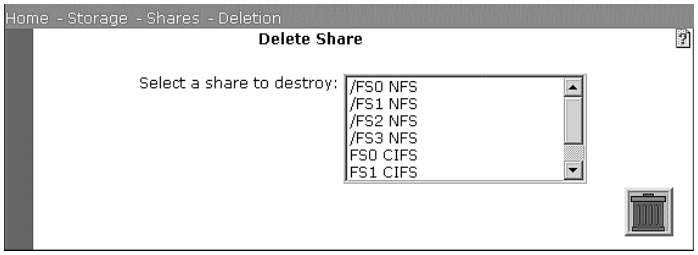
CIFS Share

If you choose to export a file system as a CIFS share, the CIFS Share window appears. Refer to “CIFS Share” on page 63.

NOTE: A file system can have multiple CIFS shares.

Modifying a Share

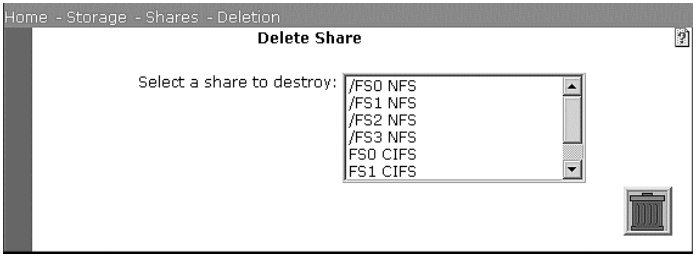
To make changes to a share, from the Storage menu, choose **Shares | Modify**. The Modify Share window appears:



1. In the list of shares, click on the share you want to modify.
2. Click **Next** to proceed to the CIFS Share (see page 63) window.

Deleting a Share

To remove access to a share or change the share options for the exported file system, choose **Storage | Shares | Delete**. The Delete Share window appears:



You cannot delete a file system that is in use or cannot be unmounted. Such file system conditions occur when:

- Any client has a file within the file system open and is writing to it.
- The HTTP server has its root directory on the file system.
- Any ftp user has its home directory on the file system.

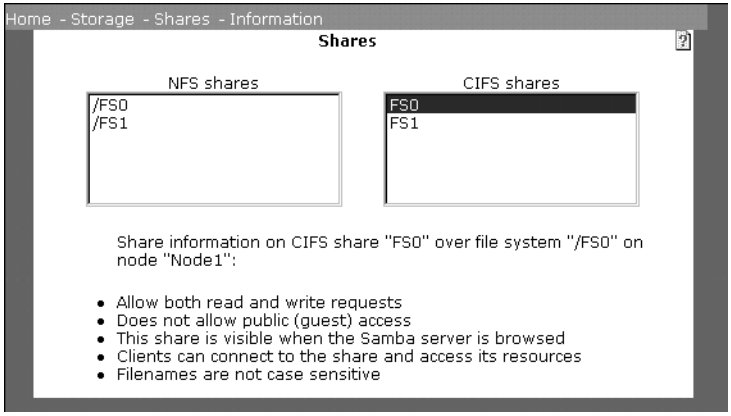
1. Select the **share** from the text box.
2. Click the **Trashcan**. NewsShare NAS asks you to confirm the deletion.
3. Click **OK** to confirm the deletion.

Viewing Share Information

To display information about a share, choose **Storage | Shares | Information**. From one of the two lists, click on the share for which you want information.

CIFS Share

If you choose a CIFS share, the window refreshes and displays information similar to that shown.



Chapter 5

System Services

This chapter describes administrative services you may want to implement and configure for NewsShare NAS. The services are:

- Defining Server Message Block (SMB)/Common Internet File System (CIFS) security
- Defining Network Information Service (NIS) security
- Configuring the network for Domain Name Service (DNS)
- Configuring a local host database
- Selecting host name resolution (HNR) order
- Changing event notification
- Testing event notification

Security Configuration

Security configuration consists of these tasks:

- Defining Server Message Block (SMB)/Common Internet File System (CIFS) security
- Defining NIS security

SMB/CIFS

To display the SMB/CIFS windows, choose **System | System Services | SMB/CIFS**.

SMB is a message format used by DOS and Windows to share files, directories, and devices. Many network products use SMB, including LAN Manager, Windows for Workgroups, Windows NT, and LAN Server. A number of products use SMB to enable file sharing among different operating system platforms. Samba, for example, enables UNIX and Windows machines to share directories and files. SMB runs over most common network protocols.

To configure SMB/CIFS security:

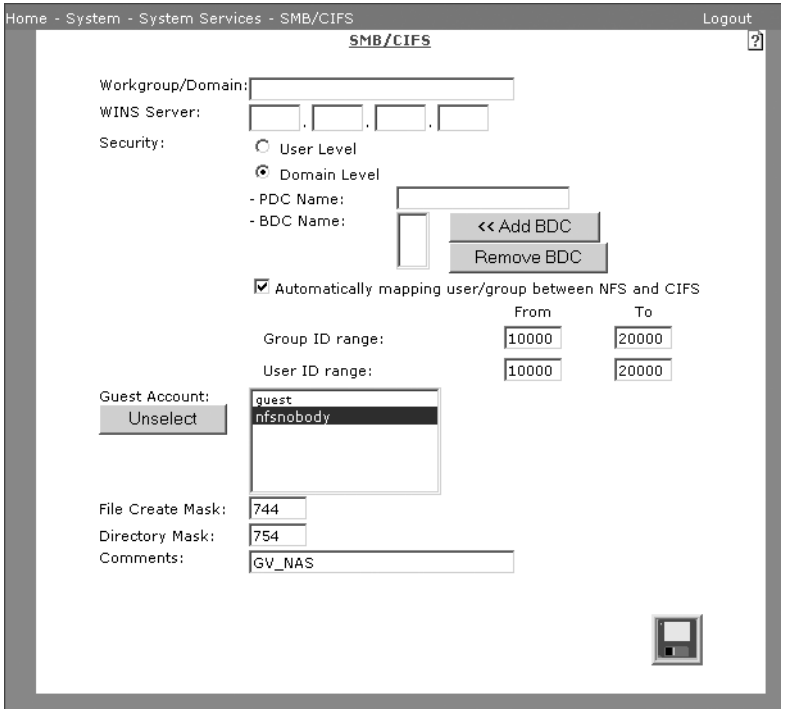
1. Enter the **Workgroup/Domain** name on the window. This is the workgroup or domain used to access the NewsShare NAS server nodes in the Windows network neighborhood. This field is required. Use a maximum of 64 alphanumeric characters, underscore (_), dash (-), and period. The first character must be alpha.

   NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

2. Enter the IP address of the **WINS server**, if you use one. WINS is a Windows-specific method of name resolution. The WINS server translates a NetBIOS name into an IP address.
3. Choose one of the following for **Security**:
   - **User level**: Local authentication for valid users and groups. See "User Level Security" on page 78.
   - **Domain level**: Windows NT domain server determines valid users and groups. See "Domain Level Security" on page 75.

Domain Level Security

1. To change domain level security, in the SMB/CIFS window, choose **Domain Level**. The SMB/CIFS window appears:



2. For domain level security, NewsShare NAS asks for the name of the Primary Domain Controller (PDC) and the Backup Domain Controller (BDC). Enter the name of the **PDC,** using a maximum of 64 alphanumeric characters, underscore (_), dash (-), or a period. In Windows NT, the PDC is the main machine that responds to security authentication requests, such as logging in, within its domain.

3. (Optional) The PDC can be backed up by one or more backup domain controllers (BDC) that also handle security authentication. Enter the name of any **BDC**, using a maximum of 64 alphanumeric characters, including an underscore (_), dash (-), or a period. Click **Add**.

4. (Optional) To remove a BDC, click on its name and click **Remove**.

5. Select the user whose privileges are given to the **Guest account** by clicking on the user name. Anyone logging in as Guest will have the same privileges as this user. If no user is selected here, the Guest account will have the same privileges as nfsnobody. To deselect a selected user, click **Unselect**.
6. Enter 3 digits, none greater than 7, for the **File Create Mask**. (The first digit cannot be 0.) When a DOS/Windows file is placed in a NewsShare NAS file system, this octal file create mask is used to assign UNIX permissions to the new file. Each DOS/Window file is assigned the permissions specified by the file create mask at the time the file enters a NewsShare NAS file system. Later the permissions for individual files can be changed. If the create mask itself is changed, any new DOS/Windows files are assigned the new permissions. All existing files retain the originally-assigned permissions. The initial default file create mask is 744.
7. Enter 3 digits, none greater than 7, for the **Directory Mask**. (The first digit cannot be 0.) When a DOS/Windows directory is placed in a NewsShare NAS file system, this octal directory create mask is used to assign UNIX permissions to the new directory. Each DOS/Window directory is assigned the permissions specified by the directory create mask at the time the directory enters a NewsShare NAS file system. Later the permissions for individual directories can be changed. If the create mask itself is changed, any new DOS/Windows directories are assigned the new permissions. All existing directories retain the originally-assigned permissions. The initial default directory create mask is 754. UNIX permissions are described in "Create Mask for DOS Files and Directories" on page 77.
8. (Optional) To set the system to automatically map between NFS and CIFS, check the box next to **Automatically mapping**. When set, a mapped user or group is mapped to a number in the Group/User ID range specified in Step 9.

   NOTE: If this box is not checked, users will be able to access only public files, even though they will be included in the domain.

9. (Optional, for automatic mapping only) To change the range of IDs, enter integers for the From/To fields of Group/User ID. The default ranges are 10000 to 20000. The fields are used only when automatic mapping is on.

NOTE: If you use both PDC and NIS, enter all PDC users and groups into NIS. Otherwise, you could have duplicate users/groups in the domains. This also ensures that mappings between the domains are consistent.

10. Enter any comments, using a maximum of 110 characters. Accepted characters are alphanumeric or underscore (_).

11. Click **Save**.

Create Mask for DOS Files and Directories

NewsShare NAS is a UNIX-based operating system. Although Windows/DOS has a larger set of modes than UNIX specifies for permissions, all NewsShare NAS files and directories are assigned a UNIX-format octal mask for permissions.

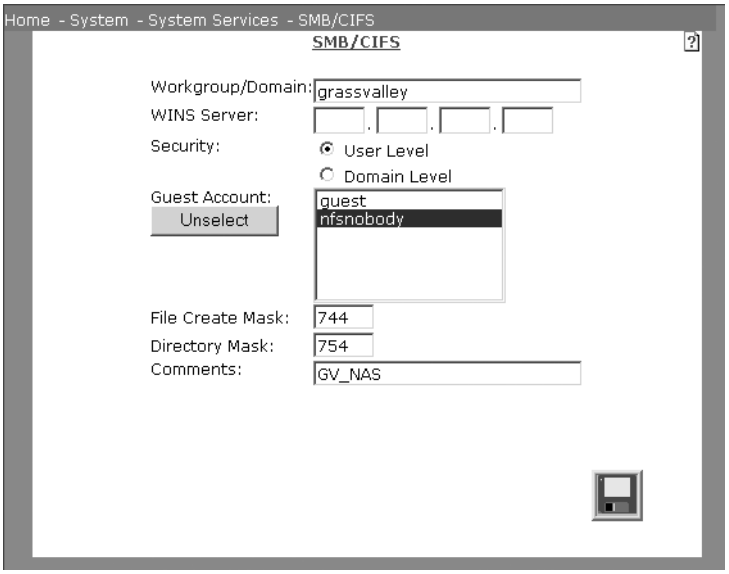
UNIX permissions are defined as follows:

- The first digit (left-most) of the octal mask controls owner access permissions.
- The second digit (middle) controls the group access permissions.
- The third digit (right-most) controls permissions for all other users.
- Within each digit, reading the bits from left to right, the bits stand for: read, write, execute.

For example, the default create mask of 744 means that the owner can read, write, and execute; group members and others can read only. The default directory mask of 754 means that the owner can read, write, and execute; group members can read and execute; others can read only.

User Level Security

1. To change user level security, in the SMB/CIFS window, choose **User Level**. The SMB/CIFS window appears:



2. Select the user whose privileges are given to the **Guest account** by clicking on the user name. Anyone logging in as Guest will have the same privileges as this user. To deselect a selected user, click **Unselect**.

3. Enter 3 digits, none greater than 7, for the **File Create Mask**. (The first digit cannot be 0.) When a DOS/Windows file is placed in a NewsShare NAS file system, this octal file create mask is used to assign UNIX permissions to the new file. Each DOS/Window file is assigned the permissions specified by the file create mask at the time the file enters a NewsShare NAS file system. Later the permissions for individual files can be changed. If the create mask itself is changed, any new DOS/Windows files are assigned the new permissions. All existing files retain the originally-assigned permissions. The initial default file create mask is 744. UNIX permissions are described in “Create Mask for DOS Files and Directories” on page 77.

4. Enter 3 digits, none greater than 7, for the **Directory Mask**. (The first digit cannot be 0.) When a DOS/Windows directory is placed in a NewsShare NAS file system, this octal directory create mask is used to assign UNIX

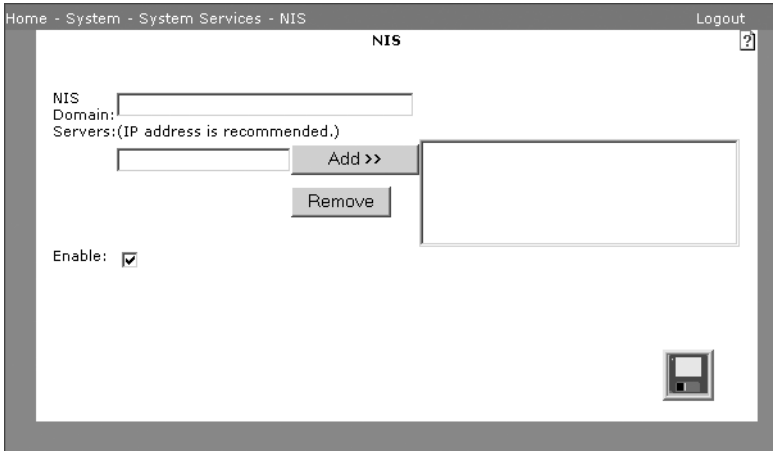
permissions to the new directory. Each DOS/Window directory is assigned the permissions specified by the directory create mask at the time the directory enters a NewsShare NAS file system. Later the permissions for individual directories can be changed. If the create mask itself is changed, any new DOS/Windows directories are assigned the new permissions. All existing directories retain the originally-assigned permissions. The initial default directory create mask is 754. UNIX permissions are described in "Create Mask for DOS Files and Directories" on page 77.

5. Enter any comments, using a maximum of 110 characters. Accepted characters are alphanumeric or underscore (_).

6. Click **Save**.

NIS

To display the Network Information Service (NIS) window, choose **System | System Services | NIS**. NIS is a naming service from SunSoft™ that allows resources to be added, deleted, or relocated. Formerly known as Yellow Pages or yp, NIS is a defacto UNIX standard. NIS+ is a redesigned NIS for Solaris™ 2.0 products. TCP/IP, NFS, and NIS comprise the primary networking components of the UNIX client-server protocol for tracking user and host names on a network.



1. To use NIS security, enter the NIS **domain** name. Use a maximum of 64 alphanumeric characters, underscore (_) or period. The first character must be alpha.

   NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

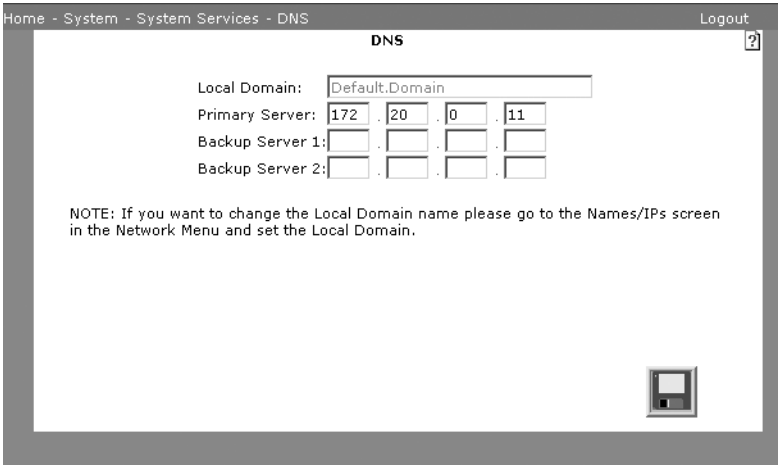
2. Click **Add**. To remove a server, select it and click **Remove**.
3. Click **Enable**.
4. Click **Save**.

Network Configuration - DNS

Domain Name Service (DNS) is database system that translates a host name into an IP address using TCP/IP. For example, abc.com is converted into a numeric IP address such as 207.219.116.4. DNS is a static, hierarchical name service housed on a number of servers on the Internet. It maintains this database for resolving host names and IP addresses. This allows you to specify remote computers by host or user name rather than by numerical IP address.

"Very small sites, not connected to the Internet sometimes use the host table. If there are few local hosts and the information about these hosts rarely changes and there is no need to communicate via TCP/IP with remote sites, then there is little advantage to using DNS." (TCP/IP by Craig Hunt, ISBN 0-937175-82-X.)

To configure DNS, choose **System | System Services | DNS**. The DNS window appears with the local domain to which NewsShare NAS currently belongs, as shown. The Local Domain to which NewsShare NAS currently belongs is shown. To change the current domain name, access the Names and IPs window from the Network menu.



1. Enter the IP address of the primary server.

NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

2. (Optional) Enter the IP address of a backup server.
3. (Optional) Enter an IP address of a second backup server.
4. Click **Save** to save the information you entered.

Local Host Database

A local host database contains IP addresses of machines that provide services NewsShare NAS needs to access. For example, a local host database allows NewsShare NAS to access NIS, NTP, or DNS. To display the window shown, choose **System | System Services | Local Hosts**.

Adding a Device

1. Enter a **name** for any device that NewsShare NAS accesses by name, such as an NTP server or NIS server. Use a maximum of 64 valid characters. (See "Restricted Input Characters" on page 169.) Blanks and dashes (-) are not accepted. The first character must be alpha.

   NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

2. Enter the **IP address** of the device.
3. (Optional) Enter any **comments** for each pair of device names and addresses you enter. Use a maximum of 128 characters. The characters back slash (\), double quote, pound sign (#), semi-colon (;), and apostrophe are not accepted.
4. After typing the name and IP address of each local host device, click **Add**. This adds a name and address pair to the local host file.

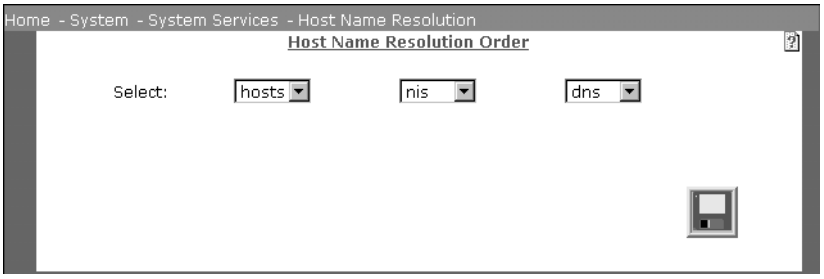
Removing a Device

1. To remove a device from the database, select the name and click **Remove**.

2. Click **Save**.

Host Name Resolution Order

Bypass this window if you do not have an existing HNR setup. To specify the methods and the order in which NewsShare NAS resolves name conflicts, choose **System | System Services | Host Name Resolution**. The Host Name Resolution (HNR) window appears:



There are three methods for resolving names:

- **DNS**: Refer to “Network Configuration - DNS” on page 81.
- **Hosts** (a local host file): Refer to “Local Host Database” on page 82.
- **NIS**: Refer to “NIS” on page 80.

For each resolution method you select, you must set up parameters. A parameter entry window exists for each method.

On the Host Name Resolution Order window, specify the order in which the system looks at these three (or less than three, if you do not use all possible methods) to resolve names. For Example: Hosts, NIS, DNS (which is the default order) indicates that names are resolved by first looking to Hosts, second looking to NIS, and lastly looking to DNS. When the window opens, the drop-down list boxes show the order currently set for the system.

1. Select the first name resolution method. Use the left-hand drop-down arrow to choose one of these resolution methods: Hosts, DNS, or NIS.
2. Select the second name resolution method. Use the middle drop-down arrow to choose one of these resolution methods: Hosts, DNS, NIS, or the empty

slot. (The options do not include the method you picked as the first one.) If you select the empty slot, there is no second or third resolution method.

3. Select the third name resolution method. Use the right-hand drop-down arrow to choose one of these resolution methods: Hosts, DNS, NIS, or the empty slot. (The options do not include the methods you picked as the first and second ones.) If you selected the empty slot previously, only the empty slot is available here.

4. Click **Save** to save the changes you made.

Changing Event Notification

Configuring event notification consists of SNMP and SMTP.

SNMP

To change SNMP information, choose **System | System Services | SNMP**. For details, refer to “SNMP” on page 53.

SMTP

To change SMTP information, choose **System | System Services | SMTP**. You can add additional e-mail contacts from this menu selection. For details, refer to “SMTP” on page 54.

Testing Event Notification

From the **System | System Services** menu, you can test if event notification is working correctly. No window is associated with this function. Click **Notification Test** and NewsShare NAS does the following:

- Sends an e-mail to all configured SMTP contacts that meet the current date and time requirements.
- Sends an event to the event log.
- Sends SNMP traps to all configured trap handlers.

Chapter 6

Users and Groups

If NewsShare NAS is attached to an existing network that has PDC or NIS authentication, use the existing network authentication. However, if you want to add user or group permissions specifically to the data on the NewsShare NAS file systems, or if NewsShare NAS is not attached to an existing network that has authentication, add and maintain users and groups through the commands described in this chapter. Creating users or groups for NewsShare NAS is optional. All members of a group have the same access and permissions to read, write, and view files.

To add users and groups through NewsShare NAS, use the following procedure, described in more detail in this chapter.

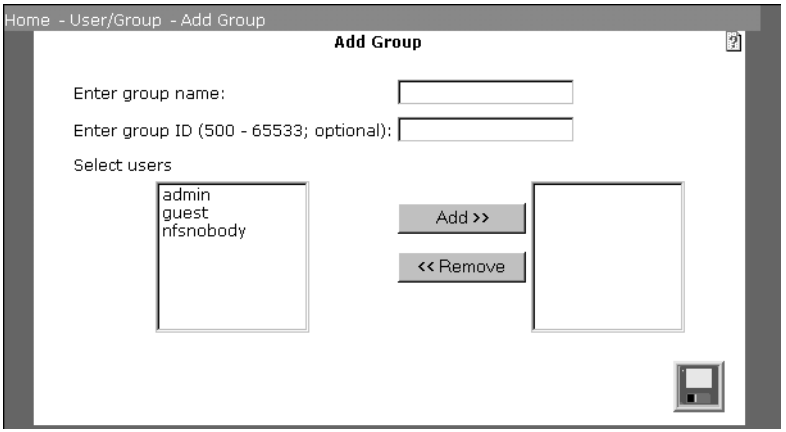
1. Create a group or groups.
2. Create a user name and password for each user.
3. While adding a user, assign the user to a primary group and, optionally, a secondary group.

This chapter also describes how to:

- Change a user
- Delete a user
- Delete a group
- View existing users and groups on the network. This is especially useful when adding new users or groups. If a name is already taken, the Add command fails. In that case, check the existing users and groups for an unused name.

Adding Groups

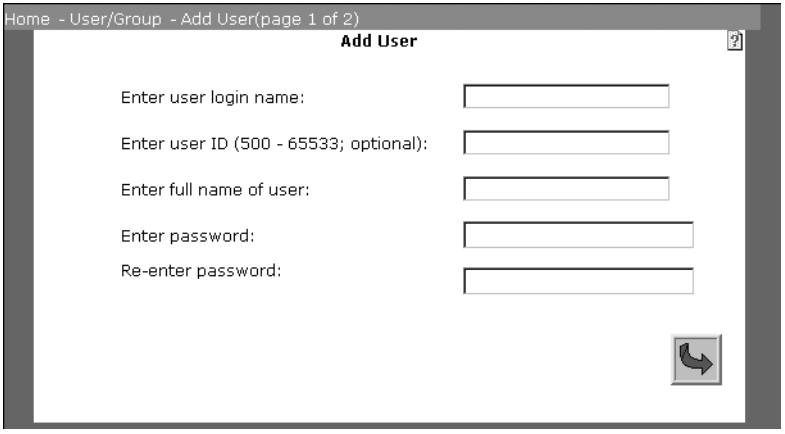
A group combines users into a unit with common rules and permissions. To create a group, choose **User/Group | Add Group**. The Add Group window appears:



1. Enter a **group name:** maximum of 16 characters. The characters must be alphanumeric, underscore (_), or a hyphen (-). The name cannot start with a digit.
2. Enter a **group ID** or let NewsShare NAS assign a group ID. A Group ID is required. Valid IDs are (500 through 65533). If the entered or assigned number is already assigned to a local, NIS, or PDC group, the add command fails. Use the User/Group List window to locate free IDs.
3. (Optional) To add a user to a group, from the list of available users on the left, click on the **user name**, and click **Add**. This will be a secondary group for the user. The list on the right shows the users currently in the group. Repeat this step for each user you want in the group.
4. (Optional) To remove a user, click on the **user name** in the list on the right. Click **Remove**. Repeat this step for each user you do not want in the group.
5. Click **Save**.

Adding Users

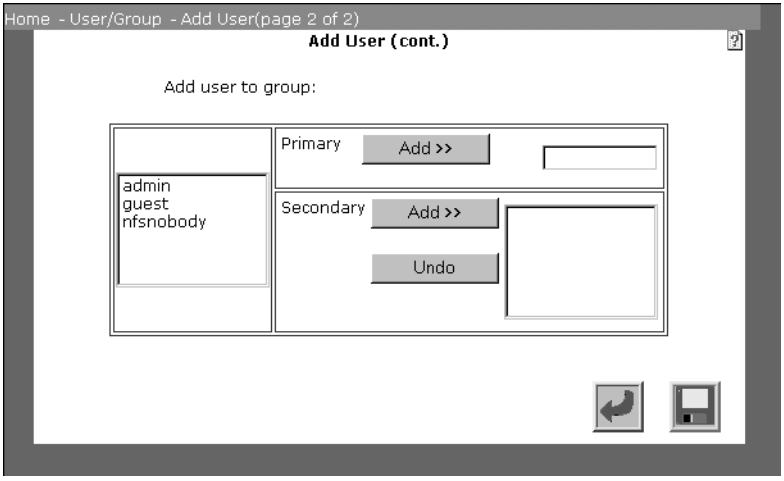
From the User/Group menu, choose **Add User**. The Add User window appears. Identify users to NewsShare NAS so that files and information can be accessed by these users.



1. Enter the **user login name**. This is required. The maximum length is 32 characters. The name cannot start with digits. Use only alphanumeric, underscore, or dash.
2. Enter a **user ID** or let NewsShare NAS assign a user ID. This field is required. Valid IDs are (500 through 65533). If the entered or assigned number is already assigned to a user, an NIS user, or a PDC user, the add fails. Use the “Viewing the User/Group List” on page 92 to locate free IDs.
3. Enter the **full name** of the user. This is required. Use a maximum of 61 valid characters. (See “Restricted Input Characters” on page 169.) The first character cannot be a digit. Periods are not accepted. Spaces are allowed anywhere except the beginning or end of the field.
4. Enter a **password** for the user. This is required. Use a maximum of eight characters.
5. Re-enter the user **password**. The two password entries must match.

6. Click **Next**. The Add User to Group window appears:

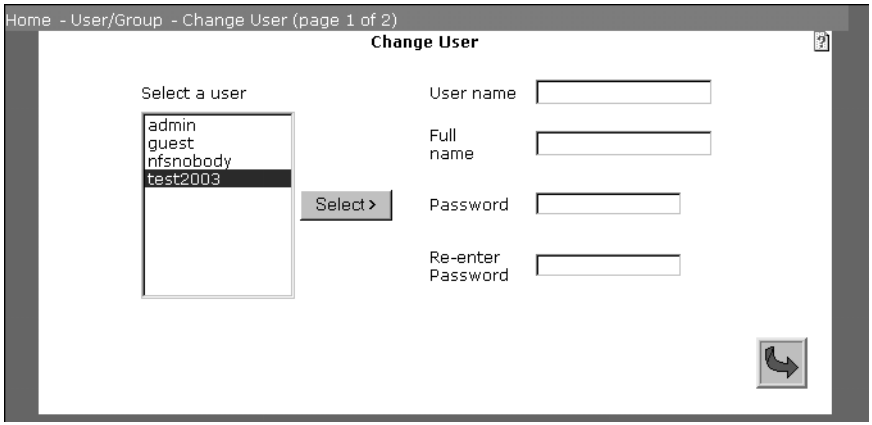
NOTE: If you add users before you add groups, there is no list of groups from which to choose. In that situation, bypass this window. When you create a group (as shown in "Deleting Groups" on page 91), you can add existing users to it. The group can only be a user's secondary group. To add a primary group, use "Changing Users" on page 89.



7. To specify a user's **primary** group, from the list of available groups on the left, click on a group name. Click **Add** (in the Primary box) to make this group the primary group for this user. You must have one primary group. If you change your mind, repeat this step, selecting a different primary group.
8. (Optional) To specify the **secondary** groups, from the list of available groups on the left, click on a group name. Click **Add** (in the Secondary box) to create a secondary group for this user. If you change your mind, click **Undo** (in the Secondary box) to remove the user from the group.
9. Repeat the previous step for each secondary group to which you want this user to belong.
10. Click **Save**.

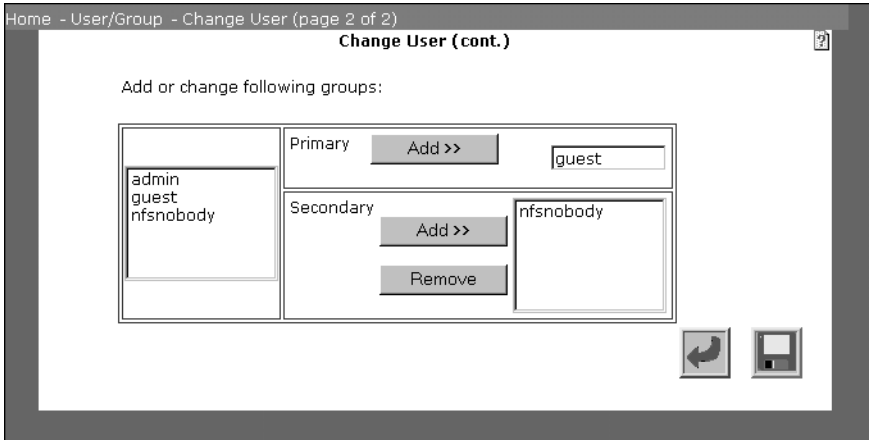
Changing Users

To modify user information, choose **User/Group | Change User**. The Change User window appears:



1. From the list on the left, select the **user** to change. Current information about that user appears in the text boxes to the right. You can change any of the displayed fields except the user login name.
2. (Optional) Type the new **full name** in the text box. Use a maximum of 61 valid characters. (See “Restricted Input Characters” on page 169.) The first character cannot be a digit. Spaces are allowed anywhere except the beginning or end of the field.
3. (Optional) Type the new **password** in the text box, using a maximum of eight characters. Spaces are not accepted.
4. Enter the **password** a second time to confirm it.

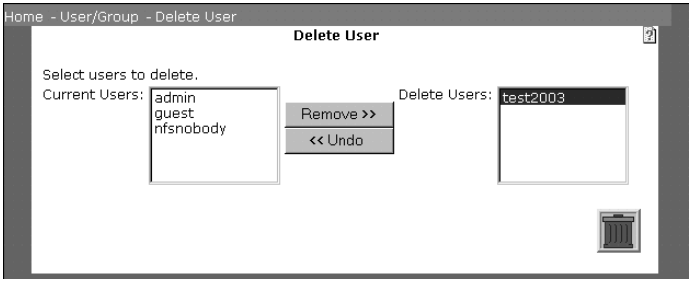
5. Click **Next**. The Change User (cont.) window appears:



6. (Optional) Select a new **primary** group for the user. From the list of available groups on the left, click on a group. Click **Add** (in the Primary box) to make it the user's primary group. Each user must be part of one primary group. To change the primary group, simply repeat this step selecting a different group.
7. (Optional) Add the user to a new **secondary** group. From the list of available groups on the left, click on a group. Click **Add** (in the Secondary box) to make it the user's secondary group. A user can belong to any number of secondary groups, or none. Repeat this step for each group to which you want the user added.
8. (Optional) Remove the user from a secondary group. From the list of secondary groups on the right, click on a group name. Click **Remove** to delete the user from this group. Repeat this step for each group from which you want the user removed.
9. Exit the window by clicking **Save**.

Deleting Users

To delete a user, choose **User/Group | Delete User**. The Delete User window appears:

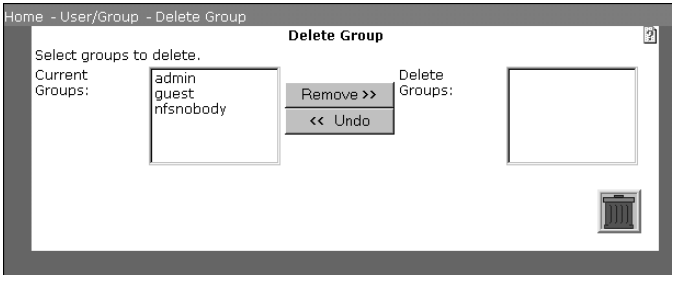


1. From the list on the left, select the **user** to delete.
2. Click **Remove**. The user name appears in the box to the right. Repeat this step for each user you want removed. If you change your mind, select a user in the list on the right, and click **Undo**.

3. Click the **Trashcan** to remove all users in the Delete Users list.

Deleting Groups

To remove a group from the system, choose **User/Group | Delete Group**. The Delete Group window appears:

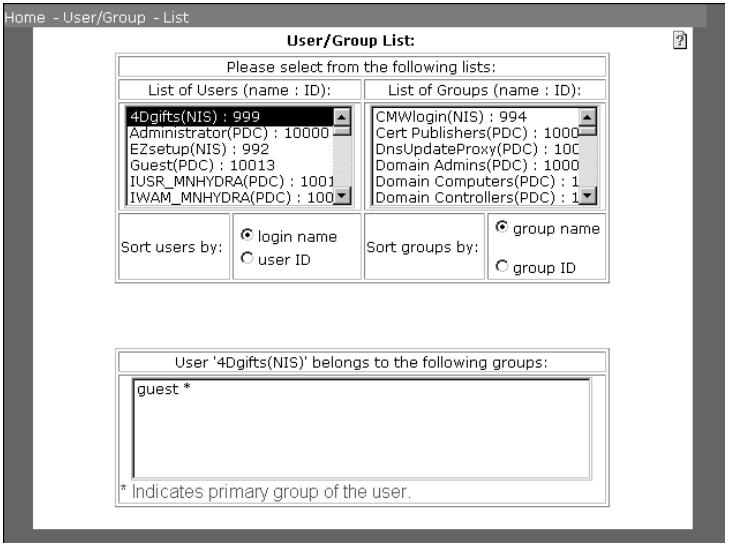


1. From the list on the left, select the **group** to delete.
2. Click **Remove**. The group name appears in the box to the right. Repeat this step for each group you want removed. If you change your mind, select a group in the list on the right, and click **Undo**.

3. Click the **Trashcan** to remove all groups in the Delete Groups list.

Viewing the User/Group List

To view all users and groups in the system, choose **User/Group | List User/Group**. The window, as shown, displays users, user IDs, groups, group IDs, which users are in each group, and which groups each user is in.



Display a list of either all users or all groups in the list box at the bottom of the window. When NIS or PDC are enabled, those users and groups are displayed along with local users and groups. Perform the following actions:

1. Display all groups to which a user belongs. From the list of users on the left, select a **user name**. In the list of groups at the bottom of the window, an asterisk next to a group name indicates the user's primary group.

   - Click in a radio button to select the order in which groups appear in the List of Groups. Order the list by **group name**, followed by **group ID** or vice versa. To locate free group ID numbers, check the **group ID** button.

2. Display all users in a group. From the list of groups on the right, select a **group name**. All users in that group are displayed in the list at the bottom of the window.

   - Click in a radio button to select the order in which users appear in the List of Users. Order the list by **Login name**, followed by **user ID** or vice versa. To locate free user ID numbers, check the **user ID** button.

Chapter 7

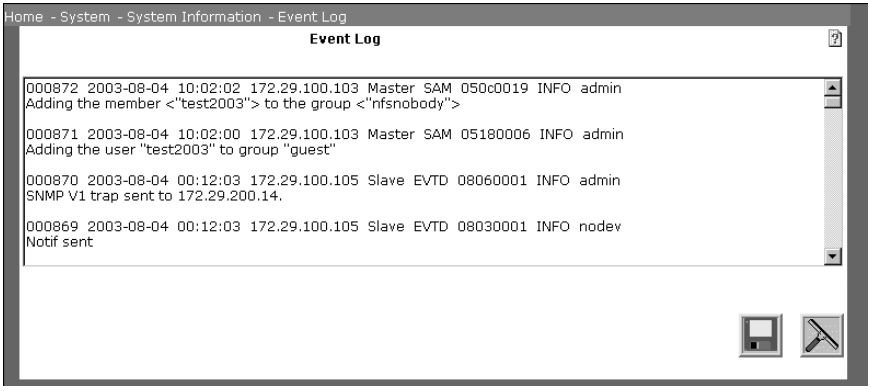
Viewing System Information

The System Information menu lets you view the following information about the NewsShare NAS system:

- Event log entries
- Summary of the network
- CIFS clients
- Status
- Overall storage usage
- Overall CPU usage
- Performance statistics
- Configuration information

Event Log

To view the event log, choose **System | System Information | Event Log**. The Event Log window appears. You can also save the log to another file and clear the log. The event log holds one megabyte of data. When it is full, new events are written over the oldest events.



The event log contains events for each server node and descriptions of fields:

Field	Description
Event ID	A sequential number assigned by the system as events are logged.
Time/Date	Date and time at which the event occurred.
Private IP	The address of the NewsShare NAS server node that reported the event.
Configured Master or Slave	During the original configuration, one server node is designated as the master and the other as the slave. Although circumstances can change which node is master and which slave, this field always reflects the original configured state of the node reporting the event.
Software Module	The software module in which the event message was generated. (For use by development engineers.)
Code Address	Within the above software module, this is the address at which the event message was generated. (For use by development engineers.)
Severity Level	The severity level of an event can be Info, OK, Warning, or Critical. Warning and Critical events indicate system problems. Info and OK events are included in the log to provide context for the serious events.
Description	This describes the logged event.

Save the Event Log

1. Right-click **Save** to save the contents of the current event log file to another file. A menu appears.
2. From the menu, select **Save Target As** or **Save Link As** (different browsers use different terminology). A **Save As** dialog box appears.

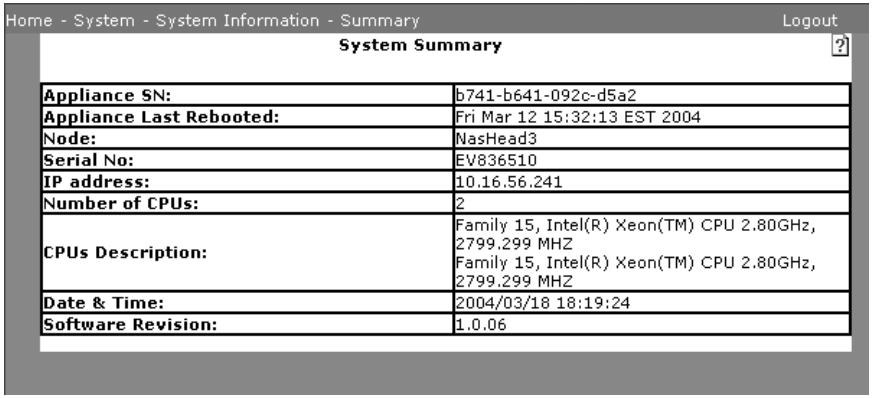
3. Browse to the directory you use for saving log files, type the file name, and click **Save**.

Clear the Event Log

Click **Clear** (window wiper) to delete all contents from the current event log.

Summary

To view a summary of the network, choose **System | System Information | Summary**. The System Summary window appears:

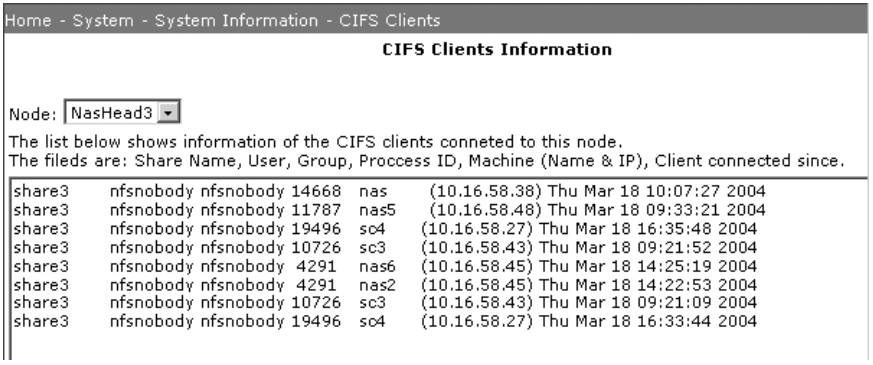


The summary displays information about each server node:

Field	Description
Appliance SN	Serial number assigned to the appliance. (Also, the initial password. Refer to “Entering Initial Password” on page 45.)
Appliance Last Rebooted	Date and time at which NewsShare NAS was last rebooted.
Node	Node name.
Serial No.	Serial number of the node.
IP address	IP address of the node.
Number of CPUs	Number of processors in NewsShare NAS.
CPU Description	A description of the processors in NewsShare NAS.
Date & Time	Current system date and time.
Software Revision	The revision of the software running NewsShare NAS.
Heart Beat	(Dual nodes inform each other that they are alive and functioning.) If the lines on the display are going back and forth, the heart beat lines are active. The lines are: • External: The gigabit interface to the public. It contains data and heartbeats. • Dedicated: This is a dedicated Ethernet port (Port 1) for the heartbeat only.)

CIFS Clients Information

To view information on all CIFS clients connected to the selected node, choose **System | System Information | CIFS Clients**. The CIFS Clients Information window appears:



A CIFS client is any PC connected to NewsShare NAS.

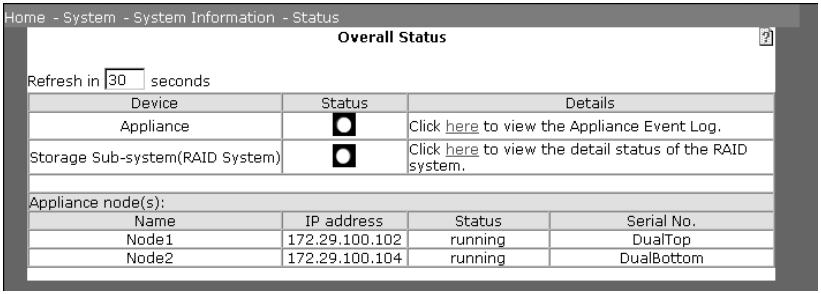
> ***NOTE: Along with CIFS clients, this list includes inter-process communication processes. These extra entries show up as IPC$ clients. Ignore these entries.***

If node selection is present, click on a node name to select it. CIFS clients connected to that server node are shown in the box below. The following information is shown for each CIFS client:

- Share name
- User group
- Process ID
- Machine name and IP address
- Time the CIFS client connected to the node

Status

To view status, choose **System | System Information | Status**. The Overall Status window appears. The window displays the status for devices.



In the Refresh box, type the number of seconds between window updates. The window is updated in intervals of the number of seconds you enter.

The Overall Status window displays fields for the devices:

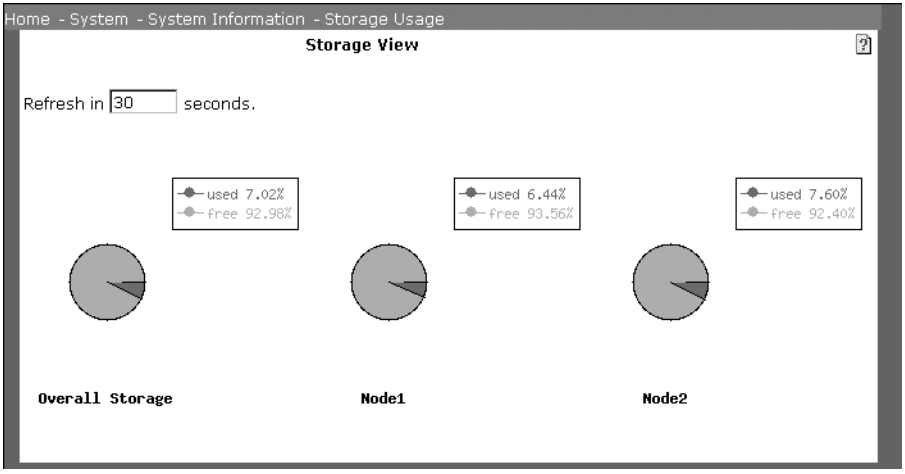
Device	Status	Details
Appliance	Status of NewsShare NAS is shown with colors. A green light means the device is a fully-functioning, dual-active controller. A yellow light means the device is degraded or has a fault, but it still functions. A red light means the device is down and not functioning.	Click on this link to display the event log.
Storage Subsystem (RAID)	Status of the PFR-600 disk subsystem is shown with colors. A green light means the device is in a fully-functioning dual-active controller. A yellow light means the device is degraded or has a fault, but it still functions. A red light means the device is down and not functioning. Storage subsystems include RAID controllers.	Click on this link to display the details of the RAID storage subsystem.

The window also displays fields for the server nodes:

Field	Description
Name	Name assigned to this server node.
IP address	The network IP address used to transfer data across the network to this server node.
Status	The status of a server node can be: Running or Not Responding.
Serial No	Serial number of this server node.

Storage Usage

To view storage usage, choose **System | System Information | Storage Usage**. The Storage View window appears:

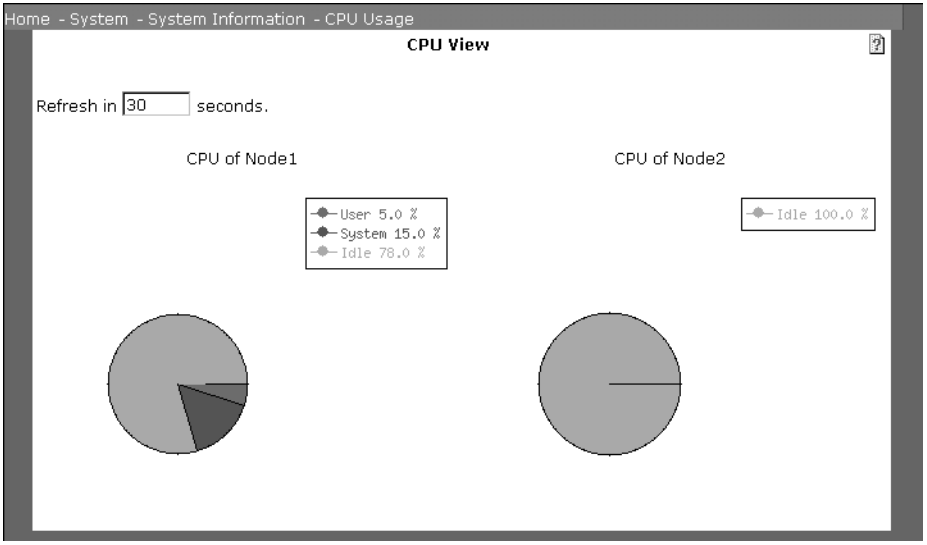


This window displays a pie chart of storage usage for each server node. Because file systems can reside on different server nodes, I/O requests are distributed between the nodes. For each node, the window lists the percent of storage space that is used and the percent that is free. The pie chart shows used space in a color different from that used for free space.

In the text box, type the number of seconds between window updates. The data shown on the pie chart is updated in intervals of the number of seconds you enter.

CPU Usage

To view a pie chart of CPU usage for each virtual machine, choose **System | System Information | CPU Usage**. The CPU View window appears:



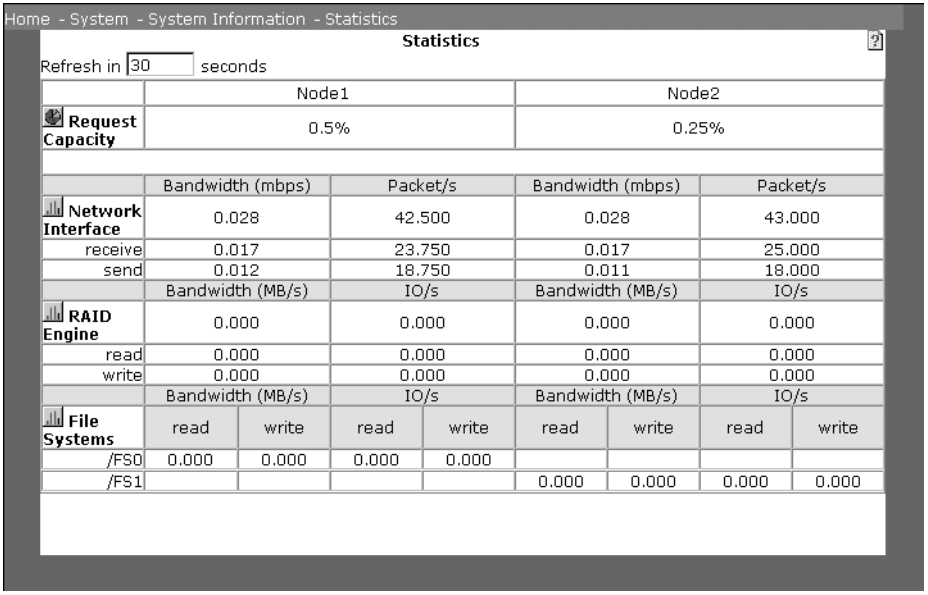
Enter the refresh interval. In the text box, type the number of seconds between window updates. The data shown on the pie chart is updated in intervals of the number of seconds you entered.

For each server node, the window shows the percent of time spent in these activities:

Activity	Description
User	Percent of time the CPU spent on application software.
System	Percent of time the CPU spent on system software.
Idle	Percent of time the CPU was inactive.

Statistics

To view statistics for a server node, choose **System | System Information | Statistics**. The Statistics window appears:



Home - System - System Information - Statistics

Statistics

Refresh in 30 seconds

	Node1				Node2			
Request Capacity	0.5%				0.25%			
	Bandwidth (mbps)		Packet/s		Bandwidth (mbps)		Packet/s	
Network Interface	0.028		42.500		0.028		43.000	
receive	0.017		23.750		0.017		25.000	
send	0.012		18.750		0.011		18.000	
	Bandwidth (MB/s)		IO/s		Bandwidth (MB/s)		IO/s	
RAID Engine	0.000		0.000		0.000		0.000	
read	0.000		0.000		0.000		0.000	
write	0.000		0.000		0.000		0.000	
	Bandwidth (MB/s)		IO/s		Bandwidth (MB/s)		IO/s	
File Systems	read	write	read	write	read	write	read	write
/FS0	0.000	0.000	0.000	0.000				
/FS1					0.000	0.000	0.000	0.000

1. Type the number of seconds between updates of data in the window.

2. Click on the icon by **Request Capacity** to graphically view the CPU load.

3. Click on a bar chart icon by **Network Interface, RAID Engine**, or **File Systems** to view these performance statistics as bar graphs.

Statistics Versus Bandwidth Management Statistics

The performance statistics reported on the system Statistics window may differ from those reported on the Bandwidth Statistics window because the statistics for these windows are collected and calculated by different methods.

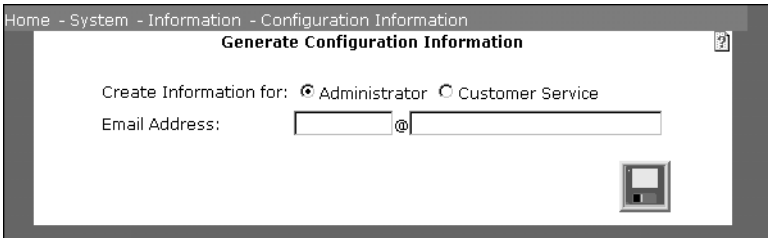
The system statistics in this window, derived from counters throughout the system, measure current throughput. The bandwidth statistics, derived from the bandwidth management subsystem, are an average of throughput over a 16 second period.

The Statistics window displays this information:

Field	Description
Request Capacity	This is the percent of processing capacity that is available. 0% means no capacity is available. 100% means that all capacity is available.
Network Interface	This is information on transfer rates between a client and NewsShare NAS. Separately, for receive and send, it shows bandwidth, measured in megabits per second and packets per second.
RAID Engine	This is information on transfer rates from the disk array. Separately, for read and write, it shows: • Bandwidth, measured in megabytes per second • Input or output (I/O) per second
File Systems	This is information on transfer rates for each file system. It shows: • Read and write bandwidth, measured in megabytes per second • Read and write input or output (I/O) per second

Generating Configuration Information

To build a file showing the NewsShare NAS configuration and e-mail the file, choose **System | System Information | Configuration Information**. The Generate Configuration Information window appears:



1. Choose the type of information to generate. You can create information for:
   - **System Administrator**: This is the default. It provides information a system administrator can use to monitor the system.
   - **Customer Service**: Request this information when a failure occurs. Customer Service staff can use it to trouble shoot the system.
2. Enter the **e-mail address**. This is the address to which the configuration report will be sent. Use a maximum of 64 valid characters. (Refer to “Restricted Input Characters” on page 169.)

3. Click **Save** to generate the configuration information report. Another window opens. Click on the **link** to view the Configuration File.

Chapter 8

System Administration

This chapter describes administrative tasks most likely performed only occasionally. These tasks are:

- Changing the NewsShare NAS administrator password
- Updating NewsShare NAS software
- Upgrading to dual node mode
- Using the Command Line Interpreter
- Setting the data and time with an option to use Network Time Protocol (NTP)
- Shutting down

Changing the Password

To change a password, choose **System | System Administration | Password**. For details, refer to “Changing the Password” on page 51.

Updating Software

To update the NewsShare NAS Software, choose **System | System Administration | Update Software**. The first Update Software window appears. To obtain a new version of the NewsShare NAS software, you must have a software warranty or a current software maintenance agreement.

Update the NewsShare NAS software from the local host computer that the NewsShare NAS GUI accesses or from the Ciprico NewsShare NAS support site.

>>> ***CAUTION: Before upgrading software, be sure to back up your data.***

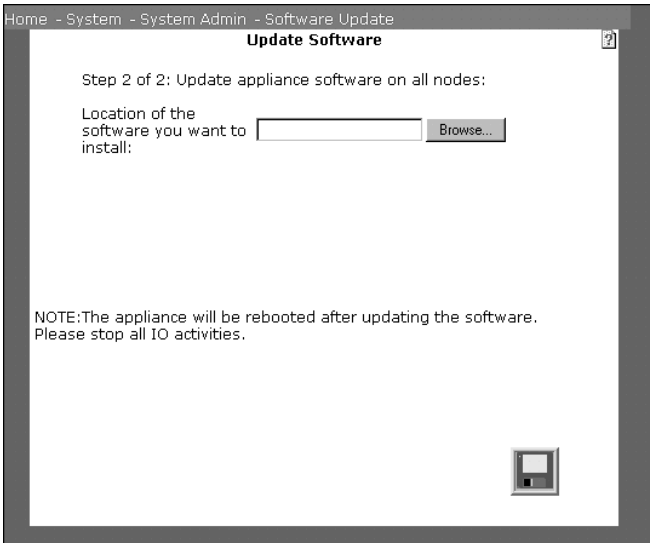
1. Select the method to update the software:
   - **FTP**: Use this method if the new software version does not reside on the local host machine.
   - **Local**: Use this method if the software is directly available from the host computer (the local host machine) that the NewsShare NAS GUI accesses.
2. Follow the instructions on the next pages for the selected method.

Using an FTP File

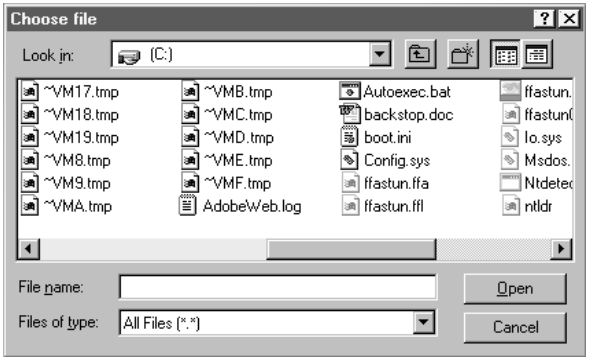
Contact Technical Support for more information on using FTP to upgrade the NewsShare NAS software.

Using a Local File

If you choose Local in the Update Software window, the local Update Software window appears:



1. Type in the full pathname or click on the browse button. Browse to the location of the TGZ file on a CD or any local directory, as shown. Select the TGZ file.

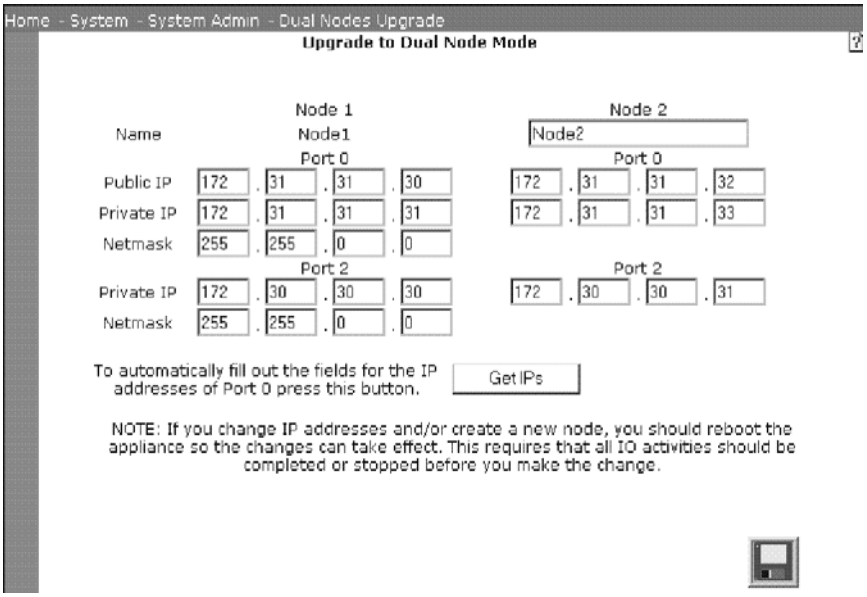


2. Click **Open**.

3. In the NewsShare NAS window, click **Save**. Software upgrades take several minutes. The system reboots after the upgrade finishes.

Upgrading to Dual Node Mode

(You must be running in single node mode to use this window.) To create a new, second server node when upgrading from a single node to dual nodes, choose **System | System Administration | Node Mode Upgrade**.



NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

When setting new IP addresses on this window, the following requirements must be met:

For Port 0, these addresses must be on the same subnet:

- Node 1, Public IP address
- Node 1, Private IP address
- Node 2, Public IP address
- Node 2, Private IP address

For Port 2, these addresses must be on the same subnet:

- Node 1, Private IP address
- Node 2, Private IP address

The IP addresses used for Port 0 and Port 2 cannot conflict; they must be in different subnets.

1. For Node 2, enter the new appliance name. An appliance node has a name with a maximum of 64 valid characters. (See "Restricted Input Characters" on page 169.) No blanks are allowed.
2. For both nodes, set the Port 0 IP addresses. There are two methods of assigning IP addresses for Port 0. Follow one of these methods
   - Method 1: Click **Get IPs** to automatically assign consecutive IP addresses.
   - Method 2: Follow Steps 3 and 4 below.
3. For Node 2, enter a new value for the public IP on Port 0. The public IP address for Node 2, Port 0 must be on the same subnet as the public IP address for Node 1, Port 0. The public IP is the address of the server nodes on the network.
4. For Nodes 1 and 2, enter new values for the private IP on Port 0. Both private IP addresses must be on the same subnet as the public IP addresses for Port 0. The private IP is the address of the server nodes that query each other.
5. For Node 1, enter a value for netmask on Port 0.
6. For Nodes 1 and 2, enter a new value for the private IP on Port 2. The private IP is the address of the server nodes that query each other.
7. For Node 1, enter a new value for the netmask on Port 2.
8. Save and implement the settings. Click **Save** to save the information you entered. You are asked if you want to reboot immediately or wait until later. (You might want to check some values or status before rebooting.)

   NOTE: The new values do not take effect until you reboot through this software.

9. After Node 1 comes back online, enable the controller on the new node (using the **Storage | RAID System | Controller | Add/Remove** window), and power-on the new node. The new node acquires all its configuration information as it boots. It then joins the system as Node 2. For Windows NT domain level security, follow the procedures for section titled *Joining the New Server Node to the Domain*.

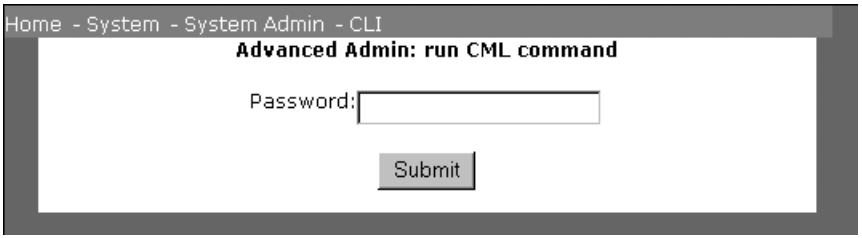
Joining the New Server Node to the Domain

When upgrading to a dual-node server, follow these steps to complete the process of joining both server nodes to your Primary Domain Controller (PDC).

1. After using the Upgrade window, the original node reboots. At this point, connect the new server node and power it up.
2. On the domain controller, remove the existing computer name from the list. Then add both the original node and the new node names to the list.
3. Using the NewsShare NAS software, choose **System | System Services | Security Configuration - SMB/CIFS** (see “SMB/CIFS” on page 74), and select the Domain Level Security option. Rejoin the domain by specifying the PDC and the other fields in this window.

Using the Command Line Interpreter

To enter commands in a command line interpreter (CLI), choose **System | System Administration | CLI**.



The Run Command Line (CML) window is a function used under the direction of Thomson Grass Valley Support staff. If there is a need to run a CLI, call Ciprico to obtain instructions.

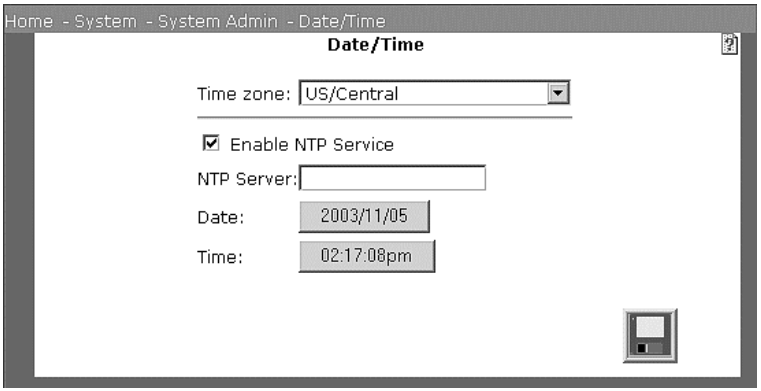
1. Enter a password.
2. Click **Submit**.

   A second CML Command window appears. Use the drop-down list to select the **command** to run.

1. **Parameters** can be passed to the command.
2. Click on the **hypertext link** to run the command. The results of running the command, if any, are shown in the **Result** area.

Setting the Date and Time (Option To Use NTP)

To set the date and time that NewsShare NAS uses, choose **System | System Administration | Date/Time**. The Date/Time window appears:



After you set the date and time, NewsShare NAS maintains the correct date and time even when special events, such as Daylight Savings and Leap Year, occur.

1. If you do not use Network Time Protocol (NTP), select the correct **time zone** for the site and go to Step 4.

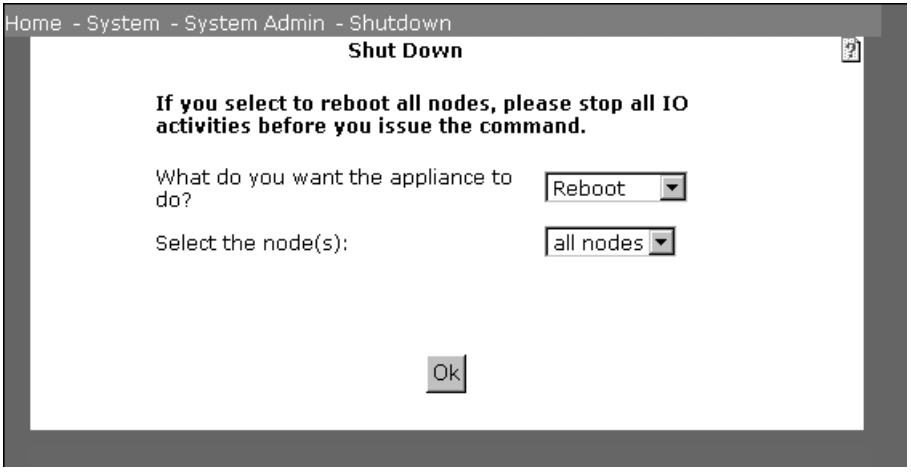
   NOTE: To automatically update scheduled time changes such as daylight savings time, use a city time zone rather than a regional time zone.

2. If you use NTP, click in the **Enable NTP Service** box. NTP is a protocol that synchronizes the real-time clock in a computer to the Universal Time Coordinated (UTC) via radio, satellite, or modem. The NTP server field appears. The date and time fields are set at the current date and time. They cannot be modified. Using NTP ensures accurate time keeping. Some business application may require it.
3. Enter the **IP address or the host name** of the NTP service to which you subscribe. Go to Step 6.
4. Specify the current **year, month, and day**. (Not available if NTP service is enabled.)
5. Specify the current **hours, minute, and second**. (Not available if NTP service is enabled.)

6. Click **Save**.

Shutting Down

To shut down NewsShare NAS, choose **System | System Administration | Shutdown**. The Shut Down window appears.



1. From the drop-down list box, choose one of the following:
   - **Reboot**: This option shuts down and then reboots the NewsShare NAS server.
   - **Shutdown**: This option shuts down the server operating system. Wait at least one minute after issuing a shutdown before turning off power to the server node.
2. From the drop-down list box, choose one or both server **nodes** to shut down or reboot.
3. Click **OK**.

NOTE: Shutdown does not turn off the electrical power to a node. It halts the server.

Chapter 9

Network Administration

You viewed some of the network configuration during Setup. That information and other network information can be modified later by choosing the Network menu. The following can be modified:

- Network Ports - for a dual or single node system
- Names and IPs
- Static Routes

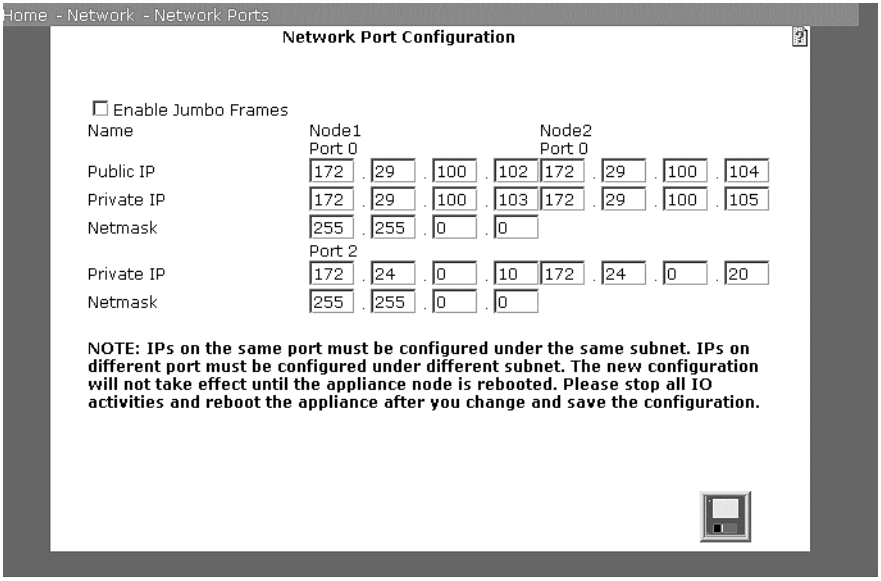
NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

Configuring Network Ports

Network port configuration depends on whether you have a dual node or a single node system.

Configuring Dual Node Network Ports

To view and modify the network port configuration for a **dual node** NewsShare NAS system, choose **Network l Configure Network Ports**. The Network Port Configuration window appears:



Enter the IP address that attaches NewsShare NAS to the existing network. (If NewsShare NAS is not attached to an existing network, do not change the values on this window.)

Step A. Enabling Jumbo Frames

(Optional) Enable jumbo frames. Click on the check box to enable jumbo frames (or to disable them when already enabled). Using standard frames, the packets sent through the network are 1.5K. Using jumbo frames, the packets sent through the network are 9K. Jumbo frames improve performance.

When setting new IP addresses on this window, the following requirements must be met:

For Port 0, these addresses must be on the same subnet:

- Node 1, Public IP address
- Node 1, Private IP address
- Node 2, Public IP address
- Node 2, Private IP address

For Port 2, these addresses must be on the same subnet:

- Node 1, Private IP address
- Node 2, Private IP address

The IP addresses used for Port 0 and Port 2 must not conflict; they must be in different subnets.

NOTE: For information on using IP addresses in a network, refer to "Basics of IP Addresses" on page 42.

Step B. Configuring Node 1

1. Enter the Port 0 Public IP address. The Public IP address is the address of the server node on the network.
2. Enter the Port 0 Private IP address. The Private IP address is the address that server nodes use to query each other.
3. Enter the Port 0 netmask. This is also the Port 0, Node 2, netmask.
4. Enter the Port 2 private IP address. The Private IP address is the address that server nodes use to query each other.
5. Enter the Port 2 netmask. This is also the Port 2, Node 2, netmask.

Step C. Configuring Node 2

1. Enter the Port 0 Public IP address. The Public IP address is the address of the server node on the network.
2. Enter the Port 0 Private IP address. The Private IP address is the address that server nodes use to query each other.
3. Enter the Port 2 Private IP address. The Private IP address is the address that server nodes use to query each other.

Step D. Saving the Configuration

After entering changes, click **Save**. You are asked if you want to reboot immediately or wait until later. (You might want to check some values or status before rebooting.).

NOTE: Changes do not take effect until you reboot through this software.

Configuring Single Node Network Ports

From the Network menu, choose **Network Port Configuration**. For details, refer to Configuring the Node in "Configuring Single Node Network Ports" on page 49. (If NewsShare NAS is not attached to an existing network, do not change the values on this window.)

Step A. Configuring the Node

1. (Optional) Enable jumbo frames. Click on the check box to enable jumbo frames (or to disable them when already enabled). Using standard frames, the packets sent through the network are 1.5K. Using jumbo frames, the packets sent through the network are 9K. Jumbo frames improve performance.

   NOTE: Refer to "Basics of IP Addresses" on page 42.

2. (Optional) Enter a new value for the Public IP address for port 0. Port 0 is the external or data port. The Public IP address is the address of the server nodes on the network.

3. (Optional) For port 0, enter the value for netmask.

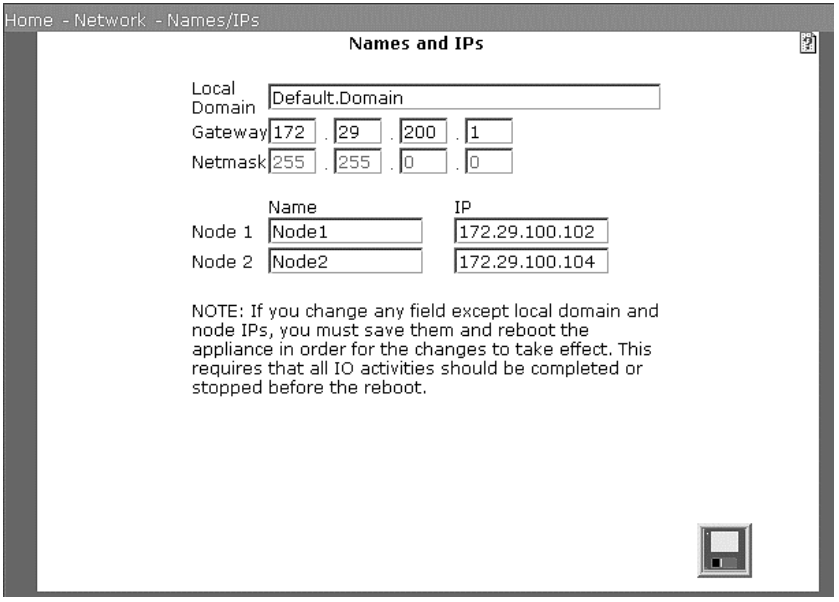
Step B. Saving the Configuration

After entering changes, click **Save**. You are asked if you want to reboot immediately or wait until later. (You might want to check some values or status before rebooting.)

NOTE: Changes do not take effect until you reboot through this software.

Names and IPs

When setting up NewsShare NAS on an existing network, to change the values of the Names and IPs window to suit the network, choose **Network | Names and IPs**. The Names and IPs window appears. If you are not making NewsShare NAS part of an existing network, use the default values set at the factory.



NOTE: For information on using IP addresses in a network, see "Basics of IP Addresses" on page 42.

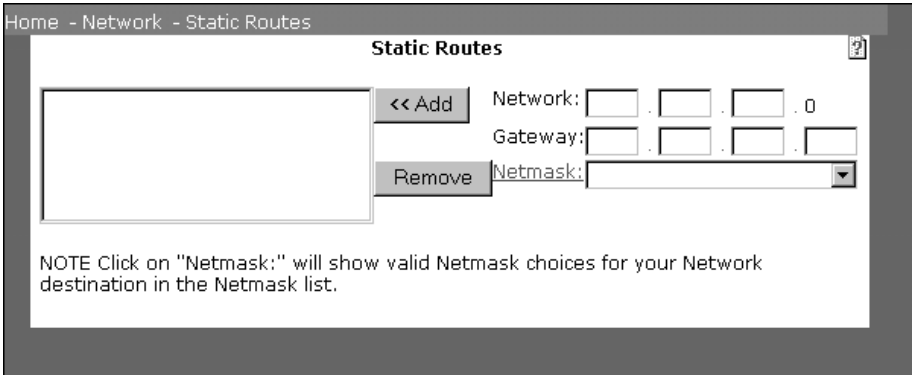
1. Review or change the **domain** name for the NewsShare NAS network. If Domain Name Service (DNS) is going to be used, this entry is the Local Domain Name on DNS. It cannot be changed on the DNS window. Use a maximum of 64 characters, which can be alphanumeric, and underscore (_), or a period. The first character must be alpha. Blanks are not accepted.
2. Review or change the **gateway address**. The gateway IP address links NewsShare NAS to public networks. You can use a gateway that is used by another computer in the network. This address might be the address of your corporate LAN.

3. You cannot change the **netmask**. The netmask is used to filter messages into a particular network segment. It is stored in the NewsShare NAS server node and is matched to each incoming IP address to determine whether to accept or reject the message packet. The preset netmask is 255.255.0.0.
4. Enter the **host name** for each NewsShare NAS server node in the system. Use a maximum of 64 characters. The first character must be alpha. The others must be alphanumeric or an underscore (_). Blanks are not accepted.
5. (Optional) Enter new **IP address**. This address cannot be in use by any other device in the network.

6. Click **Save** to save the new information.

Static Routes

A static route is a path between two networks. To specify a path by which NewsShare NAS accesses a computer outside the network (for example, NTP, DNS, or NIS) and permit outside computers to access NewsShare NAS, choose **Network | Static Routes**. The Static Routes window appears:



NOTE: For information on IP addresses, see "Basics of IP Addresses" on page 42.

1. Enter the IP address of the external **network** you want NewsShare NAS to access. This is especially important if you maintain a web server on the network.
2. Enter the **Gateway** IP address for this static route. A gateway is an entry and exit point to a network.
3. Specify a **netmask** from the list of compatible netmasks. To determine compatible netmasks for the network IP address, click **Netmask**.
4. To add the network and gateway IP addresses of this route to the NewsShare NAS route table, click **Add**.
5. To remove a route, select it and click **Remove**.

NOTE: Changes do not take effect until you reboot through this software.

Chapter 10

RAID System Administration

The following RAID system functions are available:

- View the entire RAID system, both logically and physically
- View logical unit information
- View disk drive information
- View disk enclosure information
- View Loop Bypass Board (LBB) information
- View RAID controller information
- View Configuration report
- View Storage statistics
- Create a logical unit
- Delete a logical unit
- Rebuild a logical unit
- View controller configuration information
- Configure a controller
- Add or remove a controller from the RAID system
- Update the RAID controller firmware - via FTP or locally
- Reset RAID controller default values
- Set disk drive LED on or off
- Add a spare drive
- Free a spare drive
- Disable a drive

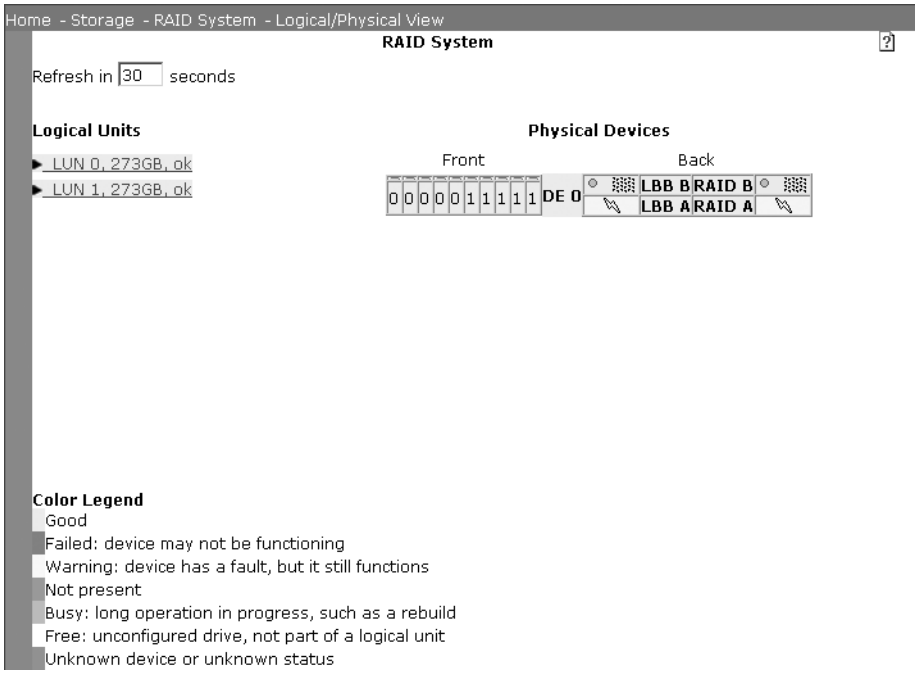
RAID System Logical/Physical View

Use the RAID Logical/Physical View window to display information about the RAID system components. From the Storage menu, choose **RAID System | Logical/Physical View**.

On the lower left of the window, status is indicated by the color legend:

- Green: Good.
- Red: Failed. Device may not be functioning.
- Yellow: Warning. Device has a fault, but it still functions.
- Black: Not present.
- Blue: Busy. A long operation, such as a Rebuild, is in progress.
- White: Free. Unconfigured drive and not part of a logical unit.
- Purple: Unknown device or unknown status.

A loop failure is indicated on the RAID system icon. For example, if loop A fails, LBB A remains green but the RAID A icon turns yellow.

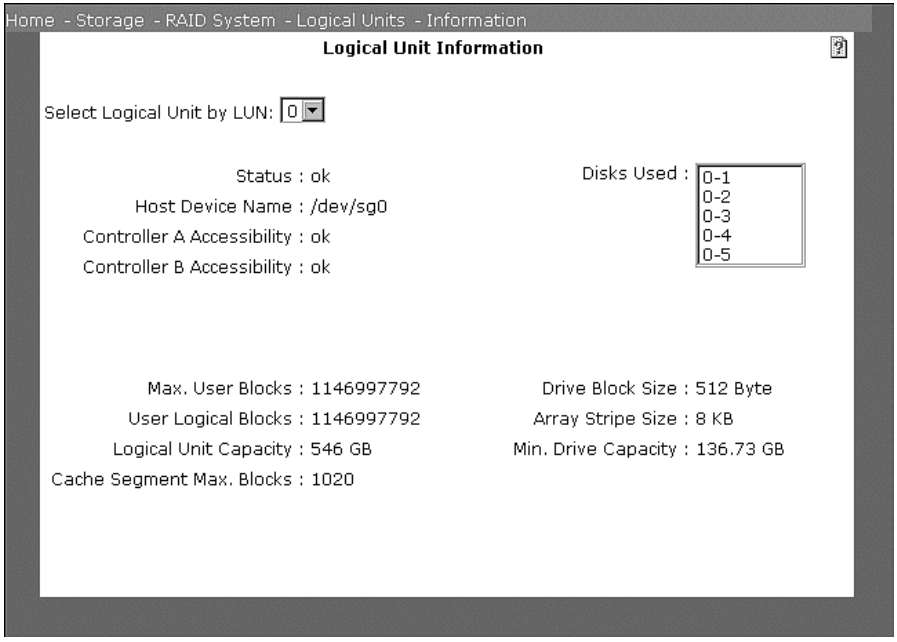


1. Enter the **refresh** interval. In the text box, type the number of seconds for the window refresh interval. Information on this window is updated once per refresh interval.
2. View logical information. On the left side of the window, the logical units are listed. The list includes the size, in gigabytes, of the logical unit and the status of the logical unit. Click on a **logical unit** and refer to “Logical Unit Information” on page 126.
3. View physical device information. On the right side of the window, the physical devices are shown graphically. The front view of an array shows disk drives and disk enclosures. The back view shows other physical components. Physical views are:
   - Disk drives are represented by small rectangles in the front view on the right side of the window. Click on a **disk** and refer to “Disk Drive Information” on page 128.

- Enclosures, labeled DE n, are shown to the right of the disk drives. Click on an **enclosure** and refer to “Disk Drive Information” on page 128.
- Fan icons are on the top at both the right and left ends of the graphic. Click on a **fan** icon to display information about it.
- Power supply icons are directly below the fan icons. Click on a **power supply** icon to display information about it.
- Loop Bypass Boards, labeled LBB A and B, are to the left center. Click **LBB A** or **B** and refer to “Loop Bypass Board Information” on page 131.
- RAID controllers, labeled RAID A and B, are to the right center. Click **RAID A** or **B** and refer to “RAID Controller Information” on page 132.

Logical Unit Information

To view information about a logical unit and the disk drives that comprise the logical unit, choose **Storage | RAID System | Logical Unit | Information**. The Logical Unit Information window appears:



Select the logical unit. Use the arrow next to the drop-down list box, and select the **number of the logical unit**. The Logical Unit Information window displays details about each logical unit:

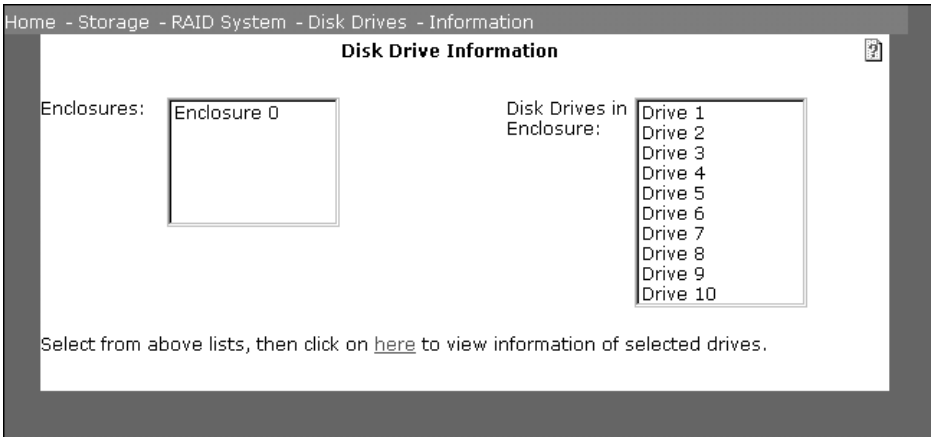
Field	Description
Status	Indicates the status of the logical unit as a whole. Some possible states are: OK, Unformatted, Duplicate logical unit number, Formatting, or Rebuilding. If the status is Formatting or Rebuilding, a link displays the current progress of that operation.
Host Device Name	The name used by the host system to identify the logical unit.
Controller A Accessibility	Indicates the state of the loops on controller A. Possible states are: OK (on one or both loops), Unavailable (both loops), or Failed (both loops).
Controller B Accessibility	This field is present only in a dual controller system. Indicates the state of the loops on controller B. Possible states are: OK (on one or both loops), Unavailable (both loops), or Failed (both loops).
Max. User Blocks	Maximum number of host system blocks in the array.
User Logical Blocks	Maximum capacity in host logical blocks. This is the same as the maximum user blocks.
Logical Unit Capacity	Number of gigabytes on the logical unit.
Cache Segment Max. Blocks	The number of host system blocks that fit into one cache segment.
Disks Used	List of the disks, by disk number, that comprise the logical unit. A disk number has the format *n*-*m*, where *n* is the enclosure ID and *m* is the disk number within the enclosure. The enclosure ID number appears on the back side of each physical enclosure. Disks are numbered from left to right, start at 1.
Drive Block Size	The logical block size on the disk drive. Currently, the size is always 512KB.
Array Stripe Size	The number of bytes of data written to a single disk drive. The stripe size can be: 8KB or 16KB.
Min. Drive Capacity	Number of gigabytes on the smallest disk drive in the logical unit.

Disk Drive Information

To view information about one or more disk drives, choose **Storage | RAID System | Disk Drive | Information**. The Disk Drive Information window appears. This window can also be accessed by clicking on a disk drive in the RAID Logical/Physical View window.

Identifying Enclosures and Disk Drives

NewsShare NAS uses the enclosure number that appears on the back side of each physical enclosure. NewsShare NAS refers to the disk drives by number, from left to right with the left-most disk drive numbered 1.



1. Specify one or more enclosures. In the list on the left, click on each **enclosure** that contains a drive to view.
2. Specify one or more disk drives. In the list on the right, click on each **disk drive** to view.
3. Display the information. Click on the **here** hypertext link within the on-screen text.

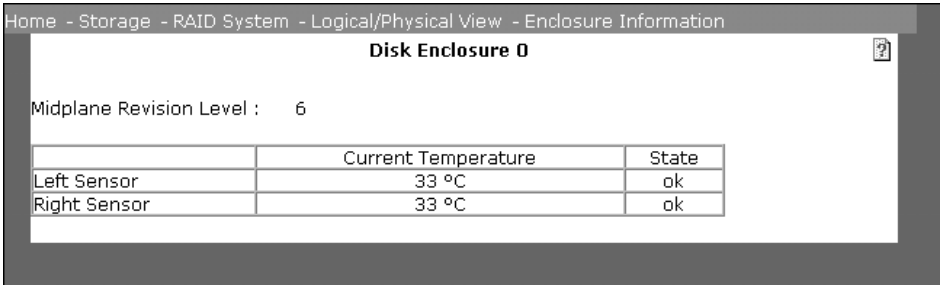
This table describes the fields for each selected disk drive:

Field	Description
Enclosure	Number of the enclosure that contains the disk drive.
Slot	Number of the position, from left to right, of the disk drive within the enclosure.
Physical State	State can be Member of a Logical Unit or Free.
Status	Status can be OK or Failed.
Capacity	Capacity
Block Size	The logical block size on the disk drive. Currently, the size is always 512KB.
Number of Blocks	Number of Blocks
LUN	Number of the logical unit of which the disk drive is a part.
Index in LUN	The number of the disk drive within the logical unit.
Logical State	This state can be: • Ready • Off • Failed • Spinning up • Testing • Testing good • No system sector • Rebuilding • Unformatted
WWN	The worldwide name of the disk drive.
Serial Number	Disk drive serial number.
Inquiry	Name of the disk drive manufacturer.
LED is off	Indicates whether the blue drive LED, located on the front bezel of the drive, is on or off. If checked the LED is off.

ASC	Should always be a blank.
ASCQ	Should be a blank, if the drive is Ready. If it is not a blank, refer to the PFR-600 User and Service Guide (21021880) to interpret the code. Or, if the code relates to a drive problem, refer to the drive manufacturer's reference manual.
Extra Sense Data	Should be a blank, if the drive is Ready. If it is not a blank, call Ciprico Customer Support for help in interpreting the code.

Disk Enclosure Information

To view enclosure information, click on a controller icon in the RAID Logical/Physical View window. The Disk Enclosure window appears. The enclosure number is written on the back side of the physical enclosure.

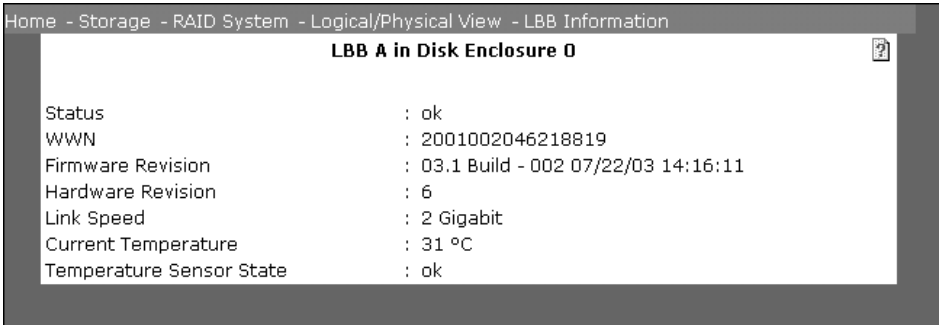


The Disk Enclosure window describes the fields for an enclosure:

Field	Description
Midplane Revision Level	The hardware revision of the midplane.
Left/right Temperature Sensor	The current temperature in degrees Celsius and the State. State can be: • OK: The current temperature is below the warning temperature setting. • Over Warning Temperature: The current temperature is at or above the warning temperature setting and below the critical temperature setting. • Over Critical Temperature: The current temperature is at or above the critical temperature setting.

Loop Bypass Board Information

To view Loop Bypass Board (LBB) information, click on an LBB icon in the RAID Logical/Physical View window. The LBB window appears:

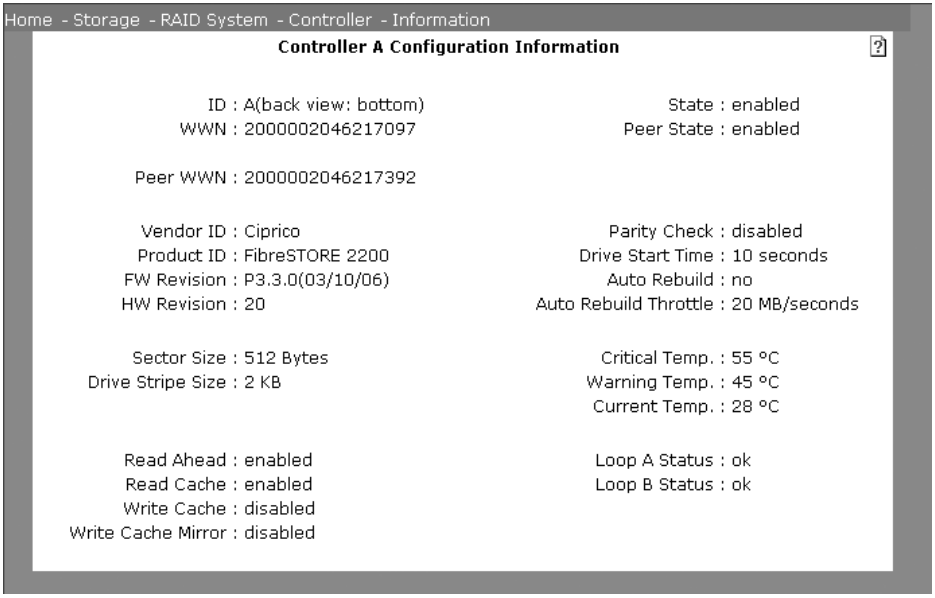


The LBB window describes the fields for the loop bypass board:

Field	Description
Status	Status can be OK, Critical or Not Available.
WWN	Worldwide name of the loop bypass board.
Firmware Revision	The firmware revision in the format: xxx mm/dd/yy hh:mm:ss, where xxx = compile counter, mm/dd/yy = compile date, and hh:mm:ss = compile time.
Hardware Revision	The hardware revision of the loop bypass board.
Link Speed	The actual link speed can be one gigabit Fibre Channel or two gigabits Fibre Channel.
Current Temperature	The current temperature in degrees Celsius.
Temperature Sensor State	State can be: • OK: The current temperature is below the warning temperature setting. • Over Warning Temperature: The current temperature is at or above the warning temperature setting and below the critical temperature setting. • Over Critical Temperature: The current temperature is at or above the critical temperature setting.

RAID Controller Information

To view information about a RAID controller, click on a controller icon in the RAID Logical/Physical View window. The Controller Configuration Information window appears:



The Controller Configuration Information window describes the controller fields:

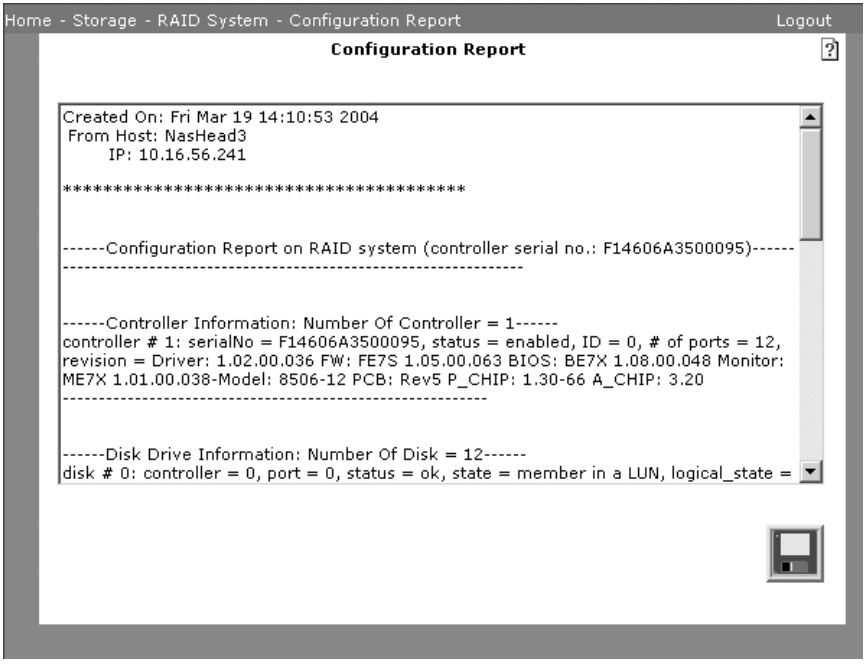
Field	Description
ID	Identification of the selected controller.
WWN	For the selected controller, the worldwide name is the unique controller ID set by the manufacturer.
Peer WWN	For the peer controller, this is a unique controller ID set by the manufacturer. This field may not be present.
Vendor ID	Name of manufacturer of the array.
Product ID	Array model number.
FW Revision	Revision number of the controller firmware.

Field	Description
HW Revision	Revision number of the controller hardware.
Sector Size	Number of bytes in a sector.
Drive Stripe Size	Drive stripe size.
Read Ahead	Read Ahead improves data retrieval performance because the controller always reads a full data stripe into cache. If the stripe size is 8KB and the read request is for 1KB, the controller reads 8KB. If subsequent read requests are for sequential data, it will already be in cache. Time spent reading the drive is minimized.
Read Cache	If read cache is enabled, the controller checks cache memory for the requested data. Only if the data is not in cache does it read the drives. If read cache is disabled, data is always read from the drives.
Write Cache	If write cache is enabled, the controller saves the data in cache memory and returns a Command Complete before actually writing the data to the drives. If write cache is disabled, the controller writes the data to the drives before issuing a Command Complete. Enabling write cache increases write performance, but introduces some data vulnerability. If data integrity is the primary consideration, disable write cache.
Write Cache Mirror	This feature is available only in a dual controller system, and enabling it on one controller automatically enables it on the other controller. If write cache mirroring is enabled, write cache data is duplicated in the cache memory of each controller. Exactly half of the write segments on each controller are reserved for the peer controller data. With write cache mirroring enabled, static cache segment allocation is automatically enabled and cannot be disabled. With write cache mirroring enabled, write caching is allowed when both controllers are enabled.
State	The state can be Not Present, Failed, Disabled, Enabled, or Resetting.
Peer State	For the peer controller, the state can be Not Present, Failed, Disabled, Enabled, or Resetting. This field may not be present.
Parity Check	If parity check is enabled, the controller performs additional, useful error reporting. Enabling parity checking decreases performance, so by default it is disabled.
Drive Start Time	The maximum of.1 second increments that the array waits for a drive to become ready before turning to the next drive. Default is 10. If this is 0, all drives start simultaneously. This is not recommended because the power required to start all drives at once can tax the power supply.

Field	Description
Auto Rebuild	Yes, if auto rebuild is enabled and no, if it is not enabled. Auto rebuild tells the controller to automatically rebuild a logical unit whenever a drive in the logical unit fails.
Auto Rebuild Throttle	This is the average host bandwidth (in megabytes/second) used as the rebuild throttle for automatic rebuilds. Broadly speaking, this is the host bandwidth that limits the insertion of Rebuild commands. When the bandwidth drops below this value, Rebuild commands generated by an automatic rebuild are not inserted until the bandwidth for normal host operations rises above this value.
Crit. Temp.	The temperature (in degrees Celsius) at which the critical alarm will sound, if the alarm is enabled. If Unit Attention is enabled, reaching the critical temperature causes a critical Unit Attention condition. It is recommended, although not required, that you set the critical temperature to the same value on both controllers in a dual controller system.
Warn. Temp.	The temperature (in degrees Celsius) at which the warning alarm will sound, if the alarm is enabled. If Unit Attention is enabled, reaching the warning temperature causes a warning Unit Attention condition. It is recommended, although not required, that you set the warning temperature to the same value on both controllers in a dual controller system.
Current Temp.	The current temperature in degrees Celsius.
Peer Current Temp.	The current temperature in degrees Celsius on the peer controller. This field may not be present.
Loop A Status	For drive loop A, the status can be Loop Initializing, Loop Waiting, OK, Failed or Unknown.
Loop B Status	For drive loop B, the status can be Loop Initializing, Loop Waiting, OK, Failed or Unknown.

Configuration Report

The Configuration Report reports on the components in the array. Access the window from the Storage menu by choosing **RAID System | Configuration Report**.

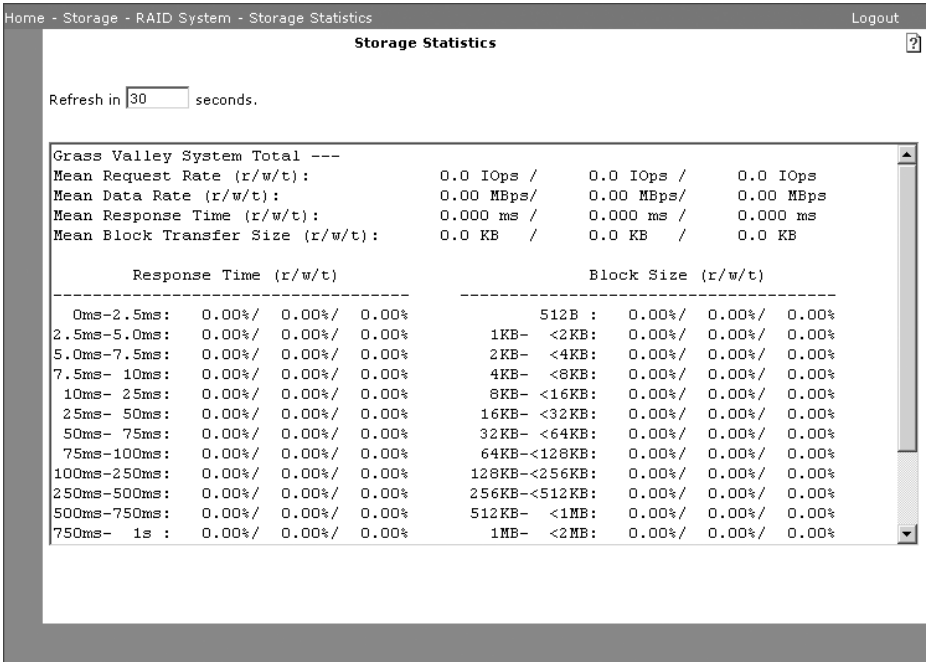


The report displays information on the following components:

- Overall array information
- Array devices such as fans, temperature sensors, and power supplies
- Array Controller
- Disk enclosures
- Volumes (also known as logical units)
- Disk drives
- Fibre Channel loops

Storage Statistics

To display statistics regarding the RAID sub-subsystem devices on one or both nodes, choose **Storage | RAID System | Storage Statistics**. The Storage Statistics window appears:



1. Enter the **refresh** interval. In the text box, type the number of seconds for the window refresh interval. The data on this window is updated once per refresh interval.
2. Select one or both server nodes. In the **Filter By** drop-down list box, click on a **node name or total**.

The Storage Statistics window describes the fields for reads, writes, and the total reads and writes:

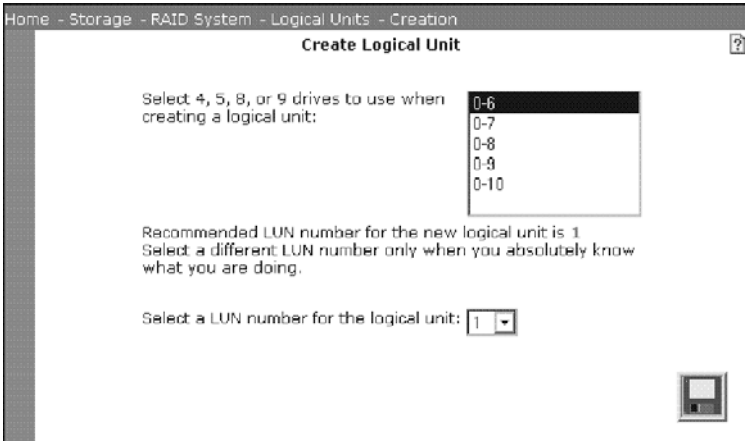
Field	Description
Mean Request Rate	The number of requests per second from the host processes.
Mean Data Rate	The number of megabytes of data read/written per second.
Mean Response Time	The number of milliseconds from read/write initiation to completion.
Mean Block Transfer Size	Mean Block Transfer Size.
Response Time	Reads and writes, grouped by various response time intervals.
Block Size	Reads and writes are grouped by various block sizes.

Logical Units

You can create, view, delete, and rebuild logical units.

Creating a Logical Unit

To create a logical unit, choose **Storage | RAID System | Logical Unit | Create**. The Create a Logical Unit window opens and lets you select disk drives on which to create a logical unit.



1. Select the disk drives. Click on each **drive** that will be part of the logical unit. A logical unit may contain either 4 drives (with or without a parity drive) or 8 drives (with or without a parity drive). A logical unit with a parity drive (i.e., consisting of either 4 or 8 drives) cannot be recovered if one drive fails. For redundancy, specify 5 or 9 drives for the logical unit. One of those drives will be a parity drive.

   The drives in the list are identified by Enclosure number-disk drive number. For example, disk drive 1-3 is the third drive from the left end of the first enclosure. (For more information, see “Identifying Enclosures and Disk Drives” on page 128).

2. Specify the logical unit to create. Use the arrow next to the drop-down list box to select the **number of the logical unit** to be created.

   Create logical unit 0 before creating any other logical units. If you have any logical units, you must have a logical unit 0.

3. Click **Save** to save the information you entered.

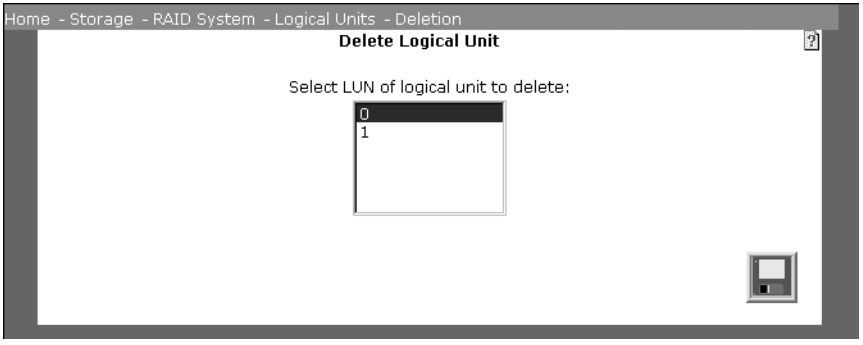
Viewing Logical Unit Information

To view Logical Unit Information, choose **Storage | RAID System | Logical Unit | Information**. For details, refer to "Logical Unit Information" on page 126.

Deleting a Logical Unit

Use the Delete Logical Unit window to disband a logical unit. Access the window from the Storage menu by choosing **RAID System | Logical Unit | Delete**. When a logical unit is deleted, all disk drives formerly comprising it become free drives.

>>> ***Deleting a logical unit destroys all data on it; you cannot recreate that logical unit. If you want to retain the data, back it up before deleting the logical unit.***



1. Select the logical unit to delete. Click the **logical unit number**.

   Do not delete logical unit 0 unless you are deleting all logical units. If you have any logical units, you should have a logical unit 0.

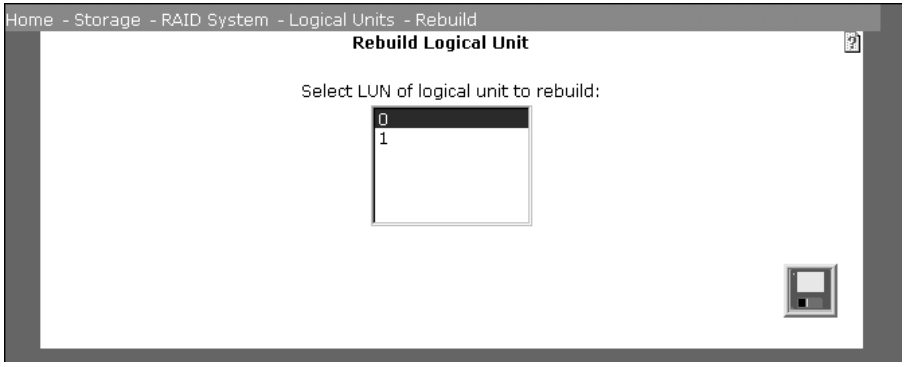
2. Click **Save** to disband the logical unit you selected.

Rebuilding a Logical Unit

Use the Rebuild a Logical Unit window to rebuild a logical unit. Access the window from the Storage menu by choosing **RAID System | Logical Unit | Rebuild**.

Rebuilding applies to one disk drive within the logical unit. If a drive in the logical unit fails, a spare drive is used as a replacement for the failed drive. All the data that was formerly on the failed drive is reconstructed on the replacement drive.

Rebuilding is not a method for recreating a deleted logical unit. Once you delete a logical unit, the data on it is gone.



1. Select the logical unit. Use the arrow next to the drop-down list box, and select the **number of the logical unit** to rebuild.

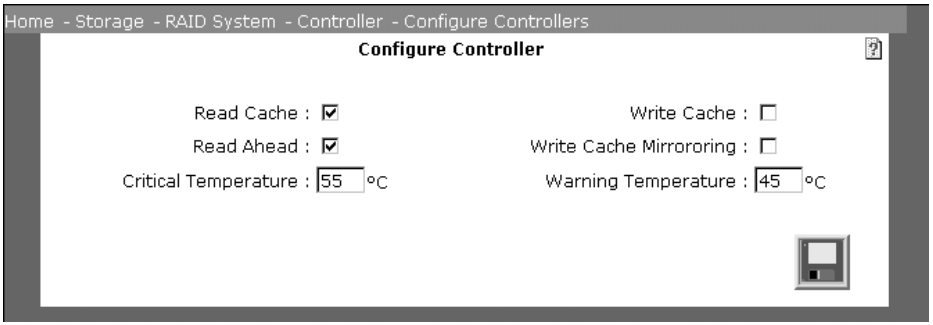
2. Click **Save** to rebuild the logical unit you selected.

Viewing Controller Configuration Information

To view Controller Configuration Information, choose **Storage | RAID System | Controller | Information**. The Controller Configuration Information window appears, as shown on page 132. Fields are also described on that page.

Configuring Controller

To configure certain RAID controller features, from the Storage menu choose **RAID System | Controller | Configure Controllers**. The Controller window appears:



1. Click in the check box to enable **read cache** (or to disable it when it is already enabled). If read cache is enabled, the controller checks cache memory for the requested data. Only if the data is not in cache does it read the drives. If read cache is disabled, data is always read from the drives. The default is enabled.

2. Click in the check box to enable **read ahead** (or to disable it when it is already enabled). Read Ahead improves data retrieval performance because the controller always reads a full data stripe into cache. If the stripe size is 8KB and the read request is for 1KB, the controller reads 8KB. If subsequent read requests are for sequential data, it will already be in cache. Time spent reading the drive is minimized. The default is enabled.

3. Click in the check box to enable **write cache** (or to disable it when it is already enabled). If write cache is enabled, the controller saves the data in cache memory and returns a Command Complete before actually writing the data to the drives. If write cache is disabled, the controller writes the data to the drives before issuing a Command Complete. Enabling write cache increases write performance, but introduces some data vulnerability. If data integrity is the primary consideration, disable write cache. For a single controller, the default is enabled. For a dual controller system, the default is disabled.

4. Click in the check box to enable **write cache mirroring** (or to disable it when it is already enabled). This feature is available only in a dual controller

system, and enabling it on one controller automatically enables it on the other controller. If write cache mirroring is enabled, write cache data is duplicated in cache memory of each controller. Exactly half of the write segments on each controller are reserved for the peer controller data. With write cache mirroring enabled, static cache segment allocation is automatically enabled and cannot be disabled. With write cache mirroring enabled, write caching is allowed when both controllers are enabled. The default is disabled.

5. Enter the **critical temperature** (in degrees Celsius) at which the critical alarm will sound, if the alarm is enabled. If Unit Attention is enabled, reaching the critical temperature causes a critical Unit Attention condition. It is recommended, although not required, that you set the critical temperature to the same value on both controllers in a dual controller system.
6. Enter the **warning temperature** (in degrees Celsius) at which the warning alarm will sound, if the alarm is enabled. If Unit Attention is enabled, reaching the critical temperature causes a warning Unit Attention condition. It is recommended, although not required, that you set the warning temperature to the same value on both controllers in a dual controller system.

7. Click **Save** to save the information you entered.

Adding or Removing a RAID Controller

To add or remove one of the RAID controllers, choose **Storage | RAID System | Controller | Add/Remove**. The window that appears depends on which of the situations described below applies. Each different Add/Remove One RAID Controller window lists the steps to follow for the particular situation:

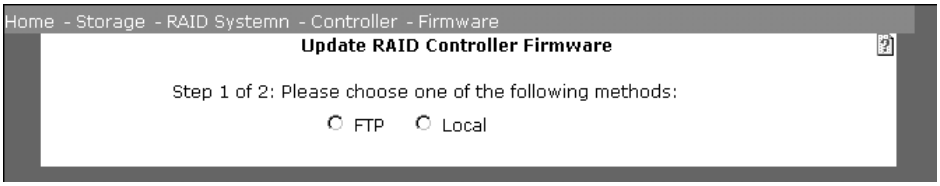
The situations for which this window is used are as follows:

- You need to remove the RAID controller when the system status is DAC (both controllers functioning OK). In this case, first shut down the node containing the controller you want to remove. Wait until the node shuts down, and the system status shown on the NewsShare NAS software is Degraded. Re-select **Storage | RAID System | Controller | Add/Remove**, and follow the steps described on the Add/Remove window. The situation now is the same as the one described directly below.
- The system status shown on the NewsShare NAS software is Degraded. First, disable the controller. Then follow the steps described on the Add/Remove window.
- The RAID controller is disabled and the system shown on the NewsShare NAS software is Degraded. Follow the steps described on the Add/Remove window.
- To upgrade from one node to two nodes, first execute the Node Mode Upgrade function. Reboot the NewsShare NAS software, and select **Storage | RAID System | Controller | Add/Remove**. Enable the controller on the new node, and power up the new node.

Updating RAID Controller Firmware

Use the Update Controller Firmware window to update the RAID controller firmware. Access the window from the Storage menu by choosing **RAID System I Controller I Firmware**.

You can update the RAID controller firmware from a Thomson Grass Valley-supplied CD or from the Ciprico FTP site.



Click on one of the following options:

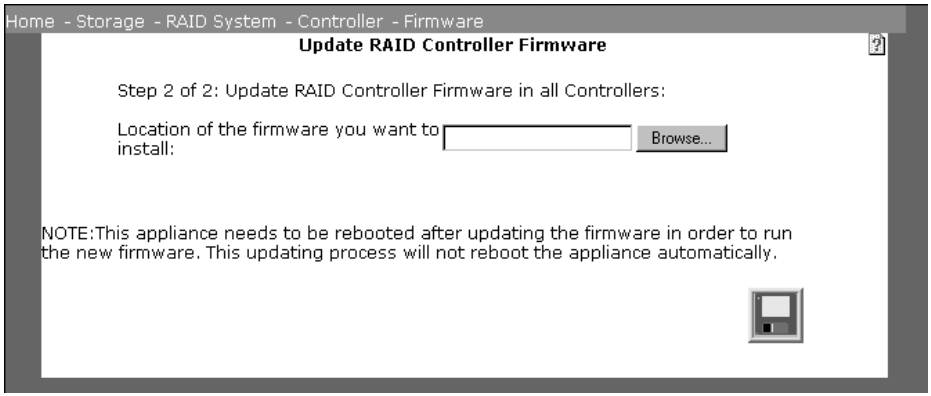
- **FTP**: Use this method if the RAID controller firmware does not reside on the local host machine. To download the RAID controller firmware from the Ciprico NewsShare NAS FTP site, contact Ciprico Customer Support. Customer Support can provide you access to the Ciprico FTP server.
- **Local**: Use this method if the RAID controller firmware is directly available from the host computer (the local host machine) that the NewsShare NAS GUI accesses.

A window to update the firmware by the method you selected appears.

>>> Stop all reading and writing to the array before updating the firmware.

Updating Firmware Locally

The Update RAID Controller Firmware window lets you update RAID controller firmware from a local machine.



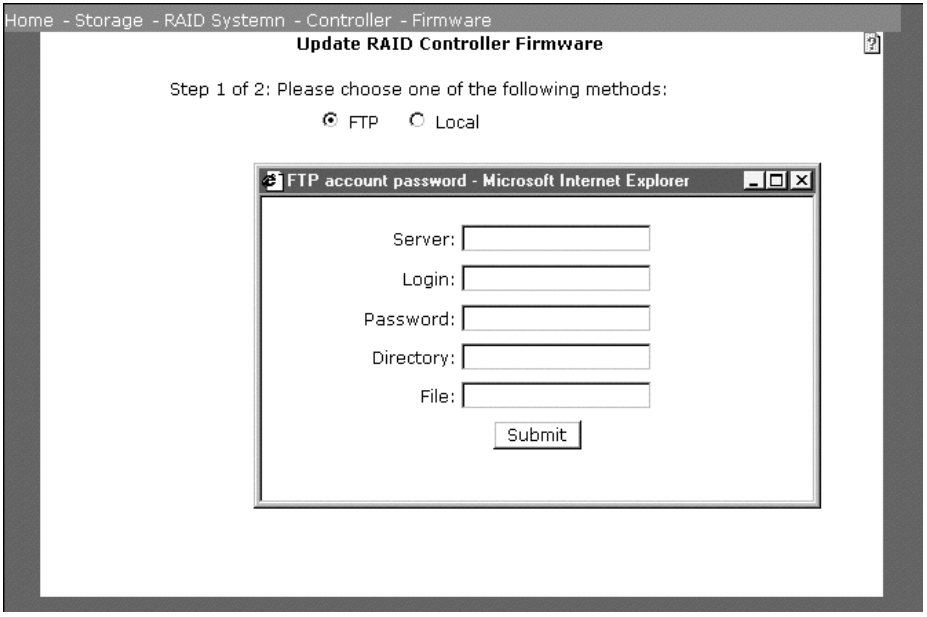
1. Specify the full pathname of the firmware. Type in the pathname of the RAID controller **firmware version** or click **Browse** to locate the RAID controller firmware version file.

>>> Stop all reading and writing to the array before updating the controller firmware.

2. To start the update, click **Save**.
3. After rebooting the appliance, perform the update procedure again so that the firmware resides in both banks of the controller.

Updating Firmware Using FTP

You can also update RAID controller firmware using File Transfer Protocol (FTP).



1. Type the name of the **server** on which the RAID controller firmware version is located. The server must be within the Ciprico network.
2. Enter the **login** name. The name used for login must have permissions that include downloading files.
3. Enter the **password**.
4. (Optional) Type the name of a **directory**. You can use wild cards: asterisk (*) for any characters or question mark (?) for any single character. The default is period (.) for the current directory.
5. (Optional) type the name of a **file** in the directory. You can use wild cards: asterisk (*) for any characters or question mark (?) for any single character.
6. Click **Submit**. If the login was valid, the connection to the server was successful, and no file name was entered, a list of available controller firmware versions appears. If a file name was entered, no list is shown, and

you should skip over the next step.

7. (Only if no file name was entered) Select a release. Click on the name of the **firmware version** to download.

>>> Stop all reading and writing to the array before updating the controller firmware. After the new firmware is downloaded, the system is automatically rebooted.

8. Click **Save** to start the update.
9. After rebooting the appliance, perform the update procedure again so that the firmware resides in both banks of the controller.

Set RAID Controller Defaults

No window appears with this command. To reset defaults, choose **Storage | RAID System | Controller | Set Defaults**. The RAID controller caching fields are immediately reset to the values described in this table:

Field	Default	Description
Read Cache	Enable	When read cache is enabled, the controller checks cache memory for the requested data. If it finds the data in cache, it returns that data. Only if the data is not in cache does it read the drives. When read cache is disabled, data is always read from the drives.
Write Cache	Enabled in a single controller Disabled in a dual controller	When write cache is enabled, the controller saves the data in cache memory and returns a Command Complete before actually writing the data to the drives. When write cache is disabled, the controller writes the data to the drives before issuing a Command Complete. Enabling write cache increases write performance, but introduces some data vulnerability. If data integrity is the primary consideration, disable write cache. In a single controller configuration, enabling write cache will increase write performance.
Write Cache Mirroring	Disabled	This feature is available only in a dual controller system, and enabling it on one controller automatically enables it on the other controller. When write cache mirroring (WCM) is enabled, write cache data is duplicated in cache memory of each controller. WCM protects data when one controller fails because the data can be found in the other controller's memory. Exactly half of the write segments on each controller are reserved for the peer controller data. With write cache mirroring enabled, static cache segment allocation is automatically enabled and cannot be disabled. With write cache mirroring enabled, write caching is allowed when both controllers are enabled. The number of write segments (see below) is not changed when WCM is enabled or disabled. Half of the write segments in each controller are reserved for the mirrored data.
Multiplication Factor	Disabled	When the multiplication factor is enabled, maximum prefetch is overridden. Instead, the largest number of blocks that can be prefetched when multiplication factor is enabled is (maximum prefetch) x (length of the current Read command). The number of blocks that can be prefetched is also limited by the maximum prefetch ceiling.

Field	Default	Description
Discontinuity	Enabled	When discontinuity is enabled, the device server prefetches across time discontinuities, such as cylinders or cache segment boundaries.
Read Ahead (Prefetch)	Enabled	Reading ahead improves data retrieval performance because the controller always reads a full data stripe into cache. This increases the likelihood of finding requested data in cache, which in turn decreases disk accesses and improves performance. This is especially useful for transfers that are small relative to the size of cache. If the stripe size is 8KB and the read request is for 1KB, the controller reads 8KB. If subsequent read requests are for sequential data, that data already will be in cache. Time spent reading the drive is minimized.
Static Cache Segment Allocation	Disabled	Static Cache Segment Allocation (SCSA) allows you to reserve a number (divisible by 2) of cache segments for write and write verify operations. SCSA is required when WCM is enabled.
Conservative Cache Mode	Disabled	When conservative cache mode is enabled, the controller does not cache write data unless the battery is fully charged. This provides additional data integrity. When conservative cache mode is disabled, the controller caches write data, no matter what the state of the battery.
Cache Segments	255	The number of cache segments depends on the size of a cache segment and the total size of cache. It is the number of segments into which cache memory is divided. The minimum is 16. The maximum is 65,535. Segments are contiguous logical blocks which divide the total cache memory into pieces. Segments are constantly reused as data is overwritten.
Write Segments	32	Segments are contiguous logical blocks that divide the total cache memory into pieces. Segments are constantly reused as data is overwritten. The number of write segments you can have depends on the size of a write segment and the total size of cache. The maximum size of a write segment is 4 megabytes. (If cache memory is 128 MBs, the minimum number of write segments is 32.) The write segment field is used if SCSA is enabled. It is the number of segments from the cache segment pool that are allocated exclusively for caching write operations. This value must be divisible by two and can range from four to the number of cache segments minus one. The number of cache segments minus the number of write segments is the number of cache segments available for read operations. Enabling or disabling WCM does not change the value of this field.

Field	Default	Description
Minimum Prefetch	2048 disk blocks	Minimum prefetch has two functions. It is the minimum prefetch size, as per the SCSI specification, and it specifies a low water value at which the controller schedules prefetches. When the multiplication factor is disabled, this is the number of blocks. When the multiplication factor is enabled, this is a scalar multiple of the transfer length of the current command. In both cases, the number of blocks beyond the end of the current request required in cache is the larger of this value or 2 x (request size). If there are not enough blocks in cache, the controller schedules a prefetch. The size of this prefetch is the larger of the minimum prefetch or the maximum prefetch. If discontinuity is disabled, the prefetch size is truncated to end on a cache segment boundary. If discontinuity is enabled, the prefetch size is not truncated.
Maximum Prefetch	4096 disk blocks	The maximum prefetch is the maximum number of blocks that the controller can prefetch. This field can be overridden by both the multiplication factor and the maximum prefetch ceiling.
Maximum Prefetch Ceiling	16384 disk blocks	This is the upper limit for the number of blocks that can be prefetched. If the computed prefetch is greater than this ceiling, prefetch is truncated to this value. (Multiplication factor does not affect this ceiling.)
Disable Prefetch Transfer Length	4096 disk blocks	The disable prefetch transfer length is the maximum number of blocks for which prefetch is operational. A Read command with a length greater than this value will not allow a Read ahead. If this value is 0, prefetch is entirely disabled.

Disk Drives

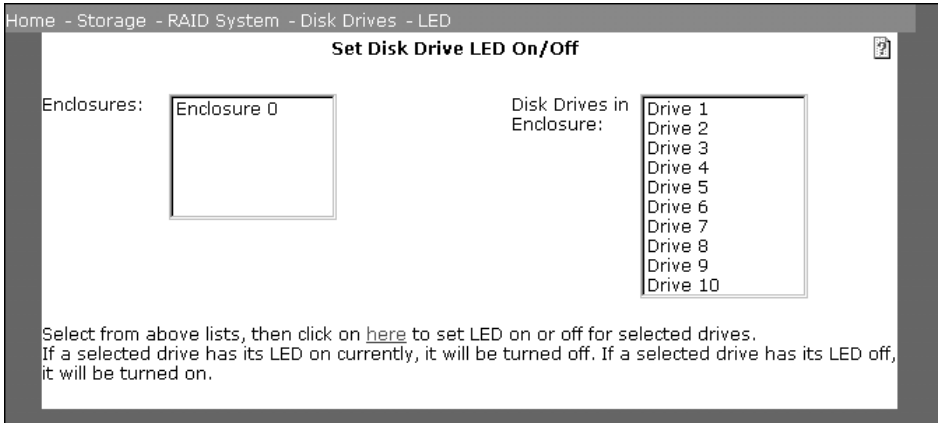
From the Disk Drive menu, you can view drives, turn a drive LED on or off, add spare drives, free spare drives, and disable a drive.

Viewing Disk Drive Information

Use this window to display information about one or more disk drives. Access the window from the RAID Logical/Physical View window, or by choosing **Storage | RAID System | Disk Drive | Information**. For details, refer to "Disk Drive Information" on page 128.

Setting Disk Drive LED On or Off

Use the Disk Drive LED window to turn on or off the LED on the selected disk drives. Access the window by choosing **Storage | RAID System | Disk Drive | LED**.



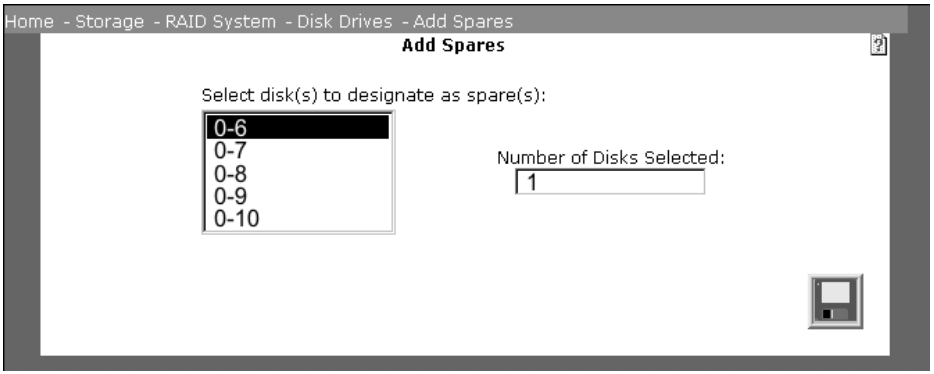
To turn on LEDs that are off or turn off LEDs that are on, do the following:

1. Specify one or more enclosures. In the list on the left, click on each **enclosure** that contains a drive LED to turn on or off. (For more information, see "Identifying Enclosures and Disk Drives" on page 128).
2. Specify one or more disk drives. In the list on the right, click on each **disk drive** to turn its LED on or off.
3. Flip the LEDs. Click on the **hypertext link** within the on-screen text.

Adding Spares

Use the Add Spares window to designate one or more disk drives as spares. Access the window by choosing **Storage | RAID System | Disk Drive | Add Spares**.

Spare drives are used to rebuild a logical unit.

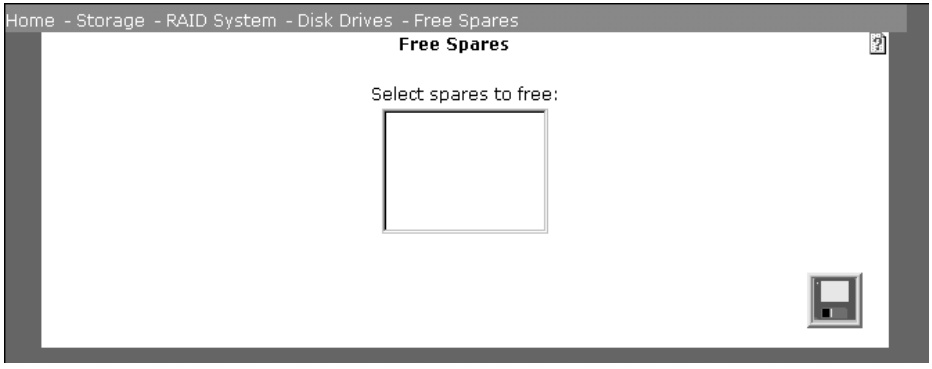


1. Specify one or more disk drives. In the list on the left, click on each **disk drive** to be made into a spare drive. The box on the right shows the current number of disk drives selected.

2. To make the selected disk drives spares, click **Save**.

Freeing Spares

Use the Free Spares window to designate one or more spare drives as free drives. Access the window from the Storage menu by choosing **RAID System | Disk Drive | Free Spares**. Free drives are not available for rebuilding a logical unit.



1. Specify one or more disk drives. Click on each **disk drive** to be made into a free drive.

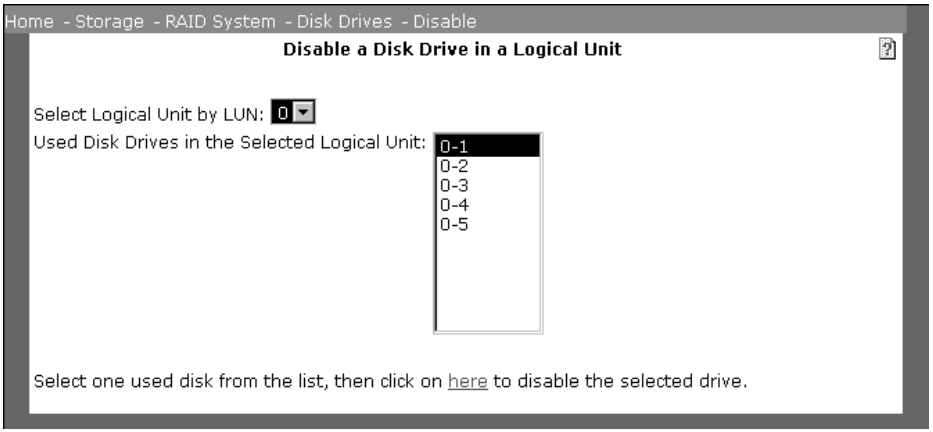
2. To make the selected disk drives free drives, click **Save**.

Disabling a Disk Drive

Before you can replace a drive in the array, it must be disabled. When the array system determines that a drive is bad, it disables that drive. If you choose to upgrade a drive for any reason, you must disable it, and then you can replace it physically.

>>> Do not remove a drive unless the controller failed it (light on drive blinks an alternate blue), or you disable it through the NewsShare NAS software. Removing a drive without following the drive failure procedure can cause loss of data.

To disable a disk drive, choose **Storage | RAID System | Disk Drive | Disable**. The Disk window appears:



1. Specify the logical unit. Use the arrow next to the drop-down list box to select the **number of the logical unit** containing the disk drive to disable.
2. Specify the disk drive. Click on one **disk drive** in the list. This is the disk drive to be disabled.
3. Click on the **hypertext link** within the on-screen text to disable the disk drive.

Chapter 11

Field Replaceable Units (FRUs)

NewsShare NAS is a high-availability system, which means that if one component of a system fails, the partner component keeps the system running. However, it is crucial that you replace a failed part as soon as possible. To order replacement parts, go to http://www.ciprico.com/csHome.shtml.

The following components are Field Replaceable Units (FRUs):

- Server node
- Drive
- Power supply in the array
- Array fan
- RAID controller

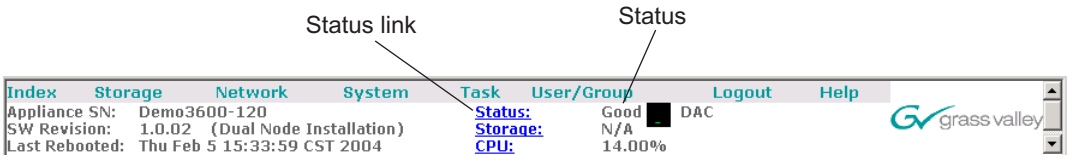
Most FRUs are hot-swapable (which means that they can be replaced while the NewsShare NAS system is powered up and running); the exception is the RAID controller.

>>> ***The RAID controller cannot be replaced while NewsShare NAS is powered up and running. To replace a RAID controller, power down the system.***

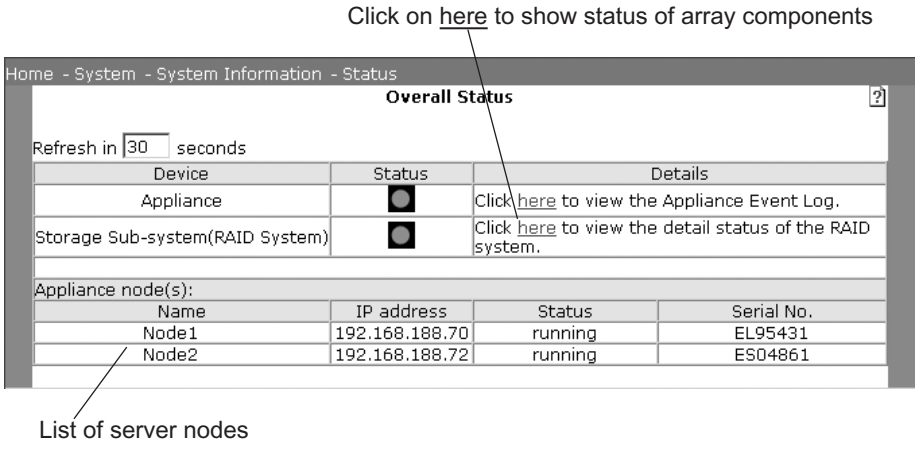
>>> ***Before replacing any part of the system, back up all data.***

NewsShare NAS notifies you of the failure of a component in one or more of the following ways:

- If you set up SNMP (refer to page 53) and SMTP (refer to page 54)
- Status light on the component
- Via the NewsShare NAS software status bar. If a component fails, the Status bar displays a status of “Degraded” or “Warning”.



From the Status bar, click on the Status link. The Overall Status appears:



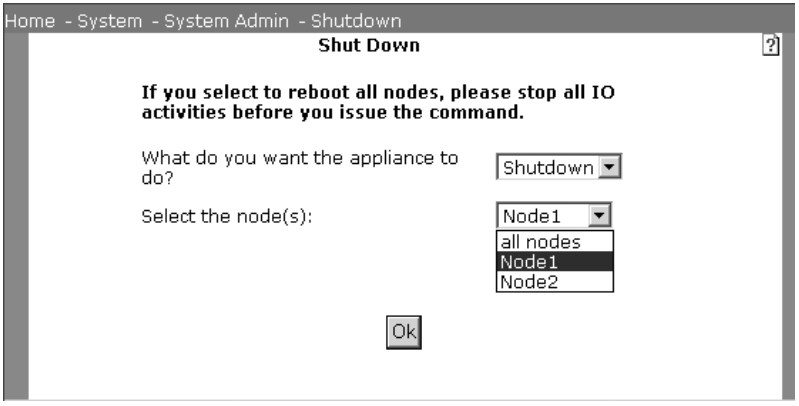
Replacing a Server Node

>>> ***Do not power off a server node that is listed in the Status window as running. If a server node is listed in the Status window as running, you must shut down the server node via the Shut Down window.***

Shut Down the Server

To shut down a server node:

1. Choose **System | System Administration | Shut Down**. The Shut Down window appears.

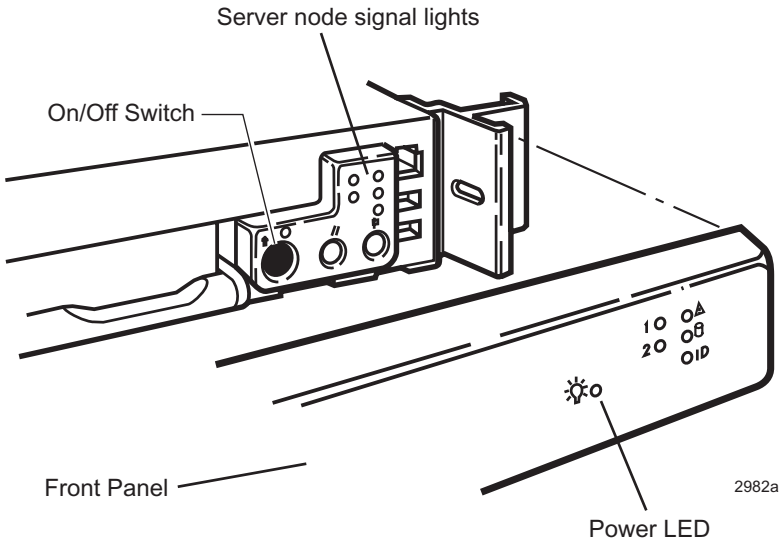


2. Select a server node.
3. Click **OK**.
4. From the System menu, choose **System Information | Status**. The Status window appears. Verify that the server node is not responding.

Remove Power

Once the server node is shut down (or if it failed and NewsShare NAS cannot recognize it), remove power to the node. Do the following:

1. Remove the front panel of the server node you are replacing.



2. Press the On/Off power switch.
3. Make sure that the power LED for the server node is off.

Unplug Cables

1. Unplug the electrical cable from the back of the server node.
2. Unplug the Ethernet crossover cable that connects the two server nodes.
3. Unplug the Ethernet cable that connects the server node to the network switch.
4. Unplug the optical Fibre Channel cable that connects the server node to the RAID array.

Disconnect from the System

- If you have a desktop system with a cover, reverse the process described in "Desktop System" on page 26.
- If you have a racked system, remove the server as shown in "Optional Racked System" on page 29.

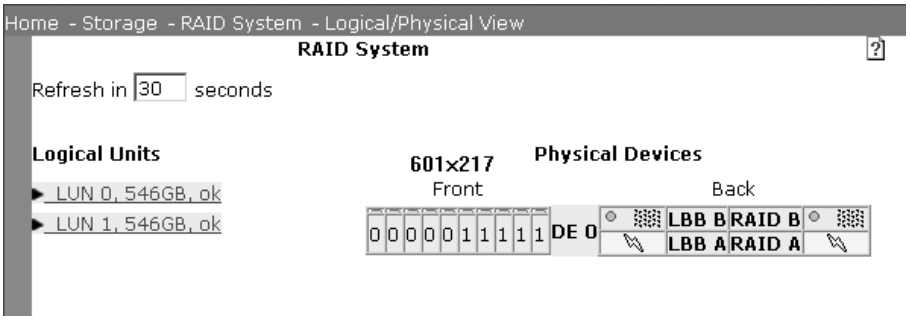
Attach the Replacement Server Node

- If you have a desktop system with a cover, replace the cover by following the procedure described in "Desktop System" on page 26.
- If you have a racked system, insert the server as shown in "Optional Racked System" on page 29.

1. Cable the Server Node. Follow the cabling diagram shown in "Cabling" on page 30.
2. Power on the node by pressing the On/Off switch.
3. Re-install the front cover.
4. Choose **System | System Information | Status** to verify the status of the node.

Replacing a Drive

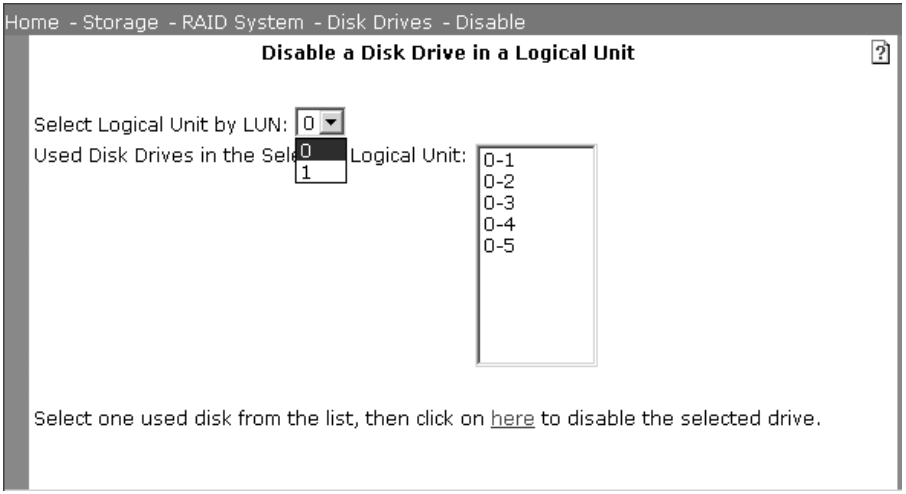
In the menu pane, choose **Storage | RAID System | Logical/Physical view**. The Logical/Physical window appears:



>>> ***A drive must be disabled before it can be removed. If the system did not disable the drive, you must disable it in the Disable a Disk Drive in a Logical Unit window.***

To replace a drive, do the following:

1. Position the mouse pointer over the drive to verify the drive number. In the menu pane, choose **Storage | RAID System | Disk Drive | Disable**. The Disable a Disk Drive window appears:

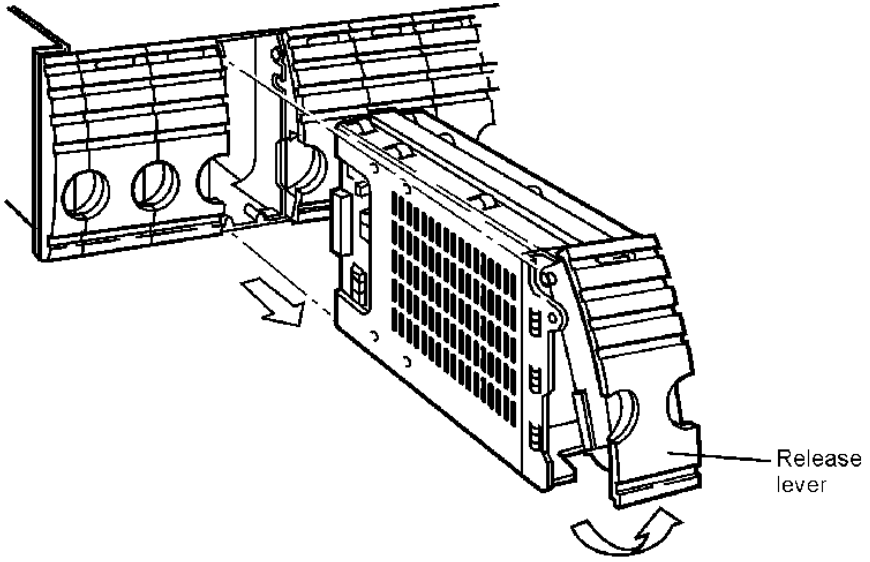


2. If the drive is listed, disable it by clicking on "**here**". (If the drive is not listed, NewsShare NAS disabled it.)

   Physically, the light on the front of the drive changes from green to blue. Return to the Logical/Physical View window to confirm that the drive has been disabled.The drive must be disabled before you remove it.

To remove a drive, do the following:

1. Grasp the release lever with your thumb and index finger and pull outward to open the door, as shown.



2. Carefully slide the drive out until it is free and out of its bay.
3. Return to the Logical/Physical view window. Verify that the drive is absent.

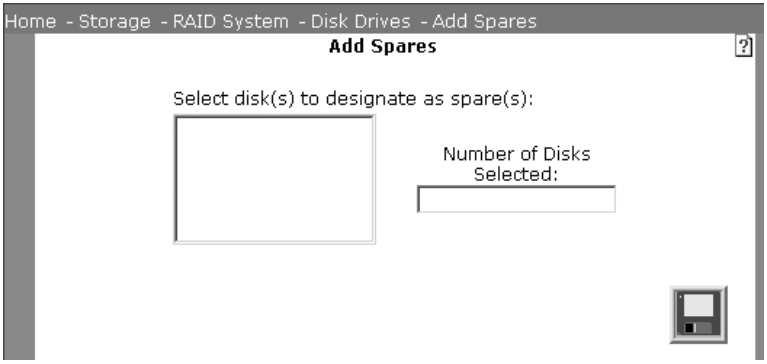
To insert a drive, do the following:

1. Make sure the drive is seated in the shuttle. Insert the replacement drive assembly into the empty bay.
2. Press the release lever down and into place.
3. Allow time for NewsShare NAS to spin the disk up. This may take as long as a minute.

4. Return to the Logical/Physical view window. Verify that the replacement drive appears. It will appear as a free drive.

   In some systems, the new drive will appear as failed, rather than as a free drive. This is immaterial. Add it as a spare, as in Step 5.

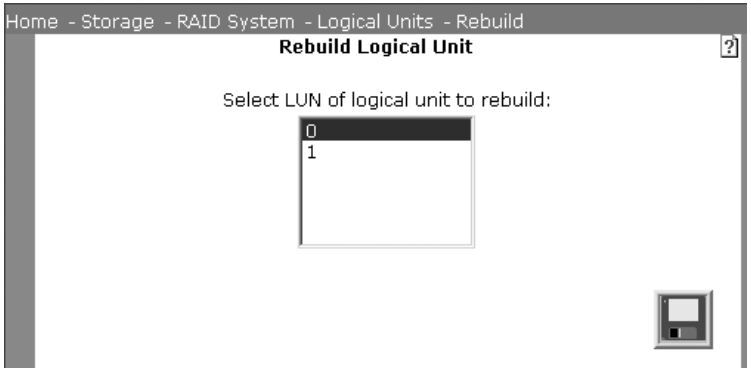
5. Choose **Storage | RAID System | Disk Drive | Add Spares**. The Add Spares window appears:



6. Select the new drive. Click **Save**.

7. Return to the Logical/Physical view window. Confirm that the drive appears as a spare.

8. In the menu pane, choose **Storage | RAID System | Logical Units | Rebuild**. The Rebuild Logical Unit window appears:

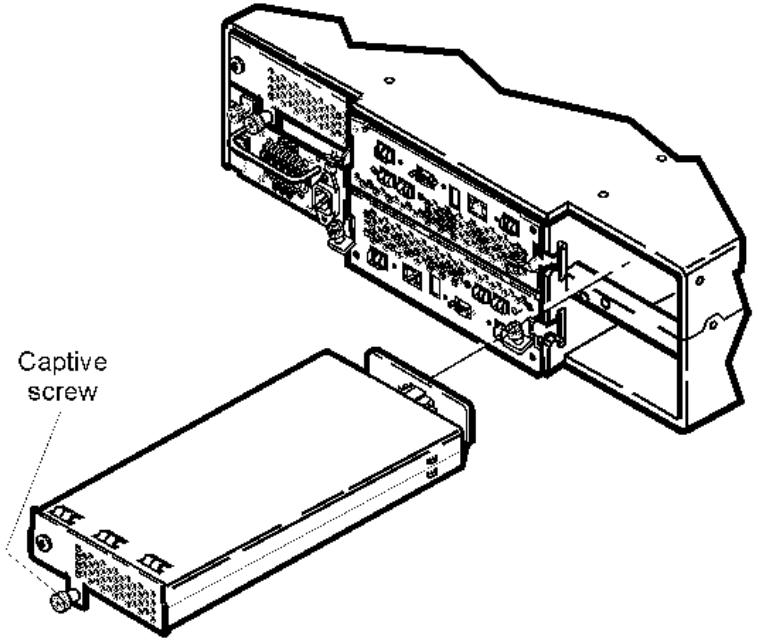


9. Select the logical unit you want to rebuild and click **Save**.

Replacing a Fan Module

To replace a fan module, do the following:

1. Loosen the captive screw on the module.
2. Pull the module out of the enclosure.
3. Insert the replacement fan module into the empty bay.
4. Tighten the captive screw on the module.

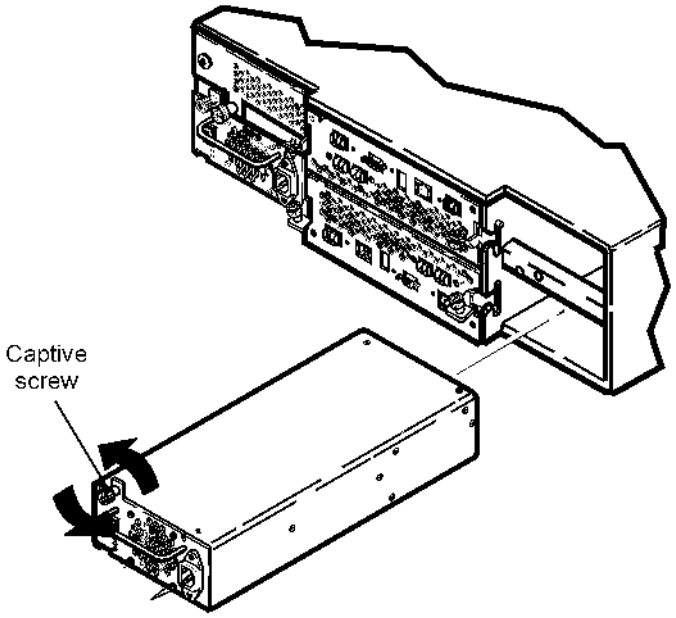


To monitor the status of the fan, choose **Storage | RAID System | Logical/Physical view**.

Replacing a Power Supply

To replace a power supply, do the following:

1. Turn off the power supply by turning the standby switch to Standby (0).
2. Remove the electrical cable from the power supply.
3. Loosen the captive screw on the power supply.
4. Pull the module out of the enclosure, as shown.



5. Insert the replacement power supply into the empty bay.
6. Tighten the captive screw on the power supply.
7. Plug the electrical cable into the power supply.
8. Turn on the power supply. Turn the standby switch to **ON** (|).

To monitor the status of the power supply, choose **Storage | RAID System | Logical/Physical view**.

Replacing a RAID Controller

Make sure that the replacement RAID controller has the same firmware revision level as the controller that is running.

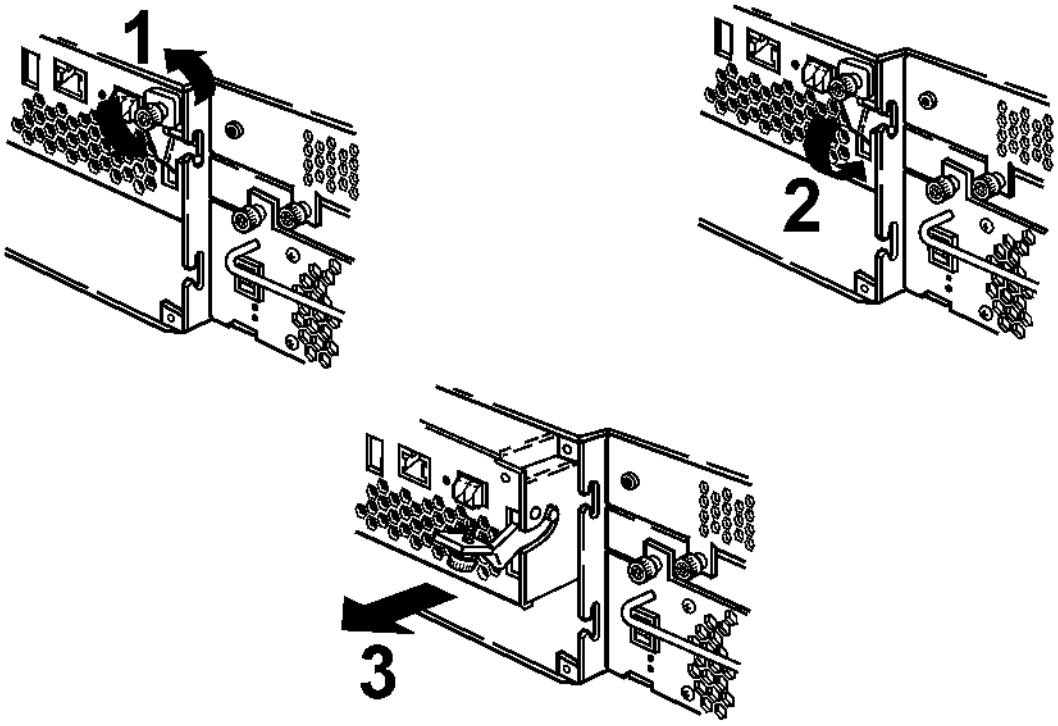
In the menu pane, choose **Storage | RAID System | Logical/Physical view**. Once you determine which controller has failed, make note of its position. Power down the appliance for this procedure; NewsShare NAS software will not be available during the replacement.

>>> ***The RAID controller cannot be replaced while NewsShare NAS is powered up and running. To replace a RAID controller, power down the system.***

Power down the NewsShare NAS. This means both nodes and the storage subsystem. Remove the fibre channel cable from the storage controller. (Once a controller has failed, the node that it is connected to will fail as well; the system can no longer see the storage device and needs to do a failover.)

To remove the canister, do the following:

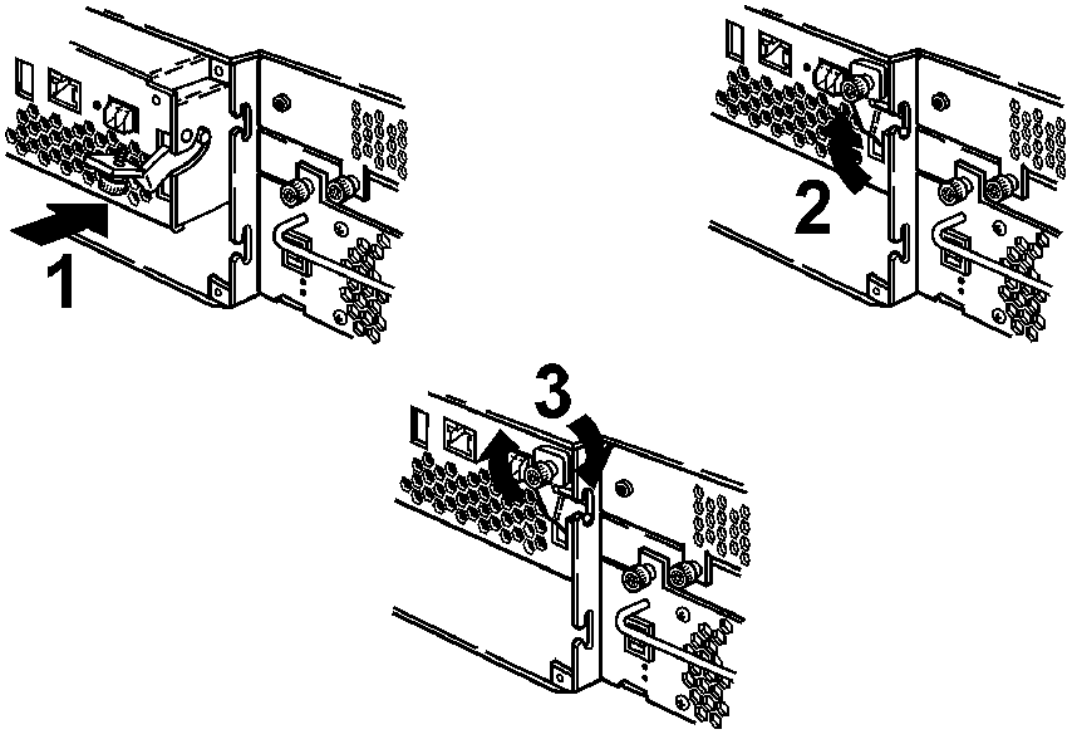
1. Unlatch the two ejector levers on the back of the canister. Loosen the captive screws, as shown in Step 1.



2. Unseat the canister by pushing down on the ejector levers.
   - Slowly press the levers down, as shown in Steps 2 and 3. The ejector lever acts as a fulcrum to ease the board away from the midplane.
   - When the board is detached from the midplane, ease it out of the slot.
3. Pull the canister module out of the enclosure.

To insert the canister, do the following:

1. With the two levers straight out, insert the replacement canister into the empty bay, as shown in Step 1 below. Carefully seat the board as smoothly as possible to avoid faults caused by intermittent connections.



Make sure the canister is fully inserted and has made full connection with the midplane. Insert the new replacement controller. Make sure the controller is properly seated. It will require you to grasp the power supply handles with your fingers and, with your thumbs, push the controller into place (tighten captive screws)

It takes a great deal of force to truly seat the board. Make sure complete contact is made.

2. Push the canister the rest of the way into the bay. Latch the ejector levers on the back of the canister, as shown in Step 2, above.
3. Tighten the captive screw, as shown in Step 3, above.
4. Replace fibre channel cable to the controller.

5. Power on the storage subsystem. Both controllers will now start up and go through a number of self tests. At the end of the test, both controllers blink the third LED on the controller at a one-second intervals. If this does not happen after five minutes, power-cycle the storage device again.
6. Power on both nodes once the storage subsystem has the blinking lights.
7. Start GUI and verify replacement was successful.

Appendix **A**

Restricted Input Characters

Each field is checked for the following restricted characters. If you enter any character listed in this table, the field entry is rejected.

Character	Name
&	ampersand
=	equal sign
~	tilde
;	semi-colon
*	asterisk
(	left parenthesis
)	right parenthesis
'	single quote
“	double quote
|	perpendicular line
`	apostrophe
<	left angle bracket
>	right angle bracket
\	back slash
$	dollar sign
%	percent sign
!	exclamation point
[	left square bracket
]	right square bracket

Character	Name
{	left curly bracket
}	right curly bracket
/	forward slash
?	question mark
+	plus sign
,	comma
@	at sign
#	pound (or number) sign
:	colon
^	caret

Appendix **B**

Setting Up the Database System Manager

The Database System Manager is already set up for you at the factory. If you ever need to re-install the software for the DSM, follow these instructions.

To set up the Database System Manager:

1. Install Microsoft SQL Server, Standard Edition
2. Install Microsoft SQL Server Service Pack 3
3. Set up SQL Server properties for the DSM

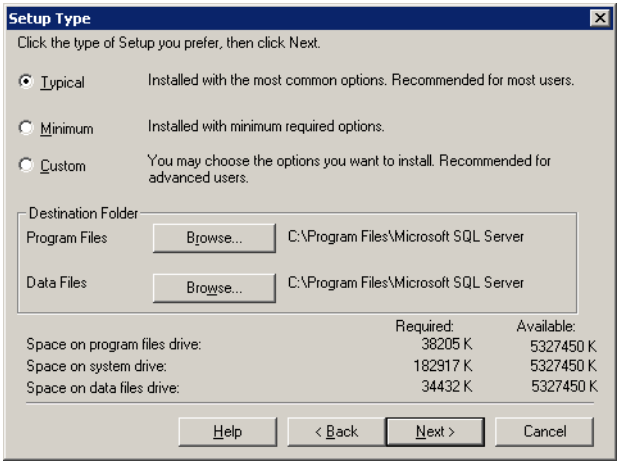
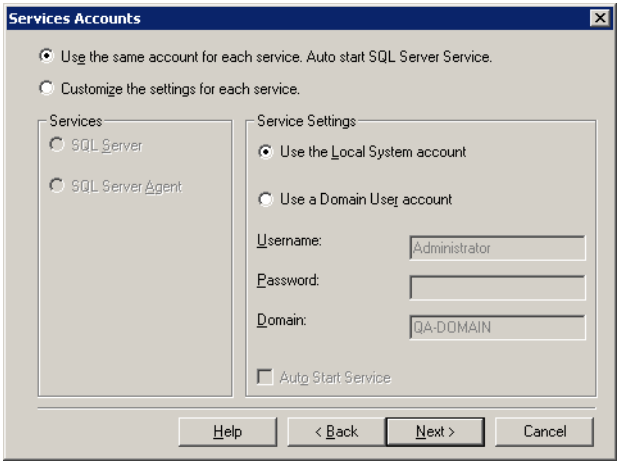
This chapter discusses each of these steps in detail.

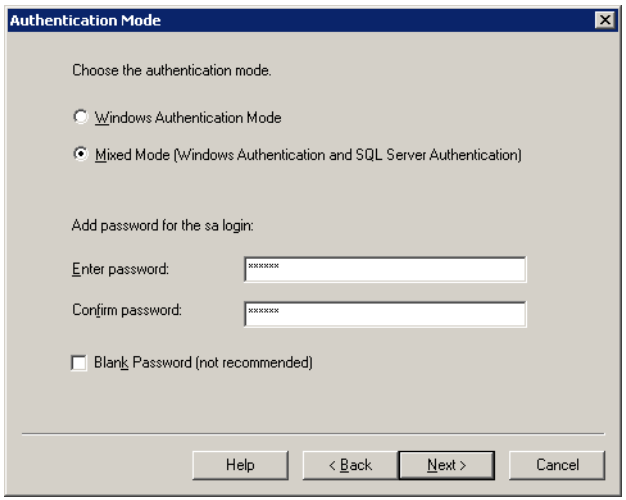
Installing Microsoft SQL Server

To install Microsoft SQL Server on the DSM, insert the Microsoft SQL CD-ROM into the machine's CD-ROM drive. Make sure you install the Standard edition, not the Personal edition.

The installation program starts automatically and guides you through the installation process as follows:

On this screen...	Do this...
Opening screen	Select **SQL Server 2000 Components**.
Install Components	Select **Install Database Server**.
Welcome	Click **Next**.
Computer Name	1. Select **Local Computer**. 2. Verify computer name. 3. Click **Next**.
Installation Selection	Select **Create a New Instance of SQL Server** and click **Next**.
User Information	Enter name and company, and click **Next**.
License	Read and accept, then click **Yes**.
CD Key	Enter your 25-digit CD key, which located on the CD liner notes on the CD sleeve, then click **Next**.
Install Definition	Select **Server and Client Tools**, and click **Next**.
Instance Name	Leave **Default** checked and click **Next**.

On this screen...	Do this...
Setup Type	 Leave settings at the default values and click **Next**.
Services Accounts	 1. Select **Use the same account for each service**. 2. In the Service Settings section, select **Use the Local System account**. 3. Click **Next**.

On this screen...	Do this...
Authentication Mode	 1. Select **Mixed Mode**. 2. Enter the password, *triton*. 3. Confirm the password. 4. Click **Next**.
Copy Files	Click **Next**.
Licensing Mode	1. Select **Per Seat**. 2. Set the maximum number of SQL clients for which your NAS is designed. 3. Click **Next**.
Setup Complete	Click **Finish**.

Installing Microsoft SQL Server Service Pack 3

To install the Microsoft SQL Server Service Pack 3:

1. Be logged in as Administrator and stop any foreground applications.
2. Locate the service pack file **sql2ksp3.exe** and double-click its icon.

   The software opens into a temporary directory—use the default location of C:\sql2ksp3.
3. Select **Start | Run** and enter **c:\sql2ksp3\setup.bat**.

   The installation program starts automatically and guides you through the installation process as follows:

On this screen...	Do this...
Welcome	Click **Next**.
License	Read and accept, then click **Yes**.
Instance Name	Click **Next**.
Connect to Server	Select Windows account information and click **Next**.
SA Password Warning	If you encounter this screen, enter and confirm the SA password, *triton*.
Backward Compatibility Checklist	Leave unchecked **Enable cross-database ownership**. Select **Upgrade Microsoft Search**. Click **Continue**.
Error Reporting	Leave unchecked **Automatically send fatal error reports** and click **OK**.
Start Copying Files	Click **Next**.
Setup Complete	Click **Finish**.

Setting Up SQL Server Properties for the DSM

To set up SQL Server properties:

1. Select **Start | Programs | SQL Server | Enterprise Manager**.
2. Click "**+**" next to **Microsoft SQL Servers** and then next to **SQL Server Group** to reveal the DSM machine.
3. Right-click on the DSM's icon and select **Properties**.
4. Click the Security tab; under Authentication, select **SQL Server and Windows**.
5. Click the Memory tab and use the Maximum slide bar to set the memory limit.

   The memory limit should be the maximum memory of the machine minus 128 MB.
6. Click **OK**.

Setting Up the NewsShare Server

In order for the NewsShare NAS to operate properly as a news database, you need to run the SetupNewsShareServer installer.

The installer will not modify or delete customer data in existing News databases; it simply makes compatibility changes for programming interfaces. Nonetheless, it is strongly recommended that backups be made of existing, server-mounted News databases prior to running the installer. See "Using Database Utilities" on page 177 for more details.

To run the installer:

1. Log on to the DSM machine as Administrator.
2. Make sure that the DSM is not in active service to NewsShare clients.
3. Locate the file, SetupNewsShareServer.exe, on the NewsroomSuite CD-ROM.
4. Double-click the installer icon, **SetupNewsShareServer.exe**.

   The installer runs and copies files onto the DSM.
5. Click **OK**.

Using Database Utilities

Six command-line utilities are available for maintenance of the News database that is used by NewsShare and NewsEdit. You need to run the SetupNewsShareUtilities installer in order to use these utilities; this installer is located on the NewsroomSuite CD-ROM.

Once installed, instructions for these command-line utilities can be found on the DSM in **C:\Program Files\Vibrint x.0\DB Maintenance \NewsDatabaseUtilities.htm**.

Appendix **C**

Electrical Interface

Appendix B pertains to the cords, cables, and connectors used in the NewsShare NAS appliance.

The power cords provided with the subsystem are for use in the United States and Canada only. They are not suitable for use in other countries. If necessary, replace the power cords with ones of correct voltage and frequency that meet local safety and electrical standards.

>>> ***WARNING: The array must be electrically grounded. Operating the array without proper grounding can damage disk drives. If the outlets you use are not grounded, have a licensed electrician replace them and install grounding conductors.***

Le cordon d'alimentation secteur fourni avec le système n'est utilisable que pour les Etats-Unis et le Canada. Il n'est pas règlementaire pour les autres pays. Dans ce cas, remplacer ce cordon d'alimentation secteur par un modèle conforme aux normes de sécurité en vigueur, localement et du standard électrique au niveau de la tension et de la fréquence.

Das mit dem Subsystem mitgelieforte Netzkabel darf nur in dem USA und Kanada verwendet werden; Für alle anderen Länder sind Netzkabel für die dort gultigen Normen (Volt und Hertz) zu verwenden.

Appendix **D**

Acronyms and Terminology

A

alias

An alternate name for a host-named IP address. Using aliases allows a service to be moved from one computer to another without the clients needing to know of the move.

ASC

Additional Sense Code

ASCQ

Additional Sense Code Qualifier

B

BDC

Backup Domain Controller

BW

BandWidth. The amount of data that can be sent to or from the system per second.

C

CIFS

Common Internet File System

CML

Command Line Interpreter

D

DE

Disk Enclosure

DNS

Domain Name Service

F

FS

File System

FTP

File Transfer Protocol. Program used to transfer files from another computer.

G

GB

GigaBytes

GUI

Graphical User Interface

H

HNR

Host Name Resolution

HTTP

Hyper Text Transfer Protocol

I

IPC

InterProcess Communications

IP

Internet Protocol

K

KB

Kilobytes

L

LAN

Local Area Network

LBB

Loop Bypass Board

LED

Light Emitting Diode

LU

Logical Unit

LUN

Logical Unit Number

M

MB

MegaBytes

MIB

Management Information Base. A database of objects that can be accessed by SNMP.

N

NAS

Network Attached Storage

NFS

Network File System

NIS

Network Information Service. Client-server protocol for distributing system configuration data, such as user and host names, between computers in a network.

NTP

Network Time Protocol

P

PC

Personal Computer

PDC

Primary Domain Controller

PDU

Protocol Data Unit

R

RAID

Redundant Array of Independent Disks.

S

SAN

Storage Area Network

SMB

Server Message Block

SMTP

Simple Mail Transfer Protocol

SNMP

Simple Network Management Protocol

SSL

Secure Sockets Layer

T

TCP/IP

Terminal Control Protocol/Internet Protocol

U

UTC

Universal Time Coordinated

W

WINS

Windows server to translate a NetBIOS name to an IP address.

WWN

World Wide Name

Appendix

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