NSA-2400

Network Storage Appliance

User's Guide

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Edition 2

ZyXEL

www.zyxel.com

About This User's Guide

Intended Audience

This manual is intended for people who want to configure the Product Name [short] using the web configurator. You should have at least a basic knowledge of TCP/IP networking concepts and topology.

Related Documentation

- Quick Start Guide
  The Quick Start Guide is designed to help you get up and running right away. It contains information on setting up your network and configuring for Internet access.
- Web Configurator Online Help
  Embedded web help for descriptions of individual screens and supplementary information.
- Supporting Disk
  Refer to the included CD for support documents.
- ZyXEL Web Site
  Please refer to www.zyxel.com for additional support documentation and product certifications.

User Guide Feedback

Help us help you. Send all User Guide-related comments, questions or suggestions for improvement to the following address, or use e-mail instead. Thank you!

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Document Conventions

Warnings and Notes

These are how warnings and notes are shown in this User's Guide.

Warnings tell you about things that could harm you or your device.

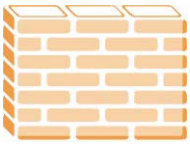
Notes tell you other important information (for example, other things you may need to configure or helpful tips) or recommendations.

Syntax Conventions

- The Product Name [short] may be referred to as the "NSA", the "device" or the "system" in this User's Guide.
- Product labels, screen names, field labels and field choices are all in **bold** font.
- A key stroke is denoted by square brackets and uppercase text, for example, [ENTER] means the "enter" or "return" key on your keyboard.
- "Enter" means for you to type one or more characters and then press the [ENTER] key. "Select" or "choose" means for you to use one of the predefined choices.
- A right angle bracket (>) within a screen name denotes a mouse click. For example, **Maintenance > Log > Log Setting** means you first click **Maintenance** in the navigation panel, then the **Log** sub menu and finally the **Log Setting** tab to get to that screen.
- Units of measurement may denote the "metric" value or the "scientific" value. For example, "k" for kilo may denote "1000" or "1024", "M" for mega may denote "1000000" or "1048576" and so on.
- "e.g.," is a shorthand for "for instance", and "i.e.," means "that is" or "in other words".

Icons Used in Figures

Figures in this User's Guide may use the following generic icons. The NSA icon is not an exact representation of your device.

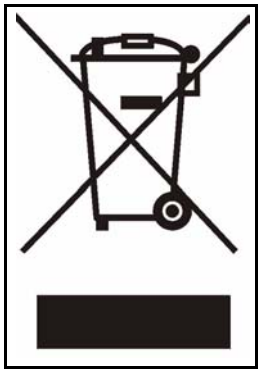
NSA 	Computer 	Notebook computer 
Server 	DSLAM 	Firewall 
Telephone 	Switch 	Router 

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions.

- Do NOT use this product near water, for example, in a wet basement or near a swimming pool.
- Do NOT expose your device to dampness, dust or corrosive liquids.
- Do NOT store things on the device.
- Do NOT install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do NOT open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- ONLY qualified service personnel should service or disassemble this device.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Use ONLY an appropriate power adaptor or cord for your device.
- Connect the power adaptor or cord to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe).
- Do NOT allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Do NOT use the device if the power adaptor or cord is damaged as it might cause electrocution.
- If the power adaptor or cord is damaged, remove it from the power outlet.
- Do NOT attempt to repair the power adaptor or cord. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- CAUTION: RISK OF EXPLOSION IF BATTERY (on the motherboard) IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS. Dispose them at the applicable collection point for the recycling of electrical and electronic equipment. For detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased the product.
- Do NOT obstruct the device ventilation slots, as insufficient airflow may harm your device.

This product is recyclable. Dispose of it properly.



Contents Overview

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PART I
Introduction

1

Getting to Know Your NSA-2400

This chapter introduces the main features and applications of the NSA-2400 (Network Storage Appliance).

1.1 NSA-2400 Overview

The NSA-2400 is a device for storing and sharing data that connects directly to your network via a Gigabit Ethernet port.

Its SATA-I (Serial Advanced Technology Attachment) hard disk serial links are compatible with all major hard drive manufacturers.

You can expand storage capacity by attaching compatible USB (2.0) drives to the USB ports.

Configure RAID (Redundant Array of Independent Disks) on your NSA-2400 so as your data is still protected even if one hard disk fails.

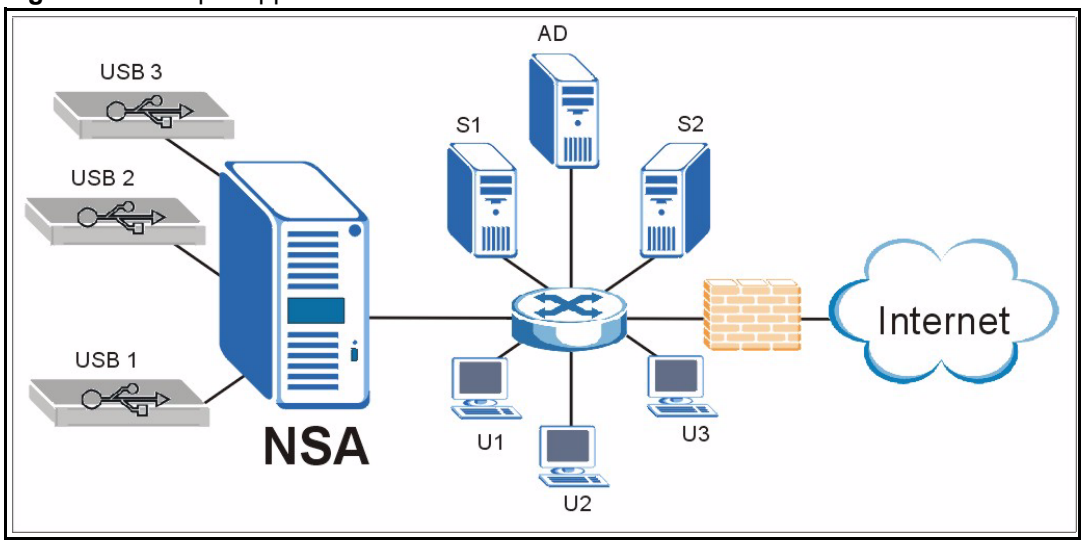
You can also protect your valuable data by using the snapshot and backup features on the NSA-2400.

Note: See the specifications appendix for more detailed information on all features of the NSA-2400.

The next figure shows an example application for the NSA-2400 in a small office network. AD is an Active Directory that contains the user names and passwords of all users that are allowed access to the NSA-2400. Users (U1, U2, U3) can all back up and share data on the NSA-2400. Important data stored on servers S1 and S2 may be also stored there. In addition to its internal drives, the NSA-2400 can also extend its storage capacity

It is recommended that the NSA-2400 is placed behind a firewall and/or IDP device to protect it.

Figure 1 Example Application



1.1.1 Front Panel LEDs

The front panel LEDs tell you important information about the NSA-2400.

Figure 2 NSA-2400 Front Panel LEDs

The following table describes the disk drive LEDs. Refer to the Quick Start Guide to see how to install and remove hard drives from the disk trays.

Make sure the NSA-2400 is turned off when you install and remove hard drives from the NSA-2400.

This table describes the LEDs related to the hard disks.

Table 1 Disk Drive Leds

LED	COLOR	STATUS	DESCRIPTION
PWR	Green	Off	The hard disk drive tray is empty or not connected properly.
		On	The hard disk drive is connected properly to the NSA-2400.
ALM	Red	Off	The hard disk drive is working properly if connected.
		On	The hard disk drive has a problem.

The following table describes the LEDs related to the NSA-2400 itself.

Table 2 NSA-2400 LEDs

LED	COLOR	STATUS	DESCRIPTION
PWR	Green	Off	The NSA-2400 is turned off.
		On	The NSA-2400 is turned on and receiving power.
SYS	Red	On	The NSA-2400 has passed system tests.
		Blinking	The NSA-2400 is starting up or shutting down. Quick blinking indicates that your RAID volumes are in degraded mode.
	Orange	On	The NSA-2400 is in maintenance mode because no disk volumes exist.
		Blinking	Firmware is being upgraded to the NSA-2400.
	Green	On	The NSA-2400 has fully booted and is operating normally.
DIAG	Red	Off	The DIAG LED is normally off.
		Blinking	It blinks slowly when hard drives are resynching; the SYS LED is green at this time. It turns off after the hard drives resynch. It blinks quickly if there is a firmware upgrade or Flash reset failure; the SYS LED blinks orange (quickly) at this time too.
LAN	Green	Off	The LAN is not connected.
		On	The NSA-2400 has a successful 10/100Mbps Ethernet connection.
		Blinking	The 100M LAN is sending or receiving packets.
	Orange	On	The NSA-2400 has a successful 1000Mbps Ethernet connection.
		Blinking	The 1000M LAN is sending or receiving packets.

2

Introducing the Web Configurator

This chapter describes how to access the NSA-2400 web configurator and provides an overview of its screens.

2.1 Web Configurator Overview

The web configurator is an HTML-based management interface that allows easy NSA-2400 setup and management via Internet browser. Use Internet Explorer 6.0, Mozilla firefox 1.0, Netscape Navigator 7.0 or later versions of these browsers. The recommended screen resolution is 1024 by 768 pixels or higher.

In order to use the web configurator you need to allow:

- Web browser pop-up windows from your device. Web pop-up blocking is enabled by default in Windows XP SP (Service Pack) 2.
- JavaScripts (enabled by default).

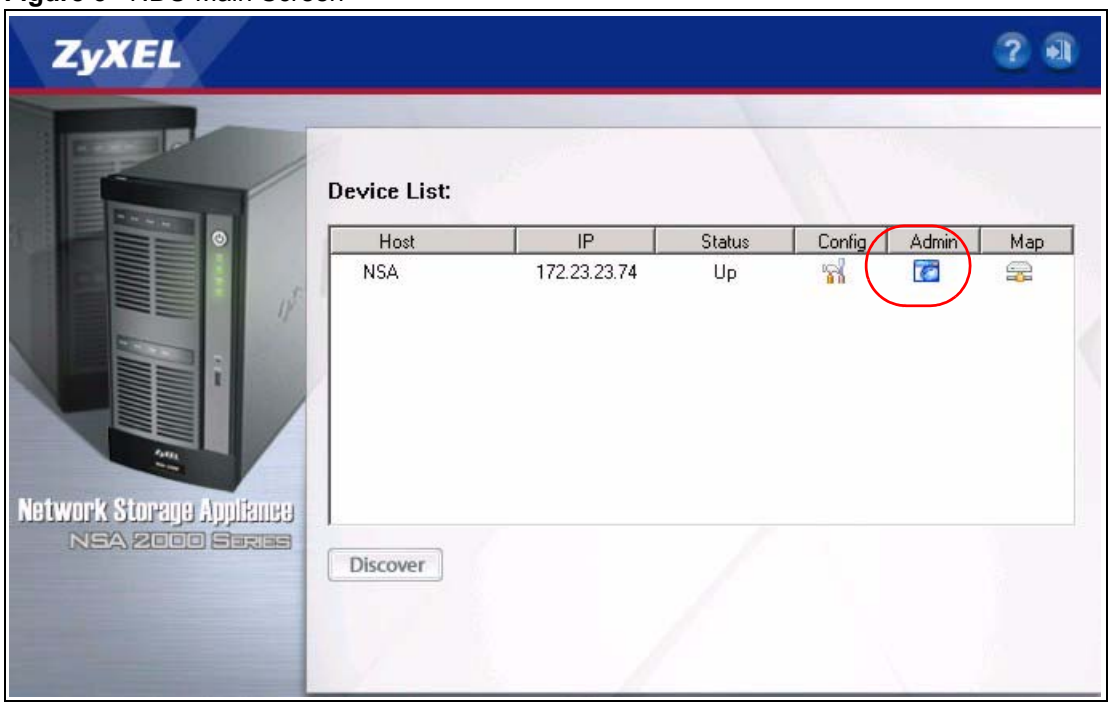
2.2 Accessing the NSA-2400 Web Configurator

Make sure your NSA-2400 is properly connected and that your computer is in the same subnet as the NSA-2400 (refer to the Quick Start Guide or the appendices).

2.2.1 Access the NSA-2400 Via NDU

If you don't know the IP address of the NSA-2400, then use the NDU to find it. Refer to the Quick Start Guide to see how to install and run the NDU.

Figure 3 NDU Main Screen

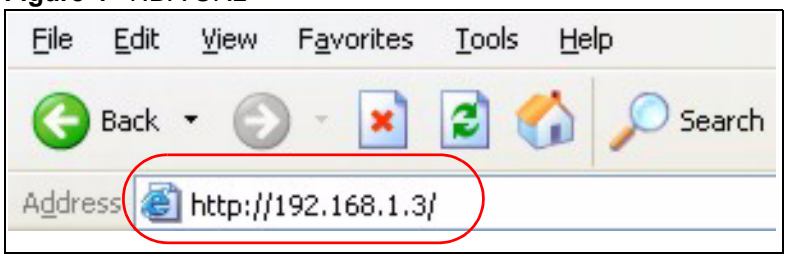


From the NDU main page click the icon under **Admin** to see the web configurator screen login screen.

2.2.2 Web Browser Access

Open your browser and type in the IP address of the NSA-2400; 192.168.1.3 is the default IP address if one has not been assigned by a DHCP server.

Figure 4 NDA URL



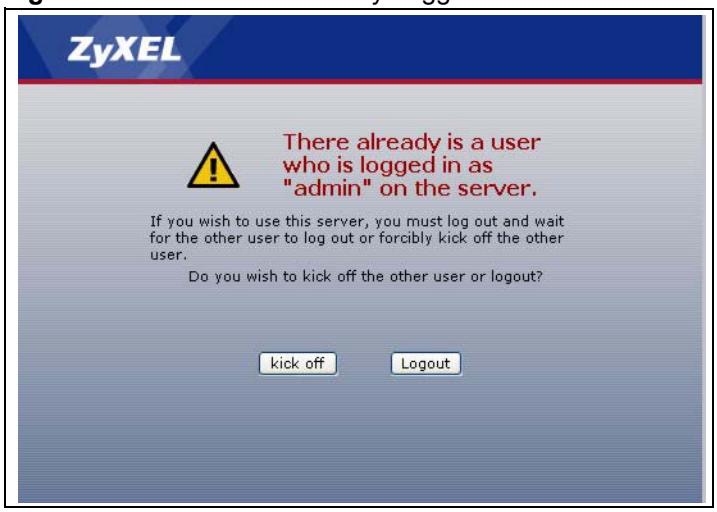
2.3 Login

The default user name and password are ‘admin’ and ‘1234’ respectively. Enter your user name and password, then click **Login**. Non-admin users can change their passwords by using the username and password assigned to them in the **Sharing > Users** screen. See Section 4.4.3 on page 58 for details.

Figure 5 NSA-2400 Login Screen

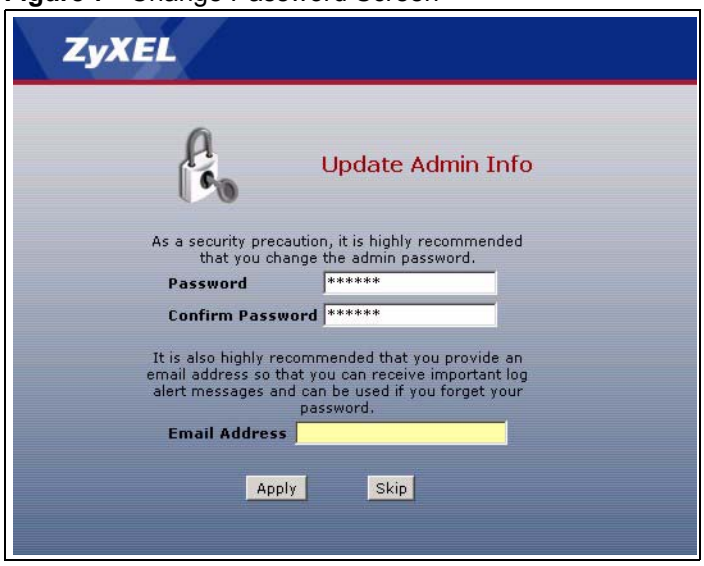
If another admin is already logged in, you may force them to log out in the next screen.

Figure 6 Administrator Already Logged In



You should see a screen asking you to change your password (highly recommended) as shown next. Type a new password (and retype it to confirm) and click **Apply** or click **Skip**.

Figure 7 Change Password Screen



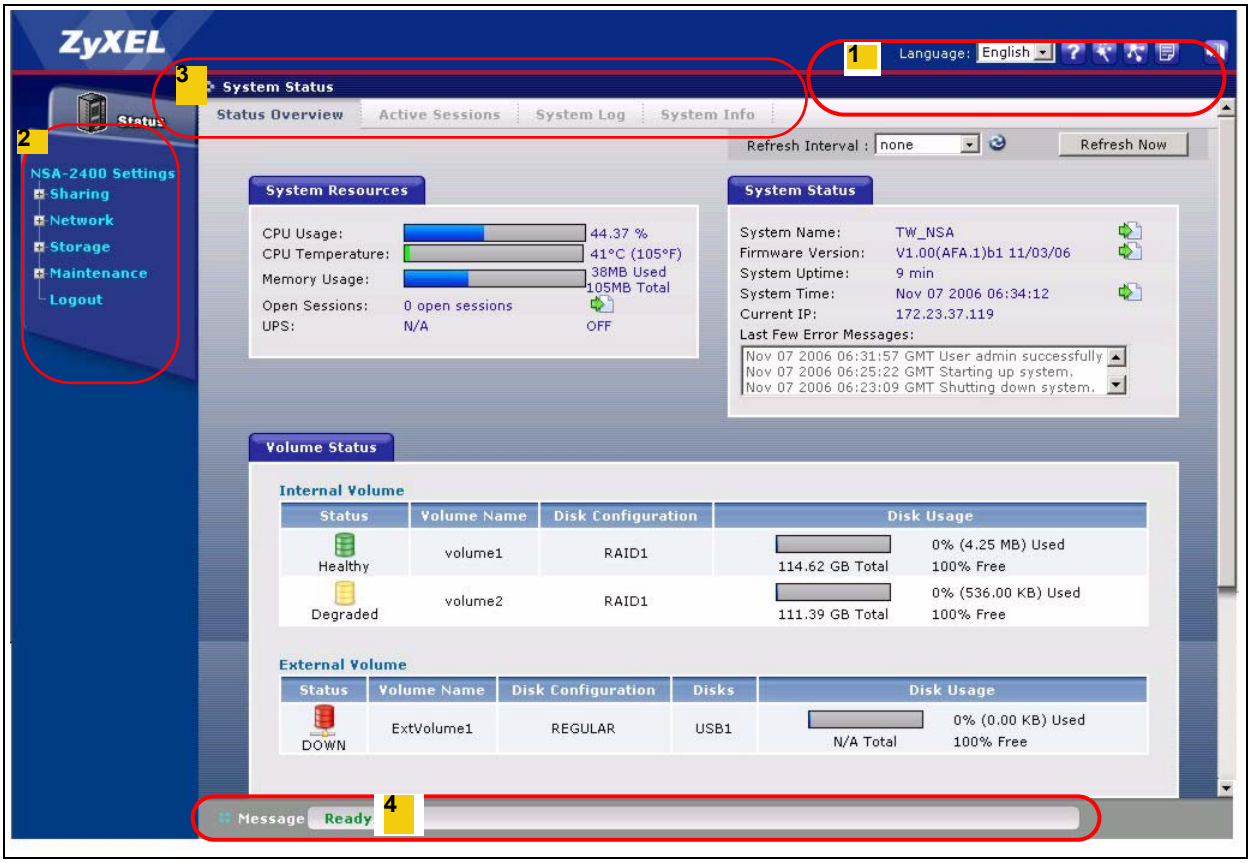
1 If this is your first time to log into the NSA-2400, you will see a screen asking you to launch the setup wizard. Run the wizard to set up the basic NSA-2400 settings. See the Quick Start Guide for information on the wizard screens.

Figure 8 Launch Setup Wizard Prompt

2.4 NSA-2400 Main Screen Overview

Admin users first see the **Status Overview** screen after they log in. See the next chapter for details on this screen.

Figure 9 NSA-2400 Status Screen



The web configurator management session automatically times out if it is left idle for 15 minutes. Simply log back into the NSA-2400 if this happens to you.

2.5 Global NSA-2400 Icons

The icons and language label at the top-right of the screen (1) are visible from most screens. You may select the web configurator language from the drop-down list box here. The following table describes the 'global' icons and labels.

Table 3 Global Labels and Icons

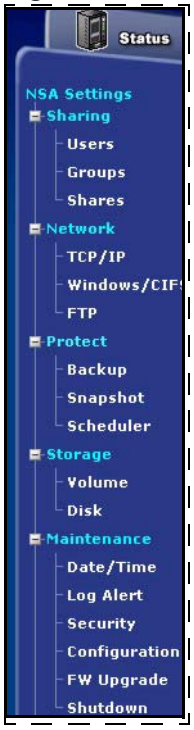
LABEL/ICON	DESCRIPTION
	Click this **Help** icon to open a web help page specific to the screen you are currently configuring.
	Click this **Wizard** icon to open a sub-menu of wizard(s).
	Click this **About** icon to view copyright and the model name.
	Click this **Logout** icon at any time to exit the web configurator. This is the same as clicking the **Logout** link at the bottom of the Navigation panel.

2.5.1 Navigation Panel

The navigation panel on the left of the screen (2) contains screen links. Click a link to display sub-links. The sub-links are the same as the screen tabs (3), so you can either click a screen tab or a sub link to go to the same screen. There is no sub-link for the overview screen. Certain screens also contain hyperlinks that allow you to jump to another screen.

Click the **Status** icon to open the **Status** screens.

Figure 10 Navigation Panel Links



The following table describes the navigation panel screens.

Table 4 Screens Summary

LINK	TAB	FUNCTION
Status	Status Overview	This screen shows system resources such as CPU usage and memory being used by the NSA-2400, system status and NSA-2400 internal and external volumes.
	Active Sessions	This screen displays users who are currently using the NSA-2400.
	System Log	This screen displays recent NSA-2400 system logs.
	System Info	This screen displays NSA-2400 hardware and IP address information.
Sharing	Overview	This screen displays statistics on users, groups and shares.
	Users	Use this screen to create users who may use the NSA-2400. You may set user passwords, define storage limits per user, and associate users to a group(s).
	Groups	Use this screen to create groups and add group members.
	Shares	Use this screen to create shared folders to which you can allow users and/or groups read/write access rights.

Table 4 Screens Summary (continued)

LINK	TAB	FUNCTION
Network	Overview	This screen displays NSA-2400 IP address, CIFS and FTP information.
	TCP/IP	Use this screen to assign a dynamic or static IP address and DNS information as well as an NSA-2400 host name.
	Windows/CIFS	Use this screen to define a WINS server and choose a workgroup or domain authentication method.
	FTP	Use this screen to enable FTP file transfer to/from the NSA-2400, set the number of FTP connections allowed and an FTP idle timeout.
Protect	Overview	This screen displays NSA-2400 backup and snapshot information
	Backup	Use these screens to create, edit, run, restore and delete backups.
	Snapshot	Use these screens to create, edit, run, restore and delete snapshots.
	Scheduler	Use these screens to set times for repeated runs of backups and snapshots.
Storage	Overview	This screen displays NSA-2400 volume, disk and snapshot information.
	Volume	Use the screen to create internal and external volumes. A volume is a fixed amount of storage on a disk.
	Disk	Use this screen to view internal and external disk information.
Maintenance	Overview	This screen displays NSA-2400 date and time, log alert, HTTPS (SSL) and firmware version information.
	Date/Time	Use this screen to chose a time zone and/or allow the NSA-2400 to synchronize with a time server.
	Log Alert	Use this screen to configure when/where to send e-mail alerts, and what mail server to use.
	Security	Use this screen to change the NSA-2400 login password and configure secure web connections to the NSA-2400 using HTTPS.
	Configuration	Use this screen to back up and/or restore the NSA-2400 configuration file and/or enable the NSA-2400 reset button to return the NSA-2400 to its default admin password and IP address.
	F/W Upgrade	Use this screen to upload new firmware to your NSA-2400.
	Shutdown	Use this screen to restart the NSA-2400 or shut it down.
Logout		Click **Logout** to exit the web configurator. This is recommended to prevent unauthorized administrator access to the NSA-2400.

2.5.2 Status Messages

At the bottom of the screen the message text box (4) displays status messages as you configure the NSA-2400.

2.5.3 Common Screen Icons

The following table explains some icons that appear in several configuration screens.

Table 5 Common Configuration Screen Icons

ICON	DESCRIPTION
	Click the **Edit** icon to go to a screen where you can change the configuration settings of an entry.
	Click the **Remove** icon to delete an entry from the list.
	Click the **Details** icon to jump to related item's configuration screen.
	This is a user icon. Please see the sharing screens chapter for detailed information on variants of this icon.
	This is a group icon. Please see the sharing screens chapter for detailed information on variants of this icon.
	This is a share icon. Please see the sharing screens chapter for detailed information on variants of this icon.
	This icon represents a **Healthy** volume.
	This icon represents a **Degraded** volume. Click the **Repair** icon to fix a degraded RAID volume after you have replaced the faulty disk.
	This icon represents a **Down** volume. Click the **Initialize** icon to create a volume.
	This icon represents a **Healthy** disk.
	Click the **Scan Disk** icon to scan a hard disk drive for file system errors.
	Click the **Expand Volume** icon to expand a volume by up to the amount of snapshot reserved space less the amount of space currently being used by snapshots.
	Click the **Unmount** icon to unmount a volume when two volumes of the same name exist. See Section 7.7.4 on page 109 for details.
	Click the **Mount** icon to mount a volume when two volumes of the same name exist. See Section 7.7.4 on page 109 for details.
	Click the **Disconnect** icon before you remove an external hard drive so that you do not lose data that is being transferred to or from that hard drive.
	Click the **Initialize** icon for the NSA-2400 to create a volume on the (external) hard drive.
	Click the **Locate** icon to cause the LED on the external storage device to blink.
	Click the **Repair** icon to resychronize a RAID volume after you replace a faulty hard disk.

Table 5 Common Configuration Screen Icons (continued)

ICON	DESCRIPTION
	Click the **Schedule** icon to set a time for a backup or snapshot to run.
	In the **Backup** screen this is the **Run Now** icon used to perform a backup immediately.
	Click the **Cancel** icon to stop a backup while it is running.
	Click the **Take Now** icon to take a snapshot immediately
	Click the **Images** icon to see a summary of all snapshots available.

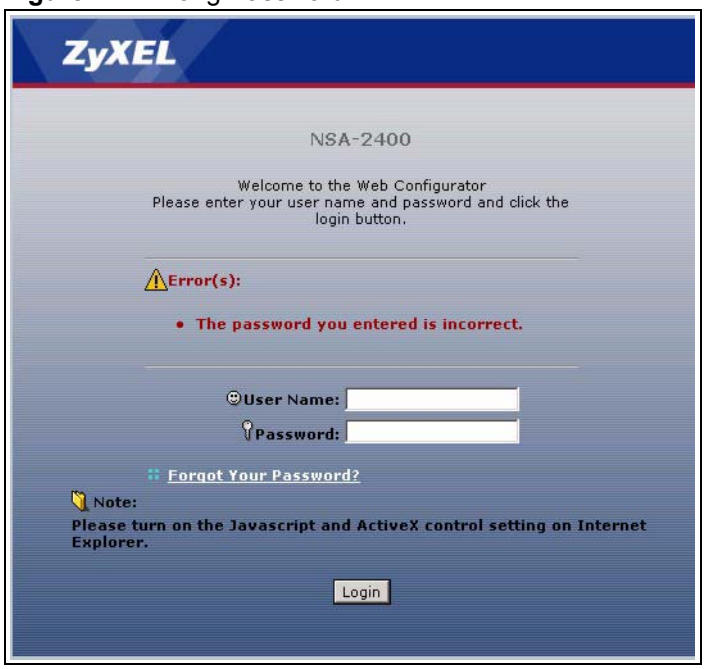
2.6 Forgot Your Password

If you forget your password, you could have the NSA-2400 e-mail your password to you if you configured your e-mail address and mail server on the NSA-2400. Alternatively, if you didn't configure an e-mail address, then you will have to reset the NSA-2400.

2.6.1 NSA-2400 Sends Password

If you enter a wrong password, the NSA-2400 displays the following screen. Click the **Forgot Your Password** link to display the **Forgot Your Password** screen.

Figure 11 Wrong Password



Click **Continue** to have the NSA-2400 e-mail a randomly generated password to the e-mail address you configured.

Figure 12 Generate Password

Click **login** to go to the NSA-2400 screen and enter the new e-mailed password there. You should change this password and then write down your new password and put it in a safe place.

Log in With New Password

2.6.2 Reset the NSA-2400

Alternatively, if you forget your password or cannot access the web configurator, use the **RESET** button at the front of the NSA-2400. You will NOT lose all NSA-2400 configurations but the IP address, subnet mask and admin password are all returned to the factory defaults.

You should check that the RESET button is enabled in the **Maintenance > Configuration** screen.

2.6.2.1 Procedure To Use The Reset Button

1 Press and hold the **RESET** button until you hear a beep, and then release it.

2 The NSA-2400 automatically restarts to complete the reset.

PART II
Status, Sharing and Network

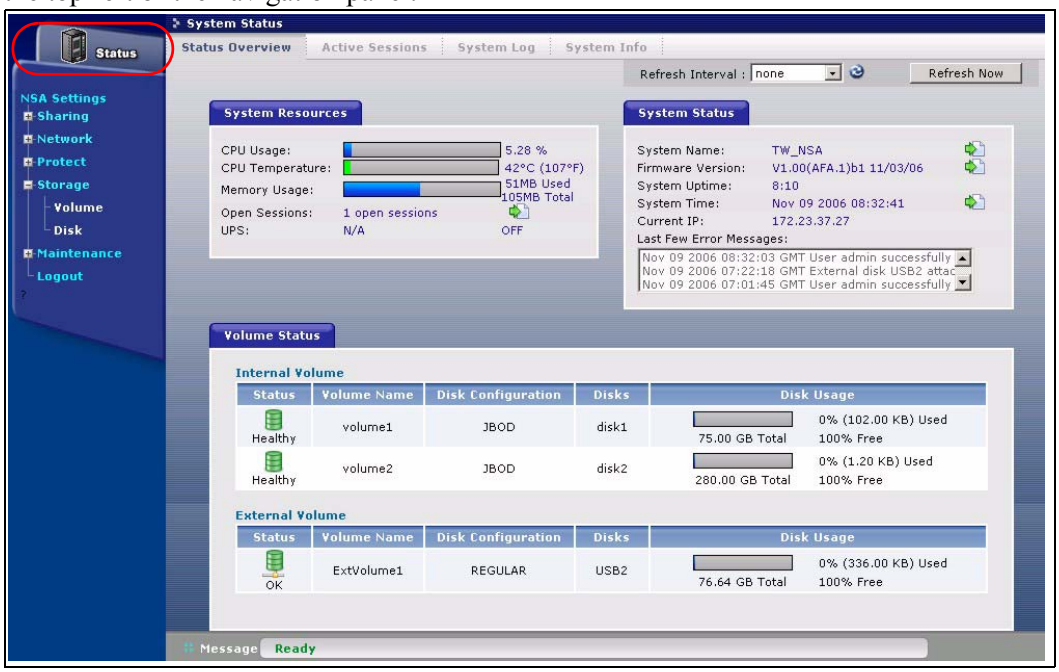
3

Status Screens

This chapter introduces the **Status** screens of the NSA.

3.1 Status Overview Screen

The **Status Overview** screen is the first main web configurator screen you see after you log in (and complete the wizard the first time). To view the status screens, click the **Status** icon on the top-left of the navigation panel.



The following table describes the labels in this screen.

Table 6 System Overview

LABEL	DESCRIPTION
Refresh Interval: 20 seconds	Select a number of seconds or **None** from the drop-down list box to refresh all screen statistics automatically at the end of each time interval.
	Click the **Refresh** icon to immediately refresh the status screen statistics.
Refresh Now	Alternatively, click this button to immediately refresh the status screen statistics.
System Resources	

Table 6 System Overview (continued)

LABEL	DESCRIPTION
CPU Usage	This displays CPU usage by all current processes since the last update. If too many users are using the NSA then the NSA may appear sluggish.
CPU Temperature	This displays the current temperature of the NSA CPU. If the temperature is not within range (about 0^{O} to 85^{O} C) the NSA may malfunction. If the NSA overheats for example, turn it off and let it cool down. Make sure the fans are working and it is in a well ventilated place.
Memory Usage	This number shows how much of the NSA's total memory is being used.
Open Sessions	This shows the current number of active sessions. It is useful when you want to restart or shutdown the NSA so you can tell if there are users currently connected to the NSA. You should then contact each user to make sure that they disconnect from the NSA before you restart or shut it down. Click the **view details** link to go to the **System Status > Active Sessions** screen.
UPS	This field displays whether an Uninteruptable Power Supply (UPS) is being used. A UPS is advisable to protect sensitive data stored on the NSA in the event of a power outage. A battery meter displays what percentage Uninteruptable Power Supply (UPS) battery power remains when an APC UPS is connected to an NSA USB port and is turned on. Power from the UPS is used when power from the mains is down and while the UPS has battery power. Power from the mains is used when the mains power returns; the APC UPS battery is recharged then too. This field displays **N/A** when no UPS is connected to the NSA or it is turned off.
System Status	
System Name	This displays the name which helps you find the NSA on the network. Click the **update** link to go to the **Network > TCP/IP** screen. Click the **Modify** button after the **Server Name** label in that screen to go to the **Network > Windows/CIFS** in which you can change the **Server Name**. You can enter up to 15 alphanumeric characters with minus signs allowed but not as the last character. The name must begin with an alphabetic character (a-z) and is NOT case sensitive.
Firmware Version	This is the NSA firmware version and the date created. Click the **update** link to go to the **Maintenance > Firmware Upgrade** screen from which you can upload new firmware.
System Uptime	This is the total time the NSA has been on since your last power-up.
System Time	This displays the date (month/date/year) and time (hours/minutes/seconds). Click the **update** link to go to the **Maintenance > Date/Time** screen from which you can change the system time.
Current IP	This displays the NSA's IP address.
Last Few Error Messages	This displays the most recent (nine) error messages generated by the NSA. Click on a log entry to go to the **Status > System Log screen**.
Volume Status	A volume is a storage area on a single disk or spread across a number of disks within a single file system.
Internal Volume	This displays the volumes created on the NSA hard drives.
External Volume	This displays the volumes created on USB hard drives connected to the NSA. USB ports are numbered in the order that you insert USB devices.
Volume Name	This field shows the NSA-generated name for the volume.
Disk Configuration	This field (also known as **Type**) shows what type of data storage system (a RAID type or JBOD) the volume is using. For external drives, it may show **REGULAR** or **OK** meaning that the NSA can read the volume but the volume wasn't created on the NSA.

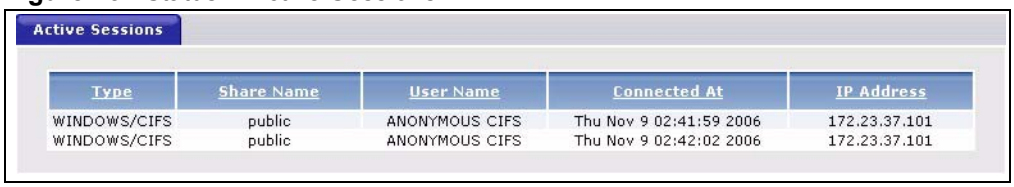
Table 6 System Overview (continued)

LABEL	DESCRIPTION
Disks	For external drives, this field shows **USB1** for the first external hard drive you connect to the NSA (regardless of which USB port), **USB2** for the second and **USB3** for the third.
Disk Usage	This field shows total disk size, the percentage of the volume being used and the percentage that is available.

3.2 Active Sessions Screen

The **Active Sessions** screen shows how many users are currently connecting to the NSA via CIFS and FTP (not web configurator).

Figure 13 Status > Active Sessions



The following table describes the labels in this screen.

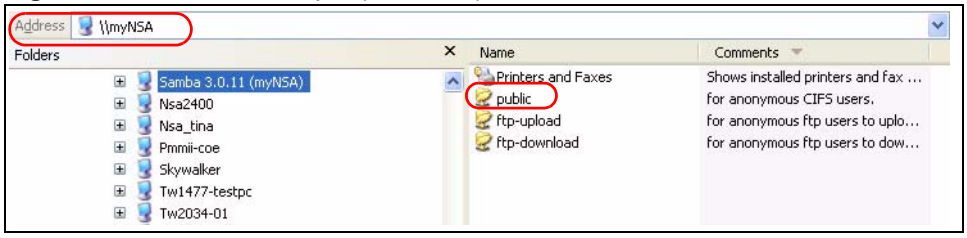
Table 7 Active Sessions

LABEL	DESCRIPTION
Type	This shows whether it's a Windows/CIFS or FTP connection to the NSA.
Share Name	This displays the shared folder name on the NSA that the user is connected to for CIFS sessions and is blank for FTP sessions.
User Name	This displays the name of the user connected to the NSA if one is defined and **ANONYMOUS CIFS** or **ANONYMOUS FTP** otherwise.
Connected At	This displays the date and time the user last connected to the NSA in day, month, date, hour, minute, second, year format.
IP Address	This displays the IP address of the computer connected to the NSA.

3.2.1 Session Example (Windows)

Open windows explorer and type two back slashes followed by the NSA name or IP address. Initially you can only read and write to the **Public** folder until you create shares on the NSA. This session is then displayed as shown in Figure 13 on page 45.

Figure 14 Session Example (Windows)



3.3 System Log

The following screen displays all NSA logs. There are at most 128 entries in the log. Older logs are removed by the system. You cannot download the log file via FTP or CIFS.

See the User Guide appendices for example log messages.

Figure 15 Status > System Log

The following table describes the labels in this screen.

Table 8 System Logs

LABEL	DESCRIPTION
View All Logs	The screen always shows all logs by default. Choose a specific log category and then click **Filter** to view logs for just that category.
Filter	Click this button to just view log types selected in the list box above.
Time	This shows the date and time the log was created.

Table 8 System Logs (continued)

LABEL	DESCRIPTION
Class	This displays the log category; see Table 9 on page 47.
Severity	This displays how serious the log is rated by the NSA. See Table 10 on page 47 for more information.
Message	This displays a description of the log.
First/Prev	Use these hyperlinks to navigate to the first or previous log page.
Next/Last	Use these hyperlinks to navigate to the next or final log page.
Purge all Logs	Click this button to erase all logs from the NSA. This may be advisable when there is not much hard drive space on the NSA available.
Edit Log Alert Settings	Click this button to jump to the **Maintenance > Log Alert** page from where you can decide when to send alerts and where to send e-mails.

The following table shows information on log categories.

Table 9 Log Categories

LOG CATEGORY	DESCRIPTION
Network	This log category shows information on network configuration, setting changes and so on.
FTP	This log category shows FTP session related information.
CIFS	This log category shows Windows/CIFS session related information.
Security	This log category shows information on user account changes, web sessions and so on.
Storage	This log category shows disk, volume and RAID information.
Quota	This log category shows quota control information.
System	This log category shows all other system related messages.

The following table shows information on log severity levels Levels range from 0 to 6 with 0 being the most severe level log and 6 being an informational log only. Log levels are not displayed in the logs and are for your reference only.

Table 10 Log Severity Levels

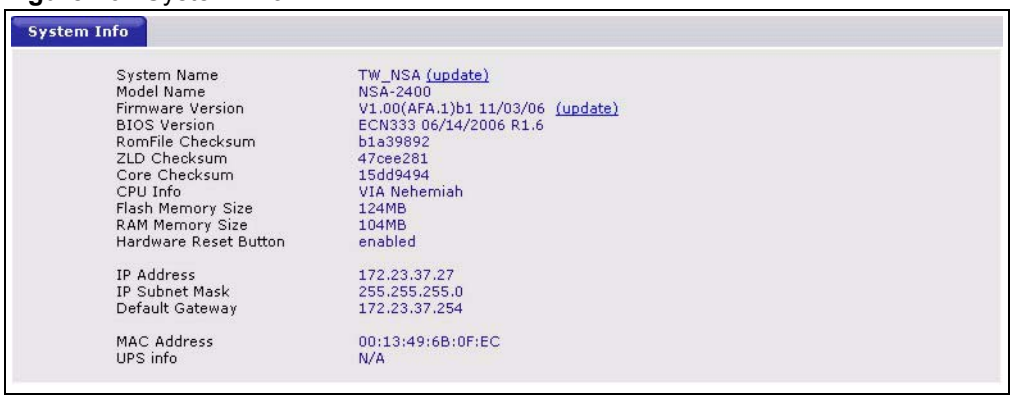
LEVEL	DESCRIPTION
0	Emergency
1	Alert
2	Critical
3	Error
4	Warning
5	Notice
6	Info

See the appendices for a table of example log messages.

3.4 System Info

Use this screen to view detailed NSA system and hardware information.

Figure 16 System Info



The following table describes the labels in this screen.

Table 11 System Info

LABEL	DESCRIPTION
System Name	This displays the name which helps you find the NSA on the network. Click the **update** link to go to the **Network> TCP/IP** screen. Click the **Modify** button after the **Server Name** label in that screen to go to the **Network > Windows/CIFS** in which you can change the **Server Name**. You can enter up to 15 alphanumeric characters with minus signs allowed but not as an end character. The name must begin with an alphabetic character (a-z) and is not case sensitive.
Model Name	This displays the NSA model name.
Firmware Version	This is the NSA firmware version and the date created. Click the **update** link to go to the **Maintenance > Firmware Upgrade** screen from which you can upload new firmware.
BIOS Version RomFile Checksum ZLD Checksum Core Checksum	These four fields are to verify that a correct version of the firmware has been installed. Customer support may also request this information to help with troubleshooting.
CPU Info	This displays the type of CPU the NSA has.
Flash Memory Size	This displays the amount of non-volatile flash memory. Flash memory is used for storing NSA firmware and configuration files.
RAM Memory Size	This displays the amount of (volatile) RAM. The NSA uses RAM during system runtime.
Hardware Reset Button	This displays whether the reset button is enabled or not. Use the reset button to restore the factory default user name to “admin”, default password to “1234”, default IP address to 192.168.1.3 with subnet mask of 255.255.255.0. Check that the reset button is enabled in the **Maintenance > Configuration** screen.
IP Address	This displays the NSA’s IP address.
IP Subnet Mask	This displays the NSA’s subnet mask.
Default Gateway	This displays the NSA’s default gateway.

Table 11 System Info (continued)

LABEL	DESCRIPTION
MAC Address	This displays the NSA's unique physical hardware address (MAC). You need the MAC address to register the product at myZyXEL.com. Customer support may also request it for troubleshooting purposes.
UPS Info	This field displays whether an Uninteruptable Power Supply (UPS) is being used. A UPS is advisable to protect sensitive data stored on the NSA in the event of a power outage. A battery meter displays what percentage Uninteruptable Power Supply (UPS) battery power remains when an APC UPS is connected to an NSA USB port and is turned on. Power from the UPS is used when power from the mains is down and while the UPS has battery power. Power from the mains is used when the mains power returns; the APC UPS battery is recharged then too. This field displays **N/A** when no UPS is connected to the NSA or it is turned off.

4

Sharing Screens

This chapter introduces the **Sharing** screens of the NSA.

4.1 Sharing Introduction

Use the **Sharing** screens to:

- Create and manage user accounts. Users are people who have access rights to the NSA and can store files there for later retrieval.
- Create and manage groups. A group is a set of users.
- Create and manage shares. A share is a set of users/groups access permissions mapped to a specific folder on a volume. It is equivalent to the Windows concept of a shared folder, but is independent of the folder. You can map a share to a network drive for easy and familiar file transfer for Windows users.

4.2 Sharing Overview

A **Local** user or group is a one created on the NSA when the NSA is in **Workgroup** mode.

Domain users and groups are created on a centralized Windows-based domain controller. This list is used by the NSA when authenticating users and/or groups that seek access to a share.

If a user belong to different groups with different access rights to the same share, then the more restrictive access right would apply, that is deny access overrides read access, overrides read-write access. For example, user Joe belongs to the Sales group. He has read access to the MIS share. The Sales group are denied access to this MIS share. Therefore, Joe is also denied access to the MIS share.

More restrictive access rights override less restrictive ones.

4.2.1 In Limbo and In Conflict

If a user or group is deleted in the domain controller, (but not on the NSA) then it appears as **in limbo** on the NSA.

A conflict users is a local user that has the same user name as that of a user on a domain controller. For example, if you first create local users and groups on the NSA (in **Workgroup** mode) and later you change to domain mode where you create (or there are already) identical users and groups, then they appear as in conflict on the NSA.

You cannot set a disk quota for users that are in conflict.

If you started in **Domain** mode and later you switch to **Workgroup** mode, the NSA will allow you to create user names and group names that already exist on the domain controller.

If the conflicting domain user's password and local user's password are NOT the same, than the two users are treated as two distinct users when using CIFS. Therefore, when using CIFS, each user can only access shares to which they have been given access rights.

However, if the domain user's password and local user's password are also the same, then only shares set to be accessible by the local user are actually accessible by both the domain user and local user. The NSA has no way to distinguish these two users as their passwords and user names are exactly the same.

During a conflict users situation, the local user takes precedence ONLY if the domain user and local user's passwords are the same.

The situation is different for conflicting users when using FTP. For FTP if there are conflict users, there will be no way for the FTP server to differentiate between the two user names. Therefore, both domain user and local user can log in through FTP using their respective passwords (regardless of whether they are the same or not) and be able to access all shares accessible by EITHER the local user or domain user.

It is possible for the conflicting domain user to log in via FTP and access shares that are supposed to be only accessible by the conflicting LOCAL user and vice versa.

4.2.1.1 In Limbo and In Conflict Example

Suppose there is a local user named u1 and a domain user named u1.

- Share 1 is configured to be only accessible by the local user u1.
- Share 2 is configured to be only accessible by the domain user u1.
- Share 3 is configured to be accessible by BOTH the local and domain u1.

The table below shows the actual accessibility of the above shares for the conflict users (local and domain u1) both when they have the same and when they have different passwords.

Table 12 In Limbo and In Conflict Example

CONFLICT USER U1	SHARE1	SHARE 2	SHARE 3
Different Passwords	CIFS: Accessible by Local u1 only. FTP: Accessible by Domain AND Local u1.	CIFS: Accessible by Domain u1 only. FTP: Accessible by Domain AND Local u1.	CIFS: Accessible by Domain u1 AND Local u1. FTP: Accessible by Domain AND Local u1.
Same Passwords	CIFS: Accessible by Domain AND Local u1. FTP: Accessible by Domain AND Local u1.	CIFS: Inaccessible by either User or Domain u1. FTP: Accessible by Domain AND Local u1.	CIFS: Accessible by Domain AND Local u1. FTP: Accessible by Domain AND Local u1.

4.2.2 Sharing Overview Screen

Click the **Sharing** link in the Navigation panel to access the **Sharing > Overview** screen. This is the first screen displayed.

Figure 17 Sharing > Overview

The following table describes the labels in this screen.

Table 13 Sharing Overview

LABEL	DESCRIPTION
Users	
Total Number of Users	This field displays the total number of user accounts created on the NSA and/or a centralized Windows-based domain controller.
Total Number of Local Users	This field displays the total number of users with accounts created on the NSA.
Total Number of CIFS Domain Users	This field displays the total number of users created on a centralized Windows-based domain controller when the NSA is functioning in **Domain** mode.

Table 13 Sharing Overview (continued)

LABEL	DESCRIPTION
Number of Users in Limbo	This field displays the number of users who were once on the domain controller but the NSA (in **Domain** mode) is currently unable to determine if the user still exists on the domain controller. This may happen if he/she has been deleted on the domain controller or the NSA is unable to connect to the domain controller. In the latter case, all domain users would be in limbo.
Number of Conflict Users	A conflict users is a local user that has the same user name as that of a user on a domain controller. This field displays how many identical users there are.
Groups	
Total Number of Groups	This field displays the total number of groups created on the NSA and/or a centralized Windows-based domain controller.
Number of Local Groups	This field displays the total number of groups created on the NSA when the NSA is in **Workgroup** mode.
Number of Domain Groups	This field displays the total number of groups created on a centralized Windows-based domain controller when the NSA is functioning in **Domain** mode.
Number of Groups in Limbo	This field displays the number of groups who were once on the domain controller but the NSA (in Domain mode) is currently unable to determine if the group still exists on the domain controller. This may happen if the group has been deleted on the domain controller or the NSA is unable to connect to the domain controller. In the latter case, all domain groups would be in limbo.
Number of Conflict Groups	A conflict group is a local group that has the same group name as that of a group on a domain controller. This field displays how many identical groups there are.
Shares	
Number of Shares	This field displays the total number of shares (default and created) on the NSA.
Number of Auto Shares	Auto shares are shares that are automatically created by the NSA for supported external USB hard drives that are not backup drives.This field displays the number of these type external USB hard drives attached to the NSA.
Number of Disabled Shares	This field displays the number of shares that have been disabled on the NSA.
Number of Unavailable Shares	If a shared folder is deleted or moved, the share appears as 'unavailable' on the NSA. This field displays the number of such shares.

4.3 Users

Use this screen to create and manage users who can store files on the NSA.

4.3.1 User Icons

The following table describes the user icons.

Table 14 User Icons

ICON	DESCRIPTION
	This is an enabled local user icon.
	This is an enabled domain user icon.
	This is a local user in conflict icon.
	This is a domain user in limbo icon.
	This is a disabled local user icon. You cannot disable a domain user.

4.3.2 Users Summary Screen

Click the **Sharing** link in the Navigation panel and then click the **Users** link or the **Users** tab to access the **Sharing > Users** screen.

Figure 18 Sharing > Users

The following table describes the labels in this screen. See Table 14 on page 55 for icon details.

Table 15 Sharing > Users

LABEL	DESCRIPTION
Status	This icon displays whether the account is enabled, disabled, in conflict or in limbo.
Type	This field displays whether the user is a local user with an account created on the NSA or a domain user created on a domain controller or active server directory.
User Name	This field displays the user name created when you add a new user. admin is the default NSA super user and cannot be deleted.
Quota	This field displays the maximum amount of storage space this user may occupy on the NSA. It is unlimited if none is specified.
Groups	This field displays the group(s) this user belongs to on the NSA.

Table 15 Sharing > Users (continued)

LABEL	DESCRIPTION
Actions	This label displays the allowable action for that user.
Add a New Local User	Click this button to go to a screen to create a new user on the NSA.

4.4 Adding a New User

Use this screen to add local users. Domain users must be added on the domain server. Click the **Add a New Local User** button in the screen shown previously to create a new NSA user account with NSA access password.

4.4.1 User Names

Enter a user name from one to 32 characters. The first character must be alphabetical (case insensitive, [A-Z a-z]); numeric characters are not allowed as the first character.

The user name can only contain the following characters:

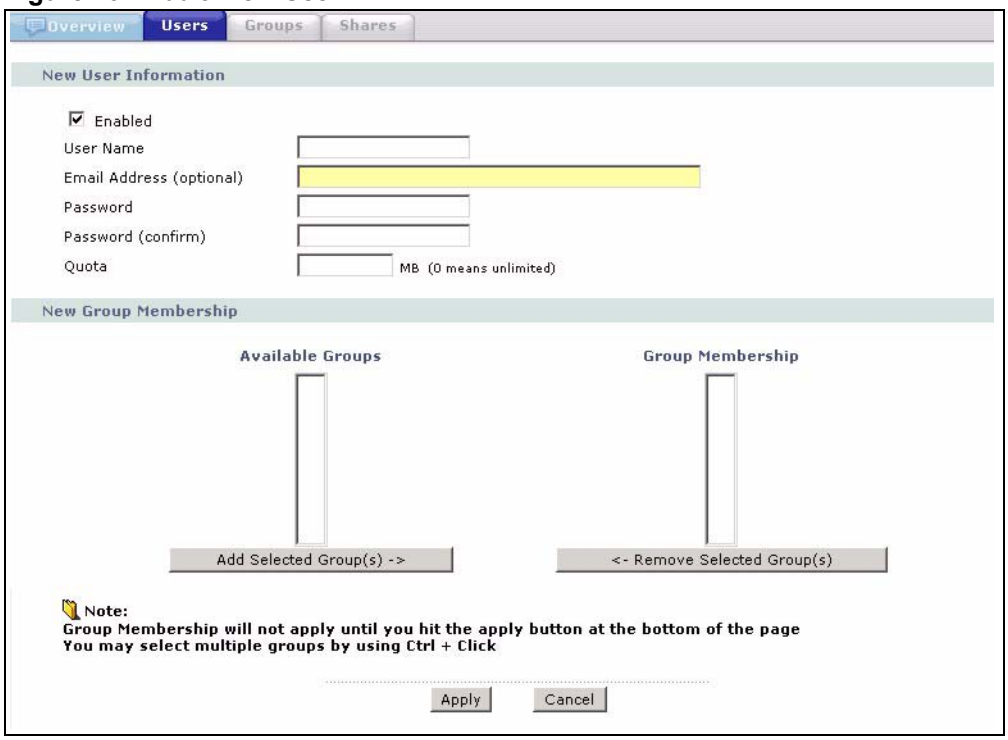
- Alphanumeric A-z 0-9 (there is no unicode support)
- Spaces
- _ [underscores]
- . [periods]
- - [dashes]

Other limitations on user names are:

- All leading and trailing spaces are removed automatically.
- Multiple spaces within names are converted to a single space.
- User names are case insensitive. The user name cannot be the same (no matter the letter case) as an existing local user or domain user. For example, if there exists a domain user with the name 'BOB', you cannot create a local user named 'bob'. If you enter a user 'bob' but use 'BOB' when connecting via CIFS or FTP, it will use the account settings used for 'bob'.
- The user name cannot be the same as a system user name such as **ANONYMOUS_CIFS**, **ANONYMOUS_FTP**, **EVERYONE** nor be the same as an existing local or domain user. Other reserved user names that are not allowed are:
  - bin
  - daemon
  - ftp
  - ftpguest
  - nobody
  - root
  - smbguest
  - admin

4.4.2 Add a New User Screen

Figure 19 Add a New User



The following table describes the labels in this screen.

Table 16 Add a New User

LABEL	DESCRIPTION
New User Information	
Enabled	You must select this check box in order for this user to be able to access the NSA.
User Name	Type a user name from 1 to 32 single-byte ASCII characters. See Section 4.4.1 on page 56 for more details on user names.
Email Address (optional)	Enter a valid e-mail address for this user. You can use up to 200 alphanumeric characters (periods and the underscore are also allowed) without spaces.
Password	Create a password associated with this user. You can type from one to 14 single-byte (no Chinese characters allowed for example) ASCII characters. Non-admin users can change their passwords by logging into the NSA web configurator using the username and password as defined here. After logging in, the **Change Password** screen is displayed. Enter a new password in that screen and confirm it by re-entering it. Non-admin users do not see other web configurator screens.
Password (confirm)	You must type the exact same password that you just typed in the above field.
Quota	This is the maximum amount of space this user is allowed per volume. Type a positive whole number (no floats, no negatives) as the maximum amount of storage (in MB) this user may use on the NSA. 0 MB means unlimited storage. The quota cannot exceed 500000000 MB.

Table 16 Add a New User (continued)

LABEL	DESCRIPTION
New Group Membership	You need to first create groups on the NSA. A group is a set of users that have common NSA access rights. A user can belong to more than one group. More restrictive access rights override less restrictive ones. Choose what groups this user should be added to or removed from. You can select multiple groups by holding the [Ctrl] key while you click.
Available Groups	These are the groups that have been created on the NSA. Select the group(s) that you want the user to join and then click the **Add Selected Group(s)** button. You need to click **Apply** for the changes to take effect.
Group Membership	These are the groups that the user already belongs to on the NSA. Select the group(s) that you want the user to leave and then click the **Remove Selected Group(s)** button. You need to click **Apply** for the changes to take effect.
Add Selected Group(s)	Select the group(s) that you want the user to join from the **Available Groups** list and then click the **Add Selected Group(s)** button. You need to click **Apply** for the changes to take effect.
Remove Selected Group(s)	Select the group(s) that you want the user to leave from the **Group Membership** list and then click the **Remove Selected Group(s)** button. You need to click **Apply** for the changes to take effect.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

User-group membership edits are also updated in the corresponding **Sharing > Groups > Edit Grou**p screen.

4.4.3 User Password Management

Non-admin users may change their passwords themselves by logging into the NSA web configurator using the username and password as defined in the previous screen. After logging in, the **Change Password** screen is displayed. Enter a new password in that screen and confirm it by re-entering it.

Figure 20 User Password Management

Non-admin users do not see other web configurator screens.

4.5 Groups

Use this screen to create and manage groups. A group is a set of users.

4.5.1 Group Icons

The following group icons display under **Status** in the **Group Summary** screen.

Table 17 Group Icons

ICON	DESCRIPTION
	This is a local group icon. Groups cannot be disabled.
	This is a domain group icon. Groups cannot be disabled.
	This is a local group in conflict icon.
	This is a domain group in limbo icon.

4.5.2 Groups Summary Screen

Click the **Sharing** link in the Navigation panel and then click the **Groups** link or the **Groups** tab to access the **Sharing > Groups** screen.

Figure 21 Sharing > Groups

The following table describes the labels in this screen. See Table 17 on page 59 for icon details.

Table 18 Sharing > Groups

LABEL	DESCRIPTION
Status	This icon displays whether the group is enabled, in conflict or in limbo. Groups cannot be disabled.
Type	This field displays whether the group is a local group created on the NSA or a domain group created on a domain controller or active server directory.
Group Name	This field displays the group name created when you add a new group.
Actions	This label displays the edit and remove icons for all groups created on the NSA. Click the **Edit** icon to edit the corresponding existing group. Click the **Remove** icon to delete it.
Add a New Local Group	Click this button to go to a screen to create a new group on the NSA.

4.6 Adding a New Group

Click the **Add a New Local Group** button in the screen shown previously to create a new group with specified NSA access rights.

4.6.1 Group Names

Enter a group name from one to 16 characters. The first character must be alphabetical (case insensitive, [A-Z a-z]); numeric characters are not allowed as the first character.

The group name can only contain the following characters:

- alphanumeric A-z 0-9 (there is no unicode support)
- Spaces
- _ [underscores]
- . [periods]
- - [dashes]

Other limitations on group names are:

- All leading and trailing spaces are removed automatically.
- Multiple spaces within names are converted to a single space.
- Group names are case insensitive. The group name cannot be the same (no matter the case) as an existing local group or domain group. For example, if there exists a domain group with the name 'BOB', you cannot create a local group named 'bob'. If you enter a group 'bob' but use 'BOB' when connecting via CIFS or FTP, it will use the account settings used for 'bob'.

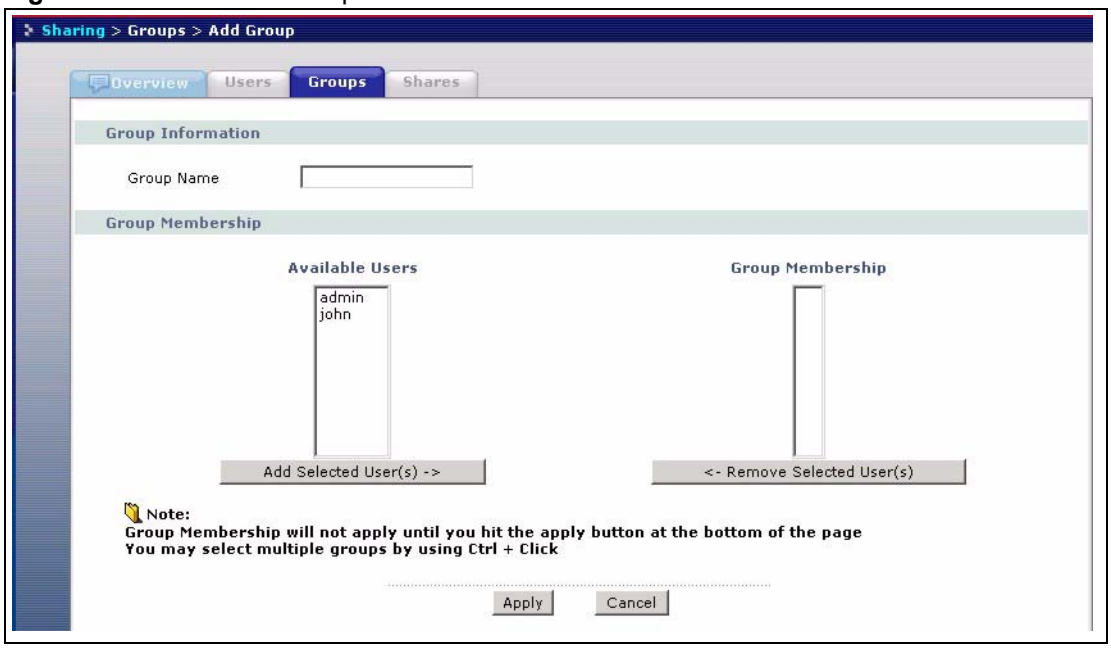
The group name cannot be ANONYMOUS_CIFS, ANONYMOUS_FTP, EVERYONE nor be the same as an existing local or domain group. Other reserved group names that are not allowed are:

- daemon
- disk
- ftp

- nobody
- lp
- root
- tty
- utm

4.6.2 Add A New Group Screen

Figure 22 Add a New Group



The following table describes the labels in this screen.

Table 19 Add Group

LABEL	DESCRIPTION
New Group Information	
Group Name	Type a group name from 1 to 16 single-byte ASCII characters. The first character must be alphabetical [A-Z a-z] (case insensitive) and cannot be a number. See Section 4.6.1 on page 60 for more information on group names.
Group Membership	A group is a set of users that have common NSA access rights. A user can belong to more than one group. Choose what users should be added to or removed from this group. You can select multiple users by holding the [Ctrl] key while you click.
Available Users	These are the users that have been created on the NSA. Select the user(s) that you want to join this group and then click the **Add Selected User(s)** button. You need to click **Apply** for the changes to take effect.
Group Membership	These are the users that already belong to this group on the NSA. Select the user(s) that you want to leave this group and then click the **Remove Selected User(s)** button. You need to click **Apply** for the changes to take effect.
Add Selected User(s)	Select the user(s) that you want to join this group from the **Available Users** list and then click the **Add Selected User(s)** button. You need to click **Apply** for the changes to take effect.

Table 19 Add Group (continued)

LABEL	DESCRIPTION
Remove Selected User(s)	Select the user(s) that you want to leave this group from the **Group Membership** list and then click the **Remove Selected User(s)** button. You need to click **Apply** for the changes to take effect
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

Group-user membership edits are also updated in the corresponding **Sharing > Users > Edit User** screen.

4.7 Shares

Use this screen to create and manage shares. A share is a set of users/groups access permissions mapped to a specific folder on a volume. It is equivalent to the Windows concept of a shared folder, but is independent of the folder.

4.7.1 Share Icons

These are the share icons you will see in this screen.

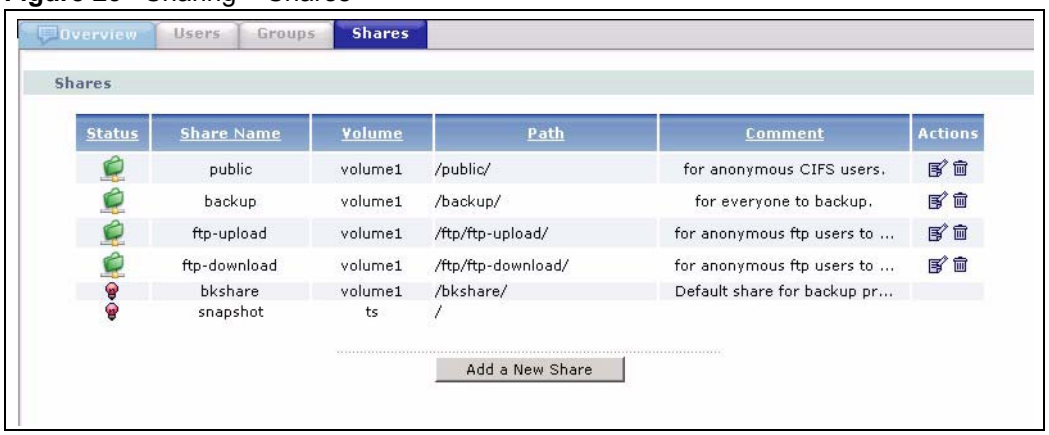
Table 20 Share Icons

ICON	DESCRIPTION
	This is an available share icon.
	This is an unavailable share icon.
	This is a disabled share icon.

4.7.2 Share Summary Screen

Click the **Sharing** link in the Navigation panel and then click the **Shares** link or the **Shares** tab to access the **Sharing > Shares** screen. The default shares on the NSA are shown in the following figure.

Figure 23 Sharing > Shares



The following table describes the labels in this screen. See Table 20 on page 62 for icon details.

Table 21 Sharing > Shares

LABEL	DESCRIPTION
Status	This icon displays whether the share is available, unavailable or disabled. The default backup and snapshot shares cannot be deleted.
Share Name	This displays the name of the shared folder on the NSA.
Volume	This displays which storage area (volume) the share was created. The default shares are on volume1.
Path	This displays the location of the shared folder on the NSA. Forward slashes are used as path (folder tree branch) separators. Share paths that no longer exist are shown in red.
Comment	This is some description of the share as the (limited) share name may not be obvious enough for users to recognize clearly.
Actions	This displays the edit and delete icons for all shares created on the NSA. Click the **Edit** icon to edit the corresponding existing share. Click the **Remove** icon to delete it.
Add a New Share	Click this button to go to a screen to create a new share on the NSA.

4.8 Adding a New Share

Click the **Add a New Share** button in the screen shown previously to create a new shared folder with optional access password.

4.8.1 Share Names

The share name can only contain the following characters:

- Alphanumeric A-z 0-9 (there is no unicode support)
- Spaces
- _ [underscores]
- . [periods]
- - [dashes]

Other limitations on share names include:

- All leading and trailing spaces are removed automatically.
- Multiple spaces within names are converted to a single space.
- Share names must be unique (they cannot be the same as other share names).
- Share names cannot use names reserved for “automatic shares” of external USB disk volumes be unique, for example, “USB[0-9]{1,2}”, that is, a share named “USB” followed by a one or two digit number).
- The minimum character length of a share name is one character, that is a share name cannot be blank.
- The maximum character length of share name is 255 characters.

4.8.2 Share Paths

A share path is the full path to a folder on a volume that will be shared, for example, /mynsa/topsecret/ugs/. This is independent from a “share name” which is the name shown for this share when accessing the share via CIFS or FTP. The path should start with a '/' (forward slash) followed by a parent folder, child folders leading to the folder that is to be shared.

The share path can include all characters including unicode characters (that is, you can use Chinese folder names for example) except for the following characters:

- \ [backslash] this will be converted to forward slash and interpreted as a path delimiter
- / [forward slash] this is always interpreted as a path delimiter, so a folder cannot include it in its folder name
- : [colon]
- * [asterisk]
- ? [question mark]
- “[double quote]
- < [less than]
- > [greater than]
- | [pipe]

Please also note the following as regards share paths:

- If the share path is missing the root path slash (the first forward slash), the system will automatically add the initial slash.
- If the share path is missing the end trailing slash, the system will automatically add the trailing slash.
- If the share path has '\' (backslashes) instead of '/' (forward slashes) they will all be automatically converted to forward slashes.
- Share paths are case insensitive. If a share path already exists on the volume, for example, /My/Little/Corner/Of/The/World/) but the entered share path is the same as the existing path except the character case does not match (for example, /MY/liTTle/CORNER/oF/THe/wOrLd/), then the NSA automatically converts the path to match to the existing path's case. This is done because folder paths for CIFS on Windows systems are case insensitive. Case insensitivity does not include some special characters, so ë will not be converted to Ë, neither ê to Ê, and so on.
- The maximum share path length is 600 characters (the entire path string including slashes)
- The share path cannot be blank

- You cannot have an empty folder name, that is, two consecutive slashes (for example, '/My//Corner/')
- Each individual folder in the path (that is, the content between the slashes) cannot exceed 255 characters

4.8.3 Share Comments

Share comments are optional, so they can be blank. The maximum character length of a share comment is 255 characters. Share comments can contain any character except for the following:

- “[double quote]
- ` [backquote]
- < [less than]
- > [greater than]

4.8.4 EVERYONE & ANONYMOUS Share Access Rights

With an **EVERYONE** access right, you still need to log in. Every local user with an account on the NSA can access this share using their username and password. Users with accounts on a domain server cannot access shares with **EVERYONE** access rights.

With **ANONYMOUS CIFS**, no login is required. If you enter a valid user name but wrong password, the session is rejected. If the user name is invalid, then the session is considered 'anonymous'.

With **ANONYMOUS FTP**, you must enter either 'anonymous' or 'ftp' as the user name. Any other name is considered a user name, so must be valid and have a corresponding correct password.

If you are already logged into a share using your username and password, you will NOT be able to access a share that has **ANONYMOUS CIFS** or **ANONYMOUS FTP** only access rights (as these require ‘no login’). If this is not your intention, it is recommended you set **EVERYONE** AND **ANONYMOUS CIFS** and/or **ANONYMOUS FTP** access rights to these type shares.

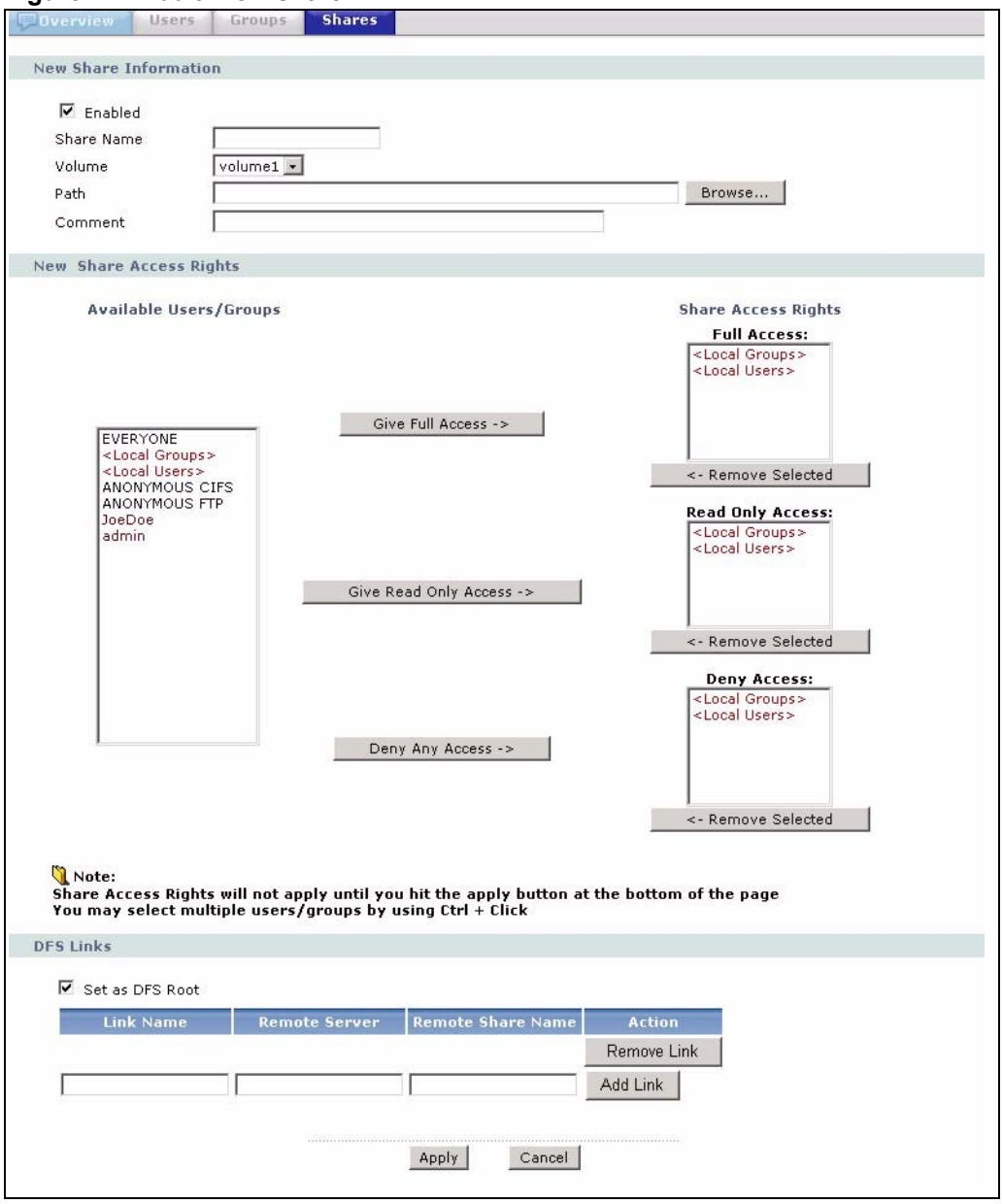
4.8.5 DFS

Distributed File System (DFS) is a network server component that makes it easier for you to find and manage data on your network. Through DFS, you can build a single hierarchical file system whose contents are distributed throughout your organization’s WAN. It permits shares to be hierarchically connected to other Windows shares. Since DFS is a logical mapping, the physical location of data becomes transparent to your users and applications.

You can use DFS links when accessing the NSA using CIFS, not FTP.

4.8.6 Add A New Share Screen

Figure 24 Add a New Share



The following table describes the labels in this screen.

Table 22 Add Share

LABEL	DESCRIPTION
New Share Information	
Enabled	You must select this check box in order for a user or group to be able to access this share on the NSA.
Share Name	Type a share name from 1 to 255 single-byte ASCII characters. The name cannot be the same as another existing local share. See Section 4.8.1 on page 63 for more information on share names.

Table 22 Add Share (continued)

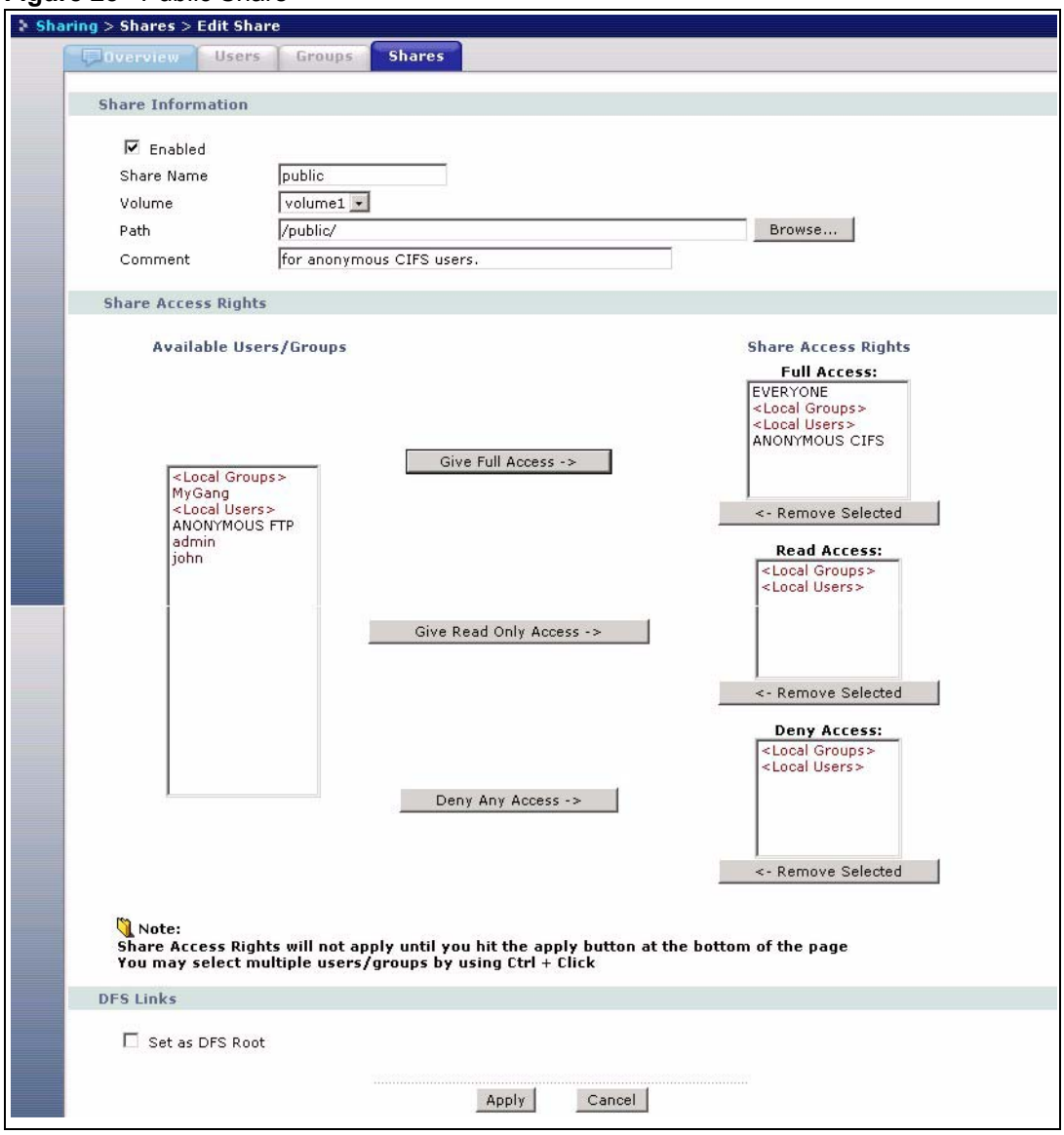
LABEL	DESCRIPTION
Volume	You should have already created volumes (a single accessible storage area with a single file system) on the NSA.
Path	Type the location of the share on the NSA using forward slashes as branch separators. See Section 4.8.2 on page 64 for more information on share paths.
Comment	Type some suitable descriptive text to further identify the share (in addition to its name) on the network. The comment text appears next to the share folder in Windows. See Section 4.8.3 on page 65 for more information on share comments.
New Share Access Rights	Use this part of the screen to assign access rights (full, read only or deny) to users and/or groups. **EVERYONE** means every local user who has an account on the NSA. **ANONYMOUS** means every user including people who do NOT have accounts on the NSA. See Section 4.8.4 on page 65 for more information on **EVERYONE** and **ANONYMOUS** share access rights.
Available Users/ Groups	This box lists all users and groups created on the NSA.
Give Full Access ->	Select users and/or groups (you can select multiple users by holding the [Ctrl] key while you click) from the **Available Users/Groups** list box and then click this button to allow them full access (read, write and execute) to all files contained within this share.
Give Read Only Access ->	Select users and/or groups (you can select multiple users by holding the [Ctrl] key while you click) from the **Available Users/Groups** list box and then click this button to allow them read-only access (they cannot modify nor execute) to all files contained within this share.
Deny Any Access ->	Select users and/or groups (you can select multiple users by holding the [Ctrl] key while you click) from the **Available Users/Groups** list box and then click this button to deny them any access (they cannot read, modify nor execute) to all files contained within this share. This share is not visible to those users and/or groups who access the NSA via FTP. Note: Where access conflict arises between users and/or groups, the most restrictive access right applies.
Share Access Rights	These boxes list what users and/or groups have what access rights to this share.
Full Access:	Select users and/or groups (you can select multiple users by holding the [Ctrl] key while you click) from this list box and then click the **Remove Selected** button to no longer allow them access to files contained within this share. These users and/or groups are then available to have other access rights to this share if you want.
Read Access:	Select users and/or groups (you can select multiple users by holding the [Ctrl] key while you click) from this list box and then click the **Remove Selected** button to no longer allow them access to files contained within this share. These users and/or groups are then available to have other access rights to this share if you want.
Deny Access:	Select users and/or groups (you can select multiple users by holding the [Ctrl] key while you click) from this list box and then click the **Remove Selected** button to deny them access to files contained within this share. These users and/or groups are then available to have other access rights to this share if you want.

Table 22 Add Share (continued)

LABEL	DESCRIPTION
Remove Selected	Select users and/or groups (you can select multiple users by holding the [Ctrl] key while you click) from one of the **Full Access**, **Read Only Access** or **Deny Access** list boxes and then click this button to no longer allow them access to files contained within this share. These users and/or groups are then available to have other access rights to this share if you want.
DFS Links	Distributed File System (DFS) is a share of other shares.
Set as DFS Root	A DFS root is a local share that serves as the starting point and host to other shares. Any shared resource can be published into the DFS name space.
Link Name	The name can be the same as another existing DFS link name. Name restrictions are the same as for share names (see Section 4.8.1 on page 63).
Remote Server	Type the IP address or domain name of the remote server.
Remote Share Name	This name should follow the same restrictions as an NSA file name in order for it to work properly with the NSA.
Action	Click the corresponding button to add or remove a DFS link.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

The following screen is an example of the default public share. Note that for anonymous CIFS users, no login is required (see Section 4.8.4 on page 65 for more information).

Figure 25 Public Share



5

Network Screens

This chapter discusses the network screens.

5.1 Network Screens

This section gives an overview of the various features included in the network configuration screens.

Use the network screens to:

- View the network information
- Configure your TCP/IP information and DNS server address.
- Change your Windows/CIFS server name and workgroup name.
- Enable FTP and set connection limits.

5.2 Network Introduction

Click the **Network** link in the Navigation panel to access the **Network > Overview** screen. This is the first screen displayed.

You can click on the edit icons to go to the appropriate page to change the settings, or you can click on the appropriate tabs or navigation panel links instead.

5.2.1 IP Address and Subnet Mask

Similar to the way houses on a street share a common street name, so too do computers on a LAN share one common network number.

Where you obtain your network number depends on your particular situation. If the ISP or your network administrator assigns you a block of registered IP addresses, follow their instructions in selecting the IP addresses and the subnet mask. The subnet mask specifies the network number portion of an IP address.

5.2.2 DHCP

DHCP (Dynamic Host Configuration Protocol, RFC 2131 and RFC 2132) allows individual clients to obtain TCP/IP configuration at start-up from a server. You can configure the NSA as a DHCP client which means it is set to receive an IP address from a DHCP server. The NDU can help you discover the IP address of the NSA.

Alternatively, configure a static IP address for the NSA.

5.2.3 Windows/CIFS

Common Internet File System (CIFS) is a standard protocol supported by most operating systems in order to share files across the network.

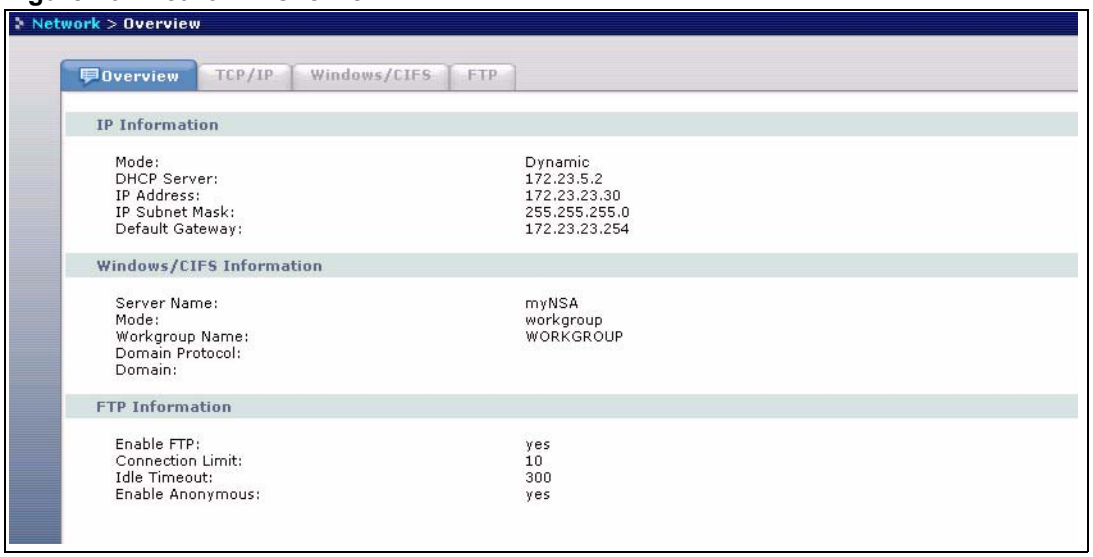
CIFS runs over TCP/IP but uses the SMB (Server Message Block) protocol found in Microsoft Windows for file and printer access; therefore, CIFS will allow all applications, not just Web browsers, to open and share files across the Internet.

5.2.4 FTP

File Transfer Protocol (FTP) is an Internet file transfer service that operates on the Internet and over TCP/IP networks. A system running the FTP server accepts commands from a system running an FTP client. The service allows users to send commands to the server for uploading and downloading files.

5.3 Network Overview Screen

Figure 26 Network > Overview



The following table describes the labels in this screen.

Table 23 Network > Overview

LABEL	DESCRIPTION
IP Information	
Mode	This field displays whether the NSA is receiving an IP address from a DHCP server (**Dynamic**) or whether it is assigned a static IP address.
DHCP Server	If the NSA is receiving an IP address from a DHCP server, this field displays the IP address of the DHCP (Dynamic Host Configuration Protocol) server. See Section 5.2.2 on page 72 for more details.
IP Address	This field displays the NSA IP address.
IP Subnet Mask	The subnet mask specifies the network number portion of an IP address. If you select **Dynamic** IP in the **TCP/IP** screen the subnet mask will be assigned by the DHCP server. If you select **Static** IP then your subnet mask will be what you type into this field. See Section 5.2.1 on page 71 for more details about IP subnet mask.
Default Gateway	If you select **Dynamic IP** in the TCP/IP screen the default gateway will be assigned by the DHCP server. If you select **Static IP** then you must type a gateway IP address in this field.
Windows/CIFS Information	
Server Name	This is the name of the NSA device.
Mode	This shows the Windows/CIFS mode, either **Workgroup** or **Domain**.
Workgroup Name	This field displays your workgroup name.
Domain Protocol	This field displays the windows domain protocol you are using. Select **NT4 Domain** or **Active Directory Domain** in the Windows/CIFS screen.
Domain	This is the domain name you have entered.
FTP Information	
Enable FTP	This field displays whether or not the NSA allows FTP connections.
Connection Limit	This is the maximum number of sessions allowed to access the NSA simultaneously via FTP. A single user may have multiple concurrent sessions.
Idle Timeout	This field shows the length of time in seconds that the FTP connection can be idle before timing out.
Enable Anonymous	This displays whether users are allowed to log into the NSA using an 'FTP' user name or 'anonmyous' without giving a password.

5.4 TCP/IP Screen

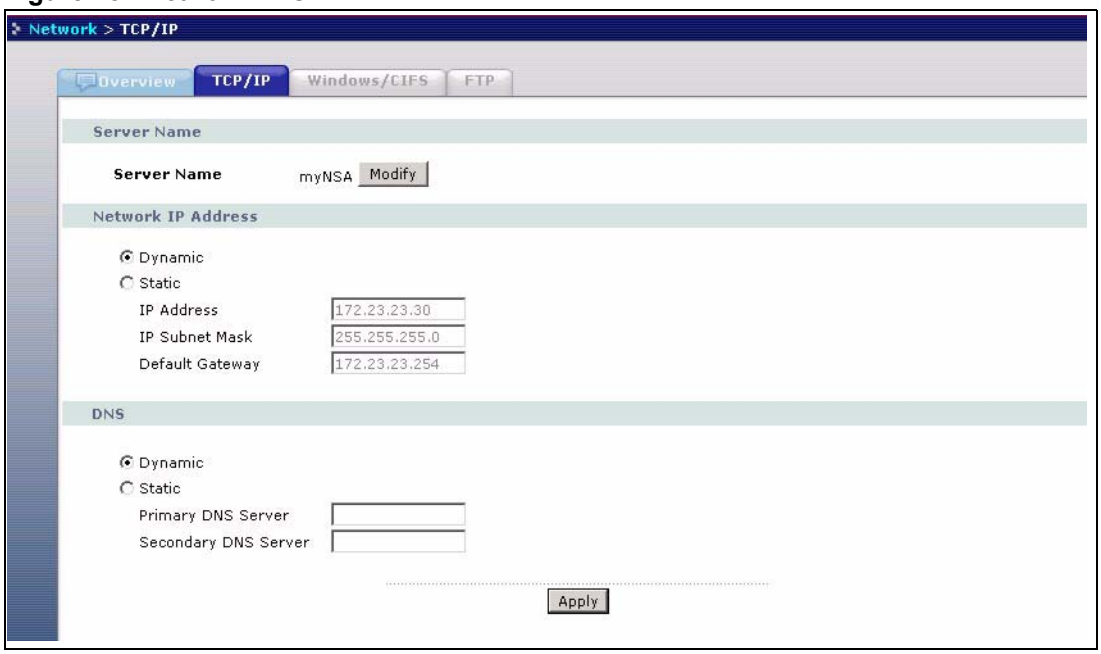
Use the **Network > TCP/IP** screen to an NSA dynamic or static IP address, subnet mask, default gateway and DNS servers.

The NSA automatically restarts after you apply changes in the **TCP/IP** or **Windows/CIFS** screens.

Figure 27 NSA Rebooting

Click the **Network** link in the Navigation panel and then click the **TCP/IP** link or the **TCP/IP** tab to access the **Network > TCP/IP** screen.

Figure 28 Network > TCP/IP



The following table describes the labels in this screen.

Table 24 Network > TCP/IP

LABEL	DESCRIPTION
Server Name	
Server Name	This field shows the name you assigned to your NSA.
Modify	Click the **Modify** button to take you to the **Windows/CIFS** screen (the next tab) where you can change your server name.
Network IP Address	
Dynamic	Select the **Dynamic** checkbox to have a DHCP server automatically assign an IP address to your NSA. If none is assigned, then the NSA reverts to the default IP address of 192.168.1.3.
Static	Select the **Static** checkbox for the NSA to use fixed TCP/IP information. You MUST fill in all the following fields.
IP Address	Type an IP address in this field.

Table 24 Network > TCP/IP

LABEL	DESCRIPTION
IP Subnet Mask	Type an IP subnet mask in this field.
Default Gateway	Type a default gateway address in this field.
DNS	DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. The DNS server is extremely important because without it, you must know the IP address of a machine before you can access it. If you have the IP address(es) of the DNS server(s), enter them.
Dynamic	Select the checkbox to have the DHCP server automatically assign a DNS server address to your NSA.
Static	Select the checkbox to choose a static DNS server address. Type the DNS server IP address(es) into the fields below.
Primary DNS Server	Type a primary DNS server IP address.
Secondary DNS Server	Type a secondary DNS server IP address.
Apply	Click **Apply** to save your TCP/IP configurations. After you click **Apply**, the NSA restarts. Wait until you see the **Login** screen or until the NSA fully boots and then use the NDU to rediscover it.

5.5 Windows/CIFS

Use this screen to configure your CIFS settings. In this screen you can set your server name, your WINS server, and specify if your NSA is a part of a workgroup or domain.

CIFS cannot be disabled on the NSA.

The NSA automatically restarts after you apply changes in the **TCP/IP** or **Windows/CIFS** screens.

5.5.1 Workgroup Security Mode

A workgroup is a group of computers on a network that can share files. On the NSA, use Workgroup Security Mode if the user names and passwords for these computers are maintained on the NSA. This is suitable for users using the Common Internet File System (CIFS) protocol for remote file access in a small-to-medium sized office.

5.5.2 Windows Domain Security Mode

A domain is a group of computers that are part of a network and share a common directory database. On the NSA, use **Windows Domain Security Mode** if you want centralized management of shared resources, services and user on a centralized Windows-based domain controller. You can create users and groups on the centralized Windows-based domain controller such as an active server directory, and the NSA checks this list when authenticating users and/or groups that seek access to a share. This is suitable for a large number of CIFS users where accounts are stored on an external server.

A domain is organized in levels and is administered as a unit with common rules and procedures. Each domain has a unique name. You must be logged on as an administrator to your local computer and have a valid user name and password to join your computer to a domain. If you do not know which user name and password to use, contact your network administrator.

The NSA time and date must be the same as the time and date on the external domain controller if the NSA is using one to import users and groups.

5.5.3 Windows/CIFS Screen

Figure 29 Network > Windows/CIFS_Workgroup

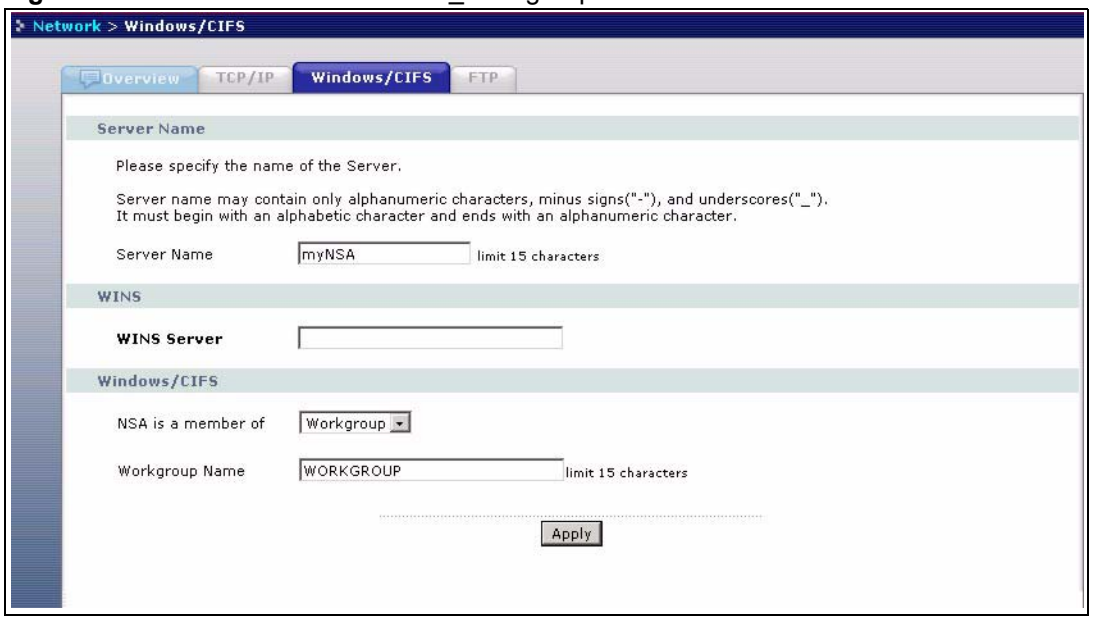
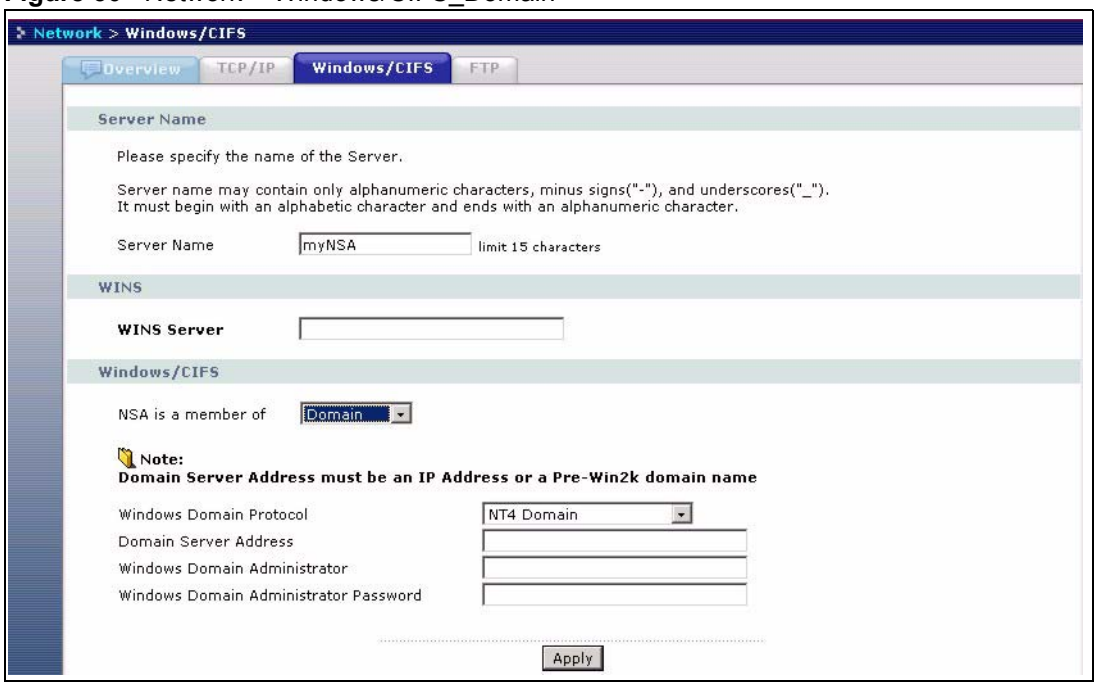


Figure 30 Network > Windows/CIFS_Domain



The following table describes the labels in these screens.

Table 25 Network > Windows/CIFS

LABEL	DESCRIPTION
Server Name	
Server Name	Enter a name to identify your NSA on the network in this field. The NSA restarts after you change the NSA.
WINS	You can specify a WINS server which the NSA will use to resolve names to IP addresses.
WINS Server	Enter the WINS server name in this field.
Windows/CIFS	
NSA is a member of	A workgroup is a group of computers on a network that can share files.These user accounts are maintained on the NSA. A domain is a group of computers that are part of a network and share a common directory database. Domain users and groups are created on a centralized Windows-based domain controller. Select either **Workgroup** or **Domain** from the drop-down list box.
Workgroup Name	Type your workgroup name in this field if you selected **Workgroup** from the field above. The following fields apply if you selected **Domain**.
Windows Domain Protocol	Select a windows domain protocol if you selected **Domain** above. Choose **NT4 Domain** if your server uses a Windows NT operating system and **Active Directory Domain** if it uses a Windows 2000 or later operating system.
Domain Server Address	Type the IP address of the Windows server domain controller or a pre-Windows 2000 domain name.
Windows Domain Administrator	Administrator is the default **Windows Domain Administrator**.

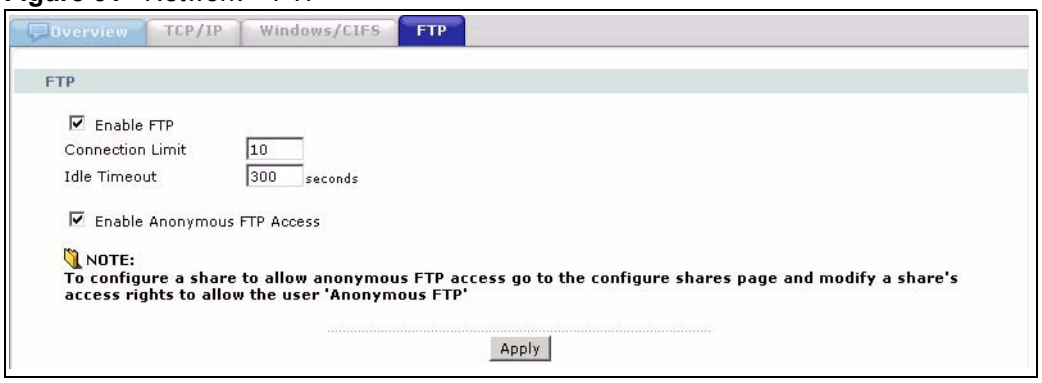
Table 25 Network > Windows/CIFS (continued)

LABEL	DESCRIPTION
Windows Domain Administrator Password	Type a password associated with the Windows Domain Administrator.
Apply	Click here to save your changes back to the NSA.

5.6 FTP Screen

Use this screen to configure your NSA FTP settings. In this screen you can enable or disable FTP, set a connection limit, idle timeout, and enable or disable anonymous FTP access. See Section 5.2.4 on page 72 for more details on FTP.

Figure 31 Network > FTP



The following table describes the labels in this screen.

Table 26 Network > FTP

LABEL	DESCRIPTION
FTP	
Enable FTP	Select the **Enable FTP** checkbox to allow users to connect to the NSA via FTP; otherwise clear the check box.
Connection Limit	Enter the maximum number of concurrent connections allowed on the NSA in this field.
Idle Timeout	Enter the length of time that an FTP connection can be idle before timing out.
Enable Anonymous FTP Access	Select **Enable Anonymous FTP Access** to allow any user to log into the NSA using 'FTP' or 'anonmyous' as a user name and no password. Any other name is considered a user name, so must be valid and have a corresponding correct password.
Apply	Click **Apply** to save your settings to the NSA.

PART III
Protect, Storage and Maintenance

6

Protect Screens

This chapter compares the different ways of protecting data on the NSA-2400 and explains how to use the **Protect** screens to create and schedule snapshots and external backups.

6.1 Protection Methods

There are a variety of ways to protect your data on the NSA-2400. Below is a summary table of what can be done in each situation.

Table 27 Overview of Protection Methods

SITUATION	ACTION
Unexpected NSA-2400 behavior after configuration changes	Back up the NSA-2400 configuration file before you make major configuration changes.
Need to transfer data from your computer to the NSA after volume(s) have been created	Use the Genie Backup Manager.
Corrupt data files Data infected by virus Data files incorrectly deleted or modified	Create regular snapshots.
Hard drive malfunction.	Use RAID.
NSA malfunction Network down Natural disaster such as a fire or earthquake occurs where your NSA-2400 is located	Back up data to another NSA or external USB hard drive.

The following sections describe these methods in more detail. See Section 7.4 on page 100 for more information on RAID.

6.1.1 Configuration File Backup and Restoration

Use the **Maintenance > Configuration** menus to create a file of your NSA configurations such as passwords, shares and volumes created, network settings and so on. If you're going to do some major configuration changes, then it is advisable to create a configuration backup file. If things go wrong after you make the configuration changes, you can always go back to the previous configuration by restoring an earlier configuration file.

If you forgot the NSA password, then reset the device to go back to the factory default configuration.

Configuration File Backup and Restoration does not affect data (your files and folders), volumes on the NSA.

6.1.2 Genie Backup Manager

Use the Genie Backup Manager to transfer data from your computer to the NSA. You could use Genie Backup Manager to back up from one NSA to another NSA but it's recommended you use the NSA **Protect > Backup** to do this (see Section 6.1.4 on page 83) as the latter would be faster.

The Genie Backup program uses the same network port as the NDU to discover the NSA. To avoid a port conflict, do not run the Genie Backup Manager at the same time as the NDU.

6.1.3 Snapshots

A snapshot is a record of changes to a (internal) volume at a particular moment in time. As it only records changes to files made in a volume, it's faster and takes up less space than a backup. Snapshots are good for data that changes often and needs to have high availability. If files within a volume become infected or corrupted, you can revert the volume back to a previous snapshot.

You can only create snapshots of a complete volume, not a single file or folder within a volume. If a volume is restored to a previous snapshot, then all files in that snapshot are returned to the state they were in at the time of the snapshot.

When you roll back to a previous snapshot, all intermediate snapshots between the rollback and the present are deleted. For example, say you had daily snapshots scheduled. Today is Friday and you decide to roll back to Monday's snapshot. Then the snapshots from Tuesday, Wednesday and Thursday are deleted after the rollback is completed.

You can continue to work, while the snapshot is taken. It's a good idea to save your open files first before taking a snapshot. Snapshots may get progressively slower as more are done but they are still very fast compared to backups (as only block changes are recorded).

6.1.3.1 Some Important Notes on Snapshots

1. Snapshots cannot be taken on external volumes or internal volumes using the **BACKUP** storage system.
2. If the reserved space for snapshots runs out, then all snapshots (including previously created ones) are lost. Make sure that you reserve enough space for snapshots.
3. Since a snapshot is a record of changes, if very large files (typically over 1GB) are transferred onto the volume, then that 'change' may be larger than the reserved space for the snapshot causing it to become invalid.

4. A snapshot just takes up as much space as it needs (within the reserved space). Reserved snapshot space can be decreased later, but not increased, so it's better to start off with a (not too) big reserved space.
5. If the disk associated with a volume fails, then all snapshots in that volume are lost.
6. The purging of snapshots occurs after the next snapshot is taken (unlike backup purges which occur before backup is done).
7. You cannot create snapshots with volumes created using this NSA-2400 release 1 (v1.00 AFA.0 C0) firmware. To overcome this, create a new volume using release 2 firmware, copy the old volume data over to the new volume and then recreate the old volume. If you don't have enough space to create a new volume, then use the Genie Backup Manager to transfer data from your old volume to your computer, recreate the old volume, and then use the Genie Backup Manager again to back up data from your computer to the newly created volume.
8. Up to 30 snapshots are allowed in total on the NSA.
9. The NSA uses EVMS (Enterprise Volume Management System) to create snapshots.

6.1.3.2 Snapshots Versus Backups

See Section 6.1.4 on page 83 for more information on backups.

1. A snapshot only records changes to files within a volume, so it's faster and takes up less space than backup.
2. You must create a snapshot of a complete volume, not on a single file or folder as you can do with a backup.

It's a good idea to take both snapshots and backups for the following reasons:

1. Snapshots may become invalid, so it's good to also have backups available in case that happens.
2. Backups may require several hours depending on the amount of data you have to back up (it's a good idea to schedule backups at non-peak times), so you should take a snapshot of your data before the backup is run. If a file becomes corrupt during the backup, you can still revert to the previous snapshot and back up again.
3. If files to be backed up are open at the time of the backup, then make sure that snapshots are allowed. If they are allowed and files are open at the time the backup is run, then backup first takes a snapshot and then copies the files from this snapshot.

If not enough snapshot space is left then the backup will cause your snapshots to become invalid. The backup will still proceed without the snapshot but if the open file changes during the backup, then the backup will fail.

6.1.4 NSA Backup

Use the **Protect > Backup** menus to create data backups to an external USB disk drive or another NSA over the network. Backup disks must be formatted by the NSA as a disk of type **BACKUP**. You cannot back up to other file systems such as NTFS, FAT, or FAT32.

NSA backup can only be done to another NAS with the same firmware version or an external USB disk that was formatted as 'Backup' volume type.

The NSA does not check if enough space is available before backup commences. The NSA first starts transferring files and if not enough space is available, then it issues a log or alert to tell you that the backup failed (due to lack of space) and deletes any files already transferred. The NSA deletes old backups first before a new backup is done (**Purge**). If you have a backup scheduled to begin at midnight, then at that time, the NSA checks your **Purge** settings and deletes files according to those settings before the actual backup takes place. If space on the backup NSA is a concern, then configure the NSA to delete old backups.

A full backup copies all files from your NSA to the backup device. It may take some time depending on how many files you have to back up.

It is not possible to run programs (like FDISK), that access the disk directly, while backup is running.

See also this related information:

- Section 6.1.3.2 on page 83 for a comparison of backups and snapshots.
- Section 7.4.7 on page 105 for a comparison of backups and RAID.
- Section 6.1 on page 81 for an overview of protection methods available on the NSA-2400.

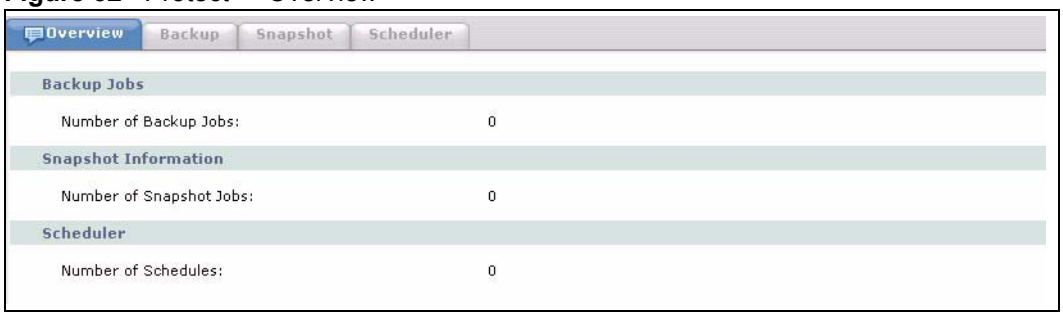
To best protect data, you should back up data to another NSA or an external hard drive, and store in an off site location.

6.2 Protect Overview Screen

Click the **Protect** link in the navigation panel to see an overview of the **Protect** screens. Use the **Backup** screens to create new backups or edit existing ones. Use the **Snapshot** screens to create new snapshots or edit existing ones. Use the **Scheduler** screens to automate backups or snapshots. Either click on a link in the overview screen or a sub-link in the navigation panel to go to the related screen.

The **Protect > Overview** screen shows you how many backups, snapshots and schedules you have created or configured.

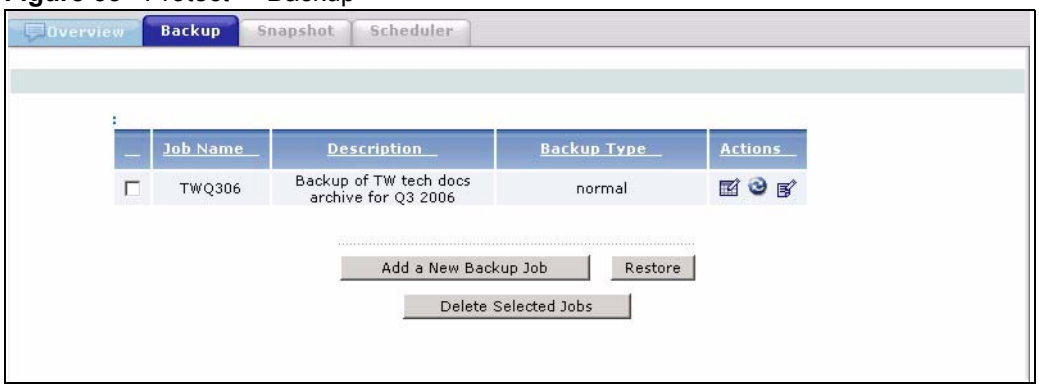
Figure 32 Protect > Overview



6.3 Backup Summary

Click the **Backup** link in the Navigation panel to access the **Protect > Backup summary** screen that shows a list of all backups created and scheduled. You can also edit or delete an existing backup or create a new one from here.

Figure 33 Protect > Backup



The following table describes the labels in this screen.

Table 28 Protect > Backup

LABEL	DESCRIPTION
Job Name	This is the name of the backup
Description	This is some extra descriptive text on the backup
Backup Type	This displays **normal** backup type.
Actions	Use these icons to schedule, immediately run or edit or an existing backup.
Add a New Backup Job	Click this button to create a new backup (see also Section 6.3.3 on page 88).
Restore	Click this button to restore a previous backup from another NSA or external USB hard drive connected to the NSA.
Delete Selected Jobs	Select the check boxes of backups you want to delete and then click this button to delete those files on the backup NSA or external USB hard drive connected to the NSA.

6.3.1 Schedule Backups

Click the schedule icon in the **Action** column in the **Protect > Backup** screen to schedule that backup. (You can also do this in the **Protect > Scheduler** screen, but if you do it in the **Protect > Backup** screen, then specific related backup information is already entered.)

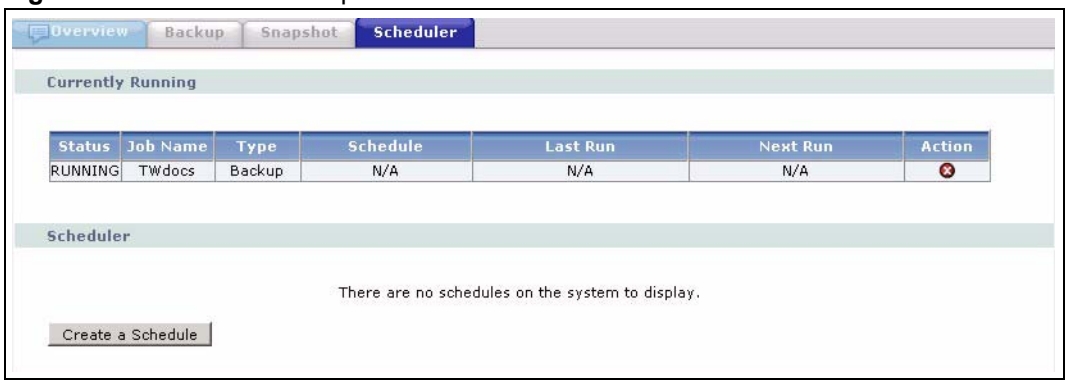
Scheduler queues backups if a different backup is already going on at the time a backup is scheduled.

Figure 34 Protect > Backup > Schedule

See the **Protect > Scheduler** screen (Section 6.4 on page 93) in this User's Guide for more information on these fields.

Click the **Run Now** icon in the **Action** column in the **Protect > Backup** screen to immediately perform that backup. Click the Cancel button if you want to stop the backup.

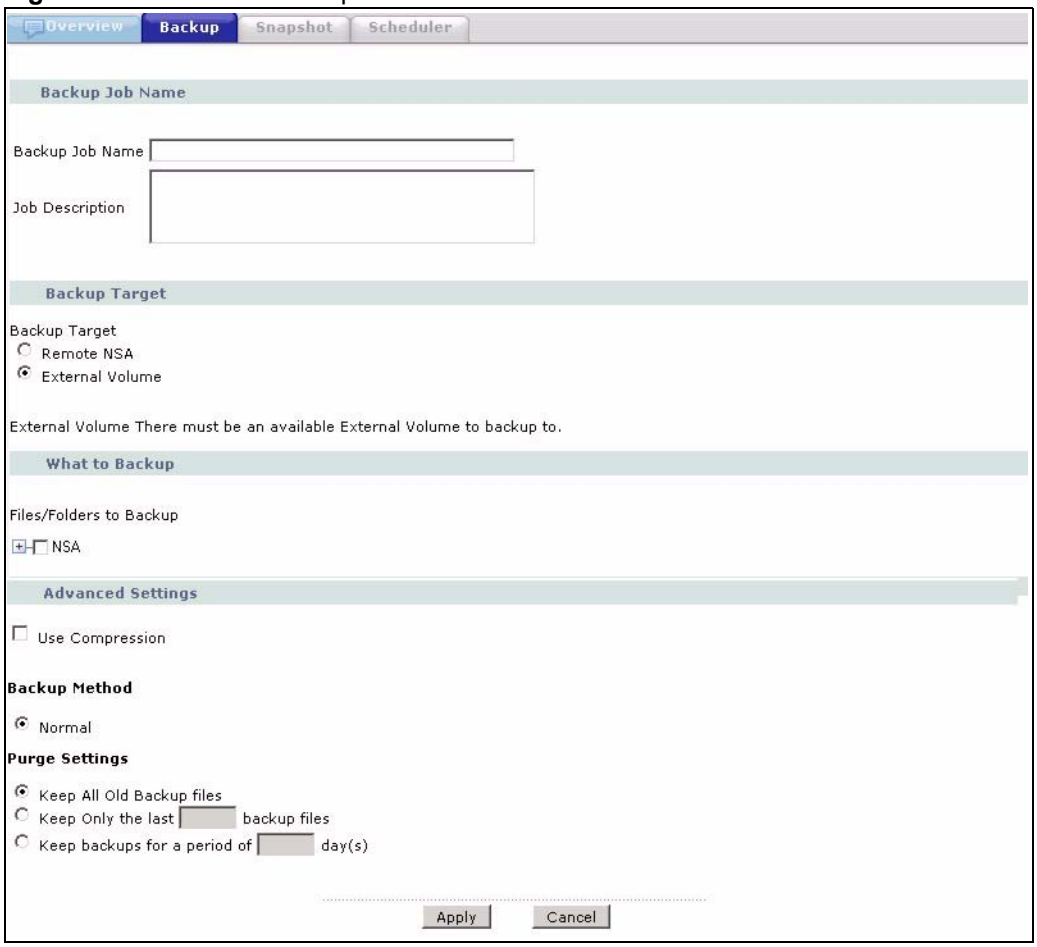
Figure 35 Protect > Backup > Run Now



6.3.2 Creating/Editing Backups

Click the edit icon in the **Action** column in the **Protect > Backup** screen to edit that backup or click **Add a New Backup Job** to create a new backup.

Figure 36 Protect > Backup > Edit



The following table describes the labels in this screen.

Table 29 Protect > Backup > Edit

LABEL	DESCRIPTION
Backup Job Name:	This is a required field that uniquely identifies the backup. Type from one to 32 characters. All characters are allowed except /:'"*?<>\.
Backup Job Description:	Type from 0 to 60 characters to further describe this backup.
Where to Backup	
Backup Target	Choose where to save the backup.
Remote NSA	If you chose to back up to another NSA, then fill in the following fields in order to be able to access it. Click **Test Connection** to see if both NSAs can communicate. • Remote NSA Address • User Name • Password • Backup Share Path
External Disk	You only see this option if an external USB hard drive is connected to the NSA (for example USB1 ExtVolume 1)
What to Backup	
Files/Folders to backup:	This textbox shows the volume and path of the folder or files that you want to back up.

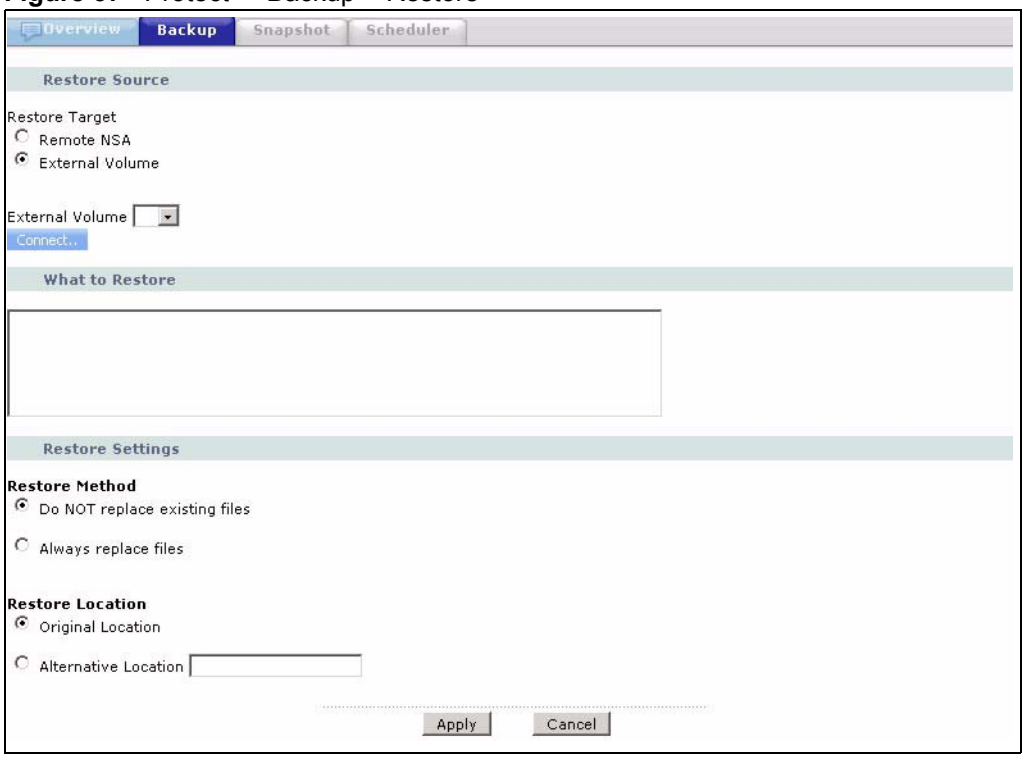
Table 29 Protect > Backup > Edit (continued)

LABEL	DESCRIPTION
Modify	Click **Modify** and then browse to the files and shares that you want to back up.
Advanced Settings	
Backup Method:	A **Normal** backup is a complete copy of all files and folders selected.
Use Compression	Compression reduces the size of the file that you want to back up. Backup is then faster, but restoring may be slower, so if backup space is not a concern and recovery speed is, then turn off compression.
Purge Settings:	Use **Purge** to delete old backups. This purge policy applies to this specific backup only, unlike snapshot purge policies which apply to all snapshots. Purge runs first before a new backup is done. For example, if you have a backup scheduled to begin at midnight, then at that time, the NSA checks these settings and deletes files accordingly before backup takes place. If space on the backup NSA or disk is a concern, then configure the NSA to delete old backups. • **Keep All Old Backups**: Purge is in effect disabled. Select this if backup space is not a concern. • **Keep only last backup files**: All backup files older than the last one are deleted. You will not be able to recover files that existed (only) in those previous backups. Select this if backup space is limited and recovery of old files is not important. • **Keep backups for a period of day(s)**: Backups older than the number of days you enter here are deleted. 0 days means that all old backups are deleted when a new one is done.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

6.3.3 Restoring Backups

Click the **Restore** button in the **Protect > Backup** screen to replace existing files with files saved previously.

Figure 37 Protect > Backup > Restore



The following table describes the labels in this screen.

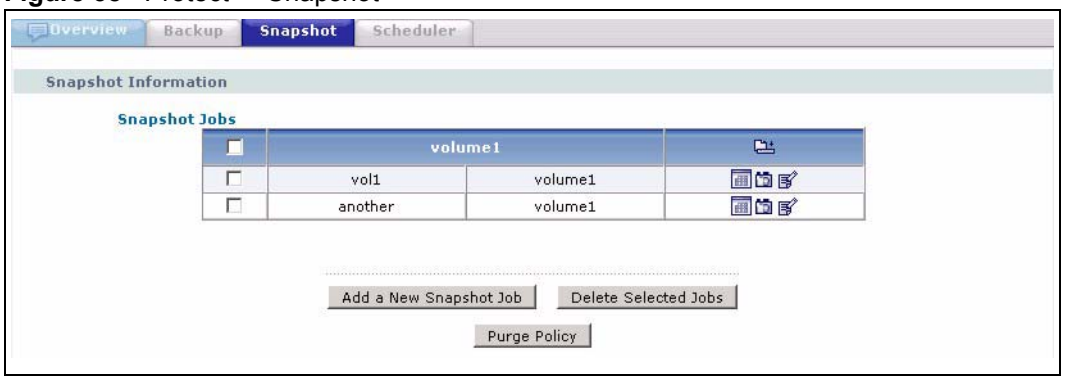
Table 30 Protect > Backup > Restore

LABEL	DESCRIPTION
Restore Source	
Restore Target	Choose from where to save the backup.
Remote NSA	If you chose to restore from another NSA, then type in its IP address here.
External Disk	If you chose to restore from an external USB hard drive then choose which one to restore from here.
What to Restore	Choose which previously saved backup to restore here.
Restore Settings	
Restore Method	Choose whether files in the backup should replace existing file.s • **Do NOT replace existing files** • **Always replace files**
Restore Location	Choose whether to restore files to their original location on the NSA-2400 or specify a different location (on the NSA-2400) • **Original Location** • **Alternative Location**
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

6.3.4 Snapshot Summary

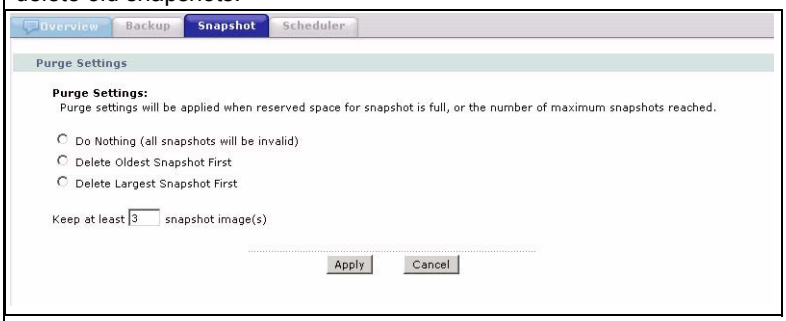
Click the **Protect** link in the Navigation panel, then click the **Snapshot** sublink to access the **Protect > Snapshot** summary screen.

Figure 38 Protect > Snapshot



The following table describes the labels in this screen.

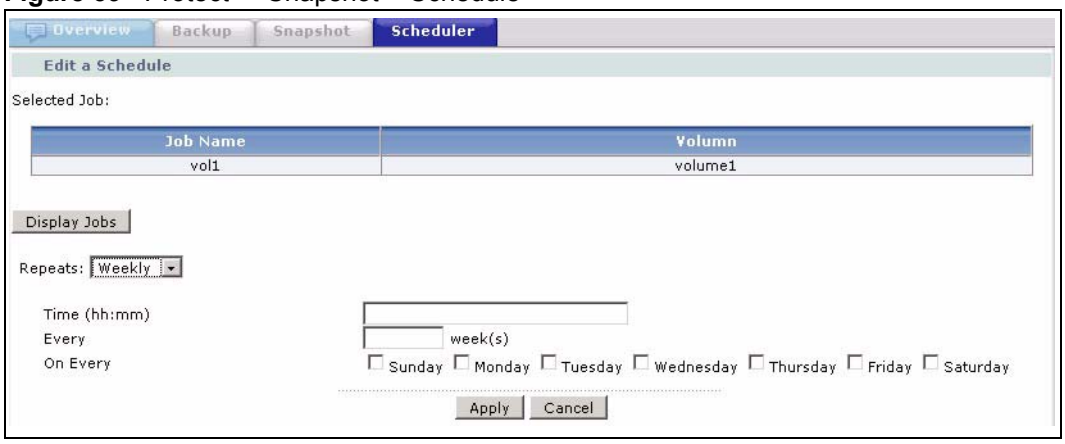
Table 31 Protect > Snapshot

LABEL	DESCRIPTION
Job Name	This is the name of the snapshot.
Volume	A snapshot must be on done on a complete volume, and not a single file or folder.
Actions	Use these icons to see all snapshot images taken so far (icon at the top of the column), schedule, immediately run or edit an existing snapshot.
Add a New Snapshot Job	Click this button to create a new snapshot (see Section 6.3.7 on page 92).
Delete Selected Jobs	Select the check boxes of snapshots you want to delete and then click this button to delete them.
Purge Policy	Click this button to display a screen where you can configure when to delete old snapshots.  You can also do this within the create/edit snapshot screen (see Section 6.3.7 on page 92 for details on these fields).

6.3.5 Schedule Snapshots

Click the schedule icon in the **Action** column in the **Protect > Snapshot** screen to schedule that snapshot. (You can also do this in the **Protect > Scheduler** screen, but if you do it in the **Protect > Snapshot** screen, then specific related snapshot information is already entered.)

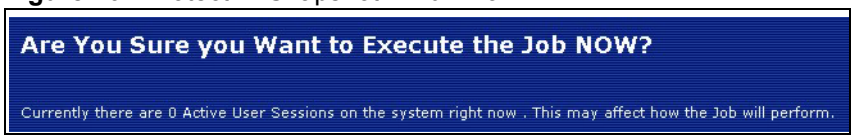
Figure 39 Protect > Snapshot > Schedule



See the **Protect > Scheduler** screen (Section 6.4 on page 93) in this User's Guide for more information on these fields.

Click the **Run Now** icon in the **Action** column in the **Protect > Snapshot** screen to immediately perform that snapshot. A screen pops up asking you to confirm.

Figure 40 Protect > Snapshot > Run Now



6.3.6 Creating/Editing Snapshots

Click the edit icon in the **Action** column in the **Protect > Snapshot** screen to edit that snapshot or click **Add a New Snapshot Job** to create a new snapshot.

Figure 41 Protect > Snapshot > Create/Edit

The following table describes the labels in this screen.

Table 32 Protect > Snapshot > Create/Edit

LABEL	DESCRIPTION
Snapshot Job Name:	This is a required field that uniquely identifies the snapshot. Type from one to 32 characters. All characters are allowed except \/:"'*?<>.
Snapshot Job Description:	Type from 0 to 60 characters to further describe this snapshot.

Table 32 Protect > Snapshot > Create/Edit (continued)

LABEL	DESCRIPTION
Volume Selection	A snapshot must be on done on a complete volume, and not a single file or folder. If a file in a volume become infected or corrupted, you must revert the whole volume back to its status in a previous snapshot.
Take Snapshots of	When creating a new snapshot, onlyvolumes that are already created on the NSA are available.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

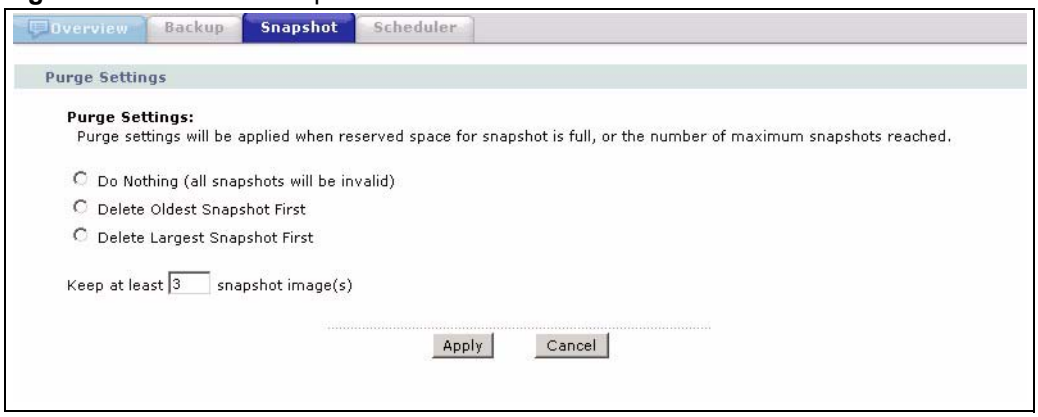
6.3.7 Purging Snapshots

Click the **Purge Policy** button in the **Protect > Snapshot** screen to define a rule for automatically deleting snapshots.

Purge policies apply to all snapshots, unlike backup purge policies which apply only to specific backups.

Purge policies always run before new snapshots are taken.

Figure 42 Protect > Snapshot > Create/Edit



The following table describes the labels in this screen.

Table 33 Protect > Snapshot > Create/Edit

LABEL	DESCRIPTION
Purge Settings:	Purge settings are run each time a snapshot is scheduled. • **Do Nothing (all snapshots will be invalid):** No new snapshots can be taken until you manually delete old snapshots. • **Delete Oldest Snapshot First**: The oldest snapshot will be deleted each time a new snapshot is scheduled. • **Delete Largest Snapshot First**: The largest snapshot will be deleted each time a new snapshot is scheduled. As a snapshot is a file of changes since your previous snapshots, selecting this option may cause problems with rollback later.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

6.4 Scheduler Screens

Use these screens to automatically run backups or snapshots at the configured times. It is recommended you schedule large backups for times when your network is not busy, such as at night. If two events are configured to run at the same time, then one must wait until the other finishes running.

The scheduler uses the dates and times you configured on the primary NSA (not the backup) **Maintenance > Date/Time** screen. Some backups or snapshots may not run if you change the NSA date and time after having configured schedules.

6.4.1 Scheduler Screen

Click the **Protect** link in the Navigation panel and then click the **Scheduler** sub-link to access the **Protect > Scheduler** summary screen.

Figure 43 Protect > Scheduler

The following table describes the labels in this screen.

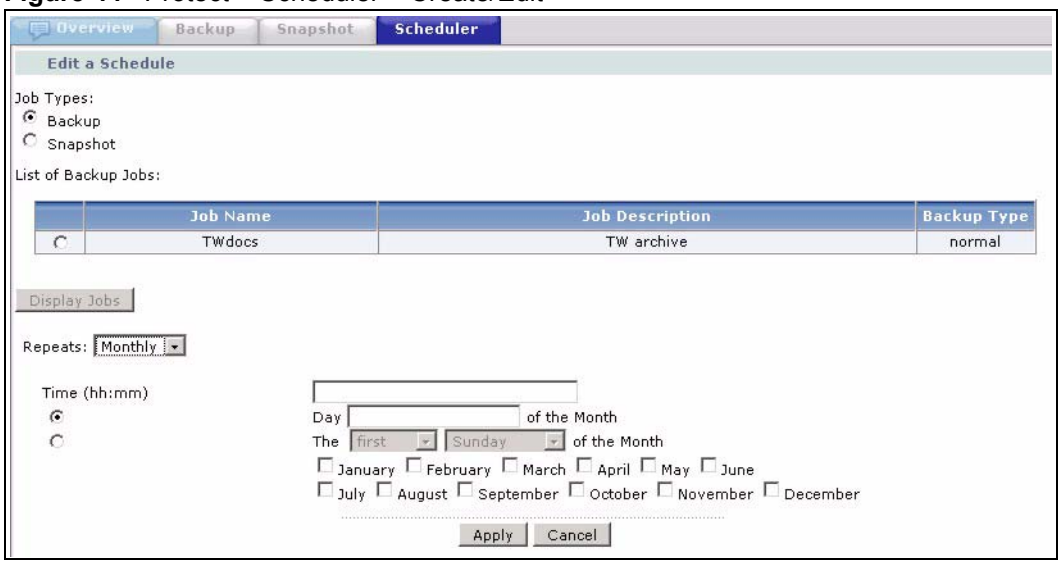
Table 34 Protect > Scheduler

LABEL	DESCRIPTION
Status	This fields shows whether the backup or snapshot has been run yet..
Job Name	This is the name of the backup or snapshot that's scheduled to be run automatically.
Type	This displays whether the schedule is for a backup or a snapshot.
Schedule	This shows the days and times the backup or snapshot will run.
Last Run	This shows the date and time the backup or snapshot was last run.
Next Run	This shows the date and time the backup or snapshot will run next..
Action	Click the edit icon to edit an existing schedule or the delete icon to delete it.
Create a Schedule	Click this button to create a new schedule.

6.4.2 Scheduler Create/Edit Screen

Click the **Create a New Scheduled Task** button in the **Protect > Scheduler** screen to create a new schedule. Click the edit icon in the **Protect > Scheduler** screen to edit an existing schedule.

Figure 44 Protect > Scheduler > Create/Edit



The following table describes the labels in this screen.

Table 35 Protect > Scheduler > Create/Edit

LABEL	DESCRIPTION
Edit a Scheduler	
Job Type:	Select whether the schedule is for a backup or snapshot. Backup is selected in this screen
List of Backup Jobs	The following table displays information on the backups or snapshots you have created.
Job Name	This displays the name of the backup or snapshot to be scheduled.
Job Description	This displays the description you typed for the backup.
Backup Type	This displays normal.
Display Jobs	Click this button to show details of the job selected.
Repeats	Select how often the job should run (**Daily**, **Weekly** or **Monthly**)
Time	Enter the time, day and/or month as appropriate for your selection above.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

7

Storage Screens

This chapter covers storage systems, volumes and disks on the NSA-2400.

7.1 Storage Introduction

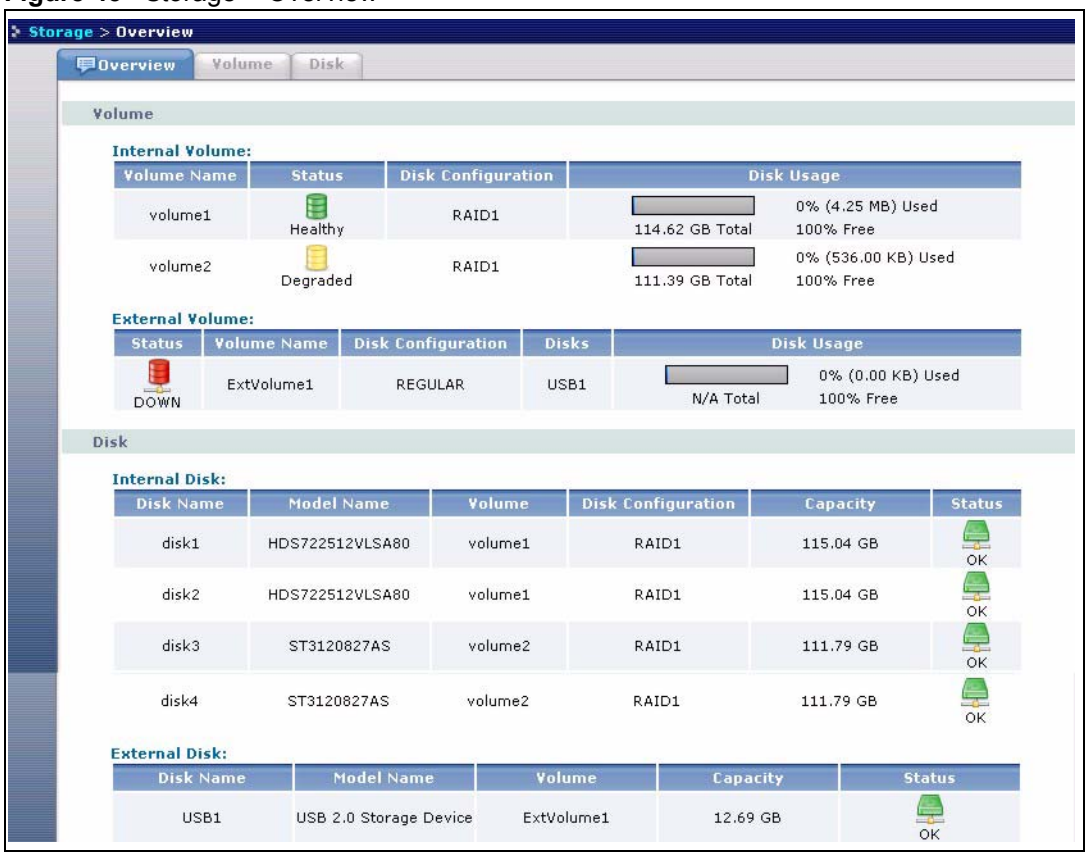
Use the **Storage** screens to create and manage NSA-2400 volumes (internal and external), disks and reserve snapshot space.

- See Section 7.3 on page 97 for more information on volumes.
- See Section 7.7 on page 108 for more information on disks.

7.2 Storage Overview Screen

Click the **Storage** link in the Navigation panel to access the **Storage > Overview** screen. This is the first screen displayed.

Figure 45 Storage > Overview



The following table describes the labels in this screen.

Table 36 Storage > Overview

LABEL	DESCRIPTION
Internal/External Volume	These tables display information on all internal volumes (created on NSA internal disk drives) and external volumes (created on external disk drives attached to the NSA USB ports). See the volume screen for field details.
Volume Name	The NSA creates the volume name automatically.
Status	This field shows whether the volume is **Healthy, Resynching, Waiting Resynch, Degraded** or **Down**.
Disk Configuration	This field shows which data storage system the volume is using.
Disk Usage	This field shows how many bytes of space on the volume are being used.
Internal/External Disk	This table displays information on all internal disk drives and external disk drives (attached to the USB port(s)).
Disk Name	The NSA creates the disk name automatically depending on how many disks you installed in the NSA.
Model Name	This is the hard disk number that identifies the disk.
Volume	This field shows the volume to which the disk belongs.
Disk Configuration	This field shows the volume storage system to which that disk belongs.

Table 36 Storage > Overview (continued)

LABEL	DESCRIPTION
Capacity	This field shows the size of the disk in GB.
Status	This field displays **OK** if the (physical) disk is readable and **Down** if no data can be read from it. If **Down**, the disk may need to be scanned for errors or replaced. If it needs to be repaired or replaced, then you will have to resynchronize the volume.

7.3 Volumes and RAID

A volume is a storage area on a disk or disks. You can create volumes on the internal disks and external disks attached to the USB port(s). You can spread a volume across internal disks but not between internal and external disks.

RAID (Redundant Array of Independent Disks) or JBOD is the storage method that the NSA-2400 uses. The storage method you use depends on how many disks you have and how many volumes you want to create. It's important that you consider this carefully as all data is deleted when you re-create a volume.

Back up your data before deleting or re-creating a volume!

For example if you originally have two disks configured at RAID 1, and you then buy two more disks and want to configure all four at RAID 5, you should first back up all your data on those disks (see the Genie Backup Manager utility on the included CD) and then restore your data later after you create the new volume type.

Below is a table that summarizes some attributes of the various RAID levels as supported on the NSA-2400. For capacity and storage efficiency, "S" is the size of the smallest drive in the array, and "N" is the number of drives in the array.

Storage efficiency assumes all drives are of identical size.

Performance rankings are approximations.

Table 37 RAID Quick Comparison

RAID Level	0	1	5	10
Number of Disks	2,3,4	2	4	4
Capacity	S*N	S*N/2	S*(N-1)	S*N/2
Storage Efficiency	100%	50%	(N-1)/N	50%
Fault Tolerance	None	YYYY	YYY	YYYY
Availability	Y	YYYY	YYYY	YYYY
Read Performance	YYYY	YYY	YYYY	YYYY
Write Performance	YYYY	YYY	YY	YYY

7.3.1 Choosing A Storage Method For a Volume

The following is a guide to help you choose a storage method for the various number of disks supported on the NSA-2400. See Section 7.4 on page 100 for theoretical background on JBOD and the RAID levels used on the NSA-2400. Typical applications for each method are also shown there.

7.3.1.1 One Disk

If you only have one disk, you must use JBOD. All disk space is used for your data - none is used for backup. If the disk fails, then you lose all the data on that volume (disk).

7.3.1.2 Two Disks:

You may choose JBOD, RAID 0 or RAID 1. With two disks you could create:

- up to two JBOD volumes
- one RAID 0 or RAID 1 volume
  - Choose JBOD for flexibility and maximum usage of disk space for data. You can either add an additional disk to your one-disk JBOD volume (and so don't have to re-create shares, access rights etc.) or create a different JBOD volume (and create new shares, access rights etc.).
  - Choose RAID 0 if performance matters more than data security. RAID 0 has the fastest read and write performance but if one disk fails you lose all your data on the volume. It has fast performance as it can read and write to two disks simultaneously. Performance may matter more than data security to gamers for example. This method may also be acceptable for data that is already backed up somewhere else.
  - Choose RAID 1 if data security is more important than performance. Since RAID 1 mirrors data onto a second disk, you can recover all data even if one disk fails, but the performance is slower than RAID 0.

7.3.1.3 Three Disks

Choose a combination of JBOD and/or RAID 0 or RAID 1 for the reasons already outlined. With three disks you could create:

- up to three JBOD volumes
- one JBOD volume and one RAID 0 or RAID 1 volume

7.3.1.4 Four Disks

In addition to the JBOD, RAID 0 and RAID 1 choices, you may choose RAID 10, RAID 5 or RAID5_SPARE. With four disks you could create:

- up to four JBOD volumes
- one or two JBOD volumes and one RAID 0 or RAID 1 volume
- two RAID 0 volumes or two RAID 1 volumes
- one RAID 0 volume and one RAID 1 volume
- one volume using one of RAID 10, RAID 5 or RAID5_SPARE
  - Choose RAID 10 for maximum data security but with just 50% of the available space for your data. You can recover all data even if two disks (not in the same RAID 1 array) fail. If two disks in the same RAID 1 array fail, then all data in the volume is lost. If two disks in different RAID 1 arrays fail, then you effectively have a RAID 0 configuration.

- Choose RAID 5 if you need more disk space available for data and if up to one disk failure is acceptable. RAID 5 uses 75% of the available space for your data. All data can be recovered if one disk fails. If two disks fail then, all data in the volume is lost. If one disk fails, the volume is degraded and will perform more slowly than a healthy volume. You should shut down the NSA, replace the faulty disk and then resynchronize the volume to attain previous performance.
- Choose RAID5_SPARE if you need the volume to recover as soon as possible in the event of a disk failure. RAID5_SPARE operates as a RAID 5 with three disks while the fourth disk is on standby. The standby disk automatically comes into play if a disk in the 3-disk RAID5 volume fails. The advantage of RAID5_SPARE over RAID 5 is that if a disk fails, then the volume resynchronizes automatically with the standby disk and operates at healthy volume speed after the resynchronization. RAID5_SPARE uses 50% of the available space for your data.

7.3.1.5 External Disks

You can configure **JBOD** or **BACKUP** on external USB disks. Choose **BACKUP** if you intend to use the backup menus to copy data from the NSA internal drive(s) to an external USB drive.

7.3.2 Volume Status

You (the administrator) can see the status of a volume in the **Status**, **Storage > Overview** or **Storage > Volume** screens.

The NSA-2400 has the following classifications for the status of a volume:

- **Healthy** if all disks in the volume are OK and the file system is functioning properly.
- **Resynching** when you create or repair a RAID volume.
- **Waiting Resync** when there is already another volume resynchronizing. Only one volume can resynchronize at one time.
- **Degraded** when a volume is currently down, but can be fixed. Data access may be slower from a degraded volume, so it's recommended that you replace the faulty disk and repair the volume as soon as you can.
- **Down** when a volume is down and can not be fixed.

A down RAID volume cannot be used until you repair or replace the faulty disk(s) in the volume. Degraded means one of the disks in the RAID volume is not available but the volume can still be used. For a degraded volume, you should replace the faulty disk as soon as possible to obtain previous performance. See your Quick Start Guide for more information on replacing a disk. If there is already another volume resynchronizing, then you will see **Waiting Resync** as the volume status.

If it's down, then the only indication is that they can no longer transfer files to/from the shares in the down volume. If it's degraded, then file transfer to/from the shares in the degraded volume will be slower.

There is no explicit message from CIFS that tells users their volume is degraded or down.

7.3.3 Resynchronizing a RAID 1 or 5 Volume

Resynchronizing a RAID 1 or 5 Volume is done block-by-block, so the time it takes depends more on the size of your hard drive(s) than the amount of data you have on them.

You should not restart the NSA while the NSA is resychronizing a volume as this will cause the synchronization to begin again after the NSA fully reboots.

You can access data on a RAID volume while it is resychronizing, but it is not recommended.

7.4 RAID

This section contains theoretical background on JBOD and the RAID levels used on the NSA-2400. Skip to the next section if you already understand RAID and know what storage system you want to use on the NSA-2400.

Redundant Array of Independent Disks (RAID) is a method of storing data on multiple disks to provide a combination of greater capacity, reliability, and/or speed. JBOD (Just a Bunch Of Disks) is not a RAID storage method but it is included in this discussion.

These are some terms that you need to know in order to understand storage systems.

- Mirroring

  In a RAID system using mirroring, all data in the system is written simultaneously to two hard disks instead of one. This provides 100% data redundancy as if one disk fails the other has the duplicated data. Mirroring setups always require an even number of drives.
- Duplexing

  Like in mirroring, all data is duplicated onto two distinct physical hard drives but in addition it also duplicates the hardware that controls the two hard drives (one of the drives would be connected to one adapter and the other to a second adapter).
- Striping

  Striping is the breaking up of data and storing different data pieces on each of the drives in an array. This allows faster reading and writing as it can be done simultaneously across disks. Striping can be done at the byte level, or in blocks. Byte-level striping means that the first byte of the file is sent to the first drive, then the second to the second drive, and so on. Block-level striping means that each file is split into blocks of a certain size and those are distributed to the various drives. The size of the blocks used is also called the stripe size (or block size).
- Parity

In mirroring 50% of the drives in the array are reserved for duplicate data. Parity is another way to allow data recovery in the event of disk failure using calculations rather than duplicating the data. If you have ‘n’ pieces of data, parity computes an extra piece of data. The’n+1’ pieces of data are stored on ‘n+1’drives. If you lose any one of the ‘n+1’ pieces of data, you can recreate it from the ‘n’ that remain, regardless of which piece is lost. Parity protection is used with striping, and the “n” pieces of data are typically the blocks or bytes distributed across the drives in the array. The parity information can either be stored on a separate, dedicated drive, or be mixed with the data across all the drives in the array.

In the following figures, A1, A2, A3 and so on are blocks of data from the A file. Similarly, B1, B2, B3 and C1, C2, C3 ar blocks of data from the B and C files.

7.4.1 JBOD

JBOD allows you to combine multiple physical disk drives into a single virtual one, so they appear as a single large disk. JBOD can be used to turn several different-sized drives into one big drive. For example, JBOD could convert 5 GB, 10 GB, 15 GB, and 20 GB drives into one large logical drive of 50 GB. Moreover, since data isn’t striped across disks, if one disk fails, you should just lose the data on that disk (but you may lose data in the whole volume depending on the nature of the disk failure). You can add disks to the JBOD volume later (using the Add disk to JBOD feature) and even remove them so JBOD offers a lot of flexibility. However JBOD read performance is not as good as RAID as only one disk can be read at a time and they must be read sequentially. The following figure shows three disks in a single JBOD volume. Data is not written across disks but written sequentially to each disk until it’s full.

Table 38 JBOD

A1	**B1**	**C1**
A2	**B2**	**C2**
A3	**B3**	**C3**
A4	**B4**	**C4**
DISK 1	**DISK 2**	**DISK 3**

7.4.2 RAID 0

RAID 0 spreads data evenly across two or more disks (data striping) with no mirroring nor parity for data redundancy, so if one disk fails the entire volume will be lost. The major benefit of RAID 0 is performance. The following figure shows two disks in a single RAID 0 volume. Data can be written and read across disks simultaneously for faster performance.

Table 39 RAID 0

A1	A2
A3	A4
A5	A6
A7	A8
DISK 1	DISK 2

RAID 0 capacity is the size of the smallest disk multiplied by the number of disks you have configured at RAID 0 on the NSA. For example, if you have four disks of sizes 100 GB, 150 GB, 150 GB and 200 GB respectively in one RAID 0 volume, then the maximum capacity is 400 GB (4 * 100 GB, the smallest disk size) and the remaining space (300 GB) is unused.

Typical applications for RAID 0 are non-critical data (or data that changes infrequently and is backed up regularly) requiring high write speed such as audio, video, graphics, games and so on.

7.4.3 RAID 1

RAID 1 creates an exact copy (or mirror) of a set of data on another disk. This is useful when data backup is more important than data capacity. The following figure shows two disks in a single RAID 1 volume with mirrored data. Data is duplicated across two disks, so if one disk fails, there is still a a copy of the data.

Table 40 RAID 1

A1	A1
A2	A2
A3	A3
A4	A4
DISK 1	DISK 2

As RAID 1 uses mirroring and duplexing, a RAID 1 volume needs an even number of disks (two or four for the NSA).

When you use RAID 1 on the NSA-2400, you MUST use disks 1 and 2 in one RAID volume and/or disks 3 and 4 in the other; you cannot have disks 1 and 3 in the same RAID volume for example.

RAID 1 capacity is limited to the size of the smallest disk in the RAID array. For example, if you have two disks of sizes 150 GB and 200 GB respectively in one RAID 1 volume, then the maximum capacity is 150 GB and the remaining space (50 GB) is unused.

Typical applications for RAID 1 are those requiring high fault tolerance without need of large amounts of storage capacity or top performance, for example, accounting and financial data, small database systems, and enterprise servers.

7.4.4 RAID 10

RAID 10 (RAID 1+0) is a nested RAID where two RAID 1 arrays are stored on the physical disks with a RAID 0 array on top. It is a stripe of mirrors. RAID 1 provides redundancy while RAID 0 boosts performance. The following figure shows two disks in two RAID 1 arrays. Data is duplicated across two disks, so if one disk fails, there is still a a copy of the data. These two arrays are configured as a single RAID 0 volume for faster performance.

Table 41 RAID 10

RAID 0			
RAID 1		RAID 1	
A1	A1	A2	A2
A3	A3	A4	A4
A5	A5	A6	A6
A7	A7	A8	A8
DISK 1	DISK 2	DISK 3	DISK 4

Typical applications for RAID 10 are those requiring both high performance and reliability such as enterprise servers and high-end moderate-sized database systems. RAID 10 is often used in place of RAID 1 or RAID 5 by those requiring higher performance. It may be used instead of RAID 1 for applications requiring more capacity.

7.4.5 RAID 5

RAID 5 provides the best balance of capacity and performance while providing data redundancy. It provides redundancy by striping data across three disks and keeps the parity information (AP) on the fourth disk (in each stripe). In case of disk failure, data can be recovered from the surviving disks using the parity information. When you replace the failed disk, the reconstructed data is written onto the new disk. Resynchronize the volume to have it return to its original state. The following figure shows data stripped across three disks (A1 to A3 in the first strip for example) with parity information (AP) on the fourth disk.

Table 42 RAID 5

A1	A2	A3	AP
B1	B2	BP	B3
C1	CP	C2	C3
DP	D1	D2	D3
DISK 1	DISK 2	DISK 3	DISK 4

The capacity of a RAID 5 volume is the smallest disk in the RAID set multiplied by one less than the number of disks in the RAID set. For example, if you have four disks of sizes 150 GB, 150 GB, 200 GB and 250 GB respectively in one RAID 5 volume, then the maximum capacity is 450 GB (3 * 150 GB, the smallest disk size) and the remaining space (300 GB) is unused.

Typical applications for RAID 10 are transaction processing, relational database applications, enterprise resource planning and other business systems. For write-intensive applications, RAID 1 or RAID 1+0 are probably better choices, as the performance of RAID 5 will begin to substantially decrease in a write-heavy environment.

7.4.6 RAID 5 SPARE

RAID 5 SPARE operates as a RAID 5 with three disks while the fourth disk is on standby. The standby disk automatically comes into play if a disk in the volume fails. The advantage of RAID5_SPARE over RAID 5 is that if a disk fails, then the volume resynchronizes automatically with the standby disk and operates at healthy volume speed after the resynchronization.

You need four hard disks to use RAID 10, RAID 5 and RAID5_SPARE on the NSA-2400.

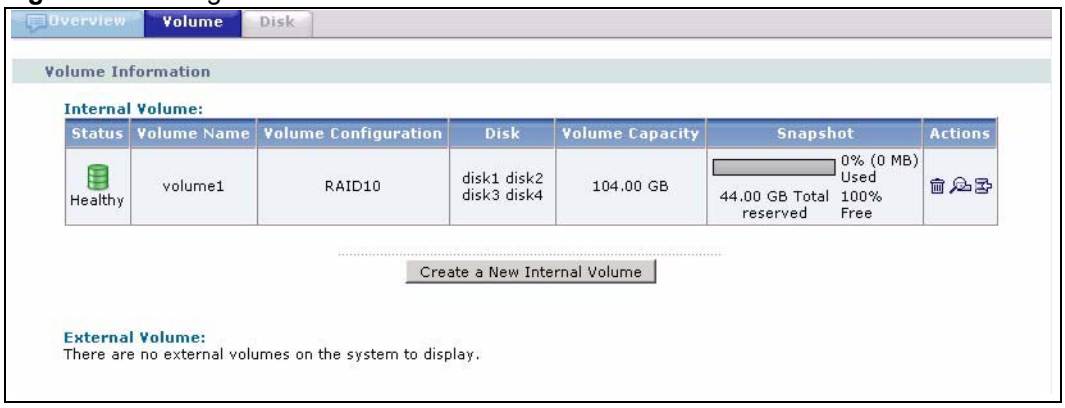
7.4.7 RAID and Data Protection

If a hard disk fails and you're using a RAID 1, RAID 10, or RAID 5 volume then your data will still be available (but at degraded speeds until you replace the hard disk that failed and resynchronize the volume). However, RAID cannot protect against file corruption, virus attacks, files incorrectly deleted or modified, or the NSA-2400 malfunctioning. See Section 6.1 on page 81 for what you should use in these cases to protect data on your NSA-2400.

7.5 Volume Screen

Click the Volume tab to display the volume summary screen as shown.

Figure 46 Storage > Volume



The following table describes the labels in this screen.

Table 43 Storage > Volume

LABEL	DESCRIPTION
Volume Information	
Internal/External Volume:	These tables display information on volumes created on the NSA internal disk drives and on the NSA external disk drives attached to the USB port(s).
Status	This field shows **Healthy, Resynching, Waiting Resync, Degraded** or **Down**; see Section 7.3.2 on page 99. If a volume is degraded, you should click the **Repair** icon after you have replaced the faulty disk.
Volume Name	This field shows the NSA-generated name for the volume.
Volume Configuration	This field shows what type of data storage system (a RAID type or JBOD) the volume is using. For external drives, it may show **REGULAR** meaning that the NSA can read the volume but the volume wasn't created on the NSA.
Disks	This field shows the hard disks that are in the volume.
Volume Capacity	This field shows the total size of the volume.
Snapshot	Snapshot just takes up as much space as it needs (within the reserved space). This field shows how much of the reserved space is currently being used for snapshots.

Table 43 Storage > Volume (continued)

LABEL	DESCRIPTION
Actions	This field displays icons allowing you to remove, scan or expand a volume. You can expand a volume by up to the amount of snapshot reserved space less the amount of space currently being used by snapshots.This in effect decreases or eliminates spare snapshot reserved space. Note: All snapshots are lost if you run out of reserved snapshot space. Note: If you remove a volume (or change a volume type), all data in the volume disk(s) is erased. If there are conflicting volumes, you will see an **Unmount** icon in addition to these icons. See Section 7.7.4 on page 109 for more information on conflicting volumes.
Create a New Internal Volume	If you have disks available for a new volume, then click this button to create it.

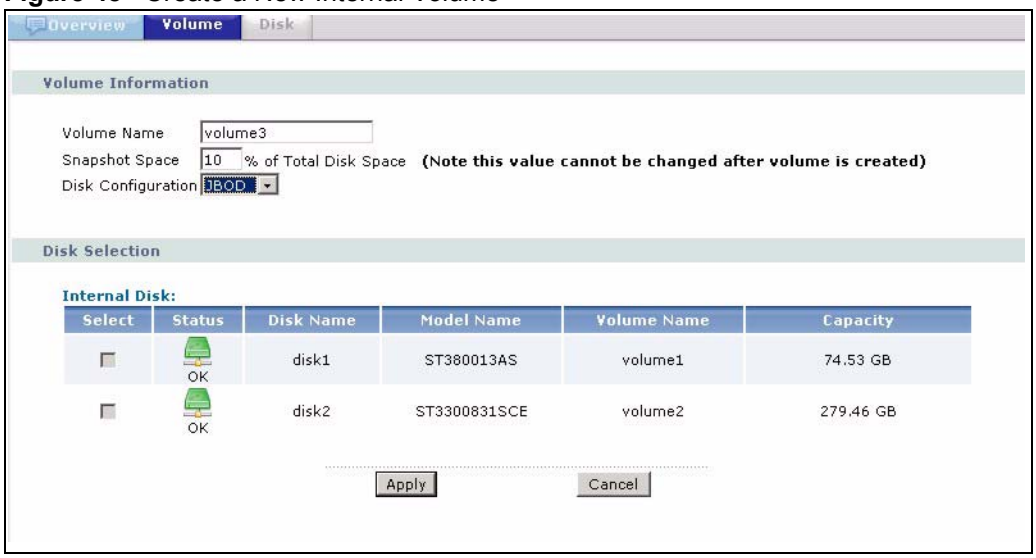
You see the following warning screens before you remove, scan or expand a volume.

Figure 47 Remove, Scan Or Expand A Volume

7.6 Creating a New Internal Volume

Click the **Create a New Internal Volume** button in the **Volume** screen as shown in Figure 46 on page 105 to create a new NSA internal disk drive volume.

Figure 48 Create a New Internal Volume



The following table describes the labels in this screen.

Table 44 Create a New Internal Volume

LABEL	DESCRIPTION
Volume Information	
Volume Name	Internal volume names are pre-defined. You cannot change them.
Snapshot Space	Type what percentage of the volume should be used for snapshots. Snapshots take up as much space as they need (within the reserved space). Note: Reserved snapshot space can not be increased later, so it's better to reserve enough space in the beginning. All snapshots are lost if you run out of disk space.
Disk Configuration	Use **JBOD** or **RAID 0** if you want maximum capacity and/or maximum speed for your disks, and/or you have other means of protecting your data. Use **RAID 1** if you want to mirror primary data to another disk(s) with high performance. Use **RAID 10**, **RAID 5** or **RAID%_SPARE** if you have four disks and you want to balance performance, hard disk capacity usage with data protection in case of disk failure. See Section 7.3 on page 97 and Section 7.4 on page 100 for more information on storage systems.
Disk Selection	
Internal Disk:	This table lists all hard disks installed inside the NSA. Use the **Select** check box(es) to choose which disks should make up this volume. A disk can only belong to one volume.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

7.7 Disk

You can view information on the NSA internal disks and external disks attached to the USB port(s) in this screen.

7.7.1 Maintenance Mode

If you have no internal NSA volumes (disks), then the NSA is in **Maintenance Mode**. When the NSA is in this mode you cannot create users, groups or shares on the NSA. You must first go to the **Storage > Disk** screen and create an internal volume (assuming you already have an internal disk installed).

You need to have at least one internal hard disk installed and an internal volume created before you can use an external hard disk.

7.7.2 External Disks

You may connect USB storage devices that support the following file systems to the NSA.

- Windows File Systems: NTFS (read only), FAT32 and FAT16.

If your USB storage device uses a NTFS file system, then the NSA can read files from it, but cannot write files to it. If you want to be able to write files to that storage device, then you should back up all data on the device (to an internal drive for example) and then click the **Initialize** icon for the NSA to create an XFS volume on the (external) hard drive. You can then both read and write to that hard drive and restore your data to it.

- Linux File Systems: EXT2, EXT3 and XFS

Although the NSA can read previously-stored files and folders using double-byte characters (such as Chinese), it does not allow you to write new ones to an external drive using double-byte characters.

7.7.3 Disk Replacement Restrictions

See the Quick Start Guide for information on replacing disks in the NSA. When replacing a disk in a degraded or down RAID volume, the new disk must be at least the same size or bigger than the other disks that are already in the RAID volume, so as all data in the volume can be restored.

For example, if you have RAID with 250 GB disks, you must put in a 250 GB or bigger disk as a replacement in order to restore all original data in that volume. If you put a bigger disk, the extra space on the disk will not be used.

AFTER replacing the disk, go to the **Storage>Disk** page and click the **Repair** icon next to the new disk.

The NSA does not repair a disk automatically when you replace it; you must click **Repair**.

7.7.4 Disk Replacement and Volume Labels

When you create a volume, the NSA writes the volume label to the disk.

Deleting a volume removes volume label information on its disk(s). It is recommended that you first delete a volume before removing its disk(s).

If you remove a disk(s) without deleting its volume and you later put the disk(s) back in a different volume, problems may occur. For example, suppose you have two disks, Disk A and Disk B and you create two **JBOD** volumes, volume1 (with Disk A) and volume2 (Disk B). Later you remove Disk A and replace it with another disk, Disk C and you re-create volume1. (You did not delete volume1 when you removed Disk A.) Later you replace Disk B with Disk A. Disk A still retains the volume1 label, so at this point there are conflicting duplicate volumes since both Disk A and Disk C have the volume1 label.

7.7.4.1 Volume Conflict Resolution Procedure

Mount and unmount icons (only) appear in the **Storage > Volume** screen when two volumes of the same name exist. The NSA can only recognize unique volume names, so you must use these icons to delete a duplicate name. Follow this procedure to do that:

1. Click the **Unmount** icon in the **Storage > Volume** screen (Figure 46 on page 105) to unmount the volume you want to be volume 1 (disk A for example).
2. Click the **Mount** icon in the **Storage > Volume** screen (Figure 46 on page 105) to mount the volume you wish to delete (disk B for example).
3. Delete this volume 1 (Disk B).
4. Now mount the original volume 1 (Disk A).

7.7.4.2 Alternative Conflict Procedure

1. Shut down the NSA.
2. Remove the disk(s) in one conflicting volume. The other disk(s) that are in the other conflicting volume must remain connected.
3. Restart the NSA.
4. Open your browser and connect to the web configurator; verify that the volume is properly recognized.
5. Save a backup of this volume.
6. Once you have made the backup, go to **Storage > Volume** and delete this volume.
7. Shut down the NSA.
8. Put back the disk(s) you removed in step 1.
9. Restart the NSA.

10 The original volume should be visible in the web configurator and the previously conflicting volume should be shown as an available disk.

11 Go to **Storage > Volume** and create a new volume on the available disk.

12 Once the new volume is successfully created, restore your backup data (step 5) onto this new volume.

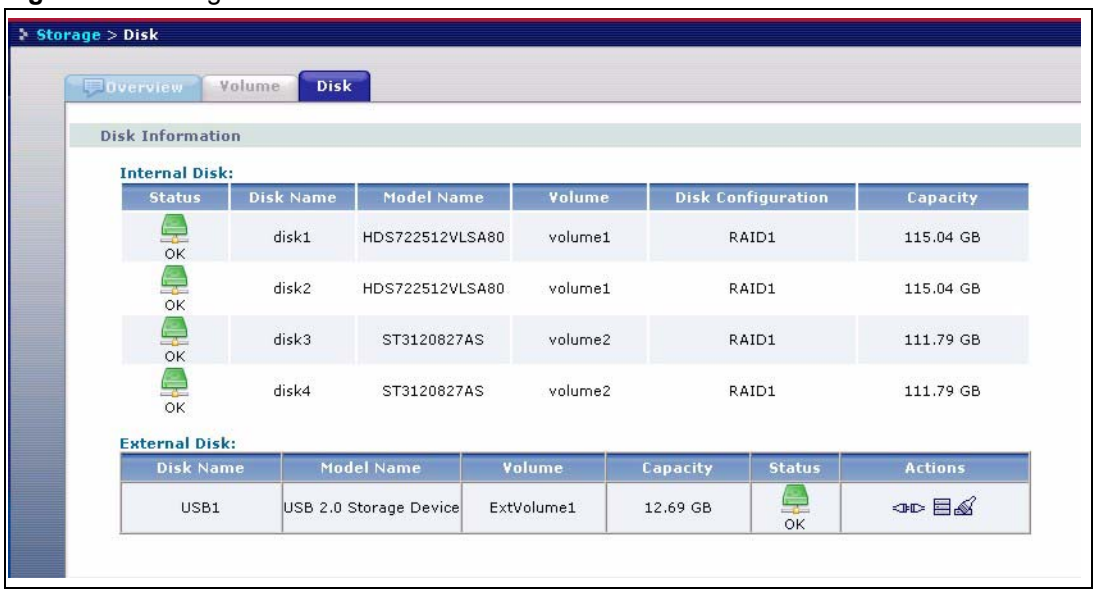
Conflicting volumes may also arise if you use **JBOD** and/or **RAID 1**.

To avoid conflicting volumes, delete a volume before you remove its disk(s).

7.7.5 Disk Screen

The following screen shows information on disks installed in the NSA-2400.

Figure 49 Storage > Disk

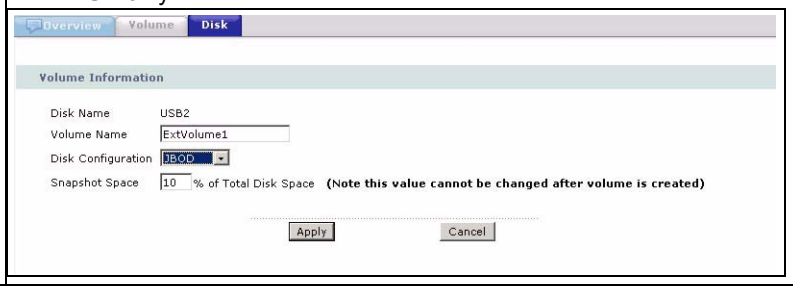


The following table describes the labels in this screen.

Table 45 Storage > Disk

LABEL	DESCRIPTION
Disk Information	
Internal/External Disk:	These tables display information on the NSA internal and external disk drives (attached to the USB ports).
Disk Name	This field shows **disk1**, **disk2**, **disk3** and/or **disk4** for disks installed in the NSA disk trays labelled 1, 2, 3 and 4 respectively. It shows **USB1**, **USB2** and/or **USB3** for external USB disks; USB ports are not numbered, so **USB1** represents the first device you connected to the NSA, **USB2** the second and so on. If you're unsure of which external disk is connected to which port, then use the **Locate** icon to cause a LED on the external disk to blink.
Model Name	This is the hard drive model number that uniquely identifies a hard drive.

Table 45 Storage > Disk (continued)

LABEL	DESCRIPTION
Volume	This field shows which volume the disk belongs to. It shows **No Volume** if it does not (yet) belong to a volume.
Disk Configuration	This shows the volume storage system to which the disk belongs. See Section 7.3 on page 97 and Section 7.4 on page 100 for more information on storage systems.
Capacity	This field shows the size of the hard disk.
Status	This field shows if the hard disk is functioning normally.
Action	Click the **Scan Disk** icon to scan a hard disk drive for bad sectors and file system errors. Note: All users must disconnect from the NSA before the disk scan can begin. For external hard disks, there are additional **Disconnect**, **Locate** and **Initialize** icons. Make sure to click the **Disconnect** icon before you remove an external drive so that you do not lose data that is being transferred to or from that hard drive. Click the **Locate** icon to cause the corresponding USB LED on the NSA to blink. Click the **Initialize** icon for the NSA to create a volume on the (external) hard drive. You can configure an external disk as either **JBOD** or **BACKUP** only! 

8

Maintenance Screens

This chapter discusses the **Maintenance** screens.

8.1 Maintenance Overview

Use the maintenance screens to:

- View system information
- Set the NSA-2400 date and time
- View logs and configure where e-mail logs should be sent via e-mail
- Change your password and configure HTTPS
- Manage the NSA-2400 configuration file
- Upload new firmware
- Restart or shut down your NSA-2400

Click the **Maintenance** link in the Navigation panel to access the **Maintenance > Overview** screen. This is the first screen displayed.

8.1.1 HTTPS and SSL

HTTPS is HyperText Transfer Protocol over Secure Socket Layer, or HTTP over SSL. For more information about these protocols see Section 8.4.1 on page 118.

8.1.2 Maintenance Overview Screen

Figure 50 Maintenance > Overview

The following table describes the labels in this screen.

Table 46 Maintenance > Overview

LABEL	DESCRIPTION
Date & Time	
Current Time	This field displays the time of your NSA-2400. The time is updated periodically from the time server.
Current Date	This field displays the date of your NSA-2400. The date is updated periodically from the time server.
Current Time Zone	This is the time zone of your location. This displays the time difference between your time zone and Greenwich Mean Time (GMT).
Time Server Address	This is the IP address or URL of your time server.
Log Alert	
Email Alert Frequency	This field displays how often the NSA-2400 should send e-mail alerts.
Primary Email Address	This field displays your primary e-mail address. It is necessary to enter your primary e-mail address in the **Maintenance > Log Alert** screen.
Secondary Email Address	This field displays your secondary e-mail address.
Outgoing Mail Server (SMTP)	This field displays the IP address of your outgoing mail server.
Security	
HTTPS Status	This field displays if HTTPS is enabled or disabled. You can click the **Use Secure Connection** checkbox in the **Maintenance > Security** screen to change this setting.
SSL Certificate	This field displays what type of SSL certificate your system is using. You can modify SSL by loading a different certificate in the **Maintenance > Security** screen.
Firmware	
Firmware Version	This field displays the version number of the firmware for your NSA-2400.

8.2 Date/Time

Use this screen to select a time zone and a time server from which your NSA-2400 can get the time and date. This time is then used in NSA-2400 logs and alerts.

8.2.1 Time Lag

Time lag occurs when the time on the NSA-2400 falls behind the time on the time server. This may happen if:

- the time server is no longer reachable
- if the NSA-2400 is shut down often (the NSA-2400 internal battery keeps time when the NSA-2400 is shut down and this may cause possible variance)
- power surges occur.

The NSA-2400 gives no warning if time lag occurs. You should resynchronize the time after a power surge or after you have shut down the NSA-2400 several times.

8.2.2 Time/Date And External Domain Controllers

The NSA-2400 time and date must be the same as the time and date on the external domain controller if the NSA-2400 is using one. To ensure this, you could use your domain controller as your time server if it has this function. Select **Set My Own Timeserver** and then enter the domain controller's IP address in **Time Server Address**. You can then in turn, set your domain controller to use another time server on the Internet.

8.2.3 Pre-defined NTP Time Servers List

When you turn on the NSA-2400 for the first time, the date and time start at 2000-01-01 00:00:00. The NSA-2400 then attempts to synchronize with one of the following pre-defined list of time servers. A time server is a server that keeps the correct time. It can assign time to the NSA-2400.

The NSA-2400 tries to connect to the following pre-defined list of time servers if you do not specify one or it cannot synchronize with the time server you specified.

These are the time servers available on the NSA-2400 at the time of writing.

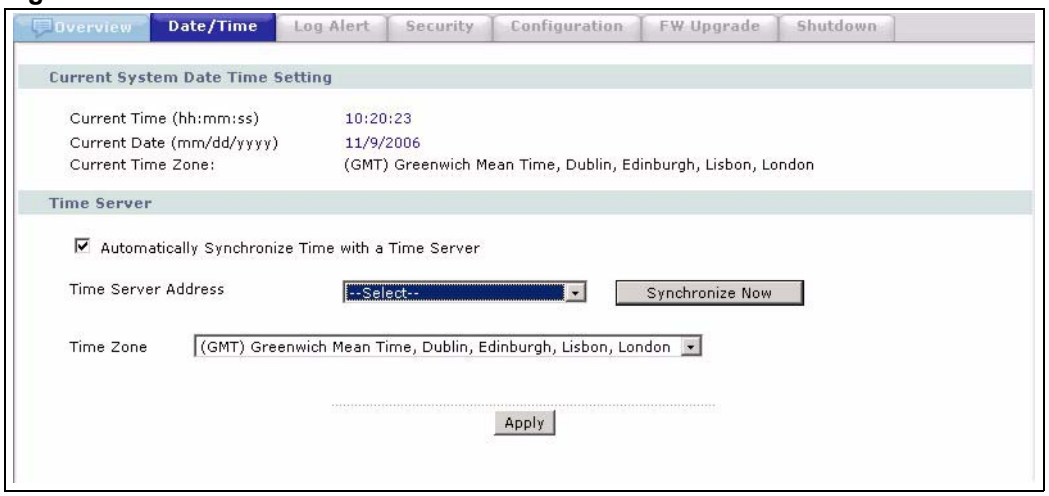
Table 47 Default Time Servers

ntp.nasa.gov
pool.ntp.org
asia.pool.ntp.org
a.ntp.alphazed.net

8.2.4 Date/Time Screen

Click the **Maintenance** link in the Navigation panel and then click the **Date/Time** link or the **Date/Time** tab to access the **Maintenance > Date/Time** screen.

Figure 51 Maintenance > Date/Time



The following table describes the labels in this screen.

Table 48 Maintenance > Date/Time

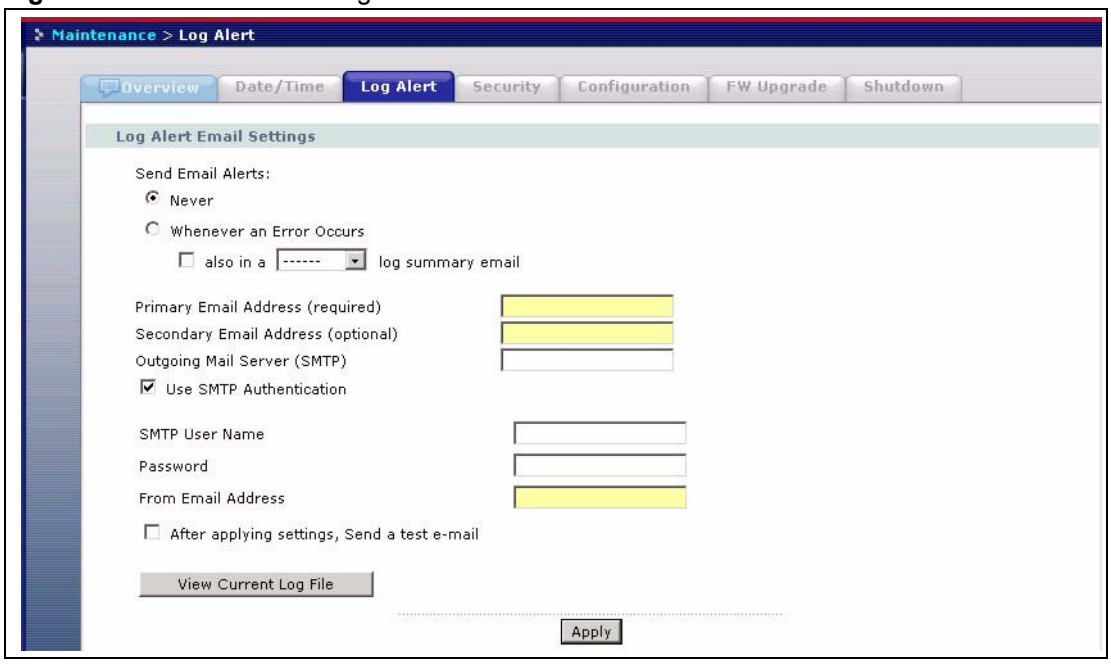
LABEL	DESCRIPTION
Current System Date Time Setting	
Current Time	This field displays the time of your NSA-2400.
Current Date	This field displays the date of your NSA-2400.
Current Time Zone	This field displays the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
Time Server	
Automatically Synchronize Time with a Time Server	Select this checkbox to have the NSA-2400 get the time and date from the time server you select in the **Time Server Address** field.
Synchronize Now	Click this button for the NSA-2400 to retrieve the correct time from the configured time server right away.
Time Server Address	Select a time server from the drop-down list box or select **Specify my own time server** and enter the time server you wish to use in the field below. Check with your ISP/network administrator if you are unsure of this information.
Time Zone	Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
Apply	Click **Apply** to confirm your settings.

8.3 Log Alert Screen

Use this screen to set how often the NSA-2400 should e-mail alerts, to where and via what e-mail server. An alert is an event that requires administrator attention.

Click the **Maintenance** link in the navigation panel and then click the **Log Alert** link or the **Log Alert** tab to access the **Maintenance > Log Alert** screen.

Figure 52 Maintenance > Log Alert



The following table describes the labels in this screen.

Table 49 Maintenance > Log Alert

LABEL	DESCRIPTION
Log Alert Email Settings	
Send Email Alerts	This section allows you to set the e-mail alert options. You can decide how often to send e-mail alerts, to whom, and via which mail server.
Never	Select **Never** to not send e-mail alerts at all.
Whenever an Error Occurs	Select this option to only send e-mail alerts whenever a critical error occurs.
also in a (daily/weekly/ monthly) log summary email	There are at most 128 entries in the log. Older logs are removed by the system. Select **daily**, **weekly** or **monthly** to determine how often e-mail alerts should be sent along with log summaries. Summary e-mail contains warnings logs.
Primary Email Address	Type the e-mail address of the person who should receive alerts.
Secondary Email Address	Type the e-mail address of another person who should receive alerts if you want.
Outgoing Mail Server (SMTP)	Type the IP address or URL of the mail server through which mail is sent.
Use SMTP Authentication	Select this check box if your e-mail server requires a user name and password.
SMTP User Name	Type your e-mail server user name here.
Password	Type your e-mail server password here.
From Email Address	Type the e-mail address of the sender of alerts here. Use an administrator e-mail address for example.

Table 49 Maintenance > Log Alert (continued)

LABEL	DESCRIPTION
After applying settings, send a test e-mail	Select this checkbox to send a test e-mail (after you click **Apply**). Use this to test if the destination e-mail address and mail server addresses are reachable and correct.
View Current Log File	When you click the **View Current Log File** button you go to the **System Status > System Log** screen. It shows you your log history and allows you to filter which types of logs you want to see as well as purge the list.
Apply	Click **Apply** to save your settings.

8.4 Security

Use this screen to change the admin password and elect to allow only HTTPS web connections to the NSA-2400.

8.4.1 Introduction to HTTPS

HTTPS (HyperText Transfer Protocol over Secure Socket Layer, or HTTP over SSL) is a web protocol that encrypts and decrypts web pages. Secure Socket Layer (SSL) is an application-level protocol that enables secure transactions of data by ensuring confidentiality (an unauthorized party cannot read the transferred data), authentication (one party can identify the other party) and data integrity (you know if data has been changed).

HTTPS relies upon certificates, public keys, and private keys.

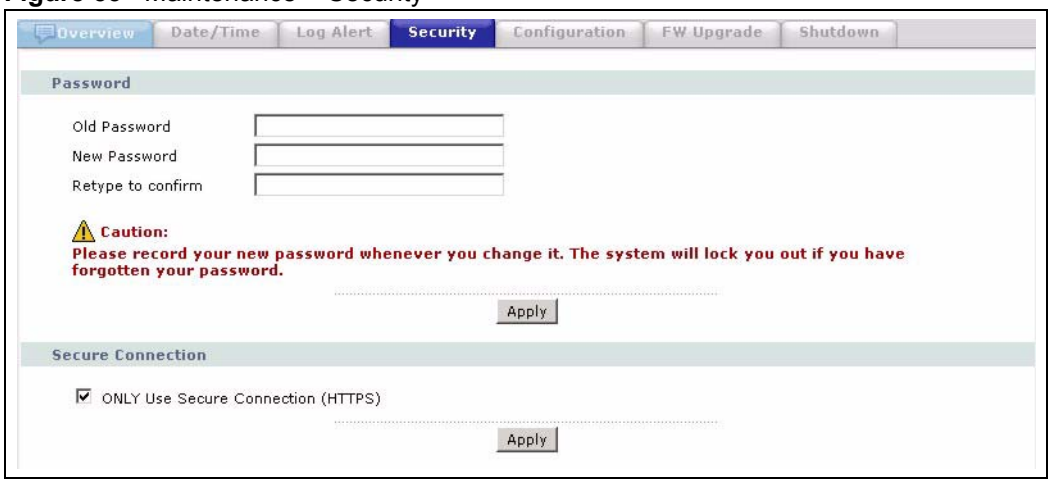
HTTPS is used on the NSA-2400 so that you may securely access the NSA-2400 using the web configurator. The SSL protocol specifies that the SSL server (the NSA-2400) must always authenticate itself to the SSL client (the computer which requests the HTTPS connection with the NSA-2400), whereas the SSL client only should authenticate itself when the SSL server requires it to do so. You must apply for a certificate for the browser from a CA that is a trusted CA on the NSA-2400.

If you select **Only** Use Secure Connection (HTTPS), then the NSA-2400 allows HTTPS connections only. HTTP connection attempts are forwarded to HTTPS. If you clear **Only** Use Secure Connection (HTTPS), then the NSA-2400 allows both HTTP and HTTPS connections.

8.4.2 Security Screen

Click the **Maintenance** link in the Navigation panel and then click the **Security** link or the **Security** tab to access the **Maintenance > Security** screen.

Figure 53 Maintenance > Security



The following table describes the labels in this screen.

Table 50 Maintenance > Security

LABEL	DESCRIPTION
Password	
Old Password	Type your old password in this field.
New Password	Type your new password in this field.
Retype to Confirm	Retype your new password in this field to confirm it.
Apply	Click **Apply** to confirm your password change.
Secure Connection	
ONLY Use Secure Connection (HTTPS)	Select the checkbox to only allow secure web (HTTPS) connections to the NSA-2400. HTTP connection attempts are forwarded to HTTPS. Clear the checkbox to allow both HTTP and HTTPS connections.
Apply	Click **Apply** to confirm your secure connection change.

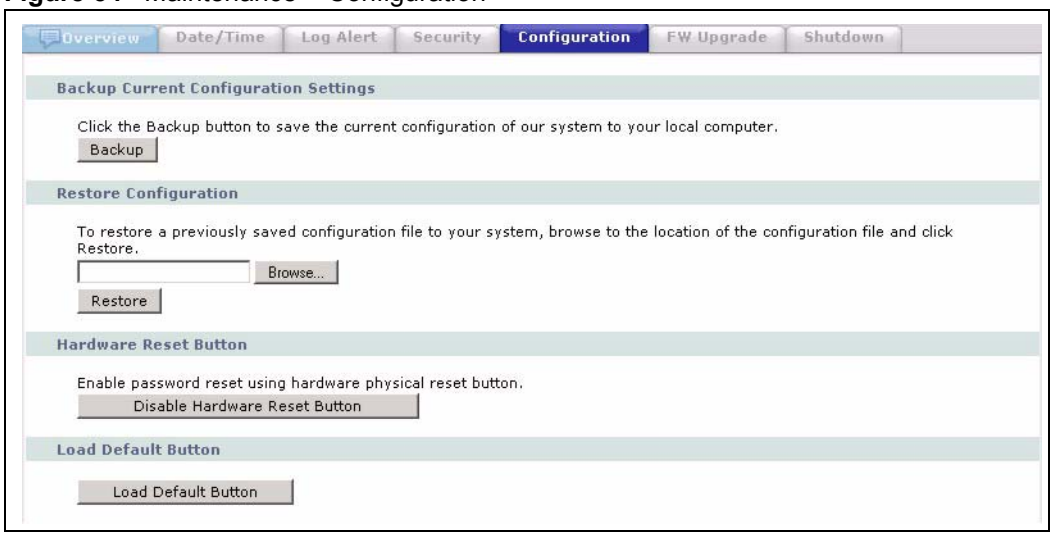
8.5 Configuration

Use the **Configuration** screen to back up or restore the NSA-2400 configuration settings and enable or disable the hardware reset button.

8.5.1 Configuration Screen

Click the **Maintenance** link in the Navigation panel and then click the **Configuration** link or the **Configuration** tab to access the **Maintenance > Configuration** screen.

Figure 54 Maintenance > Configuration



The following table describes the labels in this screen.

Table 51 Maintenance > Configuration

LABEL	DESCRIPTION
Backup Current Configuration Settings	
Backup	Click **Backup** to save the current configuration of the NSA-2400 to your computer. A pop-up screen appears asking you to confirm. Click **OK** to continue or **Cancel** to quit.
Restore Configuration	After you restore a configuration, if a share path does not exist, then it appears be in red.
Browse	Click **Browse** to locate a previously-saved configuration file.
Restore	Click **Restore** to load the previously-saved configuration file to the NSA-2400. This replaces your current NSA-2400 configuration settings with the settings in the previously-saved configuration file. A pop-up screen appears asking you to confirm. Click **OK** to continue or **Cancel** to quit.
Hardware Reset Button	This button resets the NSA-2400 to the default IP address, and default admin password. Hold the button in for six seconds to complete the reset. The NSA-2400 **DIAG** LED blinks quickly for three seconds when the reset is complete.

Table 51 Maintenance > Configuration

LABEL	DESCRIPTION
Enable/Disable Hardware Reset Button	When the screen button reads **Disable Hardware Reset Button**, it means the button on the NSA-2400 is already enabled. if you forget yur (admin) password, you can use the reset button the device to reset it to '1234' again. Click **Disable Hardware Reset Button** to stop anyone from resetting the physical hardware reset button on the NSA-2400. Note: If you disable the reset button, you will not be able to access the device if you forget your password. Make sure you write it down and keep it in a safe place. When the button on the screen reads **Enable Hardware Reset Button**, it means the reset button on the NSA-2400 is disabled. When you change the reset button setting, a pop-up screen appears asking you to confirm. Click **OK** to continue or **Cancel** to quit.
Load Default Button	Click this button to reload the factory default settings: • IP address: 192.168.1.3 • username: admin • password: 1234

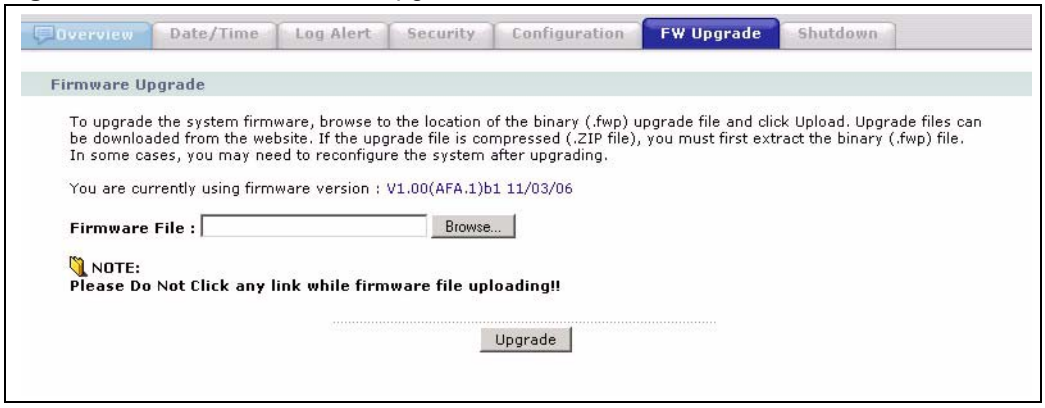
8.6 Firmware Upgrade

Use this screen to upgrade the NSA-2400 firmware. You should first have downloaded the latest firmware files from the ZyXEL website.

8.6.1 Firmware Upgrade Screen

Click the **Maintenance** link in the Navigation panel and then click the **FW Upgrade** link or the **FW Upgrade** tab to access the **Maintenance > FW Upgrade** screen.

Figure 55 Maintenance > FW Upgrade



The following table describes the labels in this screen.

Table 52 Maintenance > FW Upgrade

LABEL	DESCRIPTION
Firmware Upgrade	
Firmware File	Type the location of the firmware file you want to upload
Browse	Click **Browse** to find the file on your computer
Upgrade	Click **Upgrade** to upload the new firmware. The NSA-2400 automatically restarts after you upgrade. Wait until the restart completes before accessing the NSA-2400 again. If you interrupt the upgrade, then the NSA-2400 may become unusable.

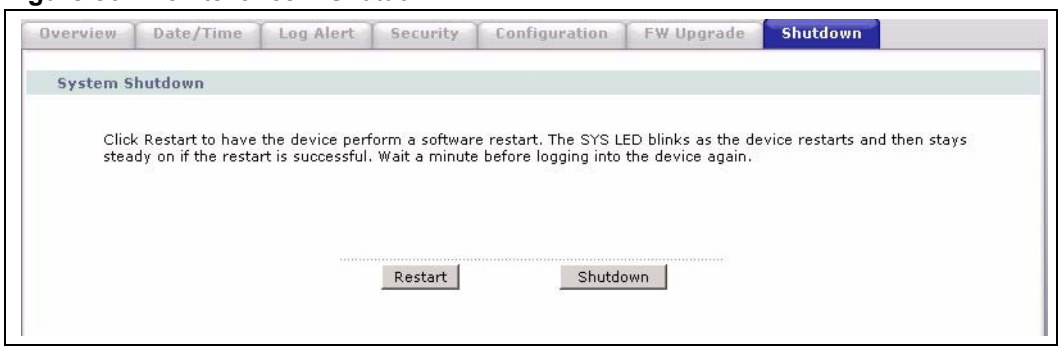
8.7 Shutdown

Use this screen to turn off the NSA-2400 or perform a software restart. A software restart is faster than turning the NSA-2400 off and then turning it on again. Before shutting down or restarting, check the **System Status > Active Sessions** screen to make sure that no one is logged into the NSA-2400 or transferring files to or from the NSA-2400.

8.7.1 Shutdown Screen

Click the **Maintenance** link in the Navigation panel and then click the **Shutdown** link or the **Shutdown** tab to access the **Maintenance > Shutdown** screen.

Figure 56 Maintenance > Shutdown



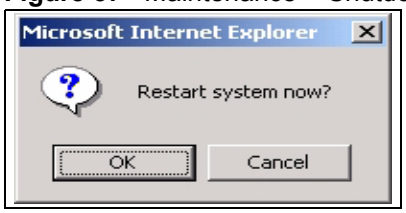
The following table describes the labels in this screen.

Table 53 Maintenance > Shutdown

LABEL	DESCRIPTION
System Shutdown	
Restart	Click **Restart** to have the device perform a software restart.
Shutdown	Click **Shutdown** to shut down the system and restart it again later.

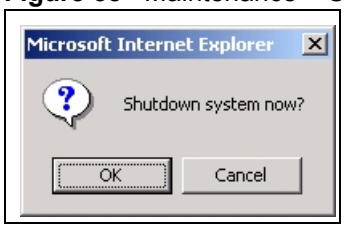
When you click the **Restart** button a pop-up screen will appear asking you to confirm. Click **OK** to continue or **Cancel** to quit the restart.

Figure 57 Maintenance > Shutdown > Confirm Restart



When you click the **Shutdown** button a pop-up screen will appear asking you to confirm. Click **OK** to continue or **Cancel** to quit the shutdown.

Figure 58 Maintenance > Shutdown > Confirm Shutdown



9

Troubleshooting

9.1 Troubleshooting Overview

This chapter offers some suggestions to solve problems you might encounter. The potential problems are divided into the following categories.

- Power, Hardware Connections, and LEDs
- NSA-2400 Login and Access
- How To Reset the NSA
- Users Cannot Access The NSA-2400
- Backups and Snapshots
- External USB Disks

9.2 Power, Hardware Connections, and LEDs

? The NSA-2400 **PWR** LED does not turn on (no LEDs are on).

- Make sure the NSA-2400 is turned on.
- Make sure you are using the power adaptor or cord included with the NSA-2400.
- Make sure the power adaptor or cord is connected to the NSA-2400 and plugged in to an appropriate power source. Make sure the power source is turned on.
- Turn the NSA-2400 off and on.
- If the problem continues, contact the vendor.

? The NSA-2400 **SYS** LED is (quickly) flashing red.

If the **SYS** LED is quickly flashing red then a RAID volume is in degraded mode. Degraded means one of the disks in the RAID volume is down but the volume can still be used (if you're using RAID 1 or RAID 5). What you have to do is turn the NSA-2400 off and replace the faulty disk. See your Quick Start Guide for information on replacing a disk and also Section 7.7.3 on page 108.

Do not remove or install hard drives while the NSA-2400 is turned on.. The NSA-2400 must be turned off before you remove or install hard drive(s).

After replacing the disk, turn on the NSA-2400, go to the **Storage > Disk** screen and click the **Repair** icon next to the new disk. If there is already another volume resynchronizing, then you will see **Waiting Resync** as the volume status.

The NSA-2400 **SYS** LED is orange or is flashing orange.

- If the **SYS** LED is steady on orange, then the NSA-2400 is in maintenance mode, which means no volumes exist. When the NSA is in this mode you cannot create users, groups or shares on the NSA. You must first go to the **Storage > Volume** screen and create an internal volume or go to the **Storage > Disk** screen (you must have an internal disk installed) and click the **Initialize** icon. See also Section 7.7.3 on page 108.
- If the **SYS** LED is flashing orange, then firmware is being upgraded to the NSA. Wait until the firmware upgrade is complete and the **SYS** LED turns steady green.

The NSA-2400 **DIAG** LED is flashing red

- It blinks slowly when hard drives are resynching; the **SYS** LED is green at this time. Wait until after the hard drives have synchronized and the LED turns off.
- It blinks quickly if there is a firmware upgrade. Wait until the firmware upgrade has completed and the **DIAG** LED turns off.
- If both the **DIAG** LED and the **SYS** LED (orange) are blinking quickly, then there may be a Flash reset failure and you should contact the vendor.

The disk drive **PWR** LED is off.

- Check that the NSA-2400 is on (see Power, Hardware Connections, and LEDs)
- Turn the NSA-2400 off, remove the disk tray and make sure:
  - it is a SATA-1 compatible hard drive
  - it is inserted correctly into the disk tray. Push the tray back into NSA disk bay until it snaps into place and push the latch up (see the NSA Quick Start Guide).
  - the hard disk is not faulty. You could either try a different hard disk or test the original hard disk in a different NSA or computer.
- If the problem continues, contact the vendor.

The disk drive **ALM** LED is on.

- The hard disk has a problem. What you have to do is turn the NSA-2400 off and replace the faulty disk. See your Quick Start Guide for information on replacing a disk and also Section 7.7.3 on page 108. After replacing the disk, turn on the NSA-2400, go to the **Storage > Disk** screen and click the **Repair** icon next to the new disk. If there is already another volume resynchronizing, then you will see **Waiting Resync** as the volume status.
- If the problem continues, contact the vendor.

The LAN LED is off.

- Make sure the Ethernet cable is connected properly to the NSA-2400 and connected to another (Ethernet) device. Make sure the other device is turned on. If it's connected directly to a computer, make sure that the computer network card is working (ping 127.0.0.1 on the computer).
- Use another Ethernet cable. If you're connecting to a Gigabit Ethernet, make sure you're using an 8-wire Ethernet cable.
- If the problem continues, contact the vendor.

See Section 1.1.1 on page 26 for a description of NSA-2400 LEDs.

9.3 NSA-2400 Login and Access

I forgot the IP address for the NSA-2400.

- The default IP address is **192.168.1.3**.
- Use the NDU (NSA Discovery Utility) to discover your NSA-2400. If you have admin privileges, you can directly change the IP address of the NSA-2400 using the NDU.
- If you changed the default password and you don't have the NDU, use the reset button to return the device to its factory default settings.

9.3.1 How To Reset the NSA

If you forget your password or cannot access the web configurator, use the **RESET** button at the front of the NSA (check that the RESET button is enabled in the **Maintenance > Configuration** screen).

You will not lose your data nor NSA-2400 configurations but the IP address, subnet mask and admin password are all returned to the factory defaults.

9.3.1.1 Procedure To Use The Reset Button

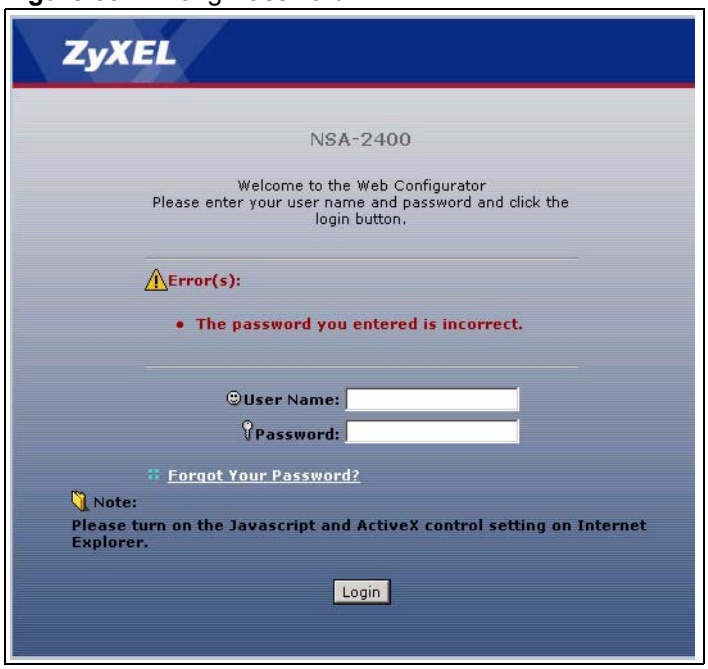
1. Press and hold the **RESET** button until you hear a beep, and then release it.
2. The NSA automatically restarts to complete the reset.

I forgot the password.

- The default password is **1234**.
- If you forget your password, you could have the NSA-2400 e-mail your password to you if you configured your e-mail address and mail server on the NSA in the **Maintenance > Log Alert** screen. If you enter a wrong password, the NSA displays the following screen.

1. Click the **Forgot Your Password** link to display the **Forgot Your Password** screen.

Figure 59 Wrong Password



2. Click **Continue** to have the NSA e-mail a randomly generated password to the e-mail address you configured.

Figure 60 Generate Password

3 Click **login** to go to the NSA screen and enter the new e-mailed password there. You should change this password and then write down your new password and put it in a safe place.

Figure 61 Log in With New Password

- If you didn't configure an e-mail address, then you will have to reset the NSA - see Section 9.3.1 on page 127.

The NDU cannot discover my NSA.

- Confirm that the computer running the NDU has a network connection. See the section on the NSA-2400's LAN connection for related information.
- The computer running the NDU can only discover NSA-2400s in the same subnet. NSA-2400s connected to the same switch or router as your NDU computer are usually in the same subnet unless the router is doing subnetting or the switch is implementing VLAN.
- The Genie Backup program uses the same network port as the NDU to discover the NSA. To avoid a port conflict, do not run the Genie Backup Manager at the same time as the NDU.

My NSA-2400 is in Maintenance Mode.

If you deleted the default volume and didn't create another volume, or you don't have an internal hard disk installed, you will see a **Maintenance Mode** screen. In **Maintenance Mode**, you MUST create an internal volume before you can use the NSA-2400.

A non-admin user wants to change her password.

Non-admin users can change their passwords directly. See Section 4.4.3 on page 58 for details on how to do that.

I cannot see or access the **Login** screen in the web configurator.

- Make sure you are using the correct IP address.
  - The default IP address is 192.168.1.3.
  - If you changed the IP address, use the new IP address.
  - If you changed the IP address and have forgotten it, see the troubleshooting suggestions for I forgot the IP address for the NSA-2400.
- Check the hardware connections, and make sure the LEDs are behaving as expected. See the Quick Start Guide and Section 1.1.1 on page 26.
- Make sure your Internet browser does not block pop-up windows and has JavaScripts and Java enabled. See the Pop-up Windows appendix.
- Make sure your computer is in the same subnet as the NSA-2400.
- Reset the device to its factory defaults, and try to access the NSA-2400 with the default IP address. See Section 9.3.1 on page 127.
- If the problem continues, contact the network administrator or vendor.

I can see the **Login** screen, but I cannot log in to the NSA-2400.

- Make sure you have entered the user name and password correctly. The default user name is **admin**, and the default password is **1234**. These fields are case-sensitive, so make sure [Caps Lock] is not on.
- Make sure that another administrator is not already logged in. Only one administrator can log into the NSA-2400 at any one time.
- Turn the NSA-2400 off and on.
- If this does not work, you have to reset the device to its factory defaults. See Section 9.3.1 on page 127.

9.4 Users Cannot Access The NSA-2400

A local user cannot access a share

- Check that the NSA is turned on and connected to the network. The local user should try to ping the NSA or use the NDU to discover it.
- The local user should check that he entered his login name and password correctly.
- Check if the share exists and has the correct access settings for this user.
- Check if the share has an ANONMYOUS or EVERYONE access right. If the user is already logged into a share using her username and password, she will NOT be able to access a share that has ANONYMOUS CIFS or ANONYMOUS FTP only access rights (as these require 'no login'). In this case she should log out and try to access the share again without logging in. See Section 4.8.4 on page 65 for more details.
- Check if the shared folder is a subfolder of another (parent) share. Check that the parent share's access rights do not conflict with the subfolder share. It is recommended that you do not create subfolder shares.
- Check if the user belongs to a group with conflicting access rights. **DENY** always takes precedence. If you allow a user **FULL** access to a share but set his group to **DENY**, then he will NOT be able to access the share.
- The local user should check if there are any existing mapped network drives to the NSA. He may need to disconnect existing CIFS connections as new CIFS connection may use previously-saved login information that may be different to NSA-2400 login.
- Check that the volume in which the share resides, exists and is not down or degraded. If the volume is down or degraded, then please see Section 9.2 on page 125.
- If the user is using DFS links, then he can only access the NSA using CIFS and not FTP.

A domain user can't access a share.

In addition to the checks listed previously for local users, you can perform these checks for domain users.

- Check that the domain controller is turned on.
- Check that the NSA-2400 time is synchronized with the domain controller. If the NSA time is set manually, make sure that the domain controller is also set manually to the same time. If the NSA is using a time server, make sure the domain controller is using the same time server and refresh the time on both devices. You could use your domain controller as your time server if it has this function. Select **Set My Own Timeserver** and then enter the domain controller's IP address in **Time Server Address.** You can then in turn, set your domain controller to use another time server on the Internet so that its time is accurate with the rest of the world.

The NSA-2400 time and date must be the same as the time and date on the external domain controller if the NSA is using one to import users and group.

9.5 Backups and Snapshots

I cannot make a backup.

- Check the logs to find the reason why the backup failed.
- Check that the external USB disk or NSA volume was formatted as **BACKUP**. Backup disks must be formatted by the NSA as a disk of type **BACKUP**. You cannot back up to other file systems such as NTFS, FAT, or FAT32.
- If you're backing up to another NSA-2400, check that it has the same firmware version as the NSA-2400 you're backing up from. You cannot back up to other NAS devices, computers or tape drives.
- Check that enough space is available on the external disk. If there isn't you may need to purge older backups or delete other files on the backup USB disk or NSA-2400 (see Section 6.3.3 on page 88)
- Check that there is not another backup being done. **Scheduler** queues backups when a different backup is already going on at the time a backup is scheduled.

I cannot take a snapshot

- Check the logs to find the reason why the snapshot failed.
- A snapshot must be done on a complete volume. Check that the volume is not down or degraded. If it is, then see Section 9.2 on page 125.
- Up to 30 snapshots in total are allowed on the NSA-2400. If you have reached this limit, then you will have to purge older snapshots before you can take new ones.
- Check that enough space is available on the volume. If there isn't you may need to purge older snapshots (see Section 6.3.7 on page 92)

The snapshot or backup does not run at the time configured.

- Check that the correct time is configured on the NSA-2400.
- Check that the NSA-2400 is able to access the time server from which it gets the time; see Section 8.2 on page 115.

9.6 External USB Disks

My external USB disk is read-only.

If your USB disk was formatted as NTFS, then it can be read-only by the NSA-2400 ((it may show **REGULAR** meaning that the NSA can read the volume but the volume wasn't created on the NSA). To solve this problem, re-format your USB disk to **JBOD** or **BACKUP** using the NSA-2400 (or FAT or FAT32 using a computer). See Section 7.5 on page 105 for information on volume creation using the NSA-2400 (recommended).

I can't create a volume on my external hard-disk.

You must install at least one hard disk and create an internal volume before you can use external USB hard drive(s) with the NSA-2400.

PART IV
Appendices and Index

A

Product Specifications

See also the Getting to Know Your NSA chapter for a general overview of the key features.

Feature Tables

Physical Features

These are the main external physical features.

Table 54 Physical Features

USB Ports	Expand storage capacity by attaching compatible USB (version 2) hard drives to the USB ports.
Gigabit Ethernet Port	The 10/100/1000 Mbps auto-negotiating Ethernet port allows the NSA to detect the speed of incoming transmissions and adjust appropriately without manual intervention. It allows data transfer of either 100 Mbps or 1000 Mbps in either half-duplex or full-duplex mode depending on your Ethernet network. Use an 8-wire Ethernet cable for Gigabit connections. The port is also auto-crossover (MDI/MDI-X) meaning it automatically adjusts to either a crossover or straight-through Ethernet cable.
SATA Interface	Serial ATA is a low cost interface technology that allows high speed data transfer. Serial ATA also allows more efficient internal airflow and also smaller chassis design.
Reset Button	If you forget your (admin) password, then use the reset button to restore the factory default password to “1234” (with user name “admin”), default IP address to 192.168.1.3 and subnet mask of 255.255.255.0. (Alternatively, you can use the web configurator ‘forget password’ feature.)
BIOS Reset Button	This button is for service personnel only. It is used to reset the BIOS settings to the ZyXEL default settings in the event the CMOS battery inside the NSA expires. This battery should not lose power for many years unless there's a battery failure or the NSA has been left powered off for an extended period of time.

Firmware Features

These are some of the main firmware features of the NSA.

RAID File Storage	Use RAID 0 if you want pure write speed and/or maximum capacity for your disks, and/or you have other means of protecting your data. Use RAID 1 if you have an even number of disks and want to mirror primary data to another disk(s). Use RAID 5 if you have four disks and you want to balance performance, hard disk capacity usage with data protection. If one disk fails, replace it and then re-synchronize to recover all data.
Backup	
Snapshot	A snapshot is a backup of your NSA data on the NSA. If files within a volume become infected or corrupted, you can revert the volume back to a previous snapshot. It's a good idea to create a snapshot before backing up data, to be sure you're backing up consistent data even if the backup is still running several hours later.
Disk Quota	Use the disk quota feature to stop one user(s) from using up all disk capacity by setting a limit on how much storage space he/she may use.
User Passwords	Configure a password for an individual **User** to restrict access to the NSA. Non-admin users can change their own passwords by accessing the web configurator. The **Change Password** screen appears when a username other than "admin" is entered.
Workgroup and Domain Security Modes	For Windows or Mac OSX users (using the Common Internet File System (CIFS) protocol for remote file access) you can configure **Workgroup** mode requiring users to log in with a user name and password. These user and group accounts are maintained on the NSA. For a large number of CIFS users where accounts are stored on an external server, you can use **Domain** security mode (Primary Domain Controller)
Client Support	Data can be shared among all Windows, Mac, Linux, and UNIX users that have FTP client software or CIFS file sharing support (such as Samba for Linux and UNIX users).
HTTP/HTTPS	Access the NSA using a regular web connection (HTTP) or an encrypted web connection (HTTPS) using secure socket layer (SSL).
DHCP (Dynamic Host Configuration Protocol)	DHCP (Dynamic Host Configuration Protocol) allows the NSA to obtain an IP address and subnet mask at start-up from a centralized DHCP server. Alternatively, you can give the NSA a static IP address and subnet mask.
Full Network Management	The embedded web configurator is an platform-independent web-based utility that allows you to easily access the NSA's management settings.
Firmware Upload and Configuration File Management	Upload new firmware to the NSA using the web configurator. You can also back up and restore the NSA configuration file containing all its settings to/from your computer.
NSA Discovery Utility (NDU)	Use the NDU from a Windows computer to find NSA(s) in your network, access the NSA login page, change its IP address configuration or map to a Windows network drive.
Genie Backup Manager	Genie Backup Manager is a tool for Windows users to create (and schedule) backups of data stored on their Windows computer to an NSA.
Time and Date	Configure a time server and set a time zone for your NSA to show the correct times in e-mail alerts and logs.
E-mail Alerts	Configure an e-mail to be sent to an NSA administrator whenever an error occurs or as a scheduled log summary.

Specification Tables

The NSA-2400 hardware specifications are shown in the following table.

Table 55 NSA-2400 Hardware Specifications

IP Address	192.168.1.3 if the NSA cannot get an IP address from a DHCP server.
Subnet Mask	255.255.255.0 (24 bits) if the NSA cannot get a subnet mask from a DHCP server.
Default Username	admin
Default Password	1234
Dimensions	140(W)*300(D)*305(H) mm
Weight	7.8kg
Disk Trays	Four
Compatible Hard Disks[A]	SATA-I (Serial Advanced Technology Attachment) hard disk serial links The NSA also recognizes SATA-II compatible drives.
UPS	The NSA supports APC Uninteruptable Power Supply
CPU	VIA CPU (1.3 GHz)
CPU Operating Temperature	0^{O} to 85^{O} C
Ports	
Ethernet	One auto-negotiating, auto MDI/MDI-X 10/100/1000[B] Mbps RJ-45 Ethernet port (10 Base-T/100 Base-TX/1000 Base-T)
USB v2.0 Storage	Two ports on rear panel and one on front panel. Windows: NTFS (read only), FAT32 and FAT16 Linux: EXT2, EXT3 and XFS
LEDs	PWR, SYS, DIAG and LAN
Reset Button	Restores factory default IP address and admin password (1234)
Operating Temperature	0º C ~ 50º C
AC Input	Voltage: 100 - 240 V at 50 - 60 Hz Current: 2 A
Storage Temperature	-30º C ~ 60º C
Operating Humidity	20% ~ 95% RH (non-condensing)
Storage Humidity	20% ~ 95% RH (non-condensing)
Certifications	EMC: FCC Class B, CE-EMC Class B, C-Tick Class B, VCCI Class B Safety: CSA International, CE EN60950-1

A. Hard drives may not be included with your NSA.

B. Use an 8-wire Ethernet cable for Gigabit connections.

The NSA-2400 firmware specifications are shown in the following table

Table 56 NSA-2400 Firmware Specifications

File Storage System	SINGLE, RAID 0, 1, 5
Network Protocols	TCP/IP, UDP/IP DHCP Client FTP HTTP/ HTTPS

Table 56 NSA-2400 Firmware Specifications (continued)

File Management	Distributed File System (DFS) Create/Delete System Volume
Network File Sharing Protocol	CIFS/SMB for Windows and Mac OSX HTTP for web browser FTP
Network Security	Authentication Share level Active Directory Services (ADS) Encrypted Network Login
Supported Clients	Windows 2000 Professional/Server Windows XP Home/Professional Windows Me Linux
Max no. of Users allowed	200[A]
Maximum number of concurrent FTP sessions	40[A]
Maximum number of concurrent CIFS sessions	50[A]
System Management	Remote Management via Web Configurator (HTTP) Secure Remote Management via Web Configurator (HTTPS) NSA Discovery Utility (NDU) E-mail alerts
Logging/Monitoring	Centralized Logs
Firmware Upgrade	Web Configurator
Web Browsers Supported	Internet Explorer 6.0 and later versions. Firefox 1.07 and later versions.

A. Limits may vary depending on user-share resource usage.

Power Consumption

The NSA-2400 was tested using the specified power sources with the external power adapter and with four hard drives installed.

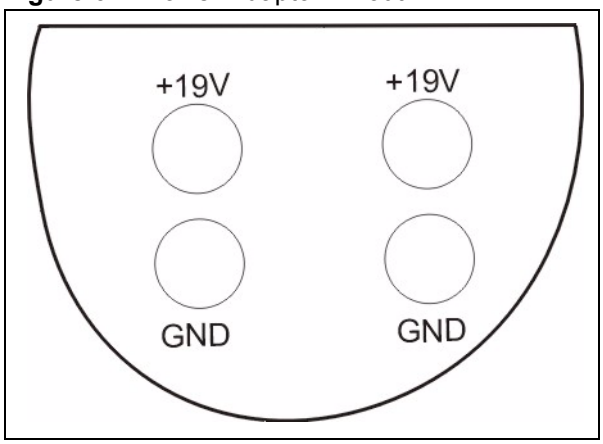
This table is a laboratory test of NSA-2400 power consumption for your reference only.

Table 57 Power Consumption in Watts (W)

POWER SOURCE	SYSTEM BOOT UP	SYSTEM READ/WRITE	SYSTEM IDLE
240V/50Hz	103 (peak)	70 (peak)	48.6
120V/60Hz	105 (peak)	72 (peak)	47
100V/60Hz	102 (peak)	74 (peak)	47.3

This is the external power adaptor pinout specification

Figure 62 Power Adaptor Pinout.



B

Log Messages

This appendix shows some NSA-2400 log messages.

Log Messages

Table 58 Log Messages

SEVERITY	MESSAGE	ARGUMENT(S)		
SECURITY				
INFO	User {0} successfully log in from {1}	User name	IP	
INFO	User {0} attempted to login from {1}	User name	IP	
INFO	User {0} changed password	User name		
CRIT	Admin password changed			
WARNING	Failed login attempt from NDU at {0}	IP		
INFO	Admin log in from NDU at {0}	IP		
CRIT	Reset button pressed. Admin password and IP reset to factory default			
INFO	A new randomly generated password was e-mailed to admin			
CRIT	Unable to create new login in database {0}	errorMsg		
ERROR	Failed to change system user's password			
WARNING	{0} session IP changed from {1} to {2}[A]	User name	Original IP	New IP
WARNING	The User Agent (Browser Program) for {0} session has changed since first login.[B]	User name		
WARNING	Failed to update database on last access time for login			
FTP				
INFO	User {0} log in from {1}	User name	IP	
INFO	User {0} log out	User name		
INFO	Maximum connection limit changed to {0}	Connection limit		
INFO	Idle timeout changed to {0} seconds	Idle timeout		
INFO	Anonymous access {0}	Enabled/ disabled		
INFO	FTP service {0}	Enabled/ disabled		
INFO	FTP server restarted			

Table 58 Log Messages (continued)

SEVERITY	MESSAGE	ARGUMENT(S)		
WARNING	Failed log in attempt from user {0} at {1}	User name	IP	
ERROR	Failed to mount shares for user {0}	User name		
TCPIP				
INFO	IP changed to {0}	IP		
INFO	Changed to {0} IP	Dynamic/Static		
INFO	DHCP server assigned IP to {0}	IP		
ERROR	Failed to obtain dynamic IP. Revert to 192.168.1.3			
INFO	Set server name to {0}	Server name		
INFO	IP changed to {0} by NDU	IP		
INFO	Changed to {0} IP by NDU	Dynamic/Static		
CIFS				
INFO	Join workgroup {0}	Workgroup name		
INFO	Join domain {0}	Domain name		
STORAGE				
INFO	{0} created on {1} using {2} with {3} snapshot space	Volume name	Disks config	Snapshot %
INFO	{0} deleted from (1}	Volume name	Disks	
ERROR	Failed to create {0}	Volume name		
ERROR	Failed to mount {0}	Volume name		
INFO	{0} mounted	Volume name		
ERROR	Failed to delete {0}	Volume name		
INFO	Start scanning {0}	Volume name		
INFO	Scanning {0} completed	Volume name		
INFO	Scanning {0} cancelled	Volume name		
ERROR	Scanning {0} failed	Volume name		
ERROR	Failed to cancel scanning {0}	Volume name		
INFO	Repairing RAID {0} [{1}, {2}]	Volume name	Configuration	Disks
INFO	Repairing RAID{0} completed [{1}, {2}]	Volume name	Configuration	Disks
ERROR	Repairing RAID{0} failed [{1}, {2}]	Volume name	Configuration	Disks
INFO	External disk {0} attached	Disk name		
INFO	External disk {0} detached	Disk name		
INFO	Scanning external disk {0}	Disk name		
INFO	Scanning external disk {0} completed	Disk name		
ERROR	Scanning external disk {0} failed	Disk name		

Table 58 Log Messages (continued)

SEVERITY	MESSAGE	ARGUMENT(S)		
INFO	Scanning external disk {0} cancelled	Disk name		
ERROR	Failed to cancel scanning external disk {0}	Disk name		
INFO	RAID resync completed			
CRIT	{0} on server {1} [{2}] failed. Please check.	Disk name	Hostname	IP
SYSTEM				
INFO	Set system time to {0}	Date/time		
INFO	Change time zone to {0}	Time zone		
INFO	Change time server to {0}	Time server IP		
INFO	Synchronize with time server {0}	Time server IP		
INFO	Create configuration backup file			
INFO	Restore configuration from file {0}	Configuration file name		
INFO	{0} hardware reset	Enabled/ disabled		
INFO	Upgrade firmware to version {0}	Firmware version		
INFO	Shutting down system			
INFO	Starting up system			
CRIT	CPU temperature over 90 degree C			
ERROR	Unable to convert date time format			

A. IP of a web configurator session changed

B. Browser type of the same web configurator session changed.

C

Setting up Your Computer's IP Address

All computers must have a 10M or 100M Ethernet adapter card and TCP/IP installed.

Windows 95/98/Me/NT/2000/XP, Macintosh OS 7 and later operating systems and all versions of UNIX/LINUX include the software components you need to install and use TCP/IP on your computer. Windows 3.1 requires the purchase of a third-party TCP/IP application package.

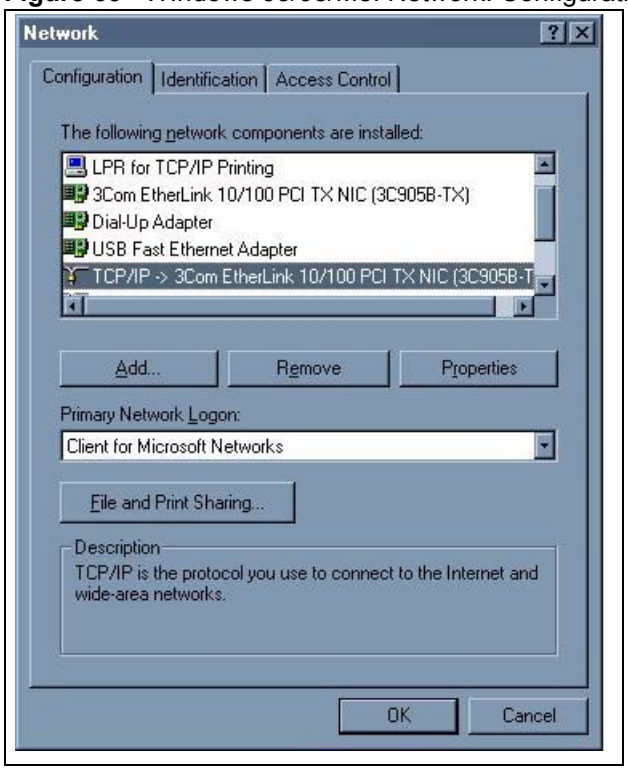
TCP/IP should already be installed on computers using Windows NT/2000/XP, Macintosh OS 7 and later operating systems.

After the appropriate TCP/IP components are installed, configure the TCP/IP settings in order to "communicate" with your network.

Windows 95/98/Me

Click **Start**, **Settings**, **Control Panel** and double-click the **Network** icon to open the **Network** window.

Figure 63 WIndows 95/98/Me: Network: Configuration



Installing Components

The **Network** window **Configuration** tab displays a list of installed components. You need a network adapter, the TCP/IP protocol and Client for Microsoft Networks.

If you need the adapter:

1. In the **Network** window, click **Add**.
2. Select **Adapter** and then click **Add**.
3. Select the manufacturer and model of your network adapter and then click **OK**.

If you need TCP/IP:

1. In the **Network** window, click **Add**.
2. Select **Protocol** and then click **Add**.
3. Select **Microsoft** from the list of **manufacturers**.
4. Select **TCP/IP** from the list of network protocols and then click **OK**.

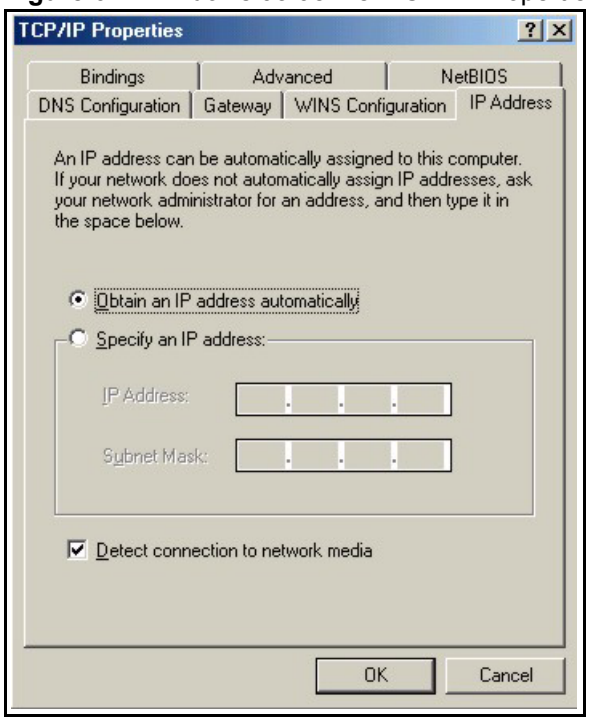
If you need Client for Microsoft Networks:

1. Click **Add**.
2. Select **Client** and then click **Add**.
3. Select **Microsoft** from the list of manufacturers.
4. Select **Client for Microsoft Networks** from the list of network clients and then click **OK**.
5. Restart your computer so the changes you made take effect.

Configuring

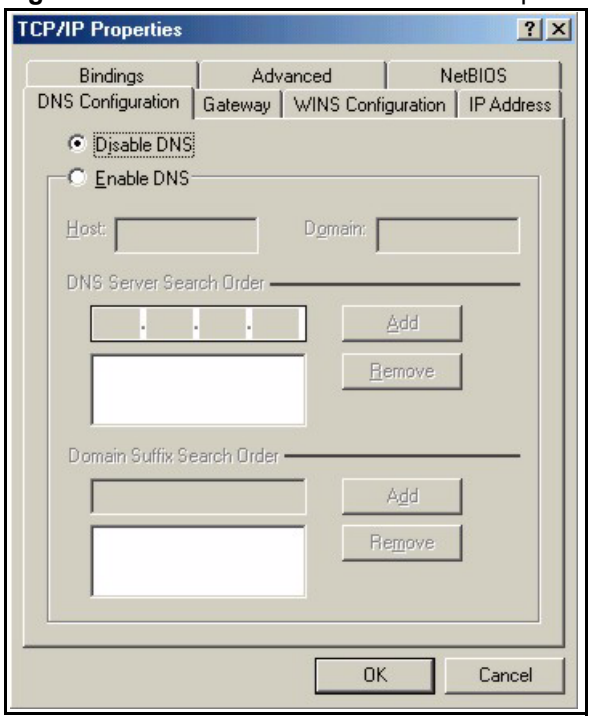
1. In the **Network** window **Configuration** tab, select your network adapter's TCP/IP entry and click **Properties**
2. Click the **IP Address** tab.
   - If your IP address is dynamic, select **Obtain an IP address automatically**.
   - If you have a static IP address, select **Specify an IP address** and type your information into the **IP Address** and **Subnet Mask** fields.

Figure 64 Windows 95/98/Me: TCP/IP Properties: IP Address



3. Click the **DNS** Configuration tab.
   - If you do not know your DNS information, select **Disable DNS**.
   - If you know your DNS information, select **Enable DNS** and type the information in the fields below (you may not need to fill them all in).

Figure 65 Windows 95/98/Me: TCP/IP Properties: DNS Configuration



4 Click the **Gateway** tab.
   - If you do not know your gateway's IP address, remove previously installed gateways.
   - If you have a gateway IP address, type it in the **New gateway field** and click **Add**.
5 Click **OK** to save and close the **TCP/IP Properties** window.
6 Click **OK** to close the **Network** window. Insert the Windows CD if prompted.
7 Restart your computer when prompted.

Verifying Settings

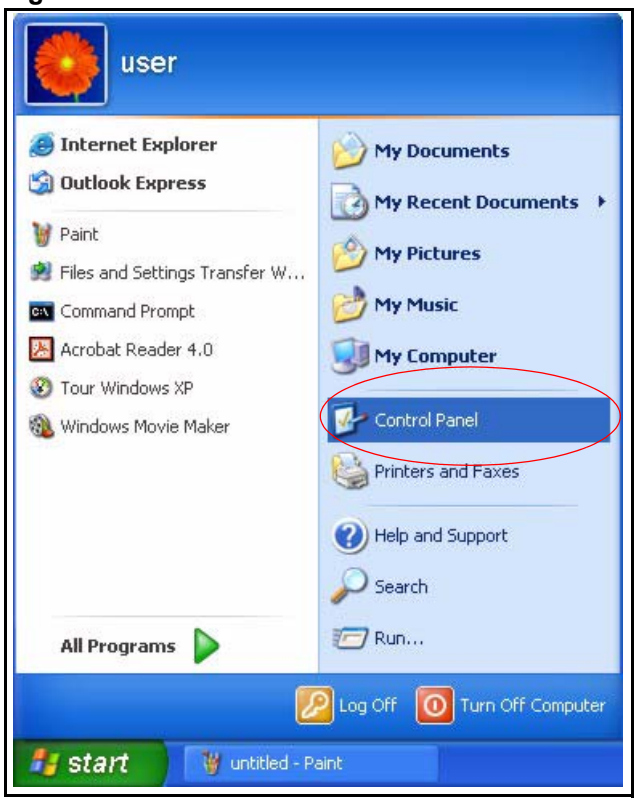
1 Click **Start** and then **Run**.
2 In the **Run** window, type "winipcfg" and then click **OK** to open the **IP Configuration** window.
3 Select your network adapter. You should see your computer's IP address, subnet mask and default gateway.

Windows 2000/NT/XP

The following example figures use the default Windows XP GUI theme.

1 Click **start** (**Start** in Windows 2000/NT), **Settings**, **Control Panel**.

Figure 66 Windows XP: Start Menu

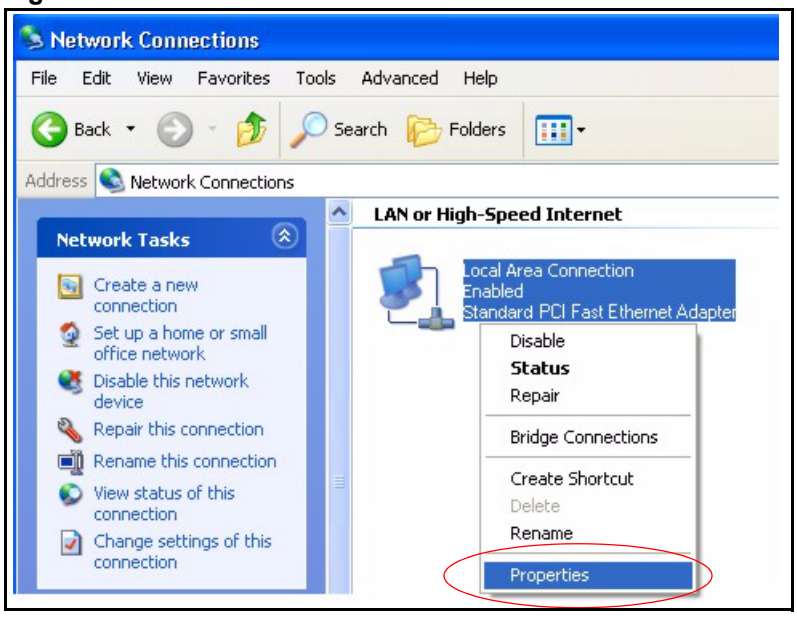


2 In the **Control Panel**, double-click **Network Connections** (**Network and Dial-up Connections** in Windows 2000/NT).

Figure 67 Windows XP: Control Panel

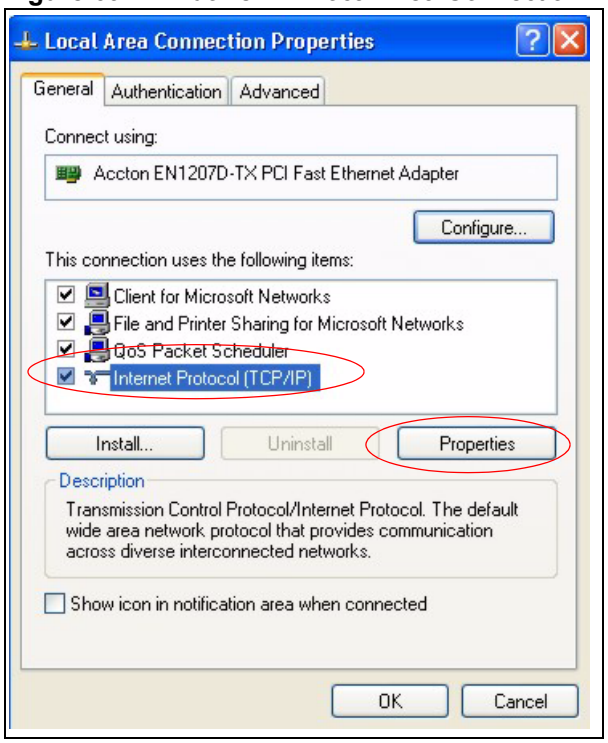
3 Right-click **Local Area Connection** and then click **Properties**.

Figure 68 Windows XP: Control Panel: Network Connections: Properties



4 Select **Internet Protocol (TCP/IP)** (under the **General** tab in Win XP) and then click **Properties**.

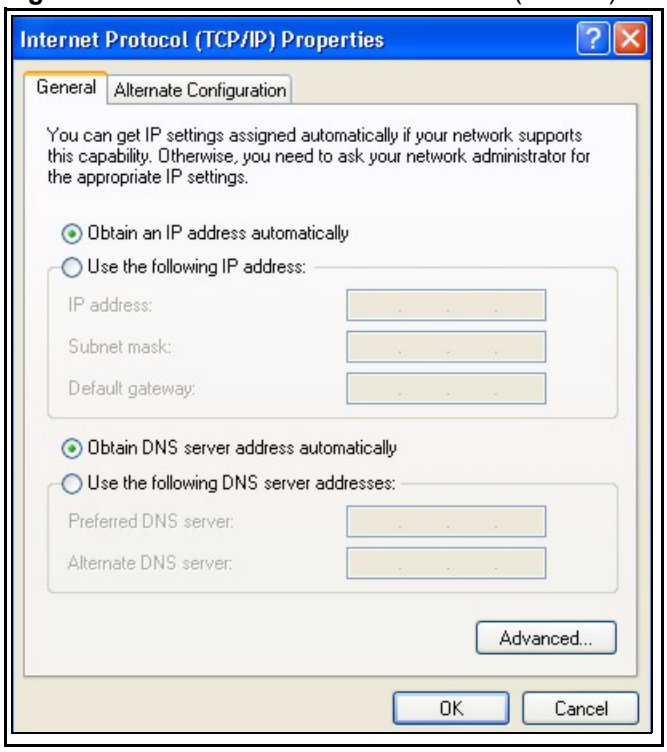
Figure 69 Windows XP: Local Area Connection Properties



5 The **Internet Protocol TCP/IP Properties** window opens (the **General tab** in Windows XP).

- If you have a dynamic IP address click **Obtain an IP address automatically**.
- If you have a static IP address click **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields.
- Click **Advanced**.

Figure 70 Windows XP: Internet Protocol (TCP/IP) Properties

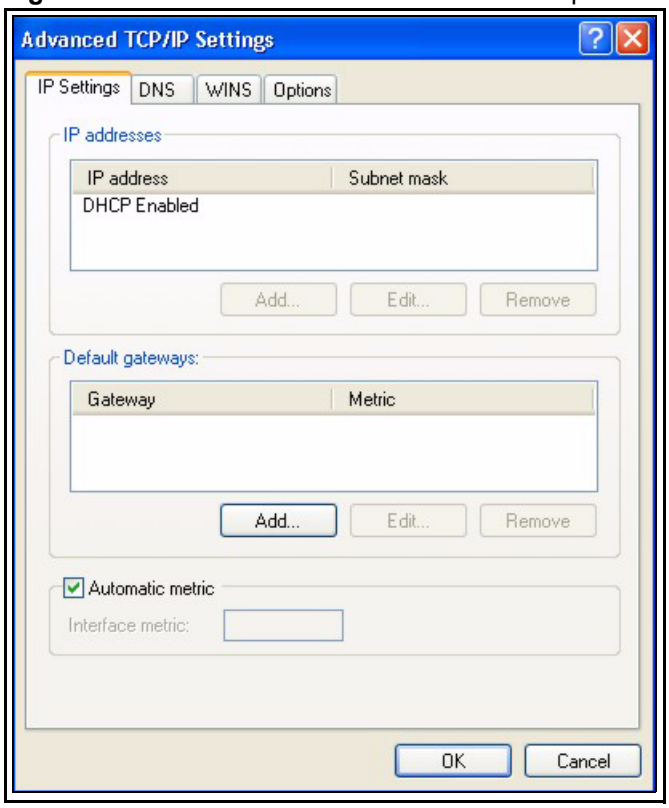


6 If you do not know your gateway's IP address, remove any previously installed gateways in the **IP Settings** tab and click **OK**.

Do one or more of the following if you want to configure additional IP addresses:

- In the **IP Settings** tab, in IP addresses, click **Add**.
- In **TCP/IP Address**, type an IP address in **IP address** and a subnet mask in **Subnet mask**, and then click **Add**.
- Repeat the above two steps for each IP address you want to add.
- Configure additional default gateways in the **IP Settings** tab by clicking **Add** in **Default gateways**.
- In **TCP/IP Gateway Address**, type the IP address of the default gateway in **Gateway**. To manually configure a default metric (the number of transmission hops), clear the **Automatic metric** check box and type a metric in **Metric**.
- Click **Add**.
- Repeat the previous three steps for each default gateway you want to add.
- Click **OK** when finished.

Figure 71 Windows XP: Advanced TCP/IP Properties

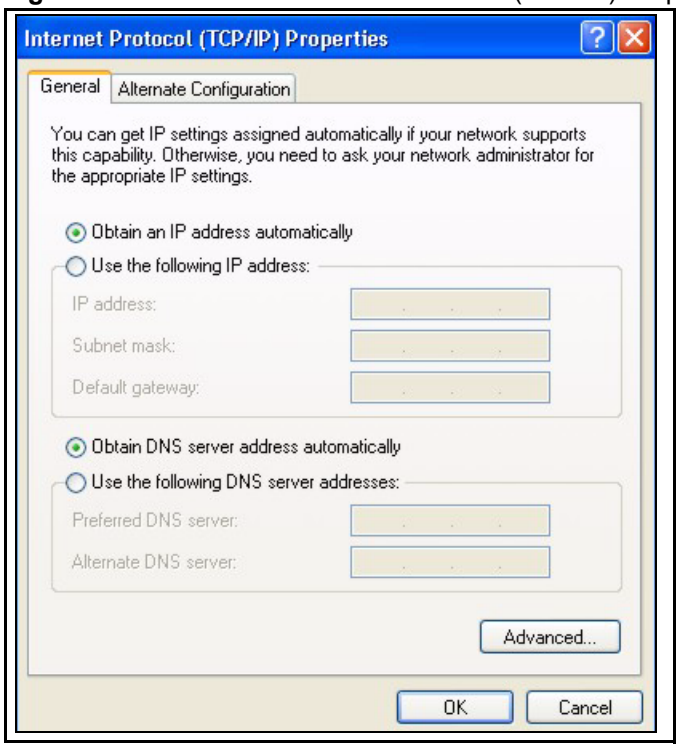


7 In the **Internet Protocol TCP/IP Properties** window (the **General** tab in Windows XP):

- Click **Obtain DNS server address automatically** if you do not know your DNS server IP address(es).
- If you know your DNS server IP address(es), click **Use the following DNS server addresses**, and type them in the **Preferred DNS server** and **Alternate DNS server** fields.

  If you have previously configured DNS servers, click **Advanced** and then the **DNS** tab to order them.

Figure 72 Windows XP: Internet Protocol (TCP/IP) Properties



8 Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

9 Click **Close** (**OK** in Windows 2000/NT) to close the **Local Area Connection Properties** window.

10 Close the **Network Connections** window (**Network and Dial-up Connections** in Windows 2000/NT).

11 Restart your computer (if prompted).

Verifying Settings

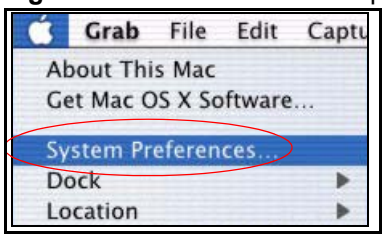
1 Click **Start**, **All Programs**, **Accessories** and then **Command Prompt**.

2 In the **Command Prompt** window, type "ipconfig" and then press [ENTER]. You can also open **Network Connections**, right-click a network connection, click **Status** and then click the **Support** tab.

Macintosh OS X

1 Click the **Apple** menu, and click **System Preferences** to open the **System Preferences** window.

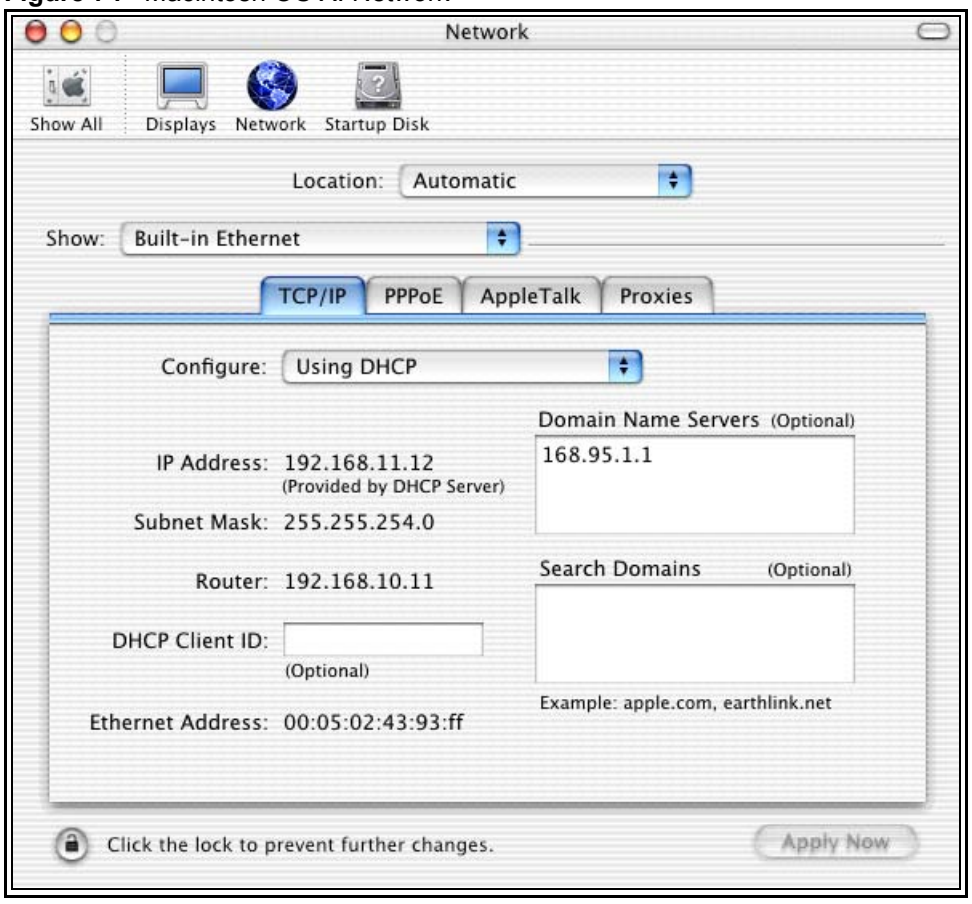
Figure 73 Macintosh OS X: Apple Menu



2 Click **Network** in the icon bar.
   - Select **Automatic** from the **Location** list.
   - Select **Built-in Ethernet** from the **Show** list.
   - Click the **TCP/IP** tab.

3 For dynamically assigned settings, select **Using DHCP** from the **Configure** list.

Figure 74 Macintosh OS X: Network



4 For statically assigned settings, do the following:
   - From the **Configure** box, select **Manually**.
   - Type your IP address in the **IP Address** box.
   - Type your subnet mask in the **Subnet mask** box.
   - Type the IP address of your gateway in the **Router address** box.

5 Click **Apply Now** and close the window.

6 Restart your computer (if prompted).

Verifying Settings

Check your TCP/IP properties in the **Network** window.

Linux

This section shows you how to configure your computer's TCP/IP settings in Red Hat Linux 9.0. Procedure, screens and file location may vary depending on your Linux distribution and release version.

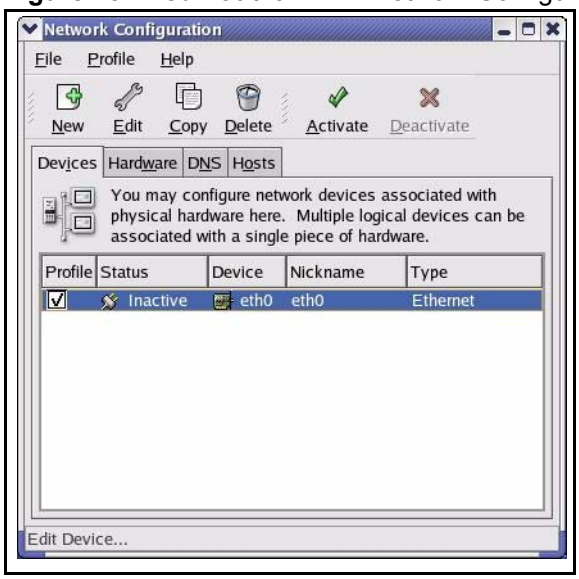
Make sure you are logged in as the root administrator.

Using the K Desktop Environment (KDE)

Follow the steps below to configure your computer IP address using the KDE.

1 Click the Red Hat button (located on the bottom left corner), select **System Setting** and click **Network**.

Figure 75 Red Hat 9.0: KDE: Network Configuration: Devices



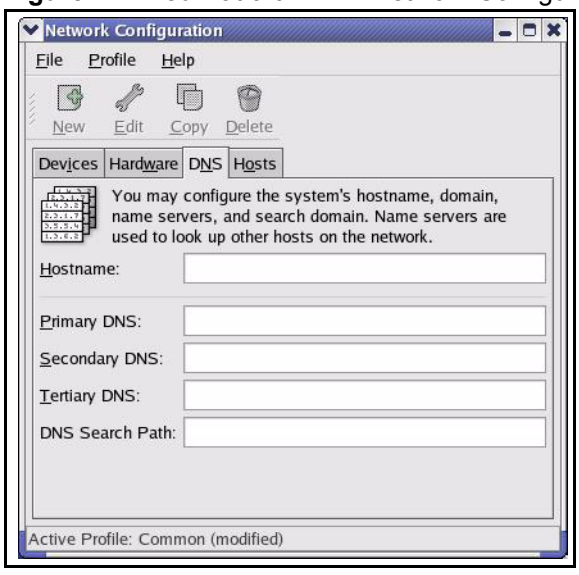
2 Double-click on the profile of the network card you wish to configure. The **Ethernet Device General** screen displays as shown.

Figure 76 Red Hat 9.0: KDE: Ethernet Device: General

- If you have a dynamic IP address, click **Automatically obtain IP address settings with** and select **dhcp** from the drop down list.
- If you have a static IP address, click **Statically set IP Addresses** and fill in the **Address**, **Subnet mask**, and **Default Gateway Address** fields.

3. Click **OK** to save the changes and close the **Ethernet Device General** screen.
4. If you know your DNS server IP address(es), click the **DNS** tab in the **Network Configuration** screen. Enter the DNS server information in the fields provided.

Figure 77 Red Hat 9.0: KDE: Network Configuration: DNS



5. Click the **Devices** tab.
6. Click the **Activate** button to apply the changes. The following screen displays. Click **Yes to save the changes in all screens.**

Figure 78 Red Hat 9.0: KDE: Network Configuration: Activate

7 After the network card restart process is complete, make sure the **Status** is **Active** in the **Network Configuration** screen.

Using Configuration Files

Follow the steps below to edit the network configuration files and set your computer IP address.

1 Assuming that you have only one network card on the computer, locate the `ifconfig-eth0` configuration file (where `eth0` is the name of the Ethernet card). Open the configuration file with any plain text editor.

- If you have a dynamic IP address, enter **`dhcp`** in the `BOOTPROTO=` field. The following figure shows an example.

Figure 79 Red Hat 9.0: Dynamic IP Address Setting in ifconfig-eth0

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=dhcp
USERCTL=no
PEERDNS=yes
TYPE=Ethernet
```

- If you have a static IP address, enter **`static`** in the `BOOTPROTO=` field. Type `IPADDR=` followed by the IP address (in dotted decimal notation) and type `NETMASK=` followed by the subnet mask. The following example shows an example where the static IP address is 192.168.1.10 and the subnet mask is 255.255.255.0.

Figure 80 Red Hat 9.0: Static IP Address Setting in ifconfig-eth0

```
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=static
IPADDR=192.168.1.10
NETMASK=255.255.255.0
USERCTL=no
PEERDNS=yes
TYPE=Ethernet
```

2 If you know your DNS server IP address(es), enter the DNS server information in the `resolv.conf` file in the `/etc` directory. The following figure shows an example where two DNS server IP addresses are specified.

Figure 81 Red Hat 9.0: DNS Settings in resolv.conf

```
nameserver 172.23.5.1
nameserver 172.23.5.2
```

3 After you edit and save the configuration files, you must restart the network card. Enter `./network restart` in the `/etc/rc.d/init.d` directory. The following figure shows an example.

Figure 82 Red Hat 9.0: Restart Ethernet Card

```
[root@localhost init.d]# network restart

Shutting down interface eth0:                [OK]
Shutting down loopback interface:            [OK]
Setting network parameters:                  [OK]
Bringing up loopback interface:              [OK]
Bringing up interface eth0:                  [OK]
```

Verifying Settings

Enter `ifconfig` in a terminal screen to check your TCP/IP properties.

Figure 83 Red Hat 9.0: Checking TCP/IP Properties

```
[root@localhost]# ifconfig
eth0      Link encap:Ethernet HWaddr 00:50:BA:72:5B:44
          inet addr:172.23.19.129 Bcast:172.23.19.255 Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:717 errors:0 dropped:0 overruns:0 frame:0
          TX packets:13 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
          RX bytes:730412 (713.2 Kb) TX bytes:1570 (1.5 Kb)
          Interrupt:10 Base address:0x1000
[root@localhost]#
```

D

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E

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Certifications

Federal Communications Commission (FCC) Interference Statement

The device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operations.

This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

Notices

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Viewing Certifications

1. Go to http://www.zyxel.com.
2. Select your product on the ZyXEL home page to go to that product's page.
3. Select the certification you wish to view from this page.

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in materials or workmanship for a period of up to two years from the date of purchase. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal or higher value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product has been modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

Note

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To obtain the services of this warranty, contact ZyXEL's Service Center for your Return Material Authorization number (RMA). Products must be returned Postage Prepaid. It is recommended that the unit be insured when shipped. Any returned products without proof of purchase or those with an out-dated warranty will be repaired or replaced (at the discretion of ZyXEL) and the customer will be billed for parts and labor. All repaired or replaced products will be shipped by ZyXEL to the corresponding return address, Postage Paid. This warranty gives you specific legal rights, and you may also have other rights that vary from country to country.

Registration

Register your product online to receive e-mail notices of firmware upgrades and information at www.zyxel.com for global products, or at www.us.zyxel.com for North American products.

F

Customer Support

Please have the following information ready when you contact customer support.

Required Information

- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

Corporate Headquarters (Worldwide)

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- Sales E-mail: sales@zyxel.com.tw
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- Fax: +886-3-578-2439
- Web Site: www.zyxel.com, www.europe.zyxel.com
- FTP Site: ftp.zyxel.com, ftp.europe.zyxel.com
- Regular Mail: ZyXEL Communications Corp., 6 Innovation Road II, Science Park, Hsinchu 300, Taiwan

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"+" is the (prefix) number you dial to make an international telephone call.

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