

NSA-220

Network Storage Appliance

User's Guide

Version 2.10

11/2007

Edition 1

DEFAULT LOGIN

Web Address nsa220

Password 1234



About This User's Guide

Intended Audience

This manual is intended for people who want to configure the NSA using the web configurator. A basic knowledge of TCP/IP networking concepts and topology will be helpful.

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 NSA 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 	Television 	Firewall 
Router 	Switch 	Internet 

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.



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PART I

Introduction

[Getting to Know Your NSA \(25\)](#)

[Web Configurator Basics \(29\)](#)

[Tutorials \(45\)](#)

[Status Screen \(63\)](#)

Getting to Know Your NSA

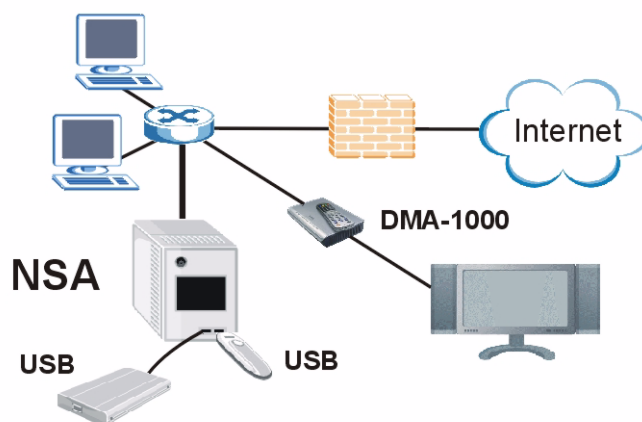
This chapter covers the main features and applications of the NSA.

1.1 NSA Overview

Use the NSA (Network Storage Appliance) to do the following.

- Share files between computers on your network.
- Back up files from your computers to the NSA.
- Use the **COPY** button to copy files directly to the NSA from USB devices like card readers, MP3 players, memory sticks, and digital cameras without using a computer.
- Have the NSA handle large file downloads.
- Automatically download files from website feeds for convenient viewing.
- Play the NSA's video, music and photo files on your computers using the included media client software.
- Play the NSA's video, music and photo files on hardware-based media clients like the DMA-1000.
- Use the NSA's web site to share files with remote users.
- Use iTunes on your computer to play video and music files stored on the NSA.
- Share printers.

Figure 1 Example of the NSA in a Home Network



Above is the NSA in a home network. Users back up and share data on the NSA. The DMA-1000 plays the NSA's media files on the TV. A USB hard drive provides extra storage space and files are copied directly from the USB memory stick to the NSA.

Place the NSA behind a firewall and/or IDP (Intrusion Detection and Prevention) device to protect it from attacks from the Internet.



See [Chapter 16 on page 155](#) for a more detailed list of NSA features and lists of compatible hard drives and USB devices.

Refer to the Quick Start Guide for hardware connections and how to install and remove hard drives from the disk trays.



Turn off and disconnect the NSA before you install or remove internal hard drives.

1.1.1 LEDs

The NSA LEDs (lights) tell you important information.

Figure 2 NSA Front Panel



Figure 3 NSA Rear Panel

This table describes the NSA's LEDs.

Table 1 LEDs

LED	COLOR	STATUS	DESCRIPTION
POWER	Blue	On	The NSA is turned on and receiving power.
		Off	The NSA is turned off.
HDD1/ HDD2	Green	On	The hard disk drive is connected properly to the NSA.
		Blinking	The NSA is saving data to the hard disk drive.
	Orange ^A	On	The NSA detected an error on the hard disk drive (like a bad sector for example). The NSA automatically tries to recover a bad sector, but the LED stays orange until the NSA restarts.
		Blinking	The hard disk drive connection came loose or the NSA detected an error on the hard disk drive (like a bad sector for example) and is saving data to the hard disk drive.
	Red	On	The hard disk drive has failed and the NSA can no longer detect it.
		Off	The NSA cannot detect a hard disk in the disk bay.
SYS	Green	On	The NSA has fully started and is operating normally.
		Blinking	The NSA is starting up.
	Red	On	The NSA has failed.

Table 1 LEDs (continued)

LED	COLOR	STATUS	DESCRIPTION
LAN	Green	On	The NSA has a successful 10/100 Mbps Ethernet connection.
		Blinking	The 100M LAN is sending or receiving packets.
	Yellow	Off	The NSA does not have a 10/100 Mbps Ethernet connection.
		On	The NSA has a successful 1000 Mbps Ethernet connection.
		Blinking	The 1000 M LAN is sending or receiving packets.
		Off	The NSA does not have a 1000 Mbps Ethernet connection.
COPY	Green	On	A USB device is connected to the NSA.
		Blinking	The NSA is copying files from the USB device.
	Red	On	Copying files from the USB device failed.
		Off	No USB device is connected.

A. The **HDD1** and **HDD2** LEDs are dual-color (green and red). The green LED is normally on when you have a hard disk installed. If the NSA detects an error on the disk, the disk's connection comes loose, or the disk fails, the red LED also comes on. Since the green LED still stays on, the color appears to be orange. If the NSA is no longer able to detect a hard disk in the disk bay, the green LED turns off and the LED appears as red.

1.1.2 COPY Button

Use the **COPY** button on the front panel to copy files from a connected USB device to the NSA. The files are stored in a folder created within the public share. The name of the folder created for the copied files consists of the date and time of the copy in year_month_day_hour_minute_second format. Up to a total of 10 GB for files can be copied. If the USB device has more than 10 GB of files, the NSA emits a long beep and does not copy any of the files.

Web Configurator Basics

This chapter describes how to access the NSA 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 setup and management using an Internet browser. Use Internet Explorer 6.0, Mozilla Firefox 1.07, 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.
- JavaScript (enabled by default).

2.2 Accessing the NSA Web Configurator

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

2.2.1 Access the NSA Via NDU

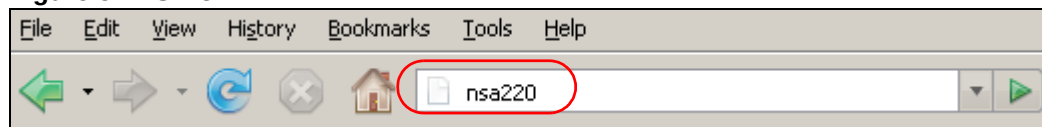
If you don't know the IP address of the NSA, then use the NDU to find it. Refer to the Quick Start Guide for how to install and run the NDU.

Figure 4 NDU Main Screen

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

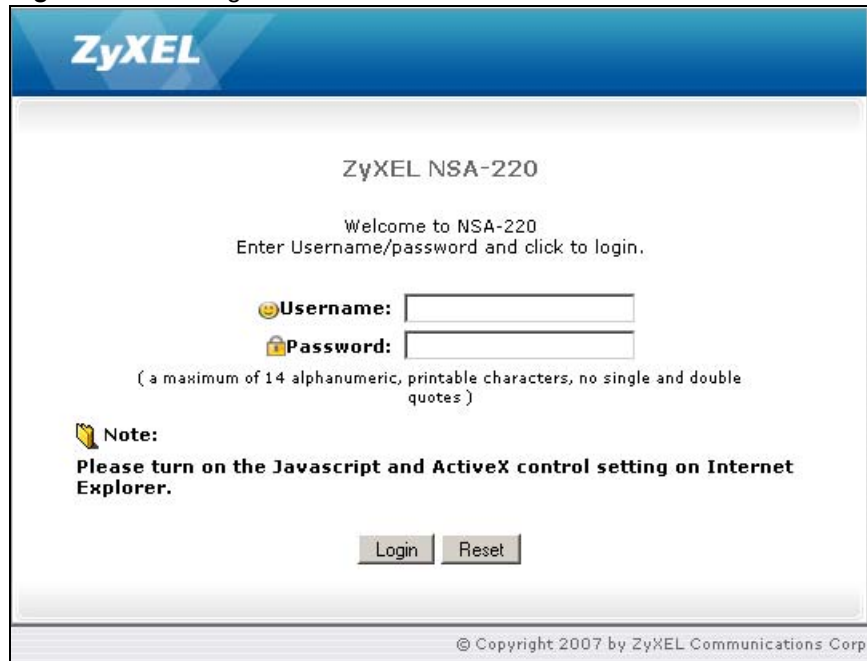
2.2.2 Web Browser Access

Open your browser and type in the server name of the NSA ("nsa220" is the default).

Figure 5 NSA URL

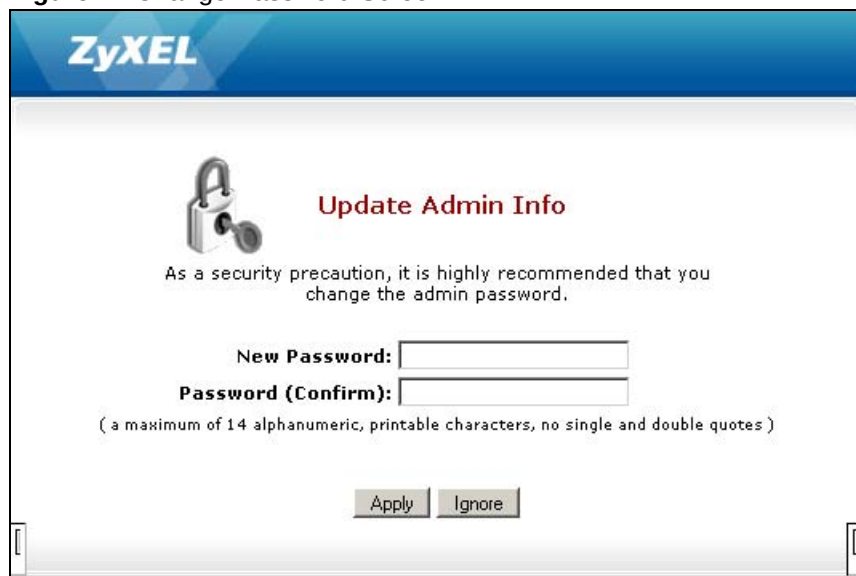
2.3 Login

The default username and password are 'admin' and '1234' respectively. Enter your username and password, then click **Login**. See [Chapter 9 on page 115](#) for how to create other user accounts.

Figure 6 NSA Login Screen

The image shows the ZyXEL NSA-220 login screen. At the top is the ZyXEL logo. Below it, the text reads "ZyXEL NSA-220" and "Welcome to NSA-220". A prompt says "Enter Username/password and click to login." There are two input fields: "Username:" and "Password:". Below the password field is a note: "(a maximum of 14 alphanumeric, printable characters, no single and double quotes)". A "Note:" section with a yellow icon says "Please turn on the Javascript and ActiveX control setting on Internet Explorer." At the bottom are "Login" and "Reset" buttons. The footer says "© Copyright 2007 by ZyXEL Communications Corp."

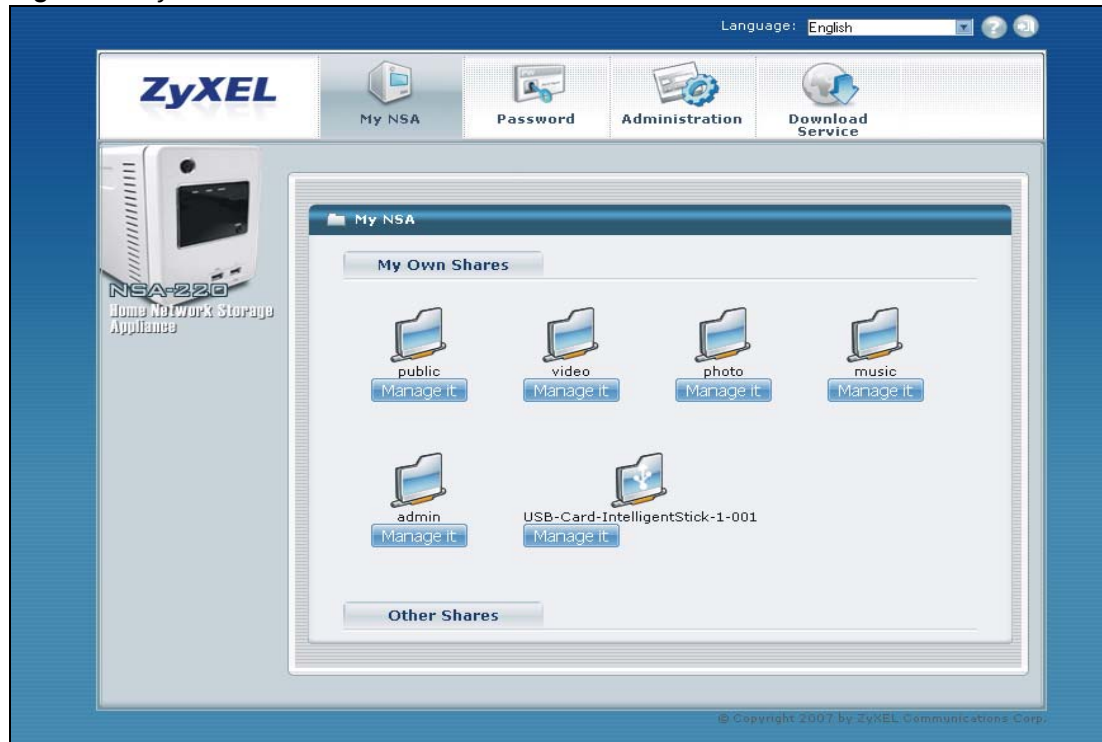
You should see a screen asking you to change your password (highly recommended) as shown next. Type a new password (and retype it to confirm) and click **Apply** or click **Ignore**.

Figure 7 Change Password Screen

The image shows the ZyXEL "Update Admin Info" screen. At the top is the ZyXEL logo. Below it is a padlock icon and the text "Update Admin Info". A message says "As a security precaution, it is highly recommended that you change the admin password." There are two input fields: "New Password:" and "Password (Confirm):". Below the second field is a note: "(a maximum of 14 alphanumeric, printable characters, no single and double quotes)". At the bottom are "Apply" and "Ignore" buttons.

2.4 User-level Screens Overview

All users (including the administrator) first see the user-level access **My NSA** screen after login.

Figure 8 My NSA

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

The icons and language label at the top-right of the screen (**1**) are visible from most screens. Use the tabs at the top of the screen to navigate between the user-level screens and menus. The following table describes the ‘global’ icons and tabs in the user-level screens.

Table 2 User-level Global Labels and Icons

LABEL/ICON	DESCRIPTION
Language	Select the web configurator language from the drop-down list box.
Help	Click the Help icon to open a web help page specific to the screen you are currently configuring.
Logout	Click the Logout icon at any time to exit the web configurator.
My NSA	Click this tab to go to screens where you can manage your shares and access the files on public shares. The administrator must go into the administration screens to manage other user's shares.
Password	Click this tab to go to a screen where you can change your password.
Administration	This tab displays when you log in as the administrator. Click the tab to go to screens where you can manage advanced configurations.
Download Service	This tab displays when you log in as the administrator. Click the tab to go to screens where you can have the NSA handle file downloads. See Section 8.5 on page 93 for more information.

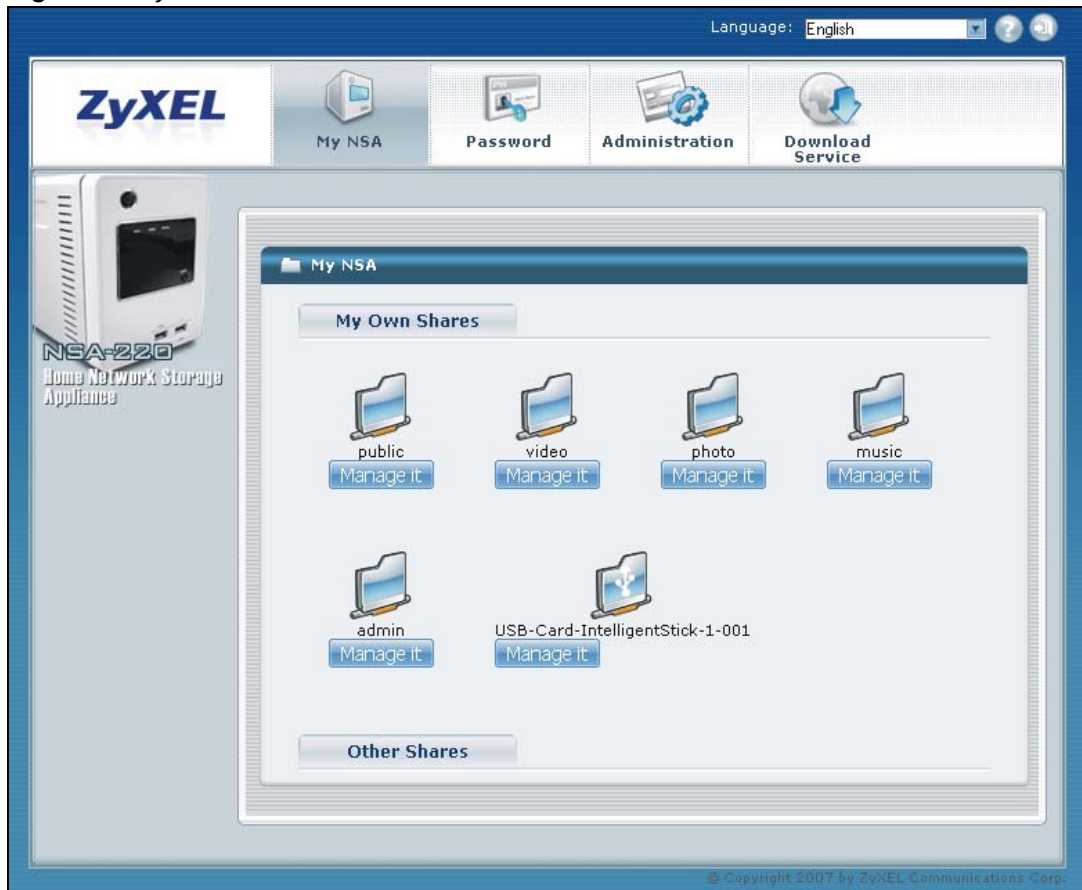
2.5 My NSA Screen

Use the **My NSA** screens to manage your shares and access the files in folders to which you have access.

A share is a set of user access permissions for a specific folder on a volume (gives someone access to a folder). It is equivalent to the Windows concept of a shared folder, but the access rights are independent of the folder (you configure the share and the folder separately). You can map a share to a network drive for easy and familiar file transfer for Windows users.

The main **My NSA** screen displays the shares to which you have access.

Figure 9 My NSA



The following table describes the labels in this screen.

Table 3 My NSA

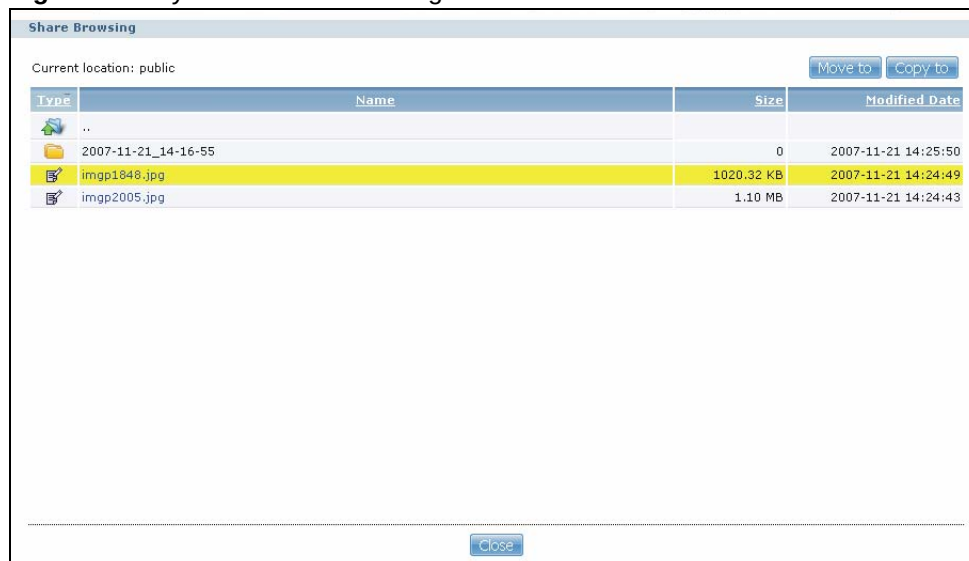
LABEL	DESCRIPTION
My Own Shares	These are the shares that you own (and manage). The share icons are folder shaped. Click a share icon to access the share's contents.  A plain share icon displays for a share on a volume on the internal hard drives.  A USB symbol displays on the icon for a share on an external (USB) device. An external share's icon turns gray if the share is not currently available (because the USB device was removed for example). The administrator owns and manages the public shares.
Manage It	Click this button to see and configure the management details for a share.
Other Shares	These are other shares on the internal hard drives or external (USB) devices that you can access (but not manage).

2.5.1 My NSA Share Browsing Screen

Click **My NSA** and then click a share to open the following screen. Use the **My NSA** share browsing screens to see and access share contents.

- Click a folder's name to go into the folder.
- Click a file's name to be able to save the file to your computer.
- Click the play icon to play the file. At the time of writing this is supported for MP3 files.
- Click to the right of a file or folder name to select it.
- Use the [SHIFT] key to select a range of entries. Hold down the [CTRL] key to select multiple individual entries.

Figure 10 My NSA Share Browsing



The following table describes the labels in this screen.

Table 4 My NSA Share Browsing

LABEL	DESCRIPTION
Current location	This is the name of the share and folder path that you are in.
Move to	Select a folder or file and click this button to move it to another location within this share or another share that you can access.
Copy to	Select a folder or file and click this button to move create a copy of it in another location within this share or another share that you can access.
Type	The icon in this column identifies the entry as a folder or a file. The folder with an arrow pointing up is for the link that takes you to the next higher layer in the share's folder tree.
Name	This column identifies the names of folders and files in the share. Click Up One Level to go to the next higher layer in the share's folder tree. Click a file's file name to open the file or save it to your computer. Click a folder's name to display the folder's contents.
Size	This column displays a file's size in bytes.
Modified Date	This column displays the last time the file or folder was changed (in year-month-day hour:minute:second format).
Close	Click this button to return to the My NSA screen.

2.5.2 My NSA Share Browsing Move to or Copy to Screen

Select a folder or file in the **My NSA** share browsing screens and click the **Move to** button or the **Copy to** button to display a screen like the following. Use this screen to select the target path for moving or copying the folder or file.

Figure 11 My NSA Share Browsing > Move to (or Copy to)

The following table describes the labels in this screen.

Table 5 My NSA Share Browsing > Move to (or Copy to)

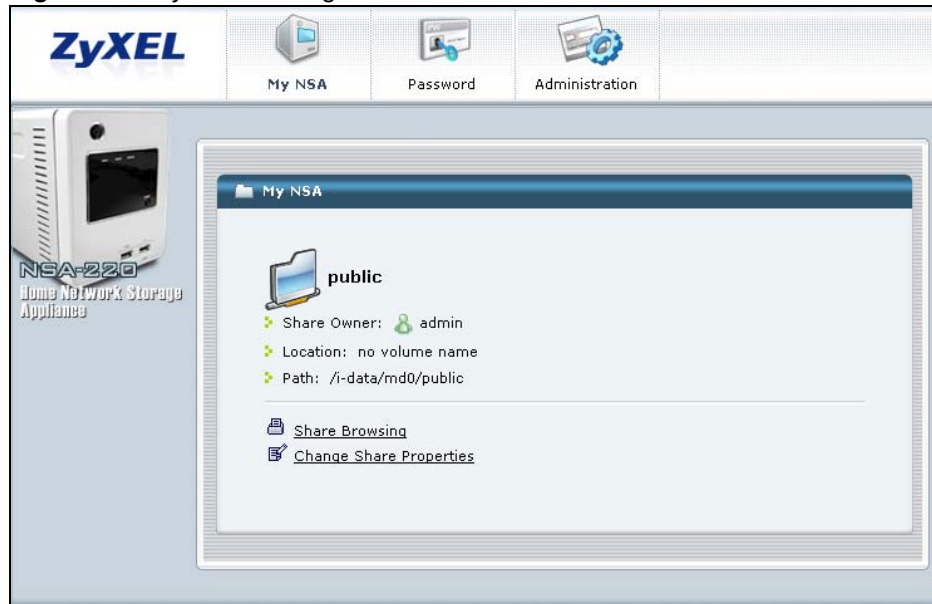
LABEL	DESCRIPTION
Shares	Select the target share.
Path	Select a folder on the NSA. You can also browse (see Section 10.3 on page 122) to find or create a folder on the NSA or type the location of the folder using forward slashes as branch separators.
Yes	Click this button to move or copy the file.
Close	Click this button to return to the My NSA share browsing screen.

2.5.3 My NSA Management Overview Screen

Use the **My NSA** management overview screens to see and configure share management details.

Click **My NSA** and then the **Manage It** button of one of your shares to open the following screen. This screen displays a share's management details.

Figure 12 My NSA Management Overview



The following table describes the labels in the this screen.

Table 6 My NSA Management Overview

LABEL	DESCRIPTION
Share Owner	The share belongs to (and is managed by) this user account. The share owner controls access rights to the share.
Location	The share is for a folder on this volume.
Path	This is the share's file path.
Share Browsing	Click this link to see and access the share's contents.
Change Share Properties	Click this link to configure the share's management details.

2.5.4 My NSA Change Share Properties Screen

Use the **My NSA Change Share Properties** screen to configure share management details.

Click **My NSA** and a share's **Manage It** button. Then click **Change Share Properties** to open the following screen. This screen displays a share's management details.

Figure 13 My NSA Change Share Properties

Change Share Properties

Share Name

public

Volume

1DiskJBODvolume (111)

Path

/public

Browse

Make this share owned by

admin

Publish this share to Media Server

Publish this share to Web

Share Access

Advanced

Username

Full

Read Only

Deny

admin

anonymous-ftp

Apply

Cancel

The following table describes the labels in the this screen.

Table 7 My NSA Change Share Properties

LABEL	DESCRIPTION
Share Name	Configure a name to identify this share. Type a share name from 1 to 255 single-byte (no Chinese characters allowed for example) ASCII characters. The name cannot be the same as another existing local share. See Section 2.5.5 on page 38 for more information on share names.
Volume	You should have already created volumes (a single accessible storage area with a single file system) on the NSA. Select the volume that you want to use with this share.
Path	This is the share's file path.
Make this share owned by	Select the administrator or user account that is to own (manage) this share. The share owner controls access rights to the share.
Publish this share to Media Server	Select this option to make the share's files available to media clients.
Publish this share to Web	Select this option to let people use a web browser to access this share's files without logging into the My NSA screens.
Share Access	Select who can access the files in the share and how much access they are to be given. If you publish the share to the media server or the web, all users will have at least read-only access to the share, regardless of what you configure here. Select Keep it private to owner to allow only the share owner to read files in the share, delete files in the share and save files to the share. Select Make it public to allow anyone (with or without a user account on the NSA) to read files in the share, delete files in the share and save files to the share. Select Advanced to select which individual users can read the share's files, which users can delete the share's files, and which users are blocked from doing either.
Username	This appears when you set the Share Access to Advanced . This column lists the names of the NSA's user accounts. Click Username in the heading column to reverse the sort order.
Full	This appears when you set the Share Access to Advanced . Select this column's radio button in a user account's row to give the user full access to the share. This allows the user to read files in the share, delete files in the share and save files to the share. Select the check box at the top of the column to give all of the users full access to the share.

Table 7 My NSA Change Share Properties (continued)

LABEL	DESCRIPTION
Read Only	This appears when you set the Share Access to Advanced. Select this column's radio button in a user account's row to give the user read-only access to the share. This allows the user to view or copy files in the share, but not delete files in the share or save files to the share. Select the check box at the top of the column to give all of the users read-only access to the share.
Deny	This appears when you set the Share Access to Advanced. Select this column's radio button in a user account's row to stop the user from accessing the share. This means the user cannot read files in the share, delete files in the share, or save files to the share. Select the check box at the top of the column to stop all of the users from accessing the share. Note: Selecting the check box at the top of the column blocks everyone (including the administrator) from accessing the share.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to leave this screen without saving your changes.

2.5.5 Share and Folder Names

The name can only contain the following characters:

- Alphanumeric (A-z 0-9) and Unicode.

The NSA allows FTP access to shares, folders or files with names encoded in the UTF-8 (8-bit UCS/Unicode Transformation Format) format. So your FTP client must support UTF-8 in order to access shares, folders or files on the NSA with Unicode names.

- Spaces
- _ [underscores]
- . [periods]
- - [dashes]

Other limitations 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).
- The NSA creates automatic volume names for external (USB) disk volumes. These are a type of share, so the share name you configure cannot conflict with the external (USB) disk volume names. "ExtVol1" or "ExtVol2" are examples of external (USB) disk volume names.
- Folder names must be unique (they cannot be the same as other folder names).
- The minimum character length of a name is one character, that is a name cannot be blank.
- The maximum character length of share name is 255 characters.
- Unicode is supported for share names, although your FTP client must support UTF-8. Full support should be available in all Windows versions after Windows 2000.

2.5.6 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 sensitive.
- 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

2.5.7 Password Screen

Click **Password** to open the following screen. Use this screen to change an account's password. Enter a new password and confirm it by re-entering it.

Figure 14 Password

ZyXEL

My NSA Password Administration

NSA-220
Home Network Storage Appliance

Modify Password

Account Name *

Old Password Password cannot be empty.

New Password Password cannot be empty.

Password (Confirm)

Caution:
Please keep a record of your new password whenever you change it.
The system will lock you out if you have forgotten your password.

Apply Cancel

The following table describes the labels in this screen.

Table 8 Password

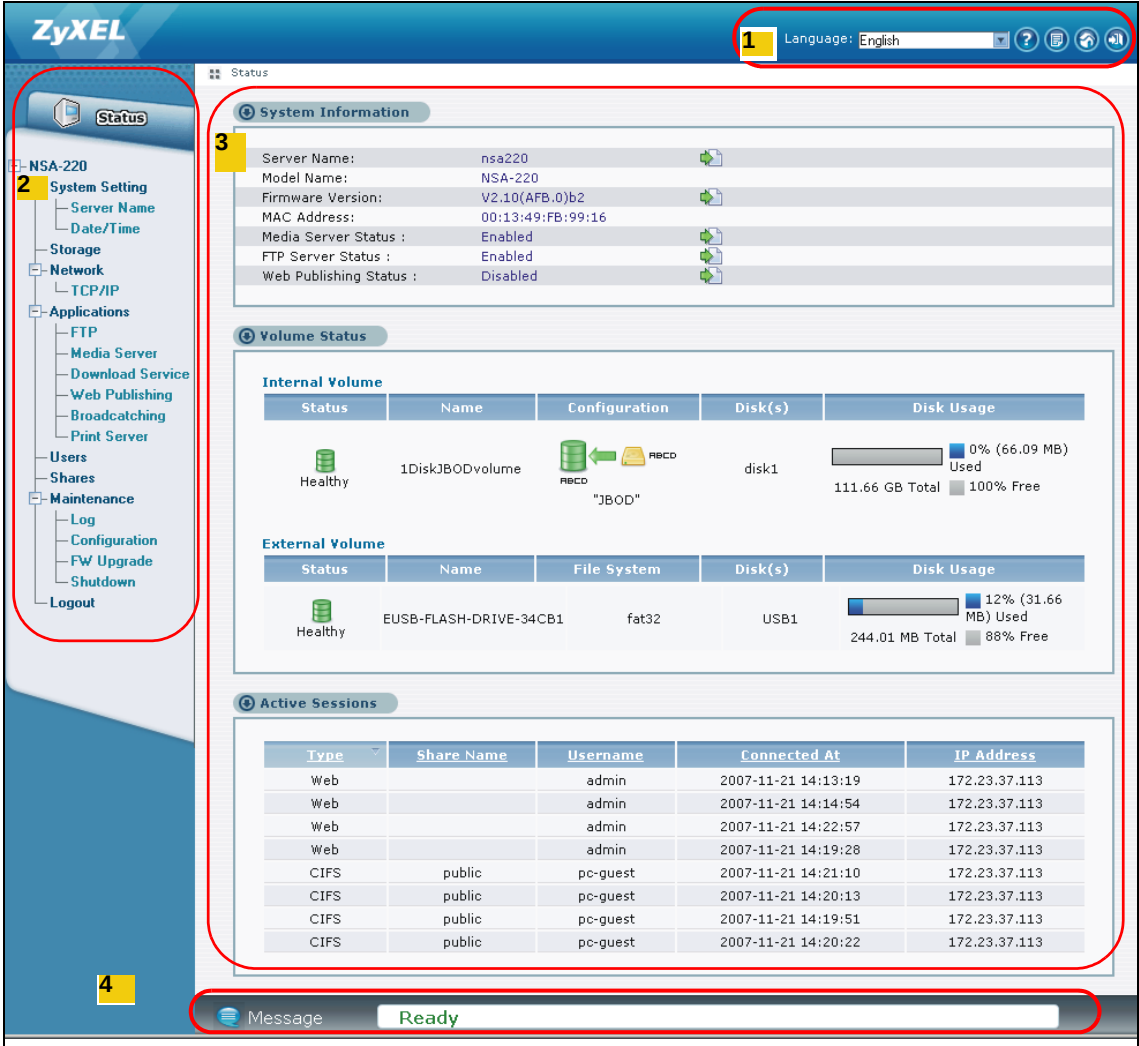
LABEL	DESCRIPTION
Account Name	Type the user name of the account for which you want to change the password.
Old Password	Type the user's current password.
New Password	Create a new password for the user. You can type from one to 14 single-byte (no Chinese characters allowed for example) ASCII characters.
Retype to confirm	You must type the exact same password that you just typed in the above field.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

2.6 Administration Screens

The **Administration** tab displays when you log in as the administrator. Click **Administration** in the **My NSA** screens to open the advanced administration screens.

The **Status** screen is the first advanced administration screen that displays.

Figure 15 Status



2.6.1 Global Administration Icons

The icons and language label at the top-right of the screen (1) are visible from most of the administration screens. The following table describes the ‘global’ icons and labels.

Table 9 Global Labels and Icons

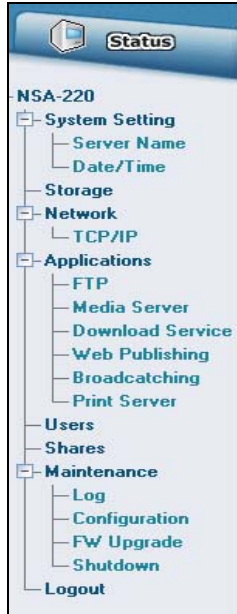
LABEL/ICON	DESCRIPTION
Language	Select the web configurator language from the drop-down list box.
	Click this Help icon to open a web help page specific to the screen you are currently configuring.
	Click this About icon to view the model name, firmware version and copyright.
	Click this Home icon to return to the user-level screens.
	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.

2.6.2 Navigation Panel

The navigation panel on the left of the screen (**2**) contains screen links. Click a link to display sub-links. There are no sub-links for the **Status** screen. Certain screens also contain hyper links that allow you to jump to another screen.

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

Figure 16 Navigation Panel Links



The following table describes the navigation panel screens.

Table 10 Screens Summary

LINK	SCREEN	FUNCTION
Status		This screen shows system information, the status of the volumes, and the users who are currently using the NSA.
System Setting	Server Name	Specify the NSA's server name and workgroup name.
	Date & Time	Chose a time zone and/or allow the NSA to synchronize with a time server.
Storage		View volume and disk information and create and edit volumes. A volume is a storage area that can span one or more internal disks or a single external (USB) disk.
Network	TCP/IP	Assign the NSA a dynamic or static IP address and DNS information.

Table 10 Screens Summary (continued)

LINK	SCREEN	FUNCTION
Applications	FTP	Enable FTP file transfer to/from the NSA, set the number of FTP connections allowed, an FTP idle timeout, and the character set.
	Media Server	Enable or disable the sharing of media files and select which shares to share.
	Download Service	Have the NSA handle large file downloads.
	Web Publishing	Let people use a web browser to access files in shares without logging into the My NSA screens.
	Broadcasting	Subscribe the NSA to feeds to download frequently updated digital content like TV programs, radio talk shows, Podcasts (audio files), YouTube videos, or even BitTorrents.
	Print Server	View and manage the NSA's list of printers and print jobs.
Users		View, create and edit administrator and user accounts to let people use the NSA.
Shares		View, create and edit shares. Shares are shared folders to which you can allow specific users read/write access rights.
Maintenance	Log	View the NSA's logs.
	Configuration	Back up and/or restore the NSA configuration file.
	FW Upgrade	Upload new firmware to your NSA.
	Shutdown	Restart the NSA or shut it down.
Logout		Click Logout to exit the web configurator. This is recommended to prevent unauthorized administrator access to the NSA.

2.6.3 Main Window

The main window (**3**) shows the screen you select in the navigation panel. It is discussed in the rest of this document.

The **Status** screen is the first administration screen to display. See [Chapter 4 on page 63](#) for more information about the **Status** screen.

2.6.4 Status Messages

The message text box at the bottom of the screen (**4**) displays status messages as you configure the NSA.

2.6.5 Common Screen Icons

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

Table 11 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 Delete icon to delete an entry from the list.

Table 11 Common Configuration Screen Icons (continued)

ICON	DESCRIPTION
	Click the Edit icon to jump to related item's configuration screen.
	This is a user icon. See the chapter on user accounts for detailed information on variants of this icon.
	This is a share icon. See the chapter on shares for detailed information on variants of this icon.
	This icon represents a Healthy volume.
	This icon represents a Degraded RAID 1 volume. Replace the faulty disk. If the replacement disk does not contain a volume, the NSA automatically restores the volume. If the replacement disk already contains a volume, you need to delete the volume and then click the Repair icon to fix the degraded RAID volume.
	This icon represents a Down volume. Click the Initialize icon to create a volume.
	Click the Scan Disk icon to scan a hard disk for file system errors.
	Click the Eject 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 Locate icon to cause the LED on the external storage device to blink.
	If you replace a faulty disk with a disk that contains a volume, you need to delete the volume and then click the Repair icon to fix the degraded RAID volume.

Tutorials

This chapter provides tutorials that show how to use the NSA.

3.1 File Sharing Tutorials

The following sections cover using the NSA for file sharing. This chapter assumes you have already followed the Quick Start Guide instructions to perform initial setup and configuration (so you have a working volume). See the Quick Start Guide for how to play media files using the included DLNA-compliant media client software. See the rest of this User's Guide for details on configuring the NSA's various screens.

3.1.1 Creating a User Account

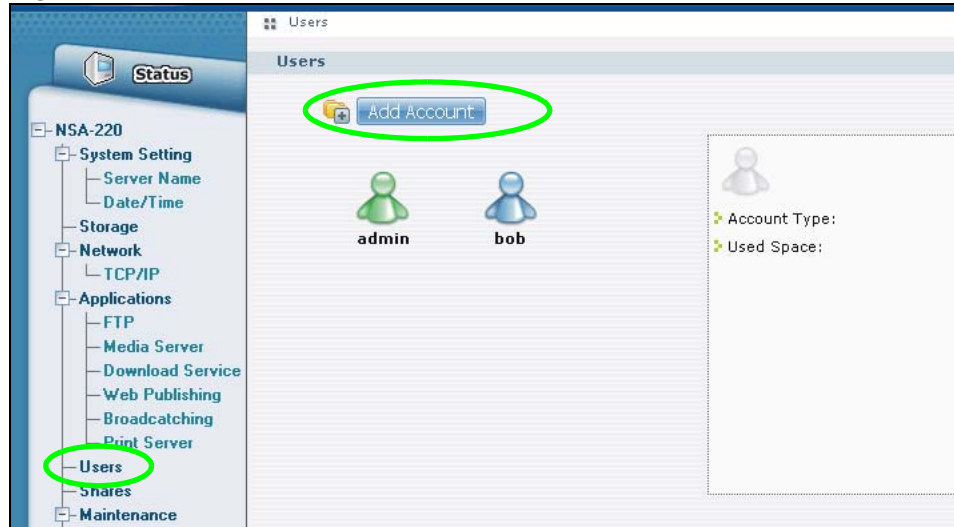
Bob wants to create accounts for his sons Jimmy and Kevin. This is how he would do it.

- 1 Log into the NSA web configurator (see [Section 2.3 on page 30](#)) and click **Administration** to go to the configuration screens.

Figure 17 My NSA



- 2 Click **Users** to open the **Users** screen. Then click **Add Account**.

Figure 18 Users

- 3 Configure the screen as follows and write down the username and password to give to Jimmy. If the username and password are the same as Jimmy's Windows login, Jimmy will not need to enter a username and password when he logs into his share from his computer. Set the **Account Type** to **User** so Jimmy doesn't get to configure the whole NSA. Click **Apply** to create the account.

Figure 19 Users > Create Example

- 4 The account now displays in the **Users** screen.

Figure 20 Users (Account Created)

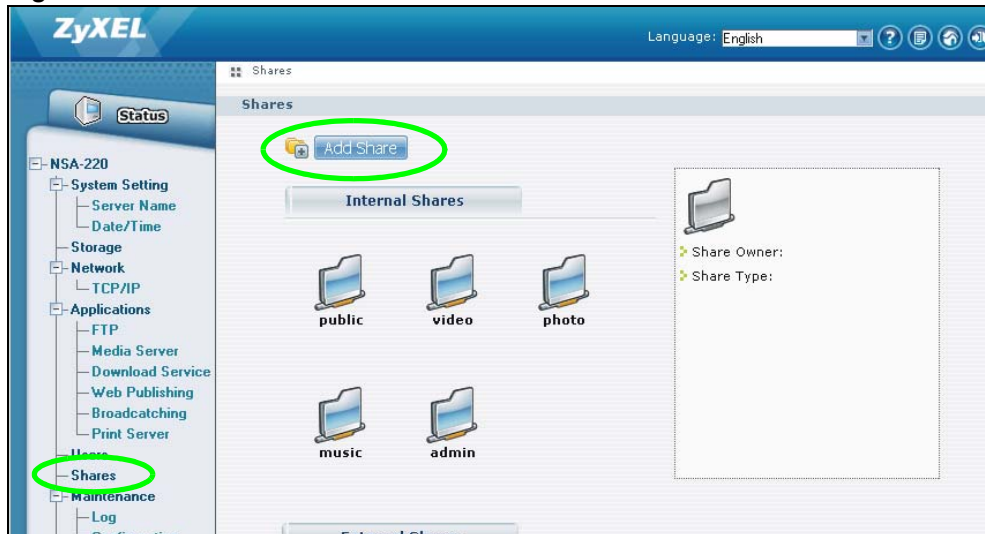
Now that Bob has created Jimmy's account, he can go through the steps again to create another account for Kevin. After both accounts are created, he can go to [Section 3.1.2 on page 47](#) to create shares for Jimmy and Kevin.

3.1.2 Creating a Share

Suppose Bob has already created separate accounts for his sons Jimmy and Kevin. Now Bob wants to create a share for each son. He also wants to make sure that each son can only access his own share (to keep them from deleting each other's files). This is how he would do it.

- 1 In the NSA's administration web configurator screens, click **Shares > Add Share**.

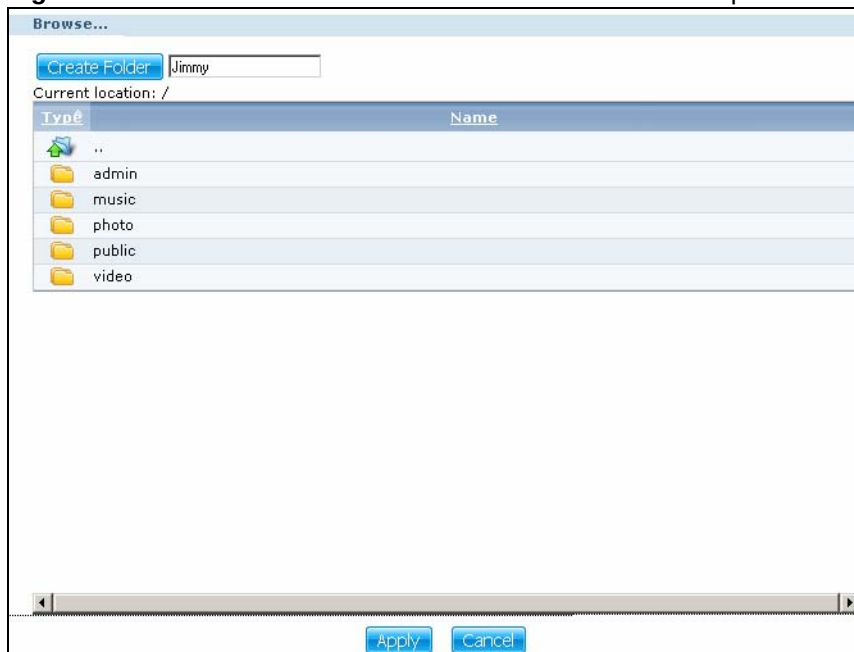
Figure 21 Shares



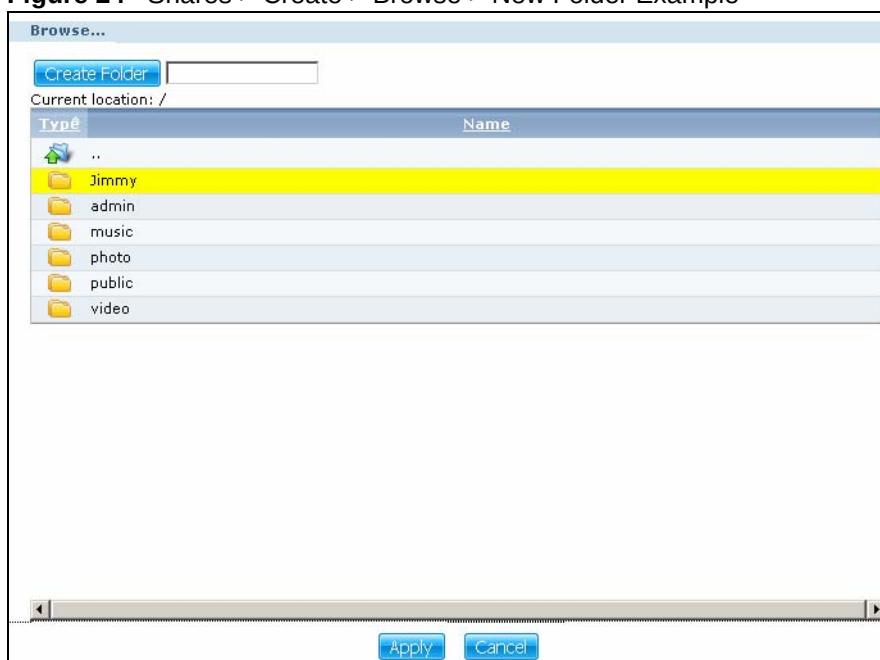
- 2 Specify a name for the share and select which volume it should be on. Then click **Browse**.

Figure 22 Shares > Create Example

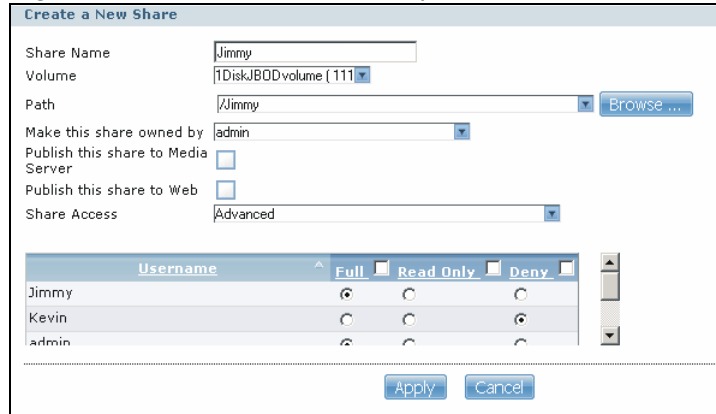
- 3 Type a name for a new folder and click **Create Folder**.

Figure 23 Shares > Create > Browse > Create Folder Example

4 Select the new folder and click **Apply**.

Figure 24 Shares > Create > Browse > New Folder Example

5 Configure the screen as follows and click **Apply**. (Make sure you also set the **anonymous-ftp** access to **Deny**).

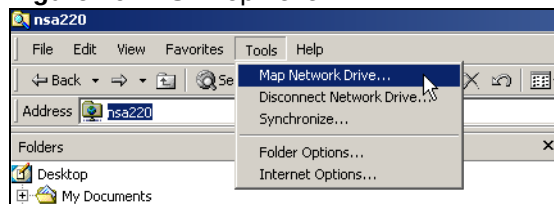
Figure 25 Shares > Create Example

Now that Bob has created Jimmy's share, he can go through the steps again to create another share for Kevin. Then he can see the rest of the tutorials for how to use the shares.

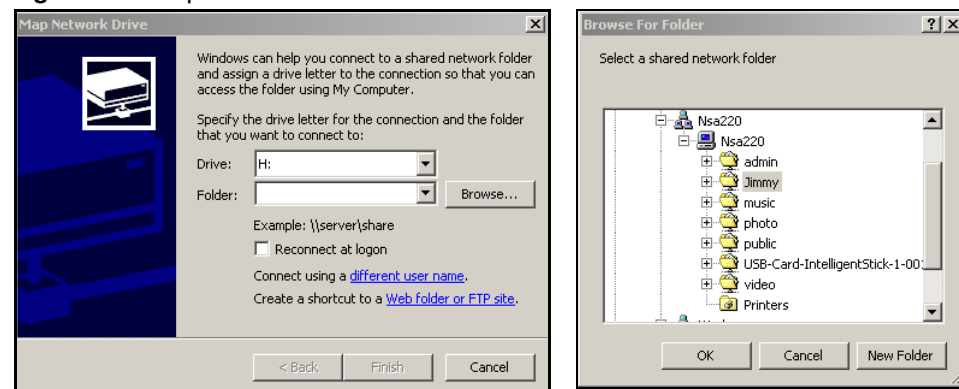
3.1.3 Accessing a Share From Windows Explorer

If you map a NSA share (where data is stored) to a Windows network drive, you can use Windows Explorer to transfer files to and from the NSA as if it was another folder on your computer. Here he maps Jimmy's share to Jimmy's computer.

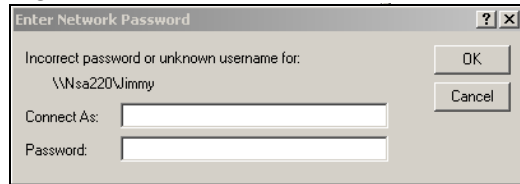
- 1 Start Windows Explorer and go to the NSA's server name ("nsa220" is the default) or IP address.
- 2 click **Tools > Map Network Drive**.

Figure 26 NSA Top Level

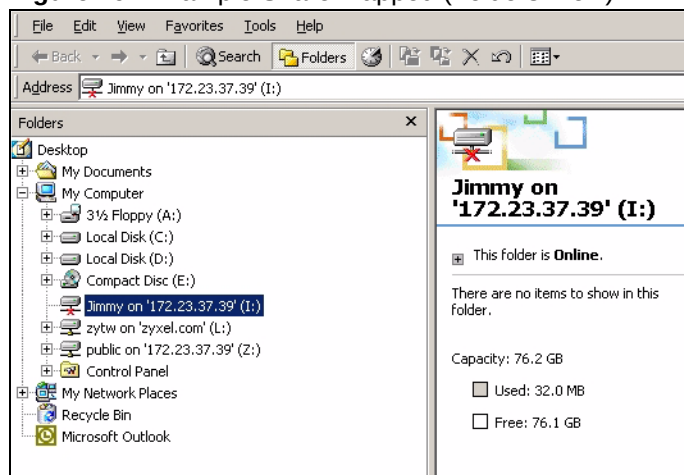
- 3 Select the network drive that you want to map the NSA to from the **Drive** list box. This example uses **I**. Then browse to and select the share on the NSA. Click **Finish**.

Figure 27 Map Network Drive

- 4 Enter the username and password for Jimmy's account and click **OK**. You do not need to do this if the username and password are the same as Jimmy's Windows login.

Figure 28 Enter Network Password

- 5 After the mapping is done, you can then simply copy and paste or drag and drop files from/to your local computer's drives to or from this network folder. Just like the NSA's share was another folder on your computer.

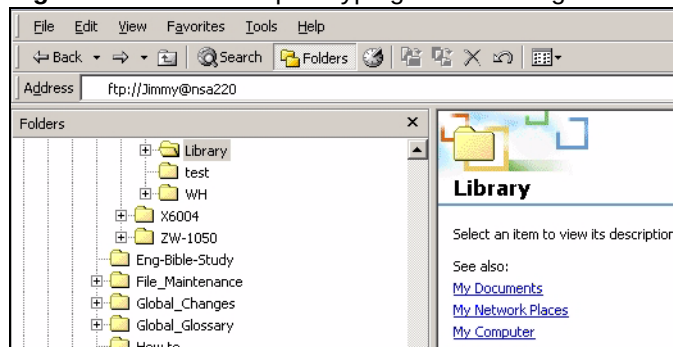
Figure 29 Example Share Mapped (Folders View)

Now that Bob has mapped Jimmy's share to Jimmy's computer, he can go through the steps again to map Kevin's share to Kevin's computer.

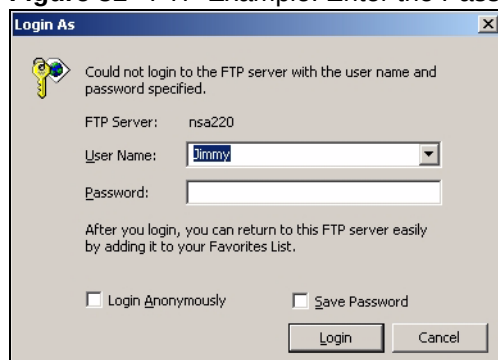
3.1.4 Accessing a Share Using FTP

You can also use FTP to access the NSA. Suppose Jimmy is temporarily using a different computer and wants to access his share without mapping it to the computer. This is how he would do it.

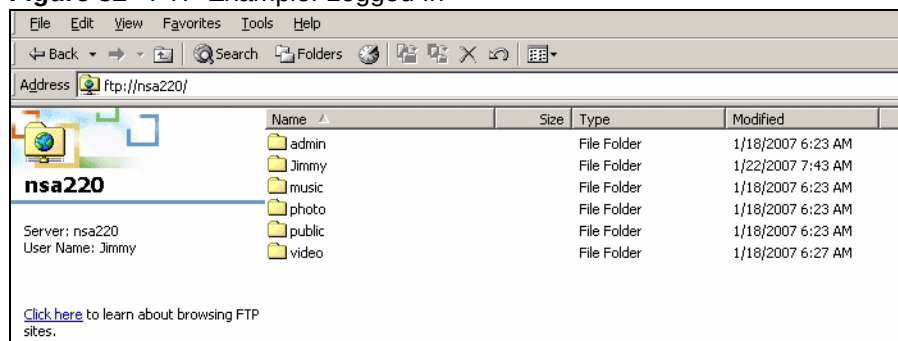
- 1 Open the FTP client (Windows Explorer is used here) and type "ftp://username@server" where "username" is the account's username and "server" is the NSA's IP address or server name.

Figure 30 FTP Example: Typing the FTP Target

2 Enter your password and click **Login**.

Figure 31 FTP Example: Enter the Password

3 Now you can access files and copy files from/to your local computer's drives to or from this network folder. ¹

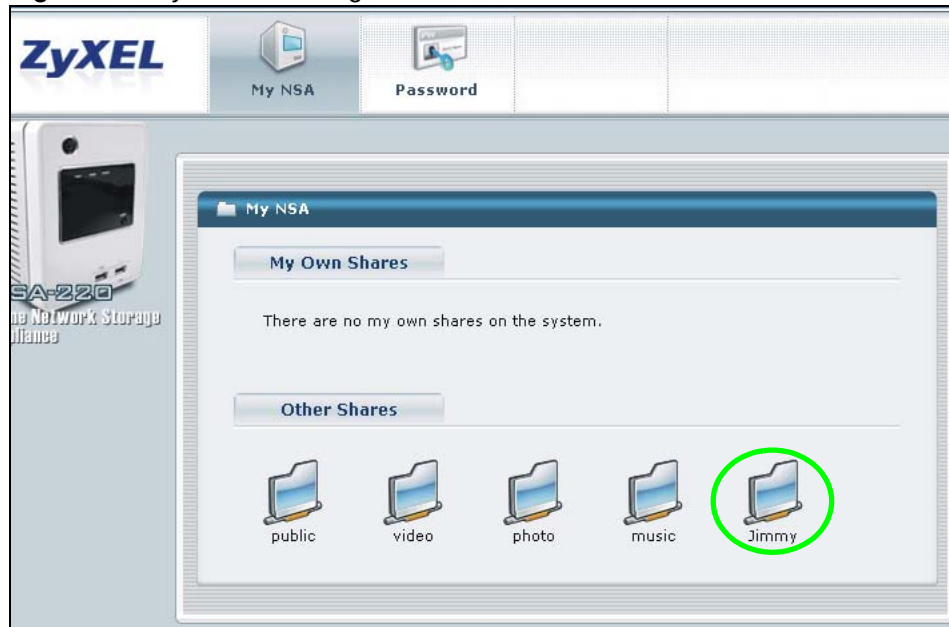
Figure 32 FTP Example: Logged In

3.1.5 Accessing a Share Through the Web Configurator

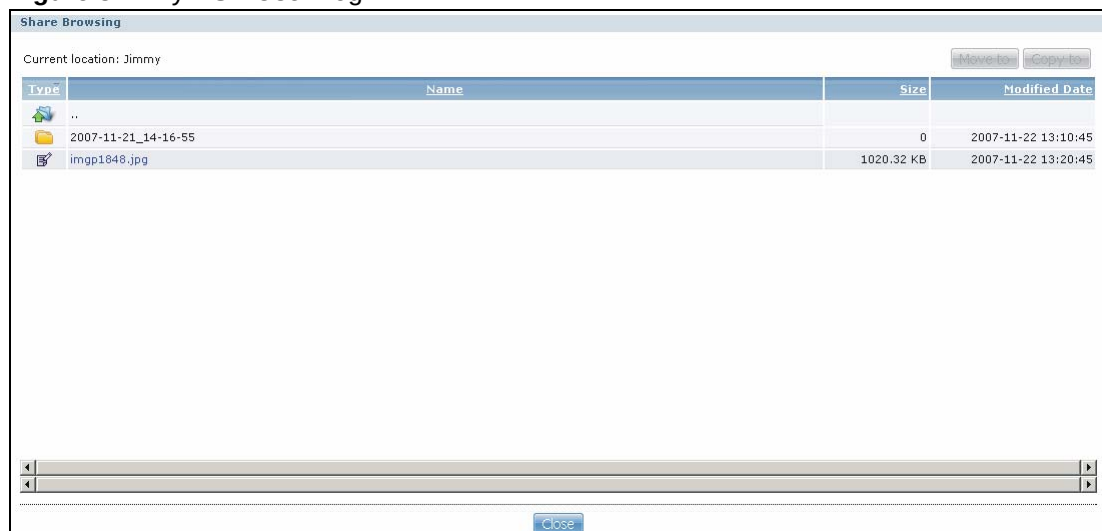
You can browse and access files through the web configurator.

- 1 Log into the NSA web configurator (see [Section 2.3 on page 30](#)) using your username and password.

1. Even though the admin share displays, user accounts cannot access it unless you change its share access settings.

Figure 33 My NSA User Login

- 2 Click a share to see the top level of the share's contents. Here is the Jimmy share.

Figure 34 My NSA User Login

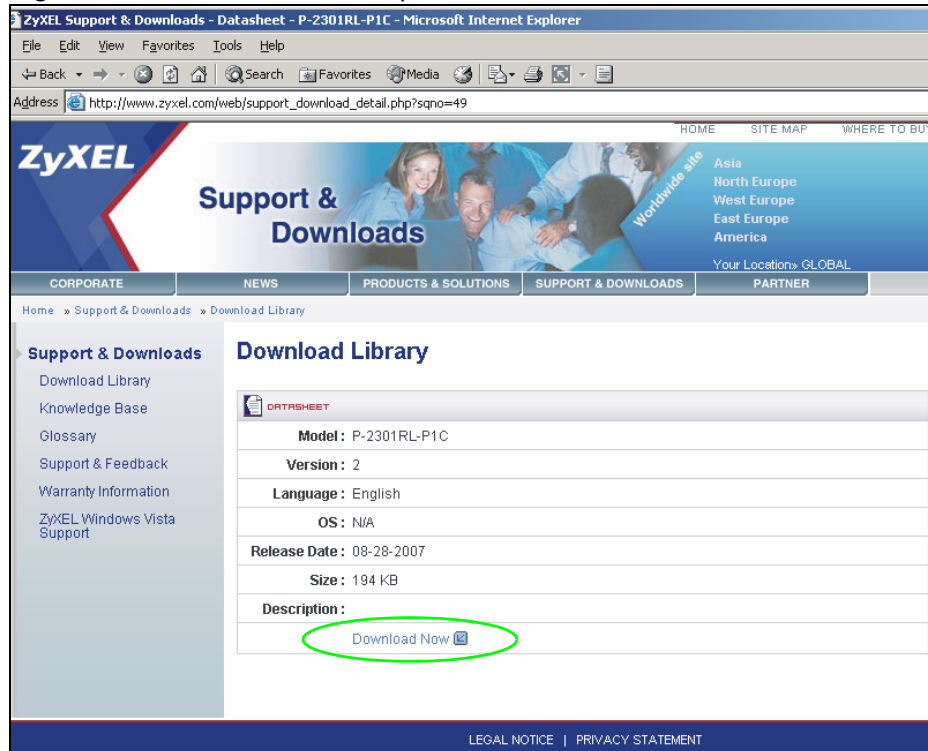
- 3 Click a folder's file name to browse the folder. You can open files or copy them to your computer. However at the time of writing you cannot use the web configurator to upload files to the NSA (use CIFS or FTP to upload files, see [Section 3.1.3 on page 49](#) and [Section 3.1.4 on page 50](#)).
- 4 Click the logout icon when you are done (see [Table 2 on page 32](#)).

3.2 Download Service Tutorial

This tutorial covers using the NSA to download a file from the Internet. Use this same procedure for BitTorrent downloads as well as regular HTTP (web) and FTP downloads. See [Section 8.5 on page 93](#) for more on the download service.

- 1 Open your Internet browser (this example uses Internet Explorer).
- 2 Find a download link for the file you want. In this example, www.zyxel.com has a **Download Now** link for downloading a datasheet for ZyXEL's P-2301RL-P1C (a device for making phone calls over the Internet).

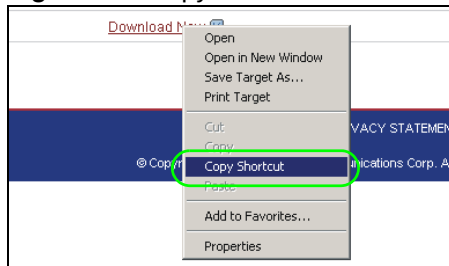
Figure 35 Download Link Example



Make sure the link opens either the file you want or a pop-up window about how to handle the file.

It is also OK for the link to open a .torrent file. If you are redirected to a screen that says the download should start in a few seconds, there may be a link to click if the download does not start automatically. See if that link opens the file or the pop-up window.

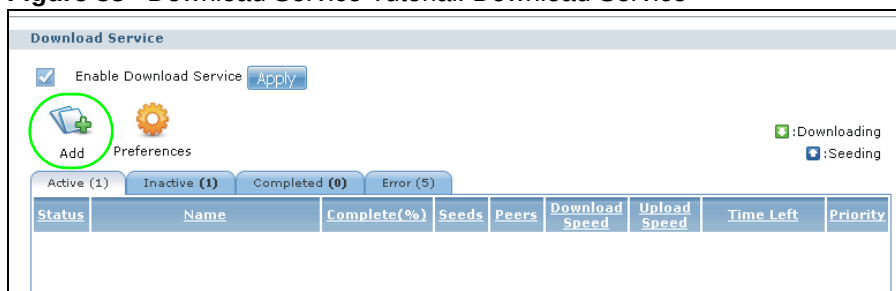
- 3 Right-click the download link and select **Copy Shortcut** in Internet Explorer (or **Copy Link Location** in Firefox).

Figure 36 Copy Shortcut

- 4 Log into the NSA web configurator (see [Section 2.3 on page 30](#)) using the administrator account and click **Download Service**.

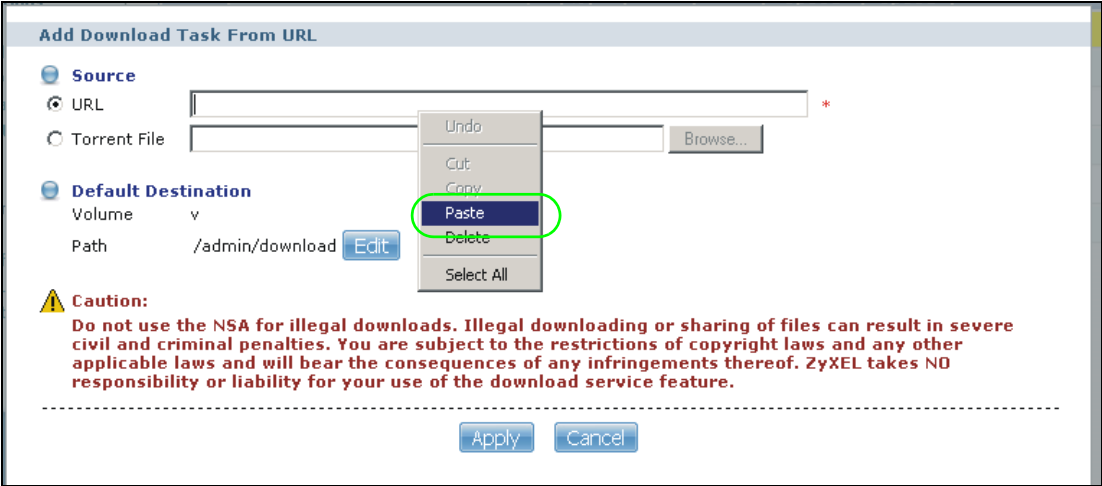
Figure 37 Download Service Tutorial: My NSA

- 5 Click **Add**.

Figure 38 Download Service Tutorial: Download Service

- 6 Right-click the **URL** field and select **Paste**.

Figure 39 Download Service Tutorial: Paste Link



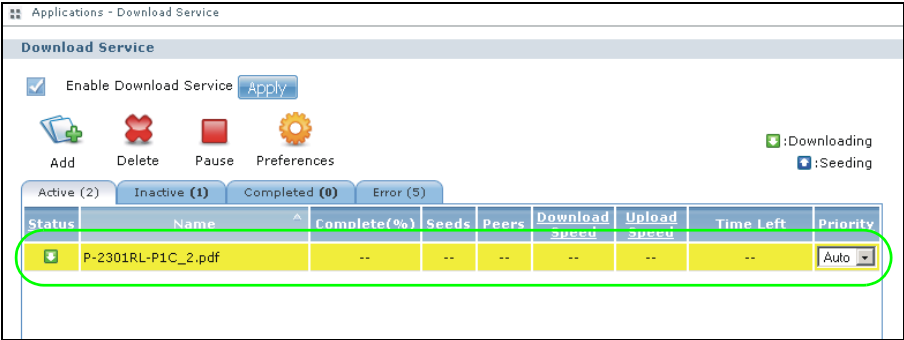
7 The URL displays in the **URL** field. Click **Apply**.

Figure 40 Download Service Tutorial: Apply Pasted Link



8 After a few moments, the download task appears in the **Download Service** screen's **Active** tab.

Figure 41 Download Service Tutorial: Download Task Added



The download appears in the **Completed** tab when it is done. By default the NSA stores all downloads in the **admin** share's **download** folder. See [Section 3.1.3 on page 49](#), [Section 3.1.4 on page 50](#), or [Section 3.1.5 on page 51](#) for how to access a share.

3.3 Broadcastching Tutorial

Use broadcastching to have the NSA download frequently updated digital content like TV programs, radio talk shows, Podcasts (audio files), and blogs. This example shows how to subscribe the NSA to the CNET TV Internet television channel. See [Section 8.12 on page 105](#) for more on the broadcastching service.

- 1 Open your Internet browser (this example uses Firefox).
- 1 Find the link for the RSS feed containing the channel you want to add. In this example, http://reviews.cnet.com/4520-11455_7-6333605-1.html has an **RSS** link for subscribing to the CNET Live podcast. However this is not the link for the actual RSS feed. Click the link to go to another screen that has RSS feed links.

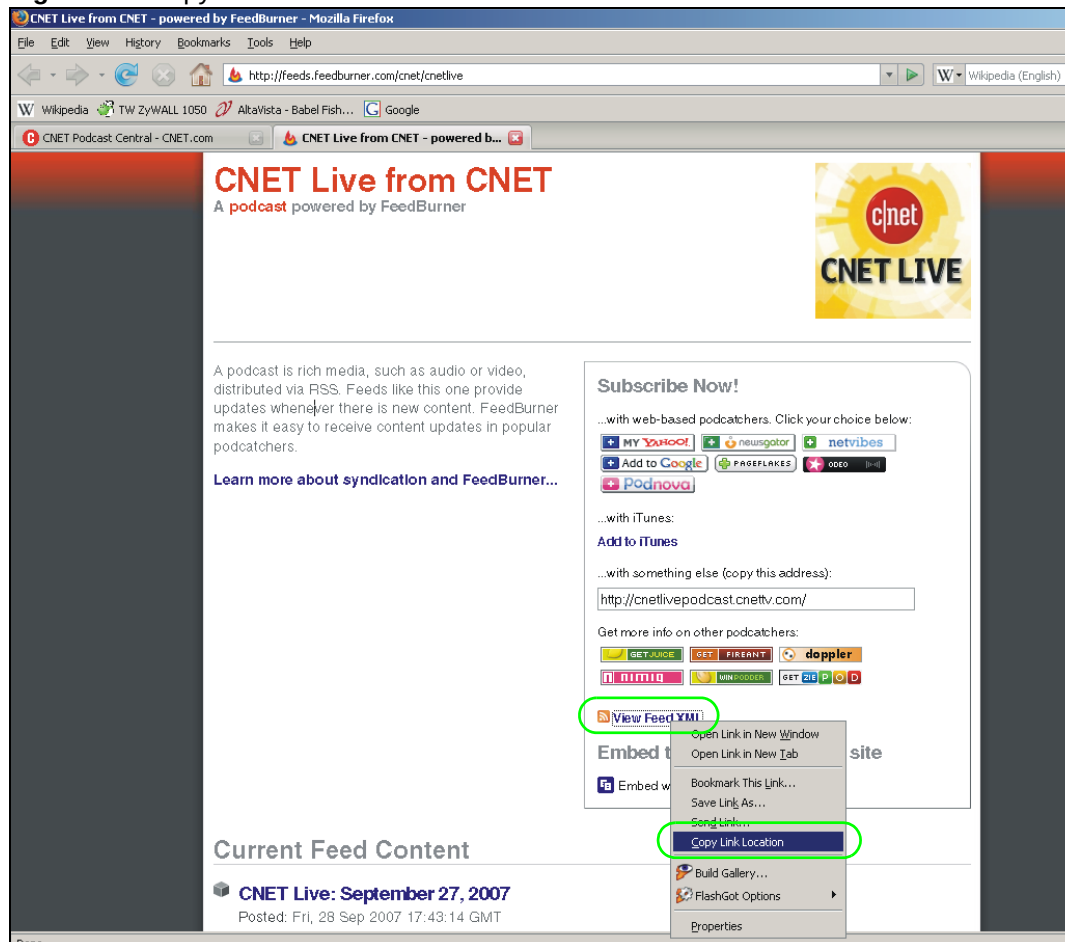
Figure 42 Broadcastching Link Example



Make sure the link goes to the actual RSS feed instead of to another list of links or information about the channel.

One way to test this is by clicking the link. Clicking an actual RSS feed link opens a screen of XML code (in browsers without an RSS feed aggregator) or a window where you can add the RSS feed (in browsers with an RSS feed aggregator).

- 2 Right-click the download link and select **Copy Link Location** in Internet Explorer (or **Copy Shortcut** in Internet Explorer).

Figure 43 Copy Link Location

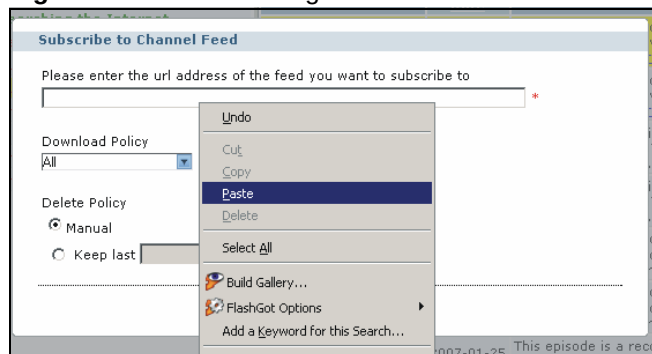
- 3 Log into the NSA web configurator (see [Section 2.3 on page 30](#)) using the administrator account and click **Administration > Applications > Broadcatching**.

Figure 44 Broadcatching Tutorial: My NSA

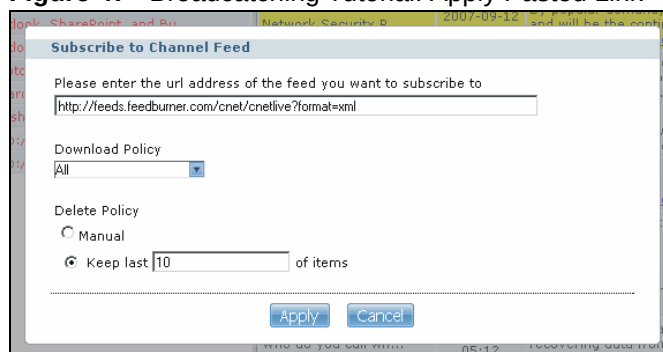
- 4 Click **Add Channel**.

Figure 45 Broadcatching Tutorial: Broadcatching

- 5 Right-click the URL field and select **Paste**.

Figure 46 Broadcatching Tutorial: Paste Link

- 6 The URL displays in the **URL** field.
- 7 Select a policy for what items to download. This example uses **Manual** so you will be able to select individual items to download later.
- 8 Select a policy for what items to delete. This example keeps the most recent 10 items.
- 9 Click **Apply**.

Figure 47 Broadcatching Tutorial: Apply Pasted Link

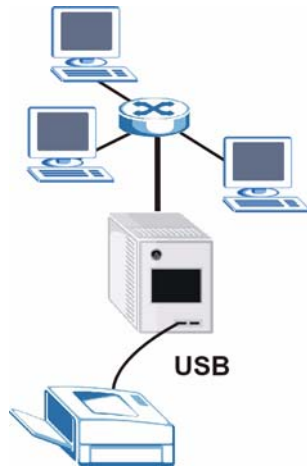
- 10 After a few moments, the channel appears in the **Broadcatching** screen where you can select items you want to download. The NSA saves the items you download in a folder named after the channel. By default, the channel folders are created in the **admin** share's **download** folder. The NSA's media server feature makes it easy for users on your network to play the broadcatching files you download. See [Section 8.3 on page 90](#) for more on the media server.

3.4 Printer Server Tutorial

Do the following to have the NSA let computers on your network share a printer. See www.zyxel.com for a list of compatible printers.

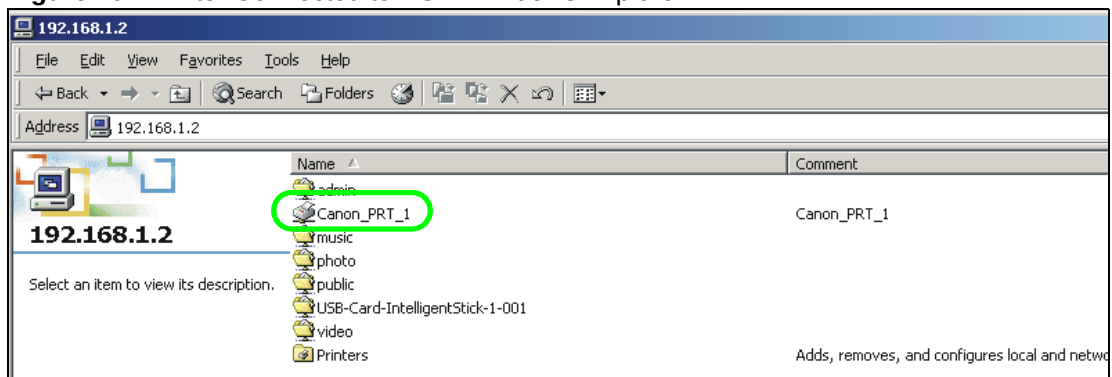
- 1 Make sure the NSA is on and the **SYS** light is on steady (not blinking).
- 2 Use a USB cable to connect the printer's USB port to one of the NSA's USB ports. Make sure the printer is also connected to an appropriate power source.

Figure 48 Printer Sharing



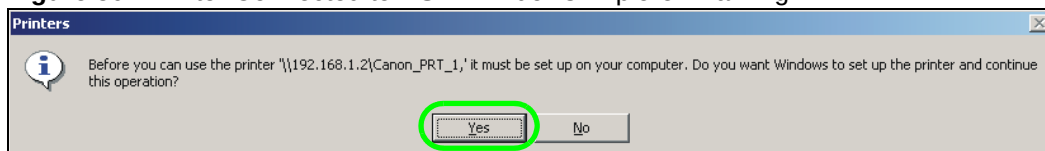
- 3 Turn on the printer.
- 4 The NSA detects the printer after a few moments.
- 5 On your computer, open your CIFS file sharing program (Windows Explorer for example) and browse to the NSA. Double-click the printer's icon.

Figure 49 Printer Connected to NSA: Windows Explorer

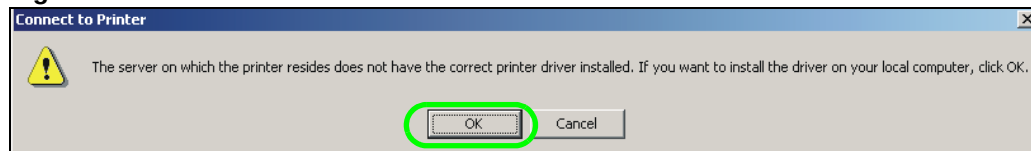


- 6 If you get a warning screen, click the option that lets you continue (**Yes** in this example).

Figure 50 Printer Connected to NSA: Windows Explorer Warning



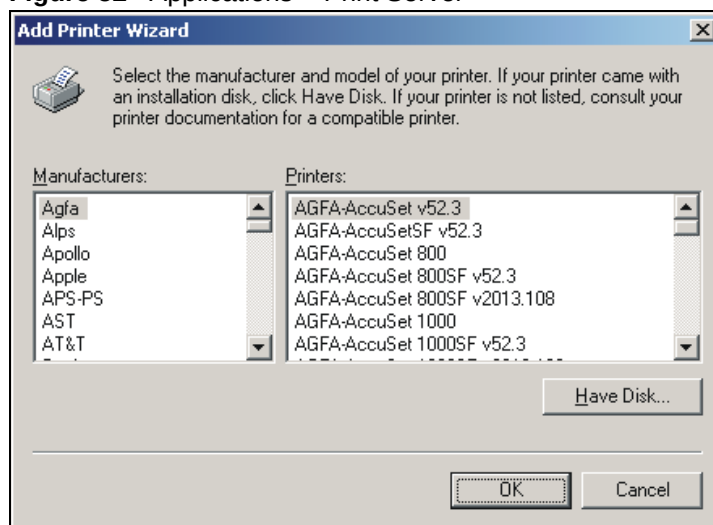
- 7 If your computer does not already have the printer's driver installed, you will need to install it. In this example, click **OK**.

Figure 51 Printer Driver Needed

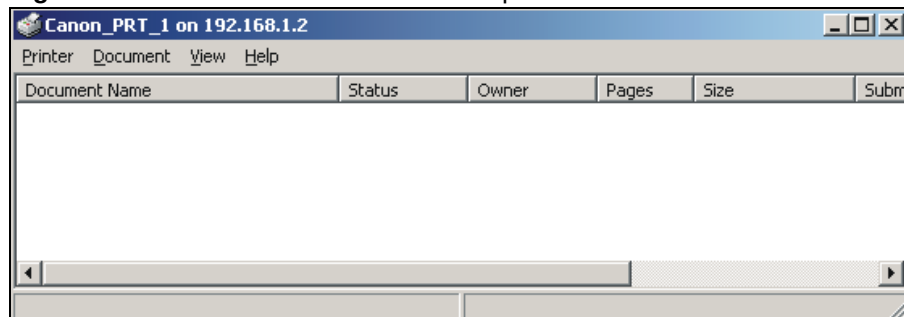
- 8 Use the wizard screens to install the printer driver on the computer. You may need to get the file from the printer's CD or the printer manufacturer's website (the driver is not installed on the NSA).



You must install the printer driver on each computer that will use the printer.

Figure 52 Applications > Print Server

After the driver installation finishes, the computer is ready to use the printer. Select the printer in an application to use it to print. Browse to the NSA using a CIFS program (like Windows Explorer) and double-click the printer's icon to open the printer's queue of print jobs.

Figure 53 Printer Screen in Windows Explorer



Repeat steps 5 to 8 on your other computers so they can also use the printer.

Status Screen

This chapter introduces the NSA **Status** screen.

4.1 Status Screen

The **Status** screen is the first main web configurator screen you see after you enter the administrator screens. To view the status screens, click **Status** on the top-left of the navigation panel.

Figure 54 Status

ZyXEL Language: English

Status

System Information

Server Name:	nsa220	
Model Name:	NSA-220	
Firmware Version:	V2.10(AFB.0)b2	
MAC Address:	00:13:49:FB:99:16	
Media Server Status :	Enabled	
FTP Server Status :	Enabled	
Web Publishing Status :	Disabled	

Volume Status

Internal Volume

Status	Name	Configuration	Disk(s)	Disk Usage
Healthy	1DiskJBODvolume	JBOD	disk1	0% (66.09 MB) Used 111.66 GB Total 100% Free

External Volume

Status	Name	File System	Disk(s)	Disk Usage
Healthy	EUSB-FLASH-DRIVE-34CB1	fat32	USB1	12% (31.66 MB) Used 244.01 MB Total 88% Free

Active Sessions

Type	Share Name	Username	Connected At	IP Address
Web		admin	2007-11-21 14:13:19	172.23.37.113
Web		admin	2007-11-21 14:14:54	172.23.37.113
Web		admin	2007-11-21 14:22:57	172.23.37.113
Web		admin	2007-11-21 14:19:28	172.23.37.113
CIFS	public	pc-guest	2007-11-21 14:21:10	172.23.37.113
CIFS	public	pc-guest	2007-11-21 14:20:13	172.23.37.113
CIFS	public	pc-guest	2007-11-21 14:19:51	172.23.37.113
CIFS	public	pc-guest	2007-11-21 14:20:22	172.23.37.113

Message: Ready

The following table describes the labels in this screen.

Table 12 Status

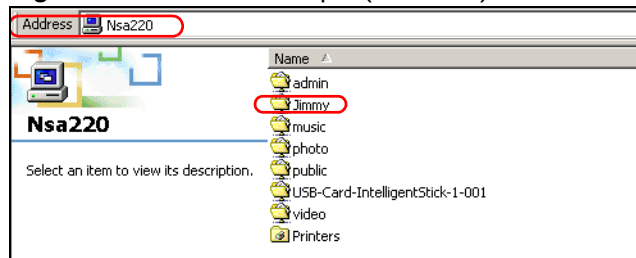
LABEL	DESCRIPTION
Status	Click Status to refresh the status screen statistics.
System Information	
Server Name	This displays the name which helps you find the NSA on the network. Click the edit icon to go to the screen where you can configure this.
Model Name	This displays which model this NSA device is.
Firmware Version	This is the NSA firmware version. Click the update link to go to the Maintenance > Firmware Upgrade screen from which you can upload new firmware. Click the edit icon to go to the screen where you can upload new firmware.
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.
Media Server Status	This shows whether the media server function is enabled or disabled. It must be enabled for media clients to play content files stored on the NSA. Click the edit icon to go to the screen where you can configure this.
FTP Server Status	This shows whether the FTP server function is enabled or disabled. It must be enabled to use FTP file transfer to/from the NSA. Click the edit icon to go to the screen where you can configure this.
Web Publishing Status	This shows whether the Web server function is enabled or disabled. It must be enabled to use HTTP to access shares on the NSA. Click the edit icon to go to the screen where you can configure this.
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 hard drives installed in the NSA.
Create an Internal Volume	This displays if there are no volumes created on the hard drive(s) installed in the NSA. Click this button to create a volume. See Section 6.4 on page 76 .
External Volume	This displays the volumes created on USB hard drives connected to the NSA. USB disks are numbered in the order that you insert USB devices.
Status	This icon indicates whether the volume is healthy, degraded, or down.
Name	This field shows the name for the volume. Read only displays for an external volume that uses Windows NTFS. This means the NSA can read the volume but can't save files on it.
Configuration	This field (also known as Type) shows what type of data storage system (a RAID type or JBOD) an internal volume is using.
File System	This field shows what file system an external (USB) volume is using.
Disk(s)	For internal drives, this shows which hard drive bays are included in the volume. For external drives, this field shows USB1 for the first external hard drive you connect to the NSA (regardless of which USB port) and USB2 for the second.
Disk Usage	This field shows total disk size, the percentage of the disk being used and the percentage that is available.
Active Sessions	This shows how many users are currently connected to the NSA.
Type	This shows whether it's a Windows/CIFS, web (web configurator), 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.

Table 12 Status (continued)

LABEL	DESCRIPTION
Username	This displays the name of the user connected to the NSA if one is defined. ANONYMOUS CIFS or ANONYMOUS FTP display if a username is not defined for the user's connection.
Connected At	This displays the date and time the user last connected to the NSA in year, month, day, hour, minute, second format.
IP Address	This displays the IP address of the computer connected to the NSA.

4.1.1 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**, **Video**, **Music**, and **Photo** folders until you create other shares on the NSA. This session is then displayed as shown in [Figure 54 on page 63](#).

Figure 55 Session Example (Windows)

PART II

System Setting and Applications

System Setting Screens (69)

Storage Screens (73)

Network Screen (85)

Application Screens (89)

System Setting Screens

This chapter discusses the system setting screens.

5.1 System Setting Screens

This section gives an overview of the various features included in the system setting screens.

Use the system setting screens to:

- Specify the NSA's Windows/CIFS server name and workgroup name.
- Choose a time zone and/or allow the NSA to synchronize with a time server.
- Create and edit volumes (see [Chapter 6 on page 73](#) for details).

5.1.1 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 is included by default in Windows and Mac OSX operating systems.
- You can use Samba with Linux to use CIFS.
- CIFS transfers use security.

5.2 Server Name

Click **System Setting** > **Server Name** to open the following screen. Use this screen to configure your CIFS settings. In this screen you can set your server name and specify if your NSA is a part of a workgroup or domain.



CIFS cannot be disabled on the NSA.

Figure 56 System Setting > Server Name

The following table describes the labels in these screens.

Table 13 System Setting > Server Name

LABEL	DESCRIPTION
Server Name	Enter a name to identify your NSA on the network in this field. 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.
Description	Add text here to describe the NSA if the Server Name field was not enough. Use up to 61 characters. You can use all characters except the following: . \: []<>+;,?="~
Workgroup Name	A workgroup is a group of computers on a network that can share files. These user accounts are maintained on the NSA. Type your workgroup name in this field. 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.
Apply	Click here to save your changes back to the NSA.

5.3 Date/Time

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

5.3.1 Time Lag

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

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

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

5.3.2 Date/Time Screen

Click the **System Setting** link in the navigation panel and then click the **Date/Time** link to access the **System Setting > Date/Time** screen.

Figure 57 System Setting > Date/Time

System Setting - Date/Time

Current System Date Time Setting

Current Time 17:23:37 +0800
Current Date 2007-9-19

Date Time Setup

☐ Manual

New Date (yyyy-mm-dd) 2007-9-19

New Time (hh:mm:ss) 17:23:22

☒ Get from Time Server

Time Server Address time.stdtime.gov.tw

Time Zone

Time Zone [(GMT+08:00) Beijing, Hong Kong, Perth, Singapore, Taipei]

☐ Enable Daylight Saving

Start Date January First Monday at 12:00

End Date January First Monday at 12:00

Offset 1 hours

The following table describes the labels in this screen.

Table 14 System Setting > Date/Time

LABEL	DESCRIPTION
Current System Date Time Setting	
Current Time	This field displays the time of your NSA.
Current Date	This field displays the date of your NSA.
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).
Date Time Setup	
Manual	Select this radio button to enter the time and date manually. When you enter the time settings manually, the NSA uses the new setting once you click Apply . Note: If you enter time settings manually, they revert to their defaults when power is lost.
New Time (hh:mm:ss)	This field displays the last updated time from the time server or the last time configured manually. When you set Time and Date Setup to Manual , enter the new time in this field and then click Apply .
New Date (yyyy-mm-dd)	This field displays the last updated date from the time server or the last date configured manually. When you set Time and Date Setup to Manual , enter the new date in this field and then click Apply .
Get from Time Server	Select this check box to have the NSA 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 to retrieve the correct time from the configured time server right away.

Table 14 System Setting > Date/Time (continued)

LABEL	DESCRIPTION
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.
Synchronize Now	Click this button for the NSA 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	
Time Zone	Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
Enable Daylight Saving	Daylight saving is a period from late spring to early fall when many countries set their clocks ahead of normal local time by one hour to give more daytime light in the evening. Select this option if you use Daylight Saving Time.
Start Date	Configure the day and time when Daylight Saving Time starts if you selected Enable Daylight Saving . The hour field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time starts in most parts of the United States on the second Sunday of March. Each time zone in the United States starts using Daylight Saving Time at 2 A.M. local time. So in the United States you would use March, Second, Sunday, at 2:00 . Daylight Saving Time starts in the European Union on the last Sunday of March. All of the time zones in the European Union start using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select March, Last, Sunday . The time you specify depends on your time zone. In Germany for instance, you would type 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).
End Date	Configure the day and time when Daylight Saving Time ends if you selected Enable Daylight Saving . The o'clock field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time ends in the United States on the first Sunday of November. Each time zone in the United States stops using Daylight Saving Time at 2 A.M. local time. So in the United States you would select November, First, Sunday, at 2:00 . Daylight Saving Time ends in the European Union on the last Sunday of October. All of the time zones in the European Union stop using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select October, Last, Sunday . The time you specify depends on your time zone. In Germany for instance, you would type 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).
Offset	Specify by how many hours to change the time for Daylight Saving Time.
Apply	Click Apply to save your changes back to the NSA. If you configured a new time and date, Time Zone and Daylight Saving at the same time, all of the settings take affect.
Reset	Click Reset to begin configuring this screen afresh.

Storage Screens

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

6.1 Storage Introduction

Use the **System > Storage** screens to manage volumes and disks (both internal and external).



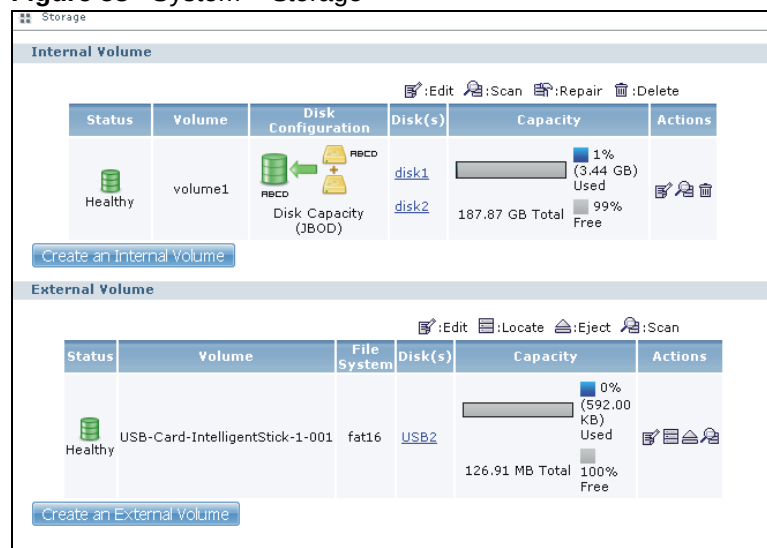
Several NSA features require a valid internal volume.

- Volumes are storage areas on disks. See [Section 6.5 on page 76](#) for details.
- For details on replacing internal disks, see [Section 6.6 on page 78](#).
- For details about external disks, see [Section 6.8 on page 80](#).

6.2 Storage Overview Screen

Click **System > Storage** in the navigation panel to display the following screen.

Figure 58 System > Storage



The following table describes the labels in this screen.

Table 15 System > Storage

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.
Create an Internal Volume	Click this to format internal hard drives and create a new volume. All data on the disk(s) will be lost.
Create an External Volume	Click this to format an external hard drive and create a new volume. All data on the disk will be lost.
Status	This field shows whether the volume is Healthy , Resync , Recovering , Degraded , or Down .
Volume	The NSA creates the volume name automatically. You can edit it.
Disk Configuration	This field shows which disks and data storage system the volume is using.
File System	This field displays the file system that an external (USB) volume is using.
Disk(s)	Click or roll your mouse over a link in this column to display the following details about the hard drive located in the corresponding hard drive bay. Type: Whether it is an internal or external (USB) hard drive. Model Name: This is the hard disk number that identifies the disk. File System: The file system that an external volume is using Capacity: The total storage space on the disk.
Capacity	This field shows total disk size, the percentage of the volume being used and the percentage that is available.
Actions	This field displays icons allowing you to edit, scan, repair or delete a volume. You can also locate or eject an external volume. Note: If you delete a volume, all data in the volume disk(s) is erased.

You see a warning screen before you delete a volume.

Figure 59 Delete a Volume Warning Screen



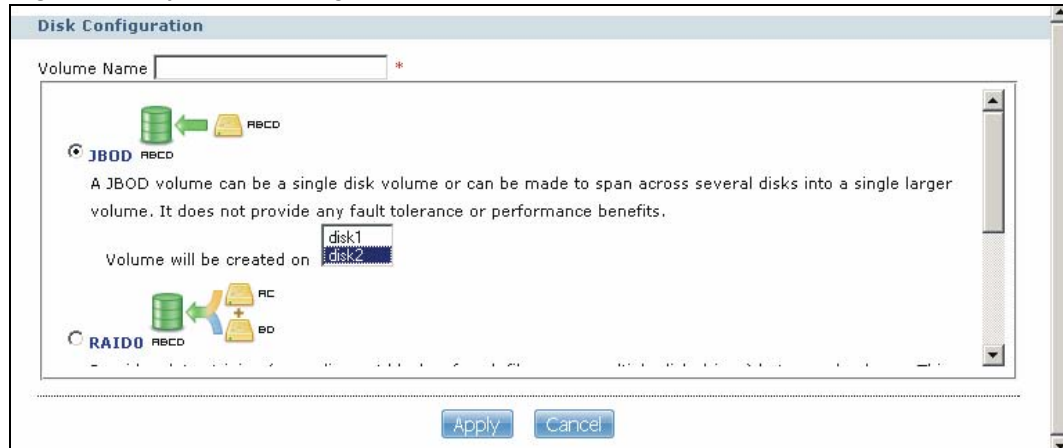
6.3 Creating an Internal Volume

Click the **Create an Internal Volume** button in the **Storage** screen as shown in [Figure 58 on page 73](#) to open the following screen. Use this screen to create a new NSA internal disk drive volume.



Creating a volume formats the hard drive. All data on the disk will be lost.

Figure 60 System > Storage > Create an Internal Volume



The following table describes the labels in this screen.

Table 16 System > Storage > Create an Internal Volume

LABEL	DESCRIPTION
Volume Name	Type a volume name from 1 to 31 characters. The name cannot be the same as another existing external volume. Acceptable characters are all alphanumeric characters and " " [spaces], "_" [underscores], and "." [periods]. The first character must be alphanumeric (A-Z 0-9). The last character cannot be a space " ". For an external volume, type a volume name from 1 to 32 single-byte (no Chinese characters allowed for example) ASCII characters. The name cannot be the same as another existing external volume.
JBOD	Use JBOD if you want maximum storage capacity and/or you have other means of protecting your data. JBOD is the only option if you only have one disk installed. With two disks, you can choose to create a JBOD volume on one of the disks or both.
RAID 0	Use RAID 0 if you want maximum speed for your disks, and/or you have other means of protecting your data. This is only available when you have two hard disks installed.
RAID 1	Use RAID 1 if you want to mirror all data on one disk to the other disk. This is only available when you have two hard disks installed.
Volume will be created on	This field lists all hard disks installed inside the NSA. Select which disks should make up this volume. A disk can only belong to one volume. You do not need to select anything if only one hard disk is installed.
Apply	Click this button to save your changes back to the NSA and create the volume.
Cancel	Click this button to exit this screen without saving your changes or creating a volume.

6.4 Editing a Volume

Click an internal volume's **Edit** icon in the **System > Storage** screen as shown in [Figure 58 on page 73](#) to open the following screen. Use this screen to change the volume's name.

Figure 61 System > Storage > Edit



The following table describes the labels in this screen.

Table 17 System > Storage > Edit

LABEL	DESCRIPTION
Volume Name	For an internal volume, type a volume name from 1 to 31 characters. The name cannot be the same as another existing external volume. Acceptable characters are all alphanumeric characters and " " [spaces], " _ " [underscores], and " . " [periods]. The first character must be alphanumeric (A-Z 0-9). The last character cannot be a space " ". For an external volume, type a volume name from 1 to 32 single-byte (no Chinese characters allowed for example) ASCII characters. The name cannot be the same as another existing external volume.
Apply	Click this button to save your changes back to the NSA and rename the volume.
Cancel	Click this button to close this screen without saving your changes.

6.5 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 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 one disk configured at JBOD, and you then install another disk and want to configure the two disks to use RAID 1, you should first back up all your data on the two disks (see the Memeo Autobackup 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. 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 18 RAID Quick Comparison

RAID Level	0	1
Number of Disks	2	2
Capacity	S*N	S*N/2
Storage Efficiency	100%	50%
Fault Tolerance	None	YYYY
Availability	Y	YYYY
Read Performance	YYYY	YYY
Write Performance	YYYY	YYY

6.5.1 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. See [Section 6.9 on page 81](#) for theoretical background on JBOD and the RAID levels used on the NSA. Typical applications for each method are also shown there.

6.5.1.1 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). You can add another disk to your one-disk JBOD volume later without having to re-create shares, access rights, and so on. Alternatively, you could create a different JBOD volume if you install a second disk. (and create new shares, access rights and so on).

6.5.1.2 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.
 - 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.

6.5.2 Volume Status

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

The NSA 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.

- **OK** means the USB connected device is functioning properly.
- **Resync** when you create a RAID volume.
- **Recovering** appears when repairing a RAID 1 volume. (A RAID1 volume was once degraded, but you have installed a new disk and the NSA is restoring the RAID1 volume to a healthy state.)
- **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.
- **Inactive** when a disk is missing from a RAID 0 volume or a two-disk JBOD volume. The volume is unusable. If you removed one of the disks you should be able to re-install it and use the volume again (as long as you did not change anything on the disk). If a disk has failed, you need to replace it and re-create the whole volume. All data will be lost. See page [144](#) for how to install or replace a hard drive.
- **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 it's down, then the only indication is that you 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.

6.6 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.



The NSA repairs a RAID volume automatically when you replace a faulty disk with a disk that does not contain a volume.

6.6.1 Resynchronizing or Recovering a RAID 1 Volume

Resynchronizing or recovering a RAID 1 volume that was down 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.



Do not restart the NSA while the NSA is resynchronizing or recovering 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 resynchronizing or recovering, but it is not recommended.

6.6.2 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 do not want to keep the data on a disk that you will remove, it is recommended that you delete the volume before you remove the disk. If you remove a disk(s) without deleting its volume and you later put the disk(s) back in a different volume, you may have more than one volume with the same name. 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 both Disk A and Disk C have the volume1 label. Although you can still use the volumes, you may find the naming confusing.

6.7 Creating an External Volume

Click the **Create a New External Volume** button in the **Volume** screen as shown in [Figure 58 on page 73](#) to open the following screen. Use this screen to create a new NSA external disk drive volume.



Creating a volume formats the drive. All data on the disk will be lost.

Figure 62 System > Storage > Create an External Volume

The following table describes the labels in this screen.

Table 19 System > Storage > Create an External Volume

LABEL	DESCRIPTION
Volume Name	Type a volume name from 1 to 31 characters. The name cannot be the same as another existing external volume. Acceptable characters are all alphanumeric characters and " " [spaces], "_" [underscores], and "." [periods]. The first character must be alphanumeric (A-Z 0-9). The last character cannot be a space " ".
Available Disk(s)	Select the external (USB) device upon which you want to create the volume.
File System	Select the file system you want the new volume to use. Windows file systems FAT32: Newer, and more efficient than FAT16. Supports a volume size of up to 2 TB (Tera Bytes) and individual file sizes of up to 4 GB. FAT16: Compatible with older Windows operating systems. Supports volume and file sizes of up to 2 GB. Linux file systems EXT2: Older file system. EXT3: The same as EXT2, but adds a journaled file system and is more robust. ReiserFS: Offers better performance for small files.
Apply	Click this button to save your changes back to the NSA and create the volume.
Cancel	Click this button to exit this screen without saving changes.

6.8 External Disks

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

- Windows File Systems: NTFS, FAT32 and FAT16.
- Linux File Systems: ReiserFS, EXT2, and EXT3.

6.9 RAID

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

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 are blocks of data from the B and C files.

6.9.1 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 multiple different-sized drives into one big drive. For example, JBOD could convert 80 GB and 100 GB drives into one large logical drive of 180 GB. If you have two JBOD volumes (with one disk in each), a failure of one disk (volume) should not affect the other volume (disk). 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 disks in a single JBOD volume. Data is not written across disks but written sequentially to each disk until it's full.

Table 20 JBOD

A1	B1
A2	B2
A3	B3
A4	B4
DISK 1	DISK 2

6.9.2 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 21 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 two disks of sizes 100 GB and 200 GB respectively in a RAID 0 volume, then the maximum capacity is 200 GB (2 * 100 GB, the smallest disk size) and the remaining space (100 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.

6.9.3 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 copy of the data.

Table 22 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).

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.

6.9.4 RAID and Data Protection

If a hard disk fails and you're using a RAID 1 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 malfunctioning. Here are some suggestions for helping to protect your data.

- Place the NSA behind a hardware-based firewall. It should have stateful packet inspection, IDP (Intrusion Detection and Prevention), and anti-virus (like ZyXEL's ZyWALL UTM products for example).
- Use anti-virus software on your computer to scan files from others before saving the files on the NSA.
- Keep another copy of important files (preferably in another location).

Network Screen

This chapter discusses the network configuration screen.

7.1 Network Settings

Use the network configuration screen to assign the NSA a dynamic or static IP address and DNS information.

7.1.1 IP Address

The NSA needs an IP address to communicate with the media servers on your network. The NSA can get an IP address automatically if you have a device on your network that gives them out. Or you can assign the NSA a static (fixed) IP address.

7.1.2 DNS Server Address

A DNS (Domain Name System) server maps domain names (like www.zyxel.com) to their corresponding IP addresses (204.217.0.2 in the case of www.zyxel.com). This lets you use domain names to access web sites without having to know their IP addresses. The NSA can receive the IP address of a DNS server automatically (along with the NSA's own IP address). You can also manually enter a DNS server IP address in the NSA.

7.1.3 Jumbo Frames

Jumbo frames are Ethernet frames larger than 1500 bytes. They enable data transfer with less overhead. The bigger the frame, the better the network performance.

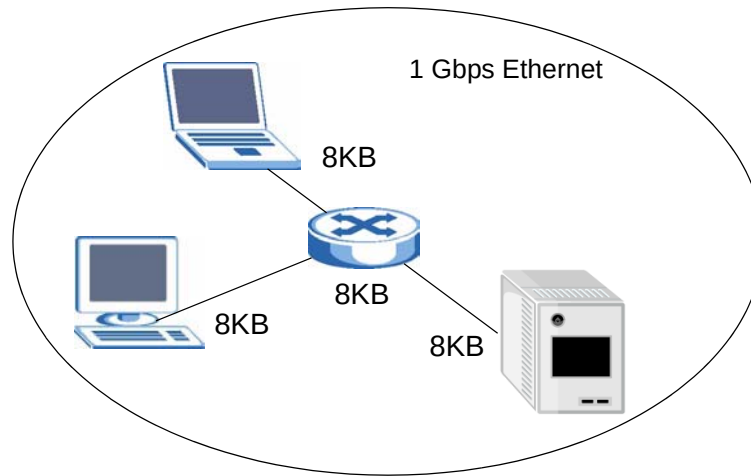
To use jumbo frames, your LAN must support 1 Gbps transmissions (Gigabit Ethernet). All of your network devices (computer Ethernet cards and switches, hubs, or routers) must also support the same size of jumbo frames that you specify in the NSA.



If you enable jumbo frames on the NSA in a network that does not support them, you will lose access to the NSA. If this occurs, you will have to restore the factory default configuration. Push the **RESET** button on the NSA's rear panel and release it after you hear a beep.

In the following example, the NSA has jumbo frames enabled and set to 8KB frames. This means the computer, notebook computer, and switch must also have jumbo frames enabled and be capable of supporting 8KB frames.

Figure 63 Jumbo Frames



7.2 Network Config Screen

Click **System Setting > Network > TCP/IP** in the navigation panel to open the following screen.

Use this screen to have the NSA use a dynamic or static IP address, subnet mask, default gateway and DNS servers.



If you change the NSA's IP address, you need to log in again after you apply changes.

Figure 64 System Setting > Network > TCP/IP

Network - TCP/IP

IP Address

☒ Dynamic
☐ Static

IP Address: 192.168.1.33
IP Subnet Mask: 255.255.255.0
Default Gateway: 192.168.1.1

DNS

☒ Dynamic
☐ Static

Primary DNS Server: 192.168.1.1
Secondary DNS Server: 0.0.0.0

Jumbo Frames

☐ Disabled
☒ Enabled

☐ 4KB
☐ 8KB
☒ 9KB

Caution:
Jumbo Frame is supported in 1 Gbps and higher mode only. Please make sure your host, switch hub, and router support Jumbo Frames

Network Diagnostic Tool

Host: 192.168.1.1 Successfully pinged host

The following table describes the labels in this screen.

Table 23 System Setting > Network > TCP/IP

LABEL	DESCRIPTION
IP Address	
Dynamic	Select this option to have the NSA get IP address information automatically. If no IP address information is assigned, the NSA uses Auto-IP to assign itself an IP address and subnet mask. For example, you could connect the NSA directly to your computer. If the computer is also set to get an IP address automatically, the computer and the NSA will choose addresses for themselves and be able to communicate.
Static	Select this option for the NSA to use fixed TCP/IP information. You must fill in the following fields.
IP Address	Type an IP address in this field.
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. If you have the IP address(es) of the DNS server(s), enter them.
Dynamic	Select the option to have the NSA get a DNS server address automatically.
Static	Select this option 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.

Table 23 System Setting > Network > TCP/IP

LABEL	DESCRIPTION
Secondary DNS Server	Type a secondary DNS server IP address.
Jumbo Frames	Jumbo frames improve network performance. You must have a 1 Gbps (Gigabit Ethernet) network that supports jumbo frames. Select the largest size of frame that all of your network devices (including computer Ethernet cards and switches, hubs, or routers) support. Note: If you enable jumbo frames on the NSA in a network that does not support them, you will lose access to the NSA. If this occurs, you will have to restore the factory default configuration. Push the RESET button on the NSA's rear panel and release it after you hear a beep.
Network Diagnostic Tool	Use this section to test the network connection to a particular IP address or domain name. Select an address or type it into the field. Then click Ping to have the NSA send a packet to test the network connection. If the NSA is able to "ping" the host, the network connection is OK.
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.
Reset	Click Reset to begin configuring this screen afresh.

Application Screens

This chapter discusses the application screens.

8.1 Application Screens

Use the application screens to:

- Configure settings for FTP file transfers to/from the NSA. See [Section 8.2 on page 89](#).
- Share files with media clients. See [Section 8.3 on page 90](#).
- Download files from the Internet. See [Section 8.5 on page 93](#).
- Download frequently updated digital content like TV programs, radio talk shows, Podcasts (audio files), and blogs. See [Section 8.12 on page 105](#).
- Share a printer. See [Section 8.15 on page 109](#).

8.2 FTP Access for NSA Files

Use FTP to upload files to the NSA and download files from the NSA. Click **Applications > FTP** to open the following screen. Use this screen to:

- Enable or disable FTP.
- Set a connection limit.
- Set an idle timeout.
- Enable or disable anonymous FTP access.
- Specify a character set to use.

File Transfer Protocol (FTP) is a file transfer service that operates on the Internet. A system running the FTP server accepts commands from a system running an FTP client. FTP is not a secure protocol. Your file transfers could be subject to snooping.

Figure 65 Applications > FTP

The following table describes the labels in this screen.

Table 24 Applications > FTP

LABEL	DESCRIPTION
FTP	
Enable FTP	You can use FTP to send files to the NSA or get files from the NSA. Select the Enable FTP check box to allow users to connect to the NSA via FTP; otherwise clear the check box.
Connection Limit	Enter the maximum number of concurrent FTP 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 'anonymous' as a username and no password. Any other name is considered a username, so must be valid and have a corresponding correct password.
Character Set	The NSA uses UTF-8 (8-bit UCS/Unicode Transformation Format) format for FTP by default. If the NSA's folders, or file names do not display correctly in your FTP client, select the appropriate language encoding here. This setting applies to all FTP client connections to the NSA. It does not affect your Windows/CIFS connections (it will not correct the character display in Windows Explorer).
Apply	Click Apply to save your changes back to the NSA.
Reset	Click Reset to begin configuring this screen afresh.

8.3 Sharing Media Files on Your Network

The media server feature lets anyone on your network play video, music, and photos from the NSA (without having to copy them to another computer). The NSA can function as a DLNA-compliant media server and/or an iTunes server. The NSA streams files to DLNA-compliant media clients or computers using iTunes. The Digital Living Network Alliance (DLNA) is a group of personal computer and electronics companies that works to make products compatible in a home network.

- Publish shares to let others play the contained media files.

- The media server is a convenient way to share files you download using the broadcasting service (see [Chapter 8 on page 105](#)).
- Media client software is included on the CD.
- Hardware-based media clients like the DMA-1000 can also play the files. See [Appendix on page 160](#) for the supported multimedia file formats.



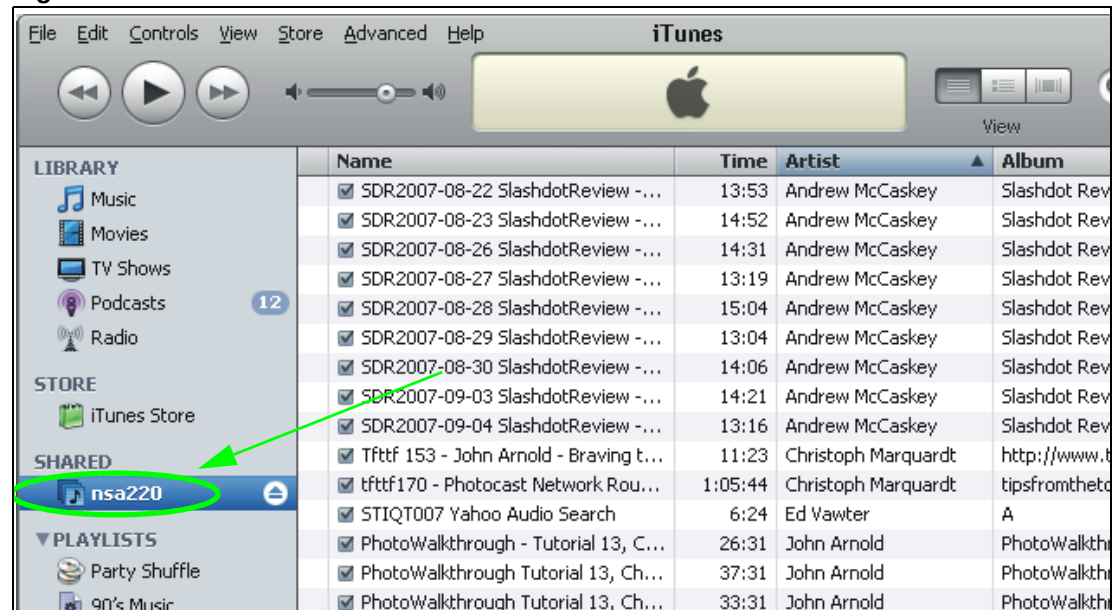
Anyone on your network can play the media files in the published shares. No user name and password or other form of security is used. The media server is enabled by default with the video, photo, and music shares published.

8.3.1 iTunes Server

The NSA iTunes server feature lets you use Apple's iTunes software on a computer to play music and video files stored on the NSA. You can download iTunes from www.apple.com.

- The iTunes server feature lets computers on your network use iTunes to play media files in the NSA's published shares.
- See [Section 16.4 on page 160](#) for the multimedia file formats iTunes supports.
- A link for the NSA in iTunes under **SHARED**. Click it to display the NSA's published media files as shown next.

Figure 66 NSA link in iTunes



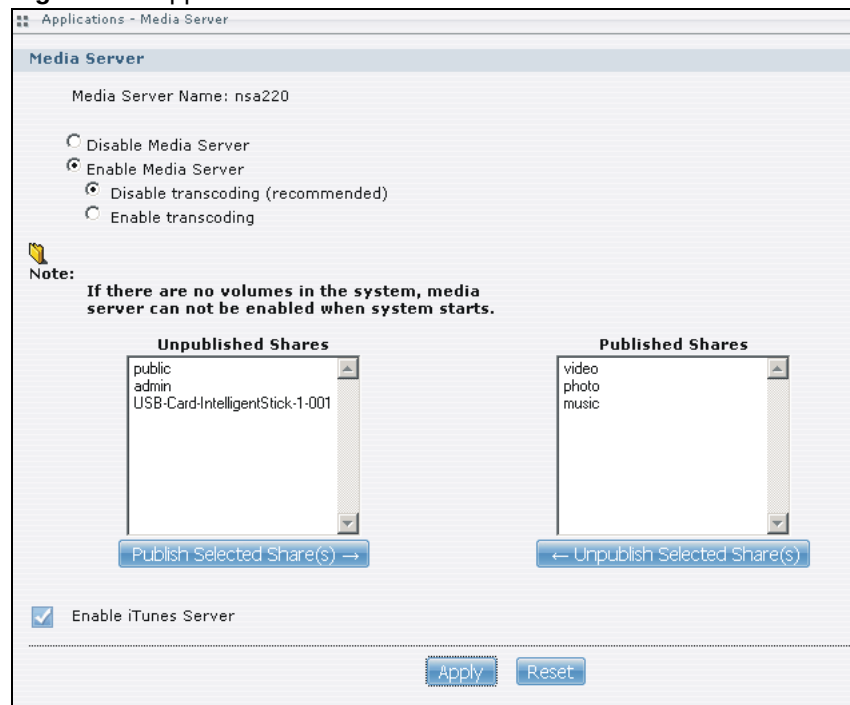
8.3.2 Songs and Videos from the iTunes Store

After using iTunes on your computer to download songs and videos from Apple's iTunes Store, you can copy them to the NSA. Many of these songs and videos have DRM (Digital Rights Management). At the time of writing, you can use your Apple account ID and password to authorize up to a total of five computers to play the files. To authorize a computer, open iTunes and click **Store > Authorize Computer**.

8.4 Media Server Screen

Click **Applications > Media Server** to open the following screen. Use this screen to turn the media server and/or iTunes server on or off and select shares to publish (share with media clients like iTunes or the DLNA-compliant media client included on the NSA CD).

Figure 67 Applications > Media Server



The following table describes the labels in this screen.

Table 25 Applications > Media Server

LABEL	DESCRIPTION
Media Server Name	This is the name of the NSA media server on the network. It is the same as the NSA's server name. This name lets media clients distinguish between multiple media servers on your network.
Disable / Enable Media Server	Turn on the media server to let (DLNA-compliant) media clients on your network play media files located in the published shares.

Table 25 Applications > Media Server

LABEL	DESCRIPTION
Disable / Enable transcoding	Disable transcoding to improve the performance of the NSA. However, disabling may cause certain media clients to fail when displaying non-JPEG photos. In the case of the media client included on the CD with the NSA, TIFF and GIF images will not be properly displayed. Enabling transcoding allows these files to be shown properly, but slows down the NSA's performance.
Unpublished Shares	This list box displays the shares that the NSA does not share with the media clients.
Publish Selected Share(s)	Select shares in the Unpublished Shares box and click this button to share the shares with media clients. Use the [SHIFT] key to select a range of entries. Hold down the [CTRL] key to select multiple individual entries.
Published Shares	This list box displays the shares that the NSA shares with the media clients.
Unpublish Selected Share(s)	Select shares in the Published Shares box and click this button to not share the shares with media clients. Use the [SHIFT] key to select a range of entries. Hold down the [CTRL] key to select multiple individual entries.
Enable iTunes Server	Select this option to let anyone on your network use iTunes to play music and video files in the published shares.
Apply	Click Apply to save your changes back to the NSA.
Reset	Click Reset to begin configuring this screen afresh.

8.5 Download Service

The NSA's download service downloads files from the Internet directly to the NSA. You do not have to download to your computer and then copy to the NSA. This can free up your computer's system resources. The download service also handles your broadcastchaching downloads. See [Section 8.12 on page 105](#) for information on broadcastchaching.

The NSA can download using these protocols.

- HTTP: The standard protocol for web pages.
- FTP: A standard Internet file transfer service.
- BitTorrent: A popular distributed peer-to-peer files sharing protocol.



Do not use the NSA for illegal purposes. Illegal downloading or sharing of files can result in severe civil and criminal penalties. You are subject to the restrictions of copyright laws and any other applicable laws and will bear the consequences of any infringements thereof. ZyXEL bears NO responsibility or liability for your use of the download service feature.

8.5.1 BitTorrent

The NSA includes a BitTorrent client for fast downloading and sharing of large files (such as educational public domain videos). With BitTorrent, you share while you're downloading the file. BitTorrent breaks up the file and distributes it in hundreds of chunks. You start sharing the file as soon as you have downloaded a single chunk.

8.5.1.1 Torrent Files

Before using BitTorrent to download a file, you must first obtain a "torrent" file. The torrent file uses a .torrent extension. The torrent file has information about the file to be downloaded (and shared) and the computer(s) that coordinates the distribution of the file (called the tracker). Your BitTorrent client uses the torrent file to connect to the tracker to find out where to get the pieces of the file you want to download.

When you add a BitTorrent download task in the NSA's web configurator screens, you can just copy and paste the URL of the torrent file. The NSA automatically downloads the torrent file and saves it in a **torrent** folder located in the same folder where the NSA stores downloaded files (the **admin** share's **download** folder by default).

If you already have the torrent file saved on your computer, you can just specify its location when adding a download task through the web configurator. Another method is to use FTP or a CIFS program (Windows Explorer for example) to copy the torrent file into the **torrent** folder. The **torrent** folder is located in the same folder where the NSA stores downloaded files (the **admin** share's **download** folder by default). The NSA automatically downloads and uses the torrent file.

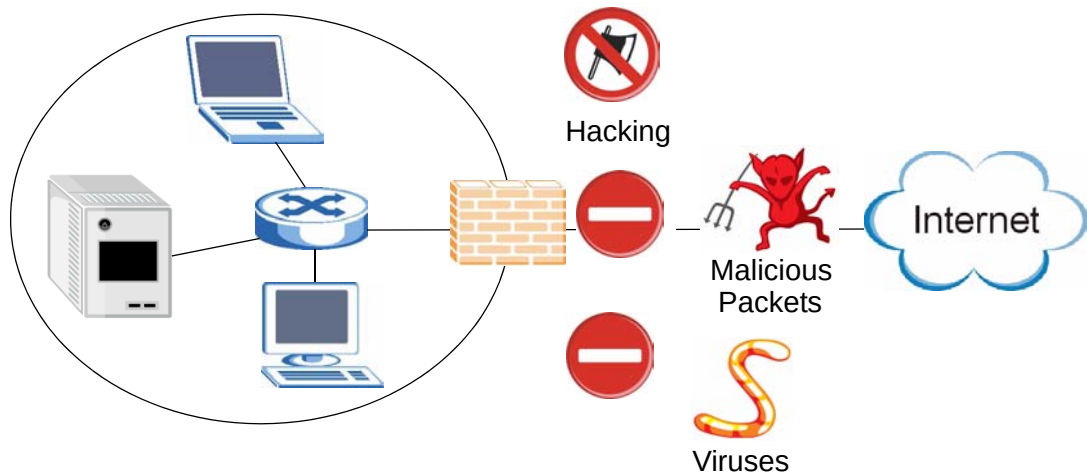
After your BitTorrent download and sharing are finished, you can go to the **torrent** folder and delete the .torrent file if you need to free up hard disk space.

8.5.2 Protecting Your Network and NSA When Using BitTorrent

When you download using BitTorrent, you reveal your IP address. This increases the risk of hacking attacks, which can be protected against by a good firewall.

8.5.2.1 Use a Hardware-based Firewall

Place a hardware-based firewall between your network and the Internet (a software-based firewall on your computer would just protect the computer itself, not the NSA since your computer is not between your NSA and the Internet). Ideally your firewall should have all of the following.

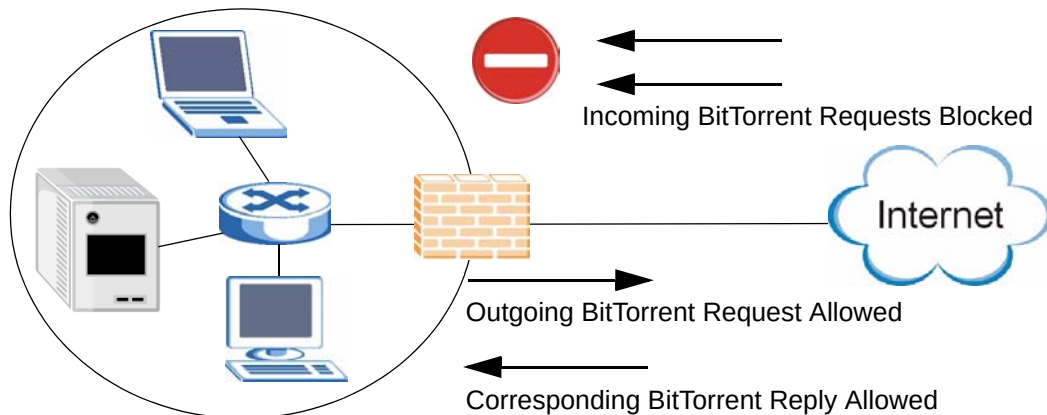
Figure 68 Firewall

- Stateful packet inspection to control access between the Internet and your network and protect your NSA (and computers) from hacking attacks.
- IDP (Intrusion Detection and Prevention) to detect malicious packets within normal network traffic and take immediate action against them.
- Anti-virus to check files you download for computer viruses.

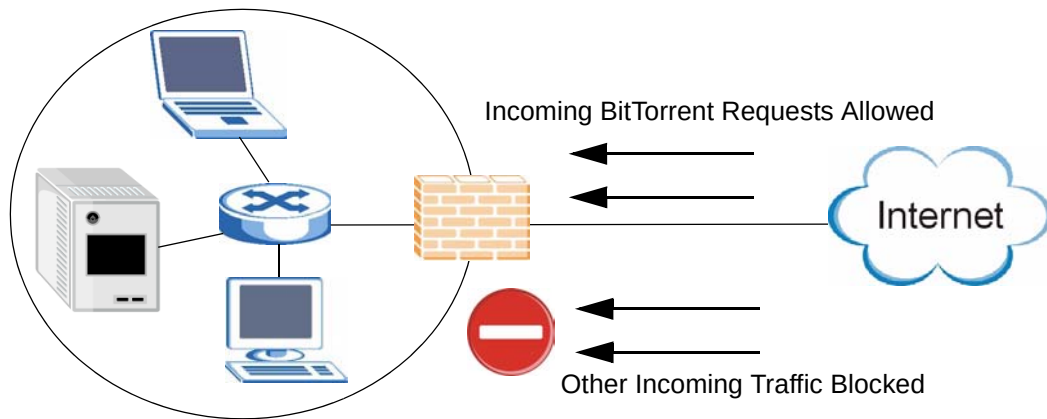
8.5.2.2 BitTorrent and Your Firewall

The anti-virus feature on a firewall probably cannot check BitTorrent downloads for viruses, so use anti-virus software on your computer to scan the NSA for viruses.

When you download using BitTorrent, many other BitTorrent users are also trying to download the file from you. The firewall slows this down because by default, it only allows traffic from the Internet in response to a request that originated on the LAN (it lets you get files from the Internet and blocks those on the Internet from getting files from you).

Figure 69 Firewall Blocking Incoming BitTorrent Requests

To speed up BitTorrent file transfers, configure your firewall's port forwarding to send incoming TCP port 6881 and UDP port 6880 connections to the NSA. You probably need to use your firewall's HTML (web-based) configuration interface to set this up (see the firewall's manual for details). You may also have to configure a corresponding firewall rule.

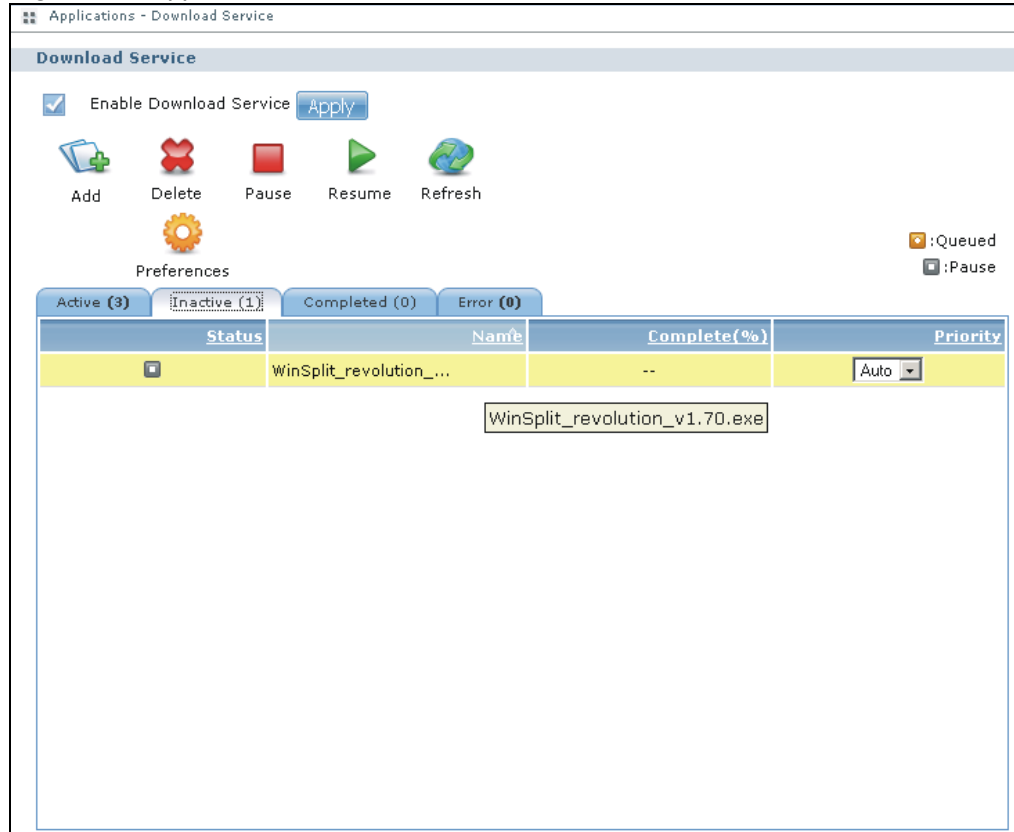
Figure 70 Firewall Configured to Allow Incoming BitTorrent Requests

8.6 Download Service Screen

Click **Applications > Download Service** to open the following screen. Use this screen to manage the NSA's file downloads.



By default, the NSA saves downloads in the **admin** share's **download** folder.

Figure 71 Applications > Download Service

The following table describes the labels in this screen.

Table 26 Applications > Download Service

LABEL	DESCRIPTION
Enable Download Service	Use this option (and the Apply button) to turn the download service off or on. If you turn off the service, all downloads are paused. The files that were downloading are treated as queued. Turning the download service back on resumes your downloads (or restarts them if they are not able to be resumed).
Add	After you find a file to download, copy the file's URL. Then log into the NSA web configurator and go to the Applications > Download Server screen and click the Add button. A screen opens where you create a new download task. You can paste the file's URL or use a BitTorrent file.
Delete	To delete download tasks (or manually clear out completed download tasks), select a download task and click Delete to remove it from the list. A pop-up screen asks you to confirm. Click Apply to delete or Cancel to quit. When you delete a download task, you are given the option to delete the associated files. Selecting this option deletes a downloaded file and in the case of a BitTorrent download task, also deletes the related .torrent file. Use your keyboard's [SHIFT] key to select a range of download tasks. Use the [CTRL] key and click individual download tasks to select multiple individual download tasks.
Pause	Select a downloading item and click Pause to temporarily stop the download. Paused downloads appear in the Download Service screen's Inactive tab. Use your keyboard's [SHIFT] key to select a range of download tasks. Use the [CTRL] key and click individual download tasks to select multiple individual download tasks.
Resume	Select a paused item and click Resume to continue the download.

Table 26 Applications > Download Service

LABEL	DESCRIPTION
Refresh	Click this button to update the information displayed on the screen.
Preferences	Click this button to open a screen where you can set the default location for saving downloads and configure your BitTorrent settings.
	The table lists your downloads. Click a column's heading to sort the entries by that criteria.
Active	Click this tab to see the list of files the NSA is currently downloading or sharing with other BitTorrent users. The NSA handles a maximum of 10 active tasks at a time (or fewer depending on how much of the NSA's system memory is available). If you add more, they appear in the Inactive tab. Bit Torrent downloads may appear in the Inactive tab for a while before showing in the Downloading tab. The NSA automatically moves completed tasks to the Completed tab.
Inactive	Click this tab to see the list of files that are queued (waiting in line) for the NSA to download or the downloads that have been manually paused.
Completed	Click this tab to see the list of files that the NSA has finished downloading.
Error	Click this tab to see the list of files that the NSA was not able to download. The NSA automatically retries unsuccessful download attempts. The download displays in the error tab when the re-attempts are also unsuccessful and the NSA stops trying to download the file. To try the download again, use the Add button to create a new download task.
Status	The icon shows the download's status. Completed: The NSA has downloaded the whole file. Seeding: The download is finished and the NSA is allowing other BitTorrent users to download it. Downloading: The NSA is getting the file. Queued: The download is waiting in line for the NSA to download it. Pause: The download has been manually stopped. Select it and click Resume to continue it. Error: The NSA was not able to complete the download. Select it and click Resume to reattempt the download.
Name	This identifies the download file. A "... " indicates an abbreviated name. Hold your cursor over the name to display the full name.
Complete (%)	This is the percentage of the file that the NSA has downloaded.
Location	This appears in the Completed tab. It displays the path for where the file is saved.
Seeds	Seeds apply to BitTorrent downloads. This is the number of computers that are sharing the complete file that you are downloading.
Peers	Peers apply to BitTorrent downloads. This is the number of other computers that are also downloading (and sharing) the file you are downloading.
Download Speed	This is how fast the NSA is getting the file. It is normal for a BitTorrent download to start out with a slow download speed since it has to set up numerous connections. The speed should increase as the download progresses and decrease near the end of the download.
Upload Speed	This is how fast the NSA is sending the file to other BitTorrent users.

Table 26 Applications > Download Service

LABEL	DESCRIPTION
Time Left	This is how much longer (in hours, minutes, and seconds) it should take to finish the download at the current download speed.
Priority	This is the download's priority on the NSA. You can set a currently downloading or queued download to high or automatic priority. You can set a download to high priority to have the NSA try to download it before the other files. However the actual download speed depends more on factors like the speed of you Internet connection, the speed of the download source's Internet connection, how many others are trying to download at the same time, the peers and seeds available and general network conditions.

8.7 Adding a Download Task

Click **Applications > Download Service > Add** to open the following screen. Use this screen to specify a file for the NSA to download. [Section 3.2 on page 52](#) provides a tutorial on adding a download task.

Figure 72 Applications > Download Service > Add

Add Download Task From URL

Source

☒ URL *

☐ Torrent File

Default Destination

Volume v

Path /admin/download

Caution:
Do not use the NSA for illegal downloads. Illegal downloading or sharing of files can result in severe civil and criminal penalties. You are subject to the restrictions of copyright laws and any other applicable laws and will bear the consequences of any infringements thereof. ZyXEL takes NO responsibility or liability for your use of the download service feature.

The following table describes the labels in this screen.

Table 27 Applications > Download Service > Add

LABEL	DESCRIPTION
URL	Paste the URL of the file you want to download into this field. The URL can be for an HTTP, FTP, or BitTorrent download. For a BitTorrent download, you can copy and paste the URL of the .torrent file. The NSA will automatically download the .torrent file and use it. You do not have to manually download the .torrent file or save it to your computer. Note: Make sure the link opens either the file you want or a pop-up window about how to handle the file. It is also OK for the link to open a .torrent file. If you are redirected to a screen that says the download should start in a few seconds, there may be a link to click if the download does not start automatically. See if that link opens the file or the pop-up window.
Torrent File	A "torrent" file has information the NSA uses to do a BitTorrent download. A torrent file uses a .torrent extension. If you already have a torrent file saved on your computer, select the Torrent File option and specify its path or click Browse and look for its location.

Table 27 Applications > Download Service > Add

LABEL	DESCRIPTION
Default Destination	This shows where the NSA stores files after downloading them.
Volume	This is the volume where the NSA saves downloaded files.
Path	This is the location of the share where the NSA will save the downloaded files. Click Edit to go to a screen where you can set the default location for saving downloads and configure your BitTorrent settings.
Apply	Click Apply to save your changes back to the NSA.
Cancel	Click Cancel to close this screen without saving your changes.

8.8 Configuring Your General Download Preferences

Click **Applications > Download Service > Preferences** to open the following screen. Use this screen to set the default location for saving downloads and configure your BitTorrent settings.

Figure 73 Applications > Download Service > Preferences

The following table describes the labels in this screen.

Table 28 Applications > Download Service > Preferences

LABEL	DESCRIPTION
Default Destination	Use these fields to select where on the NSA to store the files the NSA downloads.
Volume	If you have more than one volume, select the one that contains the share where you want to save downloaded files.
Path	Type the location of the share to save downloaded files in or click Browse and navigate to the file's location.
BitTorrent	These settings control the NSA's BitTorrent downloads.
Max. download rate	You may need to limit the bandwidth the NSA uses for BitTorrent downloads if your network's other Internet applications are not getting enough downstream bandwidth. 0 has the NSA impose no restriction.
Max. upload rate	You may need to limit the bandwidth the NSA uses to share files through BitTorrent if your network's other Internet applications are not getting enough upstream bandwidth. 0 has the NSA impose no restriction. If you do not allow any uploads, (for example, you set a limit of 1 KB/s) you will not have a good standing in the BitTorrent community.

Table 28 Applications > Download Service > Preferences

LABEL	DESCRIPTION
Keep sharing files for x minutes after the download is completed	With BitTorrent, the NSA starts sharing a file while you are downloading it. Set how long to continue sharing a file after the NSA finishes the download. Continuing to share a file helps other BitTorrent users finish downloading it. Sharing out at least as much as you download helps keep you in good standing in the BitTorrent community. 0 has the NSA stop sharing the file as soon as the download finishes. Set this to -1 to keep sharing files forever.
Apply	Click Apply to save your changes back to the NSA.
Reset	Click Reset to begin configuring this screen afresh.
Cancel	Click Cancel to close this screen without saving your changes.

8.9 Web Publishing

Web publishing lets you “publish” shares (containing folders and files) on the NSA so people can access the files using a web browser without having to log into the My NSA screens. This way you can share files with others without them having to know and enter a user name and password.

For example, if you want to share photos in a FamilyPhotos share, you could “web publish” it and others could use a web browser to access the photos at <http://my-NSA's-IP-Address/MyWeb/FamilyPhotos>.



The NSA does not use any security for the files in the published folders. It is not recommended to publish shares if you do not have the NSA behind a good hardware-based firewall. See [Section 8.5.2.1 on page 94](#) for more on firewalls.

Additionally, you can use HTML editing software (not included) to create an index.html or index.htm file to define and customize how your website works and looks.

8.9.1 Accessing Web-published Shares from the Internet

You need to use a public address to access the NSA's web-published shares from the Internet. If your NSA uses a private IP address, you may need to use the public IP address of your Internet gateway and configure NAT or port forwarding on your Internet gateway and possibly firewall rules in order to let people access the NSA's web-published shares from the Internet.

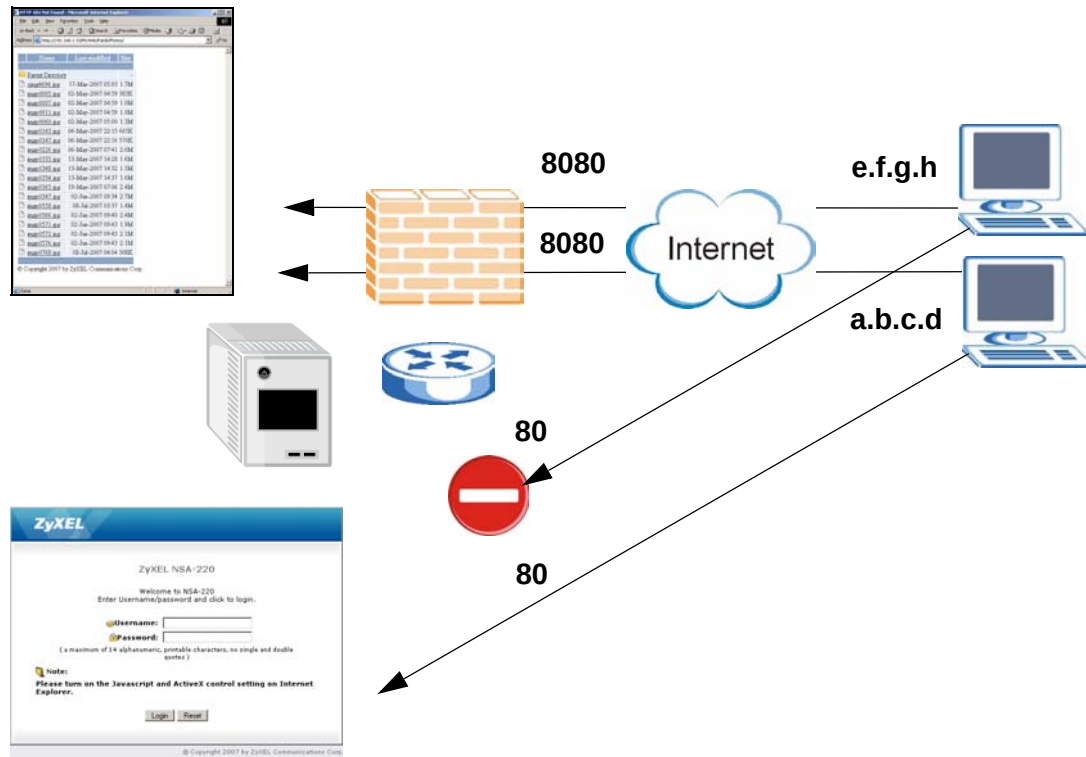
8.9.2 Web Publishing Port Number

If the web-published shares use a port number other than 80 (the normal port for web traffic), users must include it after the NSA's IP address in order to access the NSA's web-published shares. For example, say you specified port 8080, the NSA's IP address is 192.168.1.23, and the name of the web-published share is FamilyPhotos. You would have to enter "http://192.168.1.23:8080/MyWeb/FamilyPhotos/" in your browser's address bar to access the share's web page.

The NSA's web configurator uses port 80. To make the web configurator more secure, you can have the web-published shares use another port number. Then you can configure one set of firewall rules and NAT or port forwarding settings on your Internet gateway specifically for allowing access to the web-published shares and another separate set of rules for accessing the NSA's web configurator.

In the following example, the Internet gateway's firewall is configured to allow anyone to access the NSA's web-published screens using port 8080. Web configurator access (port 80) however, is only allowed from IP address a.b.c.d.

Figure 74 Web Publishing Port Number Example



8.10 Web Publishing Screen

Click **Applications > Web Publishing** to open the following screen. Use this screen to turn web publishing on or off and select shares to publish.

Figure 75 Applications > Web Publishing

Applications - Web Publishing

Web Publishing

☐ Disable Web Publishing

☒ Enable Web Publishing

Port Number:

Note:
The format of URL: "http://IP Address:Port Number/MyWeb/ShareName/"

Unpublished Shares

- public
- video
- photo
- music
- admin

Published Shares

- FamilyPhotos

The following table describes the labels in this screen.

Table 29 Applications > Web Publishing

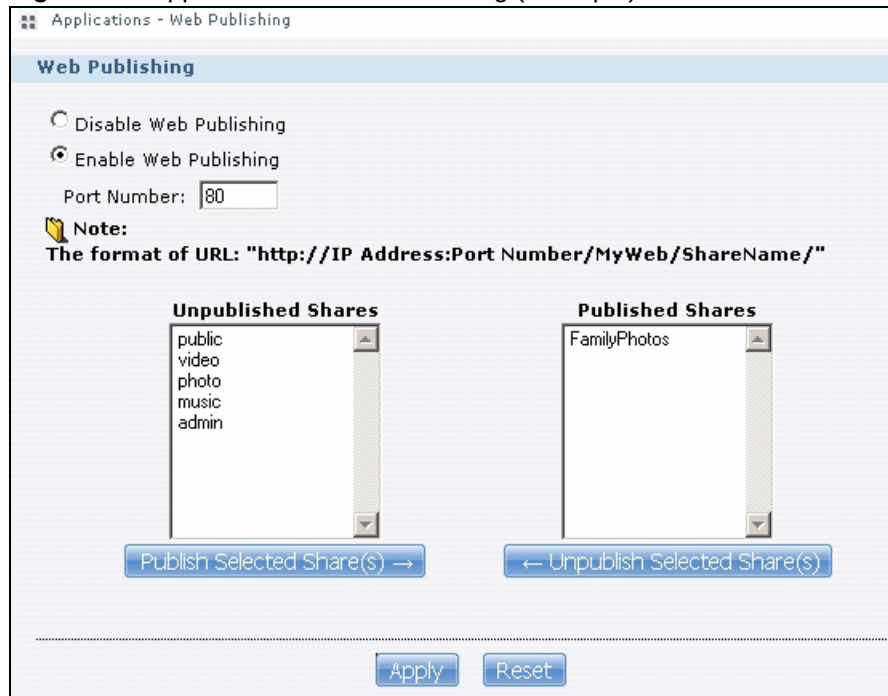
LABEL	DESCRIPTION
Disable / Enable Web Publishing	Turn on web publishing to let people access files in the published shares using a web browser, without having to log into the My NSA screens.
Port Number	Specify a port number for accessing the published share websites hosted on the NSA. If you enter a number other than 80, make sure you include it when telling others how to access the web-published share. For example, say you specified port 8080, the NSA's IP address is 192.168.1.23, and the name of the web-published share is FamilyPhotos. You would have to enter "http://192.168.1.23:8080/MyWeb/FamilyPhotos/" in your browser's address bar to access the share's web page.
Unpublished Shares	This list box displays the shares that the NSA does not publish for web browser access.
Publish Selected Share(s)	Select shares in the Unpublished Shares box and click this button to let people access files in the published shares using a web browser, without logging into the My NSA screens. Use the [SHIFT] key to select a range of entries. Hold down the [CTRL] key to select multiple individual entries.
Published Shares	This list box displays the shares people can access using a web browser, without logging into the My NSA screens.
Unpublish Selected Share(s)	Select shares in the Published Shares box and click this button to not let people access using a web browser without logging into the My NSA screens. Use the [SHIFT] key to select a range of entries. Hold down the [CTRL] key to select multiple individual entries.
Apply	Click Apply to save your changes back to the NSA.
Reset	Click Reset to begin configuring this screen afresh.

8.11 Web Publishing Example

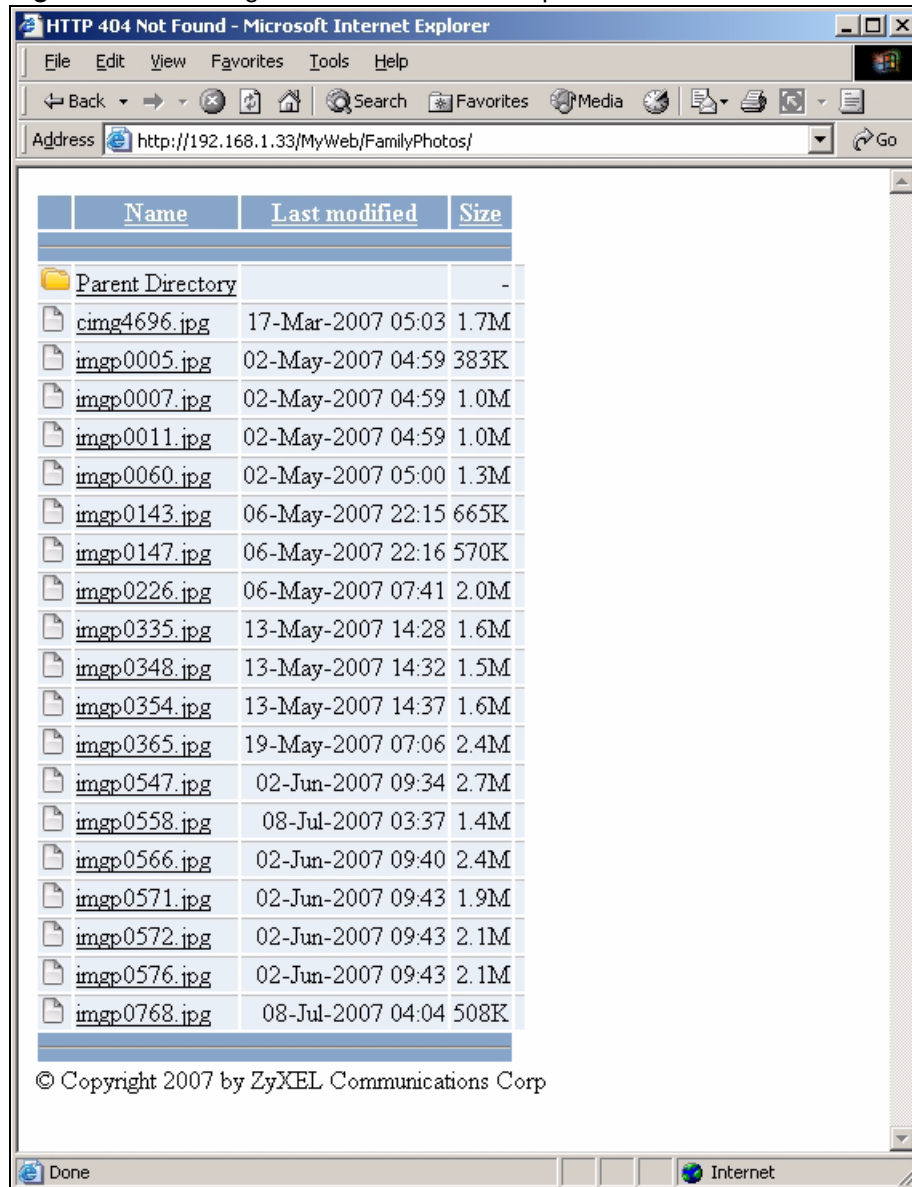
This example covers how to configure the **Web Publishing** screen to let people use a web browser to access a share named FamilyPhotos without logging into the My NSA screens and shows how to access the share through the Internet.

- 1 Click **Applications > Web Publishing** and configure the screen as shown (enable the web publishing and move **FamilyPhotos** over to **Published Shares**) and click **Apply**.

Figure 76 Applications > Web Publishing (Example)



- 2 Now open your web browser and type in the address of the NSA's FamilyPhotos web page. In this example, the NSA's IP address is 192.168.1.33, and the name of the web-published share is FamilyPhotos. So you would enter "http://192.168.1.33/MyWeb/FamilyPhotos/" in your browser's address bar. Then press [ENTER] or click **Go**. A screen displays listing the share's files.

Figure 77 Browsing to an NSA Share Example

- Click a file's link to open the file.
- Right-click a file's link and select **Save Target As..** (in Internet Explorer) to save a copy of the file.
- Click a label in the heading row to sort the files by that criteria.
- To customize how the page looks and works, create an index.html or index.htm file and store it in the share.

8.12 Broadcatching

Broadcatching is the downloading of digital content from Internet feeds. Use broadcatching to have the NSA download frequently updated digital content like TV programs, radio shows, podcasts (audio files), and blogs.

RSS (Really Simple Syndication) is a format for delivering frequently updated digital content. At the time of writing, the NSA supports RSS 2.0 feeds. Websites with a feed usually display a feed icon (shown next). Copy and paste the feed's URL into the **Applications > Broadcatching > Add** screen and you can download new files as they are added.

Figure 78 Feed Icon



A channel uses a feed to deliver its contents (items). Subscribe the NSA to a feed to be able to download the contents.

8.12.1 Channel Guides

Here are some popular broadcatching channel guide web sites.



ZyXEL does not endorse these web sites and is not responsible for any of their contents. Use these or any other web sites at your own risk and discretion.

<http://www.zencast.com/>

<http://www.miroguide.com/>

<http://www.vuze.com/>

<http://www.mefedia.com/>

<http://www.vodstock.com/>

8.13 Broadcatching Screen

Click **Applications > Broadcatching** to open the following screen. This screen displays the NSA's subscribed channels and the associated contents.

- The NSA saves a channel's downloaded items in a folder named after the channel.
- The NSA creates the channel folders in the same destination as the download service. See [Section 8.8 on page 100](#) to change the destination for saving downloads.
- The NSA's media server feature makes it easy for users on your network to play the broadcatching files you download. See [Section 8.3 on page 90](#) for more on the media server.

Figure 79 Applications > Broadcatching

Broadcatching

Add Channel
 Delete Channel
 Refresh Channel
 Edit Channel

:Completed
 :Seeding
 :Downloading
 :Queued
 :Pause
 :Error
 :Missing File
 :Start downloading
 :Delete Item

Channel Name	Item Name	Published Date	Description	Actions
CNET TV: New on CNET TV				
Network Security Blog	Network Security Pod...	2007-09-12 12:36	By popular demand, Rich is back this week and will be the continuing co-host for the Network Sec... (More)	
Outlook, SharePoint, and Busine...	Network Security Pod...	2007-09-05 13:45	Rich Mogull from Securosis.com did me the personal favor of co-hosting the show tonight. Rich bring... (More)	
Outlook Productivity Tips, a vi...	Only testing for 10 ...	2007-09-05 00:30	According to Daniel Miessler my post on his comparison between the CISSP and the GSEC was a defense ... (More)	
PhotoWalkthrough.com	Repeat after me, "Th...	2007-08-31 14:34	I've held my CISSP for coming on 5 years now. I earned my CCNA around the same time, though... (More)	
Searching the Internet	Time for a minor hea...	2007-08-29 14:32	When I went to post tonight's podcast, I encountered an API error from ScribeFire. A quick... (More)	
Slashdot Review - SDR News	Network Security Pod...	2007-08-29 14:18	Tonight's podcast is an interview with Marc Malfrett, Chief Technology Officer for Eeye Digi... (More)	
http://eclectic.libsyn.com/rs	Who do you call when...	2007-08-29 05:12	The folks at DriveSavers have been recovering data from crashed, burnt and flooded hard drives f... (More)	
	Securosis is back on...	2007-08-26 01:05	Earlier this year Gartner started enforcing a policy of no blogging for their analysts. It's un... (More)	
	"I don't want to bel...	2007-08-23 23:33	As Brian Krebs points out, the Groucho Marx comment, "I don't want to belong to any ... (More)	
	Network Security Pod...	2007-08-22 13:51	Winn Schwartau is a character and the brains behind Security Jeopardy every year at Defcon. I met h... (More)	

The following table describes the labels in this screen.

Table 30 Applications > Broadcatching

LABEL	DESCRIPTION
Add Channel	When you find a channel to subscribe to, copy the URL of the channel's feed and click this button. A screen opens for you to subscribe to the feed. When you are done, the feed's channel and contents display in the Applications > Broadcatching screen.
Delete Channel	Select a channel and click Delete Channel to remove the channel from the NSA. Any of the channel's items that you have already downloaded stay in the channel's folder (in the admin share's download folder).
Refresh Channel	Select a channel and click Refresh Channel to check for new files.
Edit Channel	Select a channel and click Edit Channel to open a screen where you can set the channel's download and delete policies.
	The table lists channels and their files. Click a column's heading to sort the entries by that criteria.
Channel Name	This identifies the channel. A channel displays in red if there was an error the last time the NSA attempted to connect to it. When this happens, you can select the channel and click Refresh Channel to have the NSA reattempt to connect to it. Select a channel to see its available files. A "..." indicates an abbreviated name. Hold your cursor over the name to display the full name.

Table 30 Applications > Broadcatching

LABEL	DESCRIPTION
Item Name	These are the downloadable files. The icon shows the file's status in the NSA. A ... indicates an abbreviated name. Hold your cursor over the name to display the full name. Completed: The NSA has downloaded the whole file. Double-click the item to go to the Download Service screen where you can see the file's name and location. Seeding: The NSA downloaded the complete file and NSA is sharing it with other BitTorrent users. Double-click the item to go to the Download Service screen. Downloading: The NSA is downloading the file. Double-click the item to go to the Download Service screen. Queued: The file is waiting in line for the NSA to download it. Double-click the item to go to the Download Service screen. Pause: The download has been manually stopped. Double-click the item to go to the Download Service screen. Missing File: The NSA could not find the file. Error: The NSA automatically retries unsuccessful download attempts. The status displays as error when the re-attempts are also unsuccessful and the NSA stops trying to download the file. To try the download again, use the Add button to create a new download task.
Published Date	This is when the file was made available for download.
Description	This is the publishers introduction for the file.
Actions	Start Downloading: Click this icon to add the file to the NSA's download queue or check the file's status in the NSA's download service. Click the Delete icon to remove the file from the channel's list.

8.14 Adding or Editing a Broadcatching Channel

Click **Applications > Broadcatching > Add Channel** to open the following screen. Use the **Add** screen to subscribe the NSA to a channel's feed so you can view the channel. You also select policies for downloading and deleting the channel's items. [Section 3.3 on page 56](#) provides a tutorial on adding a broadcatching channel. Click **Applications > Broadcatching**, then select a channel and click **Edit Channel** to open a similar **Edit** screen. Use the **Edit** screen to change the download or delete policies.

Figure 80 Applications > Broadcatching > Add

Subscribe to Channel Feed

Please enter the url address of the feed you want to subscribe to

Download Policy

Download All Items

Delete Policy

☒ Manual

☐ Keep last of items

Apply Cancel

The following table describes the labels in this screen.

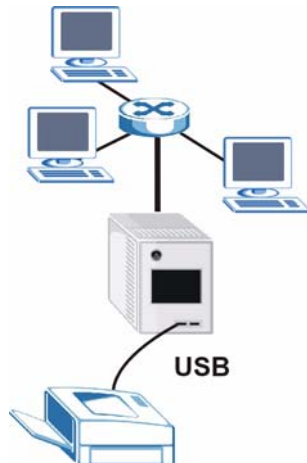
Table 31 Applications > Broadcatching > Add

LABEL	DESCRIPTION
Subscribe to Channel Feed	Paste (or type) the URL of the feed for the channel to which you want to subscribe into this field. This is read-only in the Preferences screen. Note: Make sure the link goes to the actual RSS feed instead of to another list of links or information about the channel. One way to test this is by clicking the link. Clicking an actual RSS feed link opens a screen of XML code (in browsers without an RSS feed aggregator) or a window where you can add the RSS feed (in browsers with an RSS feed aggregator).
Download Policy	Set which of the channel's items the NSA downloads. Download All Items: Download every file in the feed. Download Only New Items: Download new files from today on. Manually Choose Items for Download: Only download individual files you select later in the Applications > Broadcatching screen.
Delete Policy	Set how the NSA handles deleting the items downloaded from the channel. Manual: Only delete individual files you select later in the Applications > Broadcatching screen. Keep last N of items: Select this to set the NSA to only keep a number of the channel's most recent files. When this number has been reached, if the NSA downloads another file from the channel, it deletes the oldest file from the NSA.
Apply	Click Apply to save your changes back to the NSA.
Reset	This button appears in the Preferences screen. Click Reset to begin configuring this screen afresh.
Cancel	Click Cancel to close this screen without saving your changes.

8.15 Printer Sharing

The NSA can act as a print server. A print server lets multiple computers share a printer. Connect a printer to the NSA's USB port to let multiple computers on your network use it. See www.zyxel.com for a list of compatible printers.

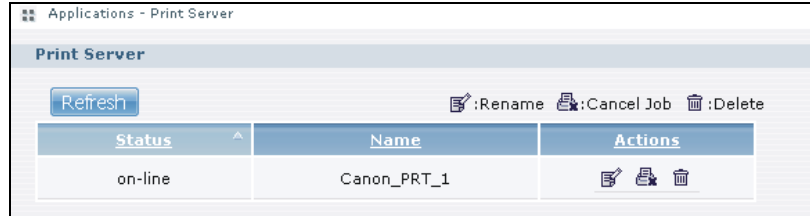
Figure 81 Printer Sharing



8.16 Print Server Screen

Click **Applications > Print Server** to open the following screen. Use this screen to view and manage the NSA's list of printers and print jobs.

Figure 82 Applications > Print Server



The following table describes the labels in this screen.

Table 32 Applications > Print Server

LABEL	DESCRIPTION
Refresh	Click Refresh to update the list of printers and print jobs.
	The table lists printers and their queued print jobs. Click a column's heading to sort the entries by that criteria.
Status	This field shows whether the printer is connected and turned on (on-line) or not (off-line).
Name	This identifies the printer. Each printer connected to the NSA must use a unique name.
Actions	Rename: Click this to change the name the NSA uses for the printer. Cancel Job: Click this to remove all print jobs from the NSA queue for a particular printer. However, since the NSA sends print jobs to the printer as soon as it can, this button may only have an effect if there are very large or many print jobs in the queue. To stop a print job that has already started, you may have to turn off the printer. Delete: Click this to remove a printer from the NSA's printer list. To add the printer back into the list, disconnect the printer from the NSA's USB port and reconnect it. If that does not work, disconnect the USB port and turn off the printer's power. Then reconnect the printer and turn it back on.

8.17 Print Server Rename

Click **Applications > Print Server** and a printer's **Rename** icon to open the following screen. Use this screen to change the name the NSA uses for the printer.

Figure 83 Applications > Print Server > Rename

The following table describes the labels in this screen.

Table 33 Applications > Print Server > Rename

LABEL	DESCRIPTION
Name	Type a new name to identify the printer. The name must be unique from all the other names of printers connected to the NSA.

Table 33 Applications > Print Server > Rename

LABEL	DESCRIPTION
Apply	Click Apply to save your changes back to the NSA.
Cancel	Click Cancel to close this screen without saving your changes.

PART III

User Accounts and Shares

[Users \(115\)](#)

[Shares \(119\)](#)

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

9.1 User Accounts Introduction

Use the **Users** screens to create and manage administrator and user accounts.

Administrators can:

- Configure and manage the NSA.
- Create volumes, shares, and user accounts.
- Assign individual users specific access rights for specific shares.

Users are people who have access rights to the NSA and can store files there for later retrieval.

A user can:

- Manage shares that he owns.
- Change his own password.
- Access the contents of other shares to which he is given access rights.

9.2 Users Overview Screen

Click **Users** to display the screen shown next.

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

Figure 84 Users



The following table describes the labels in this screen.

Table 34 Users

LABEL	DESCRIPTION
Users	
Add Account	Click this button to open a screen where you can configure a new user account.
	This screen lists the users configured on the NSA. Click a user icon to see details about the user. Administrator account icons are green. User account icons are blue.
Account Type	This field displays whether the selected account is an administrator account or a user account.
Used Space	This field displays how much storage space the selected account is currently using. This only applies for files that the user saved onto the NSA while logged in with that username.
Change Account Properties	Click this to edit the selected account.
Change Password	Click this to edit the selected account's password.
Delete Account	Click this to remove the selected account.

9.2.1 User Icons

The following table describes the user icons.

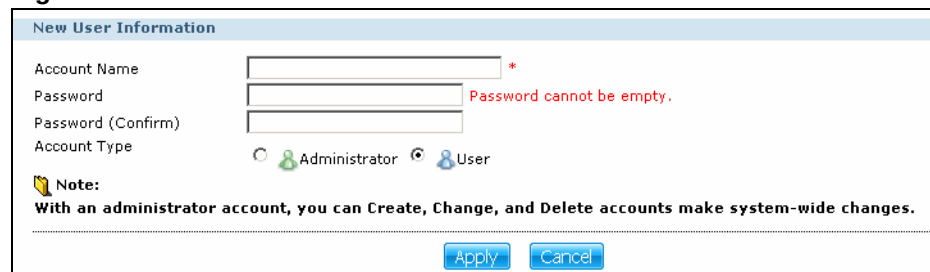
Table 35 User Icons

ICON	DESCRIPTION
	The green icon is for an administrator account.
	The blue icon is for a user account.

9.3 Adding or Editing an Account

Click the **Add Account** button in the **Users** screen to open the following screen. Use this screen to create or edit a NSA user account with NSA access password. Click the **Change Account Properties** button in the screen shown previously to edit an existing account.

Figure 85 Users > Add or Edit an Account



The following table describes the labels in this screen.

Table 36 Users > Add or Edit an Account

LABEL	DESCRIPTION
Account Name	Type a name from 1 to 32 single-byte (no Chinese characters allowed for example) ASCII characters. See Section 9.3.1 on page 117 for more details on usernames.
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.
Password (confirm)	You must type the exact same password that you just typed in the above field.
Account Type	Select Administrator to give full the account configuration and management access to the NSA. Select User to give the account basic access rights to the NSA and allow the user to manage his own shares, change his own password, and access the contents of other shares to which he is given access rights.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to leave this screen without saving changes.

9.3.1 Usernames

Enter a username 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 username can only contain the following characters:

- Alphanumeric A-z 0-9. Unicode usernames are supported with CIFS logins, but not FTP or web configurator logins.
- Spaces
- _ [underscores]
- . [periods]
- - [dashes]

Other limitations on usernames are:

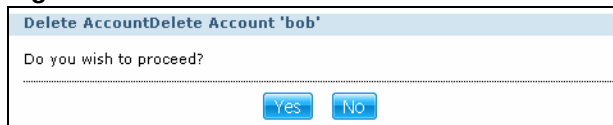
- All leading and trailing spaces are removed automatically.
- Multiple spaces within names are converted to a single space.
- Usernames are case insensitive. The username cannot be the same (no matter the letter case) as an existing user. For example, if a user exists with the name 'BOB', you cannot create a 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 username cannot be the same as a system username such as **ANONYMOUS_CIFS**, **ANONYMOUS_FTP**, **EVERYONE** nor be the same as an existing user. Other reserved usernames that are not allowed are:
 - bin
 - daemon
 - ftp
 - anonymous-ftp
 - nobody
 - root

- pc-guest
- admin
- password

9.4 Delete Account Screen

In the **Users** screen, select an account and click **Delete Account** to open the following screen. Use this screen to remove a user account.

Figure 86 Users > Delete Account

The screenshot shows a dialog box titled "Delete AccountDelete Account 'bob'". Inside the dialog, it asks "Do you wish to proceed?". At the bottom of the dialog, there are two buttons: "Yes" and "No".

Delete AccountDelete Account 'bob'	
Do you wish to proceed?	
Yes No	

The following table describes the labels in this screen.

Table 37 Users > Delete Account

LABEL	DESCRIPTION
Yes	Click Yes to remove the user account. Management of any shares that belonged to the account passes to the default administrator account.
No	Click No to keep the user account.

Shares

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

10.1 Shares Introduction

Use the **Shares** screens to create and manage shares. A share is a set of user 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.

10.1.1 Share Icons

These are the share icons.

Table 38 Share Icons

ICON	DESCRIPTION
	This represents a share on a volume on the internal hard drives. Click this icon to access the share's contents. The folder appears as gray if the share is not currently available (because the hard drive was removed for example).
	This represents a share on a volume on an external (USB) device. Click this icon to access the share's contents. The folder appears as gray if the share is not currently available (because the USB drive was removed for example).

10.1.2 Shares Screen

Click **Shares** in the Navigation panel to open the following screen. This screen lists all of the shares.

Figure 87 Shares

The following table describes the labels in this screen. See [Table 38 on page 119](#) for icon details.

Table 39 Shares

LABEL	DESCRIPTION
Add Share	Click this button to create a new share.
Internal Shares	These are shares on the internal hard drives.
External Shares	These are shares on the external (USB) devices.
Share Owner	This is the name of the user account to which this share belongs.
Share Type	This field displays built-in for system shares. You cannot delete these shares (these are the public and admin shares). This field displays pre-defined for default shares. You can delete these shares (these are the video, music, and photo shares). This field displays user-created for shares that an administrator has created. You can delete these shares.
Change Share Properties	Click this to edit the selected share.
Delete Share	Click this to remove the selected share.

10.2 Adding or Editing Share

Click the **Add Share** or **Change Share Properties** in the **Shares** screen to open the following screen. Use this screen to create a new shared folder.

Figure 88 Shares > Add Share

Create a New Share

Share Name: *

Volume: 1DiskJBODvolume (111)

Path: Browse...

Make this share owned by: admin

Publish this share to Media Server: ☒

Publish this share to Web: ☒

Share Access: Advanced

Username	Full	Read Only	Deny
Bob	☐	☐	☐
admin	☐	☐	☐
anonymous-ftp	☐	☐	☐

Because you have chosen to Publish this share, all users will have read only access to this share from the web or media client, despite any other security settings.

Apply Cancel

The following table describes the labels in this screen.

Table 40 Shares > Add Share (or Change Share Properties)

LABEL	DESCRIPTION
Share Name	Type a share name from 1 to 255 single-byte (no Chinese characters allowed for example) ASCII characters. The name cannot be the same as another existing local share. See Section 2.5.5 on page 38 for more information on share names.
Volume	You should have already created volumes (a single accessible storage area with a single file system) on the NSA. Select the one that contains the folder that you want to share out. You cannot modify this when editing a share.
Path	Select a folder on the NSA. You can also browse (see Section 10.3 on page 122) to find or create a folder on the NSA or type the location of the folder using forward slashes as branch separators. Each folder can only belong to a single share. See Section 2.5.6 on page 39 for more information on share paths. You cannot modify this when editing a share.
Make this share owned by	Select the administrator or user account that is to own (manage) this share. The share owner controls access rights to the share.
Publish this share to Media Server	Select this option to have the NSA share files in this folder with media clients. The media clients do not have to use a password to play the shares you publish.
Publish this share to Web	Select this option to let people use a web browser to access this share's files without logging into the My NSA screens.
Share Access	Assign access rights (full, read only or deny) to users. If you publish the share to the media server or the web, all users will have at least read-only access to the share, regardless of what you configure here. Keep it private to owner means only the share owner (selected above) can access the share. Public means every user (including people who do not have accounts on the NSA) can access the share. Advanced allows you to assign specific access rights (full, read only or deny) to individual users.
Username	This column lists all of the accounts configured on the NSA.

Table 40 Shares > Add Share (or Change Share Properties) (continued)

LABEL	DESCRIPTION
Full	Select this check box next to a user to give him or her full access (read, write and execute) to all files contained within this share. Select the check box in the heading row to select all users.
Read Only	Select this check box next to a user to give him or her read-only access (they cannot modify nor execute) to all files contained within this share. Select the check box in the heading row to select all users.
Deny	Select this check box next to a user to deny him or her any access (they cannot read, modify, nor execute) to all files contained within this share. Select the check box in the heading row to select all users. Note: If you deny access to all users, no-one can use the share, not even the administrator.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to close this screen without saving your changes.

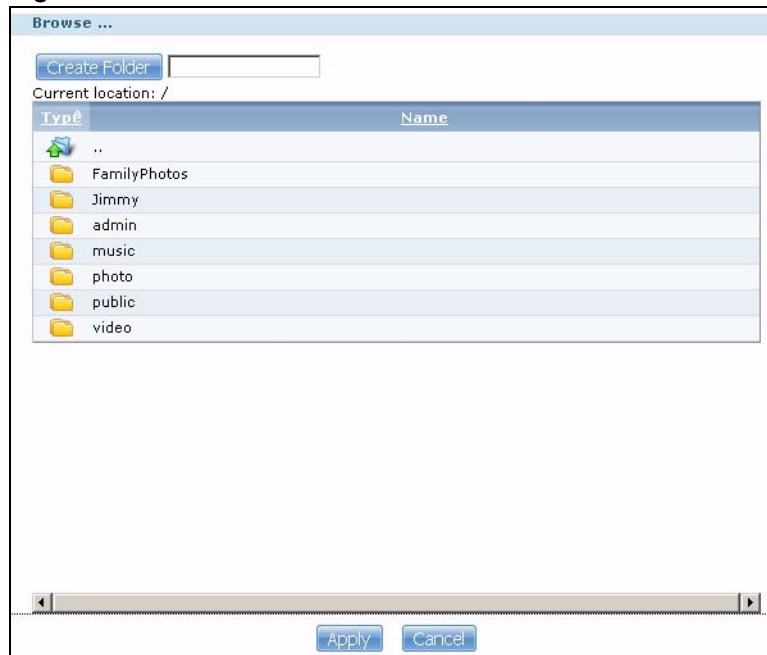
10.2.1 Public and ANONYMOUS Share Access Rights

If you make a share public, users do not need to log in.

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

10.3 Share Path Browse Screen

Use this screen to navigate and/or create folders within a share.

Figure 89 Share Path Browse

The following table describes the labels in this screen.

Table 41 Shares > Share Path Browse

LABEL	DESCRIPTION
Create Folder	Type a folder name and click Create Folder to make a new folder. The name can be 1 to 255 single-byte (no Chinese characters allowed for example) ASCII characters. The name cannot be the same as another existing folder in the same path. See Section 2.5.5 on page 38 for more information on folder names.
Current location	This is the name of the share and folder path that you are in.
Type	The icon in this column identifies the entry as a folder or a file. The folder with an arrow pointing up is for the link that takes you to the next higher layer in the share's folder tree.
Name	This section lists the volume's existing folders. Select the one for which you want to create a share (click to the right of the folder name to select). You can also click the folder's name to navigate to a sub-folder within the folder.
Apply	Click this button to return to the previous screen with your folder selection.
Cancel	Click this button to return to the previous screen without selecting a folder.

PART IV

Maintenance, Protecting Data, and Media Client

Maintenance Screens (127)

Protecting Your Data (135)

Media Client Software (137)

Maintenance Screens

This chapter discusses the **Maintenance** screens.

11.1 Maintenance Overview

Use the maintenance screens to:

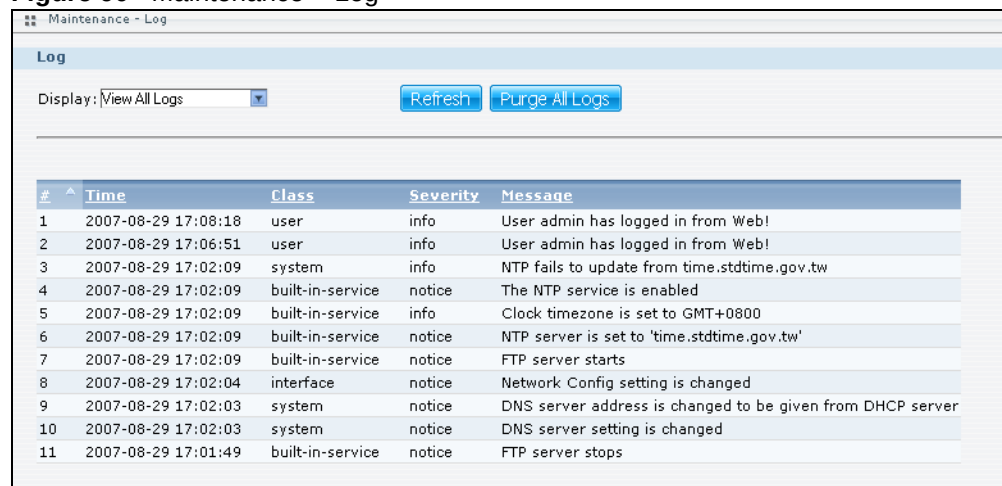
- View logs
- Manage the NSA configuration file
- Upload new firmware
- Restart or shut down your NSA

11.2 Log

Click **Maintenance > Log** to display the following screen.

The **Log** 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.

Figure 90 Maintenance > Log



The screenshot shows the 'Maintenance - Log' interface. At the top, there's a 'Log' header. Below it, a 'Display:' dropdown menu is set to 'View All Logs'. To the right of the dropdown are two buttons: 'Refresh' and 'Purge All Logs'. Below these controls is a table with 11 log entries. The table has five columns: '#', 'Time', 'Class', 'Severity', and 'Message'.

#	Time	Class	Severity	Message
1	2007-08-29 17:08:18	user	info	User admin has logged in from Web!
2	2007-08-29 17:06:51	user	info	User admin has logged in from Web!
3	2007-08-29 17:02:09	system	info	NTP fails to update from time.stdtime.gov.tw
4	2007-08-29 17:02:09	built-in-service	notice	The NTP service is enabled
5	2007-08-29 17:02:09	built-in-service	info	Clock timezone is set to GMT+0800
6	2007-08-29 17:02:09	built-in-service	notice	NTP server is set to 'time.stdtime.gov.tw'
7	2007-08-29 17:02:09	built-in-service	notice	FTP server starts
8	2007-08-29 17:02:04	interface	notice	Network Config setting is changed
9	2007-08-29 17:02:03	system	notice	DNS server address is changed to be given from DHCP server
10	2007-08-29 17:02:03	system	notice	DNS server setting is changed
11	2007-08-29 17:01:49	built-in-service	notice	FTP server stops

The following table describes the labels in this screen.

Table 42 Maintenance > Log

LABEL	DESCRIPTION
Display	The screen always shows all logs by default. Choose a specific log category to view logs for just that category.
Refresh	Click this button to update the log display.
Purge all Logs	Click this button to erase all logs from the NSA.
#	This is the log entry's number in the list according to the currently selected sort order.
Time	This shows the date and time the log was created. Click the top of the column to sort by oldest or newest.
Class	This displays the log category; see Table 43 on page 128 for details.
Severity	This displays how serious the log is rated by the NSA. See Table 44 on page 128 for more information.
Message	This displays a description of the log. Click the top of the column to sort by alphabetical or reverse alphabetical order.
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.

11.3 Log Classes

The following table shows information on log classes.

Table 43 Log Classes

LOG CATEGORY	DESCRIPTION
Network	This log class shows information on network configuration, setting changes and so on.
Services	This log class shows information on the operation of the NSA's built-in services.
Shares	This log class shows information on shares being created or deleted.
System	This log class shows all other system related messages.
Users	This log class shows information on user access to the NSA.

11.4 Log Severity Levels

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 44 Log Severity Levels

LEVEL	DESCRIPTION
0	Emergency
1	Alert
2	Critical
3	Error

Table 44 Log Severity Levels (continued)

LEVEL	DESCRIPTION
4	Warning
5	Notice
6	Info

11.5 Log Messages

Here are some example log messages.

Table 45 Log Messages

CLASS	SEVERITY	MESSAGE
Network	NOTICE	%s is active because of changing Port Group. Enable DHCP client.
Network	NOTICE	%s is inactive because of changing Port Group. Disable DHCP client.
Network	NOTICE	%s MTU > (%s MTU - 8), %s may not work correctly.
Network	NOTICE	(%s MTU - 8) < %s MTU, %s may not work correctly.
Network	NOTICE	Add interface %s.
Network	NOTICE	Because %s link down. Default route will not apply until %s link up.
Network	NOTICE	Because base interface %s will be disabled.Interface %s is disabled now., base_ud_iface
Network	NOTICE	Network Config setting is changed
Network	NOTICE	Interface %s was disabled.
Network	NOTICE	Interface %s was enabled.
Network	NOTICE	Port Group on %s is changed. Renew DHCP client.
Network	NOTICE	show_sdx
Services	INFO	admin has changed the password
Services	INFO	HTTP management port has changed to %s
Services	INFO	Clock has disable daylight saving
Services	INFO	MyClock has enable daylight saving
Services	INFO	MyClock has set timezone to %s
Services	INFO	MyClock has set timezone to default
Services	INFO	The date and time are updated from NTP server.
Services	INFO	The date and time are updated manually.
Services	INFO	The time is updated manually.
Services	NOTICE	MyClock has changed daylight saving interval
Services	NOTICE	MyClock has disabled daylight saving interval
Services	NOTICE	NTP server has set to '%s'
Services	NOTICE	NTP server has set to null
Services	NOTICE	The NTP service is disabled.
Services	NOTICE	The NTP service is enabled.
Services	WARNING	Reaching Maximum Allowed Rules

Table 45 Log Messages (continued)

CLASS	SEVERITY	MESSAGE
Services	WARNING	Reaching Maximum Allowed Rules
Services	WARNING	Rule is empty
Services	WARNING	The Rule Does Not Exist
Services	NOTICE	FTP server stops
Services	NOTICE	FTP server starts
Services	INFO	Clock timezone is set to GMT%s
Services	INFO	Clock timezone is set to default
Services	INFO	Clock daylight saving is enabled
Services	INFO	Clock daylight saving is disabled
Shares	NOTICE	Add new share %s.
Shares	NOTICE	Delete share %s.
Shares	NOTICE	Delete share %s.
System	INFO	NTP update failed
System	INFO	NTP updates successfully from %s
System	INFO	NTP fails to update from %s
System	INFO	Device is rebooted by administrator!
System	INFO	Device is shutdown by administrator!
System	NOTICE	DNS server is changed.
System	NOTICE	Hostname is cleared.
System	NOTICE	Hostname is set to '%s'.
System	NOTICE	System description is changed.
System	NOTICE	System description is empty now.
System	NOTICE	DNS server setting is changed
System	NOTICE	DNS server address is changed to be given from DHCP server
System	NOTICE	DNS server setting is changed
System	NOTICE	DNS server address is changed to be assigned by user
System	NOTICE	Name server is changed.
Users	ALERT	Failed %s login attempt (incorrect password or inexistent username)
Users	ALERT	Failed %s login attempt (incorrect password or inexistent username)
Users	NOTICE	Add new user %s.
Users	NOTICE	Change user %s's password.
Users	NOTICE	Delete user %s.
Users	NOTICE	User %s on %u.%u.%u.%u has been denied access from %s
Users	INFO	User %s has logged in from %s!
Users	INFO	User %s has logged out from %s!
Users	INFO	User %s from %s has been logged out (re-auth timeout)!
Users	INFO	User %s from %s has been logged out (lease timeout)!

11.6 Configuration

Click **Maintenance > Configuration** to open the following screen. Use the **Configuration** screen to back up or restore the NSA configuration settings and enable or disable the hardware reset button.

Figure 91 Maintenance > Configuration

The following table describes the labels in this screen.

Table 46 Maintenance > Configuration

LABEL	DESCRIPTION
Backup Current Configuration Settings	
Backup	Click Backup to save the current configuration of the NSA 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. This replaces your current NSA 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.

11.7 Firmware Upgrade

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.

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

Figure 92 Maintenance > FW Upgrade

The following table describes the labels in this screen.

Table 47 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
Upload	Click Upload to upload the new firmware. The NSA automatically restarts after you upgrade. Wait until the restart completes before accessing the NSA again. If you interrupt the upgrade, then the NSA may become unusable.
Reset	Click Reset to begin configuring this screen afresh.

11.8 Shutdown

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

Use this screen to turn off the NSA or perform a software restart. A software restart is faster than turning the NSA 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 or transferring files to or from the NSA.

Figure 93 Maintenance > Shutdown

The following table describes the labels in this screen.

Table 48 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 94 Maintenance > Shutdown > Confirm Restart

A rectangular dialog box with a thin black border. At the top, it contains the text "Restart system now?". Below the text is a horizontal dotted line. At the bottom of the dialog, there are two blue buttons with white text: "Apply" on the left and "Cancel" on the right.

Restart system now?

Apply Cancel

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 95 Maintenance > Shutdown > Confirm Shutdown

A rectangular dialog box with a thin black border. At the top, it contains the text "Shutdown system now?". Below the text is a horizontal dotted line. At the bottom of the dialog, there are two blue buttons with white text: "Apply" on the left and "Cancel" on the right.

Shutdown system now?

Apply Cancel

Protecting Your Data

This chapter compares the different ways of protecting data on the NSA and explains how to use backup management software included on the CD.

12.1 Protection Methods

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

Table 49 Overview of Protection Methods

SITUATION	ACTION
Unexpected NSA behavior after configuration changes	Back up the NSA 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 Memeo Autobackup program.
Data infected by virus	Use anti-virus software on your computer to scan files before saving them onto the NSA. Although this may be slow so you may want to schedule it to occur while no one is using the NSA. Use a firewall with anti-virus capability on your network.
Hard drive malfunction.	Use RAID.
NSA malfunction Network down Natural disaster such as a fire or earthquake occurs where your NSA is located	Back up data to another NSA or external USB hard drive.

The following sections describe these methods in more detail. See [Section 6.9 on page 81](#) for more information on RAID.

12.1.1 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 use the **RESET** button (see [Section 15.3.1 on page 146](#)) to return the NSA to the factory default configuration.



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

12.1.2 Memeo Autobackup

Use the Memeo Autobackup software (included on the CD) on your computer to schedule and manage backups. You can backup from your computer to the NSA. You can also backup from one NSA on your network to another. You can set the Memeo Autobackup software to automatically back up files from your computer to the NSA whenever you modify the files.



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

Media Client Software

This chapter introduces the media client software included on the CD.

13.1 Media Client Introduction

The NSA can function as a server to allow DLNA (Digital Living Network Alliance) compliant media clients to play files. The DLNA is a group of leading personal computer and electronics companies that works to make products compatible and able to work in a home network in order to make digital living easy and seamless. The group's members include Nokia, Intel, Microsoft, Sony, Motorola, Philips, Samsung, Matsushita, and Hewlett-Packard.

Install the included DLNA-compliant media client software on your Windows XP computers to let them browse and play files stored on the NSA.

- The software requires Windows XP.
- See the Quick Start Guide for how to install the media client software and the requirement details.

13.2 Using the Media Client Software

Refer to the Quick Start Guide and the help (**Start > All Programs > DigiOn > Help**) for details on how to use the media client software.

Memeo Autobackup Software

This chapter introduces the Memeo Autobackup software included on the CD.

14.1 Memeo Autobackup Introduction

Use the Memeo Autobackup software included on the CD to automatically back up selected files from your computer to the NSA whenever you modify the files. You can have Memeo backup specific files, folders of files, or types of files.

Install the included DLNA-compliant Memeo Autobackup software on your Windows 2000 or later computers to let them browse and play files stored on the NSA.

- The software requires Windows XP.
- See the Quick Start Guide for how to install the Memeo Autobackup software and the requirement details.

14.2 Using the Memeo Autobackup Software

Refer to the Quick Start Guide for how to use the Memeo Autobackup software. The software also includes help that you can display by clicking the help link in the screens.

PART V

Troubleshooting and Specifications

[Troubleshooting \(143\)](#)

[Product Specifications \(155\)](#)

Troubleshooting

15.1 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 Login and Access](#)
- [Reset the NSA](#)
- [I Cannot Access The NSA](#)
- [External USB Drives](#)
- [Media Server Functions](#)
- [Download Service and Broadcatching Functions](#)
- [Web Publishing](#)

15.2 Power, Hardware, Connections, and LEDs



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

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



An **HDD** LED is off.

The **HDD** LED is off when the NSA cannot detect a hard drive in the drive bay. Replace or install a hard drive. See [Installing or replacing a hard drive](#)



An HDD LED is orange.

Orange means that the NSA detected an error on the hard drive (like a bad sector for example). The NSA automatically tries to recover a bad sector, but the LED stays orange until the NSA restarts. Even if the hard drive still functions, it is recommended that you replace it since errors are a sign that the hard drive may fail soon. See [Installing or replacing a hard drive](#)



An HDD LED is red.

Red means the hard drive has failed and the NSA can no longer detect it. Replace the hard drive. See [Installing or replacing a hard drive](#) If you are using a RAID I volume, you may still be able to use the volume but you should replace the faulty drive as soon as possible.



Installing or replacing a hard drive



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

- 1 Turn the NSA off, remove the rear panel and the drive tray and make sure:
 - there is a SATA I or SATA 3.0 Gbit/s compatible hard drive installed.
 - the hard drive is installed correctly in the drive tray. Push the tray back into NSA drive bay until the screw hole at the top of the drive tray is flush with the drive bay (see the NSA Quick Start Guide and [Section 6.6 on page 78](#)).
 - the hard drive could be faulty. Try a different hard drive or test the original hard drive in a different NSA or computer.
- 2 If you had to replace the drive, turn on the NSA and go to the **Storage Setting** screen.
 - If you have a RAID I volume click the **Repair** icon next to the new drive.
 - If you are using RAID 0 you will need to recreate the whole volume. All of your data is lost.
 - If you are using a single-disk JBOD volume, you need to create a new volume on the new drive.
 - If you are using a two-disk JBOD volume, you need to create a whole new volume on both drives.



The LAN LED (by the **LAN** port) is off.

- Make sure the Ethernet cable is connected properly to the NSA 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 LEDs.

15.3 NSA Login and Access



I forgot the server name of the NSA.

- The default server name is **nsa220**.
- Use the NDU (NSA Discovery Utility) to discover your NSA. If you have admin privileges, you can directly change the IP address of the NSA using the NDU.
- If the server name has changed and you don't have the NDU, see [Section 15.3.1 on page 146](#) to use the **RESET** button to return the default setting.



I cannot get to the NSA login screen.

- Use the NDU (NSA Discovery Utility) to discover your NSA. If you have admin privileges, you can directly change the IP address of the NSA using the NDU.
- If you used the **RESET** button, the NSA may have a new IP address. Close and reopen the NDU to discover the NSA.
- Make sure the NSA is turned on.
- If you are trying to login directly by typing the server name into your web browser's address field, make sure you are using the correct server name as the web site address.
 - The default server name is **nsa220**, if you have changed the server name, use the new one.
 - If the server name has been changed and you do not know the new server name, see the troubleshooting suggestions for [I forgot the server name of the NSA](#).
 - If it still doesn't work, try using the NDU.
- 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](#).

- By default, the NSA gets an IP address automatically. The NSA assigns itself an IP address if no device assigns one. If your computer is also set to get an IP address automatically, the computer and the NSA can both assign themselves IP addresses and communicate. See [Chapter 7 on page 85](#) if you need to configure the NSA with a static IP address.
- Make sure your computer's IP address is in the same subnet as the NSA's IP address. You can use the NDU to find the NSA's IP address. See [Appendix A on page 165](#) for how to change your computer's IP address. Skip this if you know that there are routers between your computer and the NSA.
- Ping the NSA from your computer. Make sure your computer's Ethernet adapter is installed and functioning properly. In a (Windows) computer, click **Start, (All) Programs, Accessories** and then **Command Prompt**. In the **Command Prompt** window, type "ping" followed by the NSA's IP address (use the NDU to find the NSA's IP address if you don't know it) and then press [ENTER].
- Make sure you are using Internet Explorer 6.0 (and later) or Firefox 1.07 (and later).
- Make sure your Internet browser does not block pop-up windows and has JavaScripts and Java enabled. See [Appendix B on page 179](#). With Internet Explorer 6, you may also have to enable scripting of safe ActiveX controls. See [Section 15.3.2 on page 147](#).

15.3.1 Reset the NSA

If you forget your password or cannot access the web configurator, use the **RESET** button at the rear of the NSA. When you use the following reset procedure, the system name and admin password are returned to the factory defaults.

You may need to close and re-open the NDU to discover the NSA. This is because the NSA automatically re-acquires IP address information, so its IP address may change since. If no IP address information is assigned, the NSA uses Auto-IP to assign itself an IP address and subnet mask. For example, you could connect the NSA directly to your computer. If the computer is also set to get an IP address automatically, the computer and the NSA will choose addresses for themselves and be able to communicate.

- 1 Press and hold the **RESET** button (for about two seconds) 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 have changed the password and forgotten it, you will have to reset the NSA - see [Section 15.3.1 on page 146](#).



The NDU cannot discover my NSA.

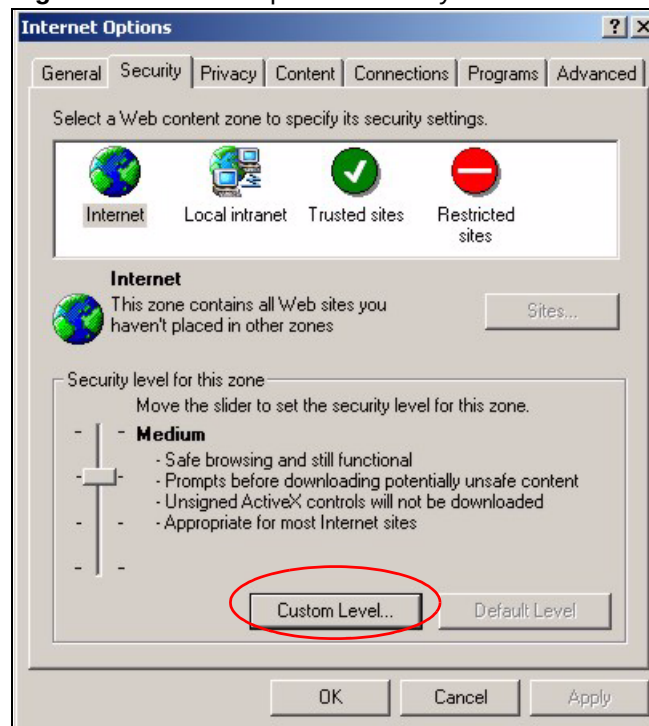
- Confirm that the computer running the NDU has a network connection. See the section on the NSA's LAN connection for related information.
- The computer running the NDU can only discover NSAs in the same subnet. NSAs connected to the same switch or router as your NDU computer are usually in the same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

15.3.2 Enabling Scripting of Safe ActiveX Controls

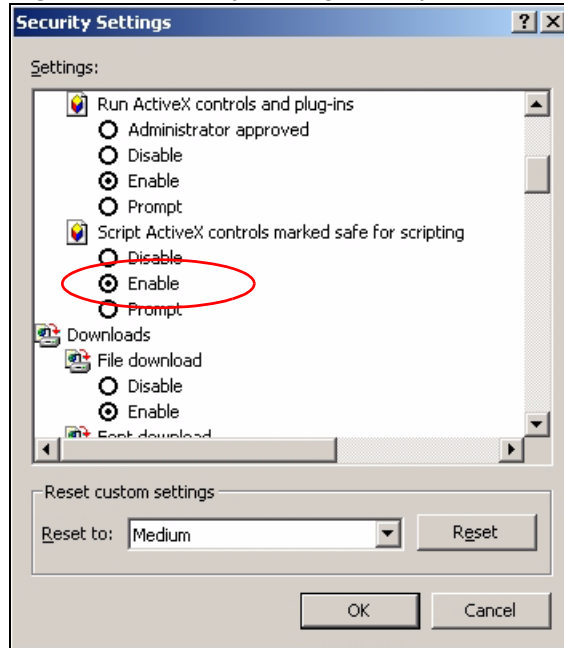
If pages of the web configurator do not display properly in Internet Explorer, check that scripting of safe ActiveX controls is enabled.

- 1 In Internet Explorer, click **Tools, Internet Options** and then the **Security** tab.

Figure 96 Internet Options: Security



- 2 Click the **Custom Level...** button.
- 3 Under **Script ActiveX controls marked safe for scripting**, make sure that **Enable** is selected (the default).
- 4 Click **OK** to close the window.

Figure 97 Security Settings - Script Safe ActiveX Controls

I can see the login screen, but I cannot log in to the NSA.

- Make sure you have entered the username and password correctly. The default username is **admin**, and the default password is **1234**. These fields are case-sensitive, so make sure [Caps Lock] is not on.
- Turn the NSA off and on.
- If this does not work, see [Section 15.3.1 on page 146](#) to reset the device.



I cannot see the multi-language web configurator screens while using Internet Explorer.

Use [Section 15.3.2 on page 147](#) to enable the scripting of safe ActiveX controls.

15.4 I Cannot Access The NSA



I cannot access a share

- Check that the NSA is turned on and connected to the network. Try to ping the NSA or use the NDU to discover it.
- Check that you entered your login name and password correctly.
- Check that the share exists and check its access settings.
- 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 there are any existing mapped network drives to the NSA. You may need to disconnect existing mapped network drives as a new mapped network drive connection may use (different) previously-saved login information. To do this, open Windows Explorer and click **Tools > Disconnect Mapped Network Drives**.
- Check that the volume in which the share resides, exists and is not down or degraded. If it is down or degraded, see [Section 15.2 on page 143](#).
- Make sure you have the client for Microsoft networks installed and enabled in your network connection's properties.
 - In Windows XP or 2000, click **Start > Settings > Control Panel > Network Connections (Network and Dial-up Connections in Windows 2000/NT) > Local Area Connection > Properties**.
 - Check that **Client for Microsoft Networks** is in the list of components and has its check box selected.

15.5 External USB Drives



My external USB drive is read-only.

If your USB drive was formatted as NTFS, then it is read-only on the NSA (the volume status displays as **OK**). To solve this problem, re-format your USB drive using the NSA (or FAT or FAT32 using a computer). See [Chapter 6 on page 73](#) for information on volume creation using the NSA (recommended). Back up the files on your computer before you format the USB drive.



The **COPY** LED is red.

Copying files from a USB device failed. The USB device may not be compatible with the NSA. Try save the files onto a computer and then from the computer to the NSA (through the network connection).

15.6 Some Features' Screens Do Not Display



Many NSA features require a valid internal volume.

Features like the print server, download service, broadcastcatching, FTP and Windows/CIFS access will not work without a valid internal volume. Make sure you have a volume on an internal disk and that the volume is in the healthy state.

- Install an internal disk if one is not installed yet or has failed. See the Quick Start Guide for how to install an internal disk.
- Create a new volume if you do not have one on the internal disk yet.
- Make sure the volume on the installed internal disk is in the healthy state.

15.7 Media Server Functions



I set the media server function to publish a folder, but some of the files in the folder do not display in the list on the media client.

Files with formats that are not supported on the media server may not display in the list. See [Appendix on page 160](#) for the file formats that the media server supports.



I published a folder with the media server function, but the media client does not play some of the files (or does not play them properly).

- 1 Files with formats that are not supported on the media server may not display in the list. See [Appendix on page 160](#) for the file formats that the media server supports.
- 2 If you are using media client software, you may need to install codecs on your computer. Since the media client software uses your computer's installed codecs, files do not play if the required codec is not installed on your computer.
- 3 The media client may not support the file's format.

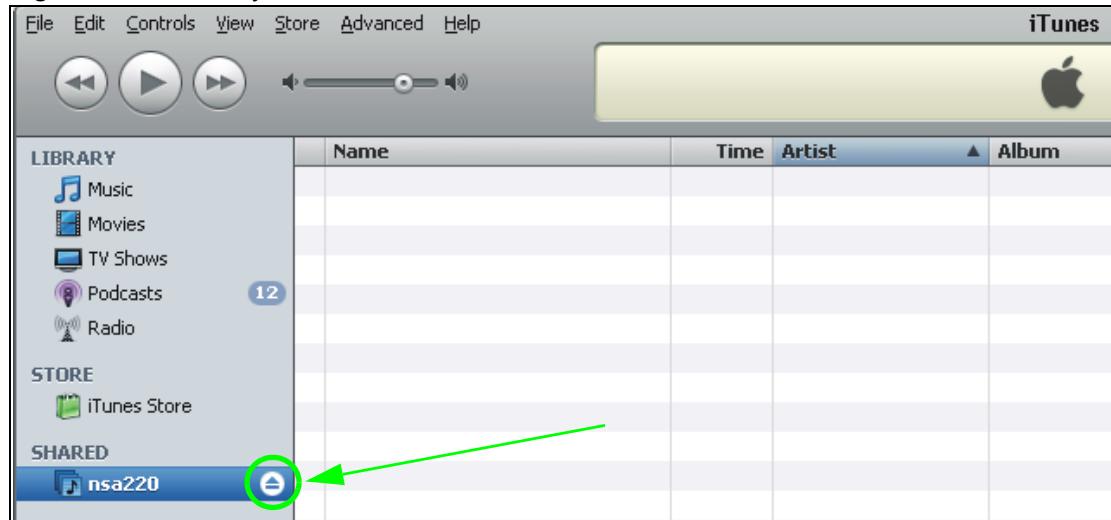


iTunes does not display the names of all the music or video files I just put on the NSA.

- 1 Make sure the files are a format supported by iTunes. See [Section 16.5 on page 160](#).

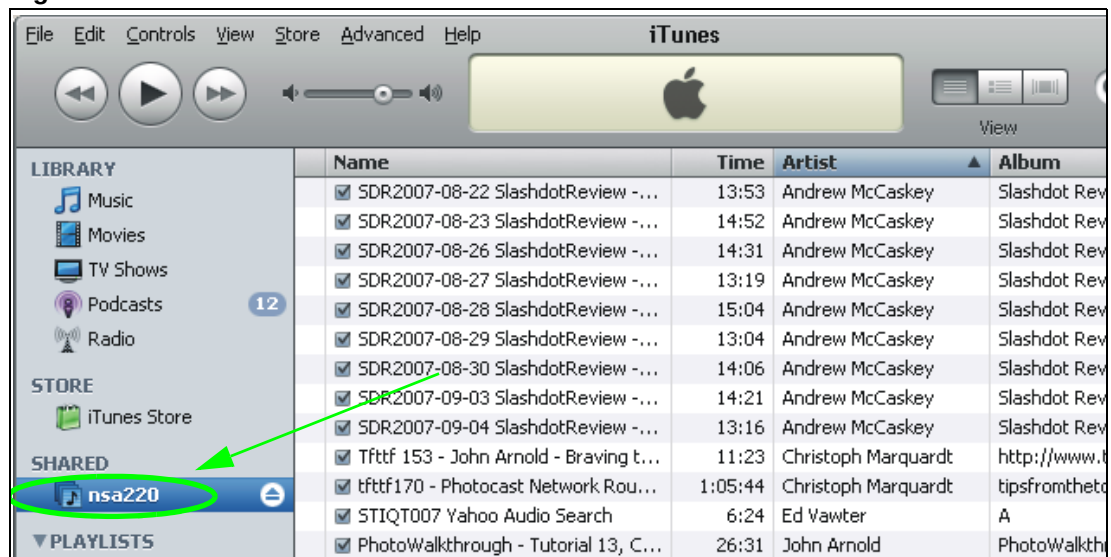
- 2 Go to **Applications > Media Server**. Make sure the share containing the music and video files is published and the iTunes server option is enabled.
- 3 If an iTunes client is connected, the NSA's iTunes server function scans the published media server folders for files every three minutes. Leave iTunes connected to the NSA for three minutes. Then use the NSA's eject button (as shown next) to disconnect.

Figure 98 iTunes Eject Button



- 4 Then click the NSA's link to reconnect.

Figure 99 iTunes Reconnected



- 5 Another way to get the NSA's iTunes server function to scan the published media server folders for files is to go to **Applications > Media Server** and disable and re-enable the iTunes server option. If you uploaded many files, it may take awhile for the NSA to find and list all of them. Then try reconnecting your iTunes client.



I cannot use iTunes to play files located on my NSA.

- 1 Make sure the files are a format supported by iTunes. See [Section 16.5 on page 160](#).
- 2 If you have files from the iTunes Store that use DRM, you need to use your Apple account ID and password to authorize other computers to play the files. Apple permits you to authorize up to five computers at a time. To authorize a computer, open iTunes and click **Store > Authorize Computer**.
- 3 If you are connecting through a NAT router, make sure that TCP port 3689 and UDP port 5353 are open for traffic on both the server and the client and all points in between (especially the NAT router). If your router includes a firewall, make sure it also allows TCP port 3689 and UDP port 5353 traffic.

15.8 Download Service and Broadcatching Functions



The download list or broadcatching items are missing after I removed a hard drive.

The NSA's download and broadcatching lists are stored on the system volume. If you have two JBOD volumes, it is possible to remove one and still use the other. However if you remove the system volume, you may lose the download and broadcasting lists. With two JBOD volumes, the hard disk that was installed first is usually the system volume.

15.9 Web Publishing



A web-published share cannot be accessed by web browser from the Internet.

- Make sure the person trying to access the share is using the correct web address (and port number if the NSA's web publishing feature is not using port 80). See [Section 8.9.2 on page 102](#) for details.
- Make sure the publishing feature is turned on and the share is in the list of published shares.
- Make sure the person trying to access the share is using Internet Explorer 6.0 (and later) or Firefox 1.07 (and later).
- You need to use a public address to access the NSA's web-published shares from the Internet. If your NSA uses a private IP address, use the public IP address of your Internet gateway (firewall) and configure NAT or port forwarding on your Internet gateway and possibly firewall rules in order to let people access the NSA's web-published shares from the Internet.
- Make sure the firewall's public IP address is static or that the firewall uses a Dynamic Domain Name (DDNS).

- Web publishing uses TCP protocol and the port number you specify. Make sure there is not another service using TCP protocol with the same port number. See [Appendix C on page 187](#) for a list of common services and their associated protocols and port numbers.
- If Firefox access to the share does not work, check that you did not set the Web publishing feature to use one of the following ports. (Firefox blocks these ports by default.)

Table 50 Ports Blocked By Default in Firefox

PORT	SERVICE	PORT	SERVICE	PORT	SERVICE
1	tcpmux	95	supdup	513	login
7	echo	101	hostriame	514	shell
9	discard	102	iso-tsap	515	printer
11	systat	103	gppitnp	526	tempo
13	daytime	104	acr-nema	530	courier
15	netstat	109	POP2	531	chat
17	qotd	110	POP3	532	netnews
19	chargen	111	sunrpc	540	uucp
20	ftp data	113	auth	556	remotefs
21	ftp control	115	sftp	563	NNTP+SSL
22	ssh	117	uucp-path	587	submission
23	telnet	119	NNTP	601	syslog
25	smtp	123	NTP	636	LDAP+SSL
37	time	135	loc-srv epmap	993	IMAP+SSL
42	name	139	netbios	995	POP3+SSL
43	nickname	143	IMAP2	2049	nfs
53	domain	179	BGP	4045	lockd
77	priv-rjs	389	LDAP	6000	X11
79	finger	465	SMTP+SSL		
87	ttylink	512	print exec		

- Make sure your ISP allows you to run a server and is not blocking the port number of the NSA's web publishing feature.

Product Specifications

See also [Chapter 1 on page 25](#) for a general overview of the key features.

16.1 Physical Features

These are the main external physical features.

Table 51 Physical Features

USB Ports	2 USB (version 2) ports. Copy files directly to the NSA from compatible USB devices like card readers, MP3 players, memory sticks, and digital cameras without using a computer. Expand the NSA's storage capacity with compatible USB devices (like hard drives).
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 username "admin"), and auto-IP address (DHCP client).

16.2 Firmware Features

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

Table 52 Firmware Features

DLNA Server	The NSA is a DLNA-certified media server that lets DLNA-compliant media clients play video, audio, and photo content files stored on the NSA.
DLNA Client Software	The DLNA-certified media client software (included on the CD) lets your Windows XP computers browse and play media files stored on the NSA.

Table 52 Firmware Features

RAID File Storage	Use RAID 0 if you want pure write speed and/or maximum capacity for your drives, and/or you have other means of protecting your data. Use RAID 1 if you have two drives and want to mirror primary data to the second drive. If one drive fails, replace it and then re-synchronize to recover all data.
User Passwords	Configure a password for an individual User to restrict access to the NSA.
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). The NSA is also a DLNA-certified media server that lets DLNA-compliant media clients play video, audio, and photo content files stored on the NSA.
HTTP	Access the NSA using a regular web connection (HTTP).
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.
Hard Disk Drive Power Saving	If a hard disk inside the NSA is idle for six minutes, the NSA puts it to sleep until you use it again.
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.
Memeo Autobackup	Memeo Autobackup is a tool for Windows users to create backups of data stored on their Windows computers to an NSA. This software is included on the CD.
Time and Date	Configure a time server and set a time zone for your NSA to show the correct times in logs.

16.3 Specification Tables

The NSA hardware specifications are shown in the following table.

Table 53 NSA Hardware Specifications

Default IP Address	DHCP client. If no DHCP server is found, the NSA uses Auto-IP to choose an IP address in the 169.254.X.X subnet (where X is a number from 1 to 254).
Default Subnet Mask	DHCP client by default. If no DHCP server is found, the subnet mask defaults to 255.255.255.0 (24 bits).
Default Username	admin
Default Password	1234
Dimensions	113 (W)*202 (D)*142 (H) mm
Weight	1.5 kg (without hard drives)
Drive Trays	Two

Table 53 NSA Hardware Specifications (continued)

Compatible Hard Disks ^A	SATA I and SATA 3.0 Gbit/s (Serial Advanced Technology Attachment) compatible hard drives.
Maximum Storage Capacity	1.5 TB (with two 750 GB hard drives installed) is the largest storage capacity that has been tested as of this writing. The NSA theoretically supports up to 17.6 TB per volume for a maximum possible capacity of 35.2 TB with two 17.6 TB drives configured as JBOD volumes.
Maximum Number of Folders Per Share	The NSA's media server function can detect up to 8,000 folders within a single published share. After 8,000 folders have been created, new folder contents will not be added to the media server's list. However you can still access the folders using Samba.
Ports	
Ethernet	One auto-negotiating, auto MDI/MDI-X 10/100/1000 ^B Mbps RJ-45 Ethernet port (1000BASE-T)
USB v2.0 Storage	Two ports on front panel. Windows: NTFS (read only), FAT32 and FAT16 Linux: ReiserFS, EXT2, and EXT3
LEDs	PWR, SYS, HDD1, HDD2, COPY, and LAN
Operating Temperature	0° C ~ 45° C
AC Input	Voltage: 100 - 240 V at 50 - 60 Hz Current: 3.42 A
Storage Temperature	-30° C ~ 60° C
Operating Humidity	20% ~ 90% RH (non-condensing)
Storage Humidity	20% ~ 95% RH (non-condensing)
Certifications	EMC: FCC Part15B, CE-EMC, VCCI, BSMI Safety: CSA International, EN60950-1

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

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

The NSA firmware specifications are shown in the following table

Table 54 NSA Firmware Specifications

File Storage System	JBOD, RAID 0, 1,
Network Protocols	TCP/IP, UDP/IP DHCP Client FTP HTTP
File Management	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

Table 54 NSA Firmware Specifications (continued)

Supported Clients	Windows 2000 Professional/Server Windows XP Home/Professional Windows 2003 Windows Vista Linux
Maximum Number of Users Allowed	100 ^A
Maximum Number of Concurrent FTP Sessions	20 ^A
Maximum Number of Concurrent CIFS Sessions	20 ^A
System Management	Remote Management via Web Configurator (HTTP) NSA Discovery Utility (NDU)
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.

The following list, which is not exhaustive, illustrates the standards and recommendations supported in the NSA.

Table 55 Supported Standards and Recommendations

CSS level 1	Cascading Style Sheets.
CSS level 2 revision 1 ("CSS 2.1")	Cascading Style Sheets.
DATETIME	"Date and Time Formats", W3C (World Wide Web Consortium) Note, M. Wolf and C. Wicksteed, 15 September 1997. Revised 27 August 1998. See http://www.w3.org/TR/1998/NOTE-datetime-19980827
DLNA v1 Server	The DLNA (Digital Living Network Alliance) group of companies works to make products compatible and able to work in a home network in order to make digital living easy and seamless. DLNA clients play files stored on DLNA servers.
ECMA-262	The original ECMAScript standard, also known as JavaScript.
ECMA-262 Edition 2	The ECMAScript standard's second revision; also ISO standard 16262.
ECMA-262 Edition 3	The ECMAScript standard's third revision; corresponds to JavaScript 1.5.
ECMA-357	ECMAScript for XML (E4X). See also the E4X errata.
HTML 3.2 Reference Specification	The HyperText Markup Language (HTML).
HTML 4.01 Specification	Defines the HyperText Markup Language (HTML), the publishing language of the World Wide Web.
ISO 3166-1	Country names (official short names in English) in alphabetical order as given in ISO 3166-1 and the corresponding ISO 3166-1-alpha-2 code elements.
ISO 639-2	Two-letter and three-letter language code sets.
MIMETYPES	IANA registered content types (MIME types). See the IANA web site (ftp://ftp.isi.edu/in-notes/iana/assignments/media-types/).

Table 55 Supported Standards and Recommendations

ISO 15740	Picture Transfer Protocol (PTP) from the International imaging Industry Association allows you to transfer pictures from digital cameras or other devices without needing additional device drivers.
RFC 1001	(STD-19) - Protocol standard for NetBIOS service on a TCP/UDP transport: Concepts and methods
RFC 1002	(STD-19) - Protocol standard for NetBIOS service on a TCP/UDP transport: Detailed specifications
RFC 1034	(STD-13) - Domain names - concepts and facilities
RFC 1035	(STD-13) - Domain names - implementation and specification
RFC 1305	Network Time Protocol (NTP version 3)
RFC 1415	FTP-FTAM Gateway Specification
RFC 1510	The Kerberos Network Authentication Service (V5)
RFC 1738	Uniform Resource Locators (URL)
RFC 1808	Relative Uniform Resource Locators
RFC 1945	The Hypertext Transfer Protocol (HTTP) 1.0.
RFC 2131	Dynamic Host Configuration Protocol
RFC 2396	Uniform Resource Identifier (URI)
RFC 2396	Uniform Resource Identifiers (URI): Generic Syntax
RFC 2616	Hypertext Transfer Protocol (HTTP) 1.1.
RFC 2854	History of HTML development, and lists the relevant W3C (World Wide Web Consortium) recommendations for the "text/html" MIME type.
RFC 3066, BCP 47 (Best Current Practice)	Language tags
RFC 3282	"Content-language:" headers.
RFC 3986	(STD-66) - Uniform Resource Identifier (URI): Generic Syntax
RFC 4120	The Kerberos Network Authentication Service (V5)
RFC 4248	The telnet URI Scheme
RFC 793	(STD-7) - Transmission Control Protocol
RFC 959	(STD-9) - File Transfer Protocol
SATA	SATA I and SATA 3.0 Gbit/s (Serial Advanced Technology Attachment) compatible hard drives. SATA 3.0 Gbit/s
UPnP	
USB 2.0	USB (Universal Serial Bus) version 2.0 allows for interfacing devices with data transfers rates of up to 480 Mbps.
XHTML 1.0	Extensible HyperText Markup Language (Second Edition)
XHTML 1.1	Module-based XHTML

16.4 Supported Media Server Content Formats

The following describes the details about the files that the NSA media server can publish.

Table 56 Supported Media Server Content Formats

CATEGORY	FILE TYPE	EXTENSION
Video	MPEG-1/MPEG-2	m2p, mpe, mpeg, mpg, vob
	Windows Media Video	asf, wmv
	AVI	avi
	DivX	divx , avi
	DVR-MS	dvr-ms
Music	MP3	mp3
	MPEG-4 AAC	m4a
	Ogg Vorbis	ogg
	WAVE	wav
	Windows Media Audio	wma
	M3U (Playlist)	m3u
Photo	Bitmap	bmp
	GIF*	gif
	JPEG	jpeg, jpg
	PNG	png
	TIFF*	tiff, tif

* Files may be converted to JPEG to allow play back on client applications that do not support the original file formats.



Not all published file types can be viewed by all client applications.

16.5 Supported iTunes Server Content Formats

At the time of writing, the NSA's iTunes server can publish AAC (MPEG-4), MP3, AIFF, WAV, and Apple Lossless files.

16.6 Power Consumption

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



This table is a laboratory test of NSA 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	58.14W	31.2W	23.9W
120V/60Hz	57.76W	29.3W	25.1W
100V/60Hz	58.14W	30.0W	25.1W

16.7 Compatible Hard Disks

The following hard disks have been tested and are known to be compatible with the NSA.

Table 58 Compatible Hard Disks

BRAND	MODEL	CAPACITY	INTERFACE
Western Digital	WD1600JS	160 GB	SATA 3.0 Gbit/s
Seagate	ST3200827AS	200 GB	SATA 3.0 Gbit/s
Seagate	ST3320820AS	320 GB	SATA 3.0 Gbit/s
Seagate	ST3500830AS	500 GB	SATA 3.0 Gbit/s
Western Digital	WD800	80 GB	SATA I
Seagate	ST3160023AS	160 GB	SATA I
Hitachi	HDS722516VLSA80	160 GB	SATA I
Maxtor	6L120M0	120 GB	SATA I
Hitachi	HCS725032VLA380	320GB	SATA 3.0 Gbit/s
Hitachi	HCS725025VLA380	250GB	SATA 3.0 Gbit/s
Seagate	ST3160815AS	160GB	SATA 3.0 Gbit/s
Seagate	ST3750840AS	750GB	SATA 3.0 Gbit/s
Seagate	ST3160215SCE	160GB	SATA 3.0 Gbit/s

PART VI

Appendices and Index

[Setting up Your Computer's IP Address \(165\)](#)

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[Legal Information \(221\)](#)

[Customer Support \(223\)](#)

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Setting up Your Computer's IP Address

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

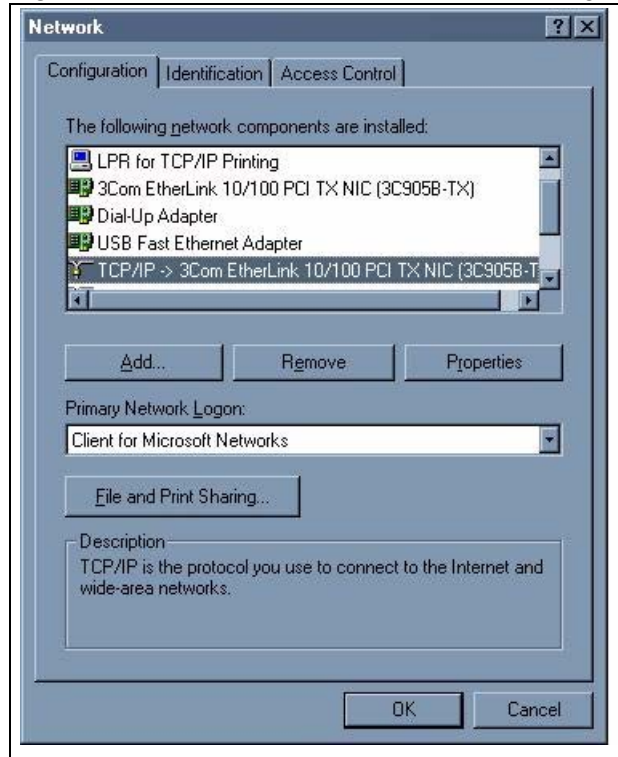
Windows 95/98/Me/NT/2000/XP, Macintosh OS 7 and later operating systems and all versions of UNIX/LINUX include the software components you need to install and use TCP/IP on your computer. Windows 3.1 requires the purchase of a third-party TCP/IP application package.

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 100 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**.

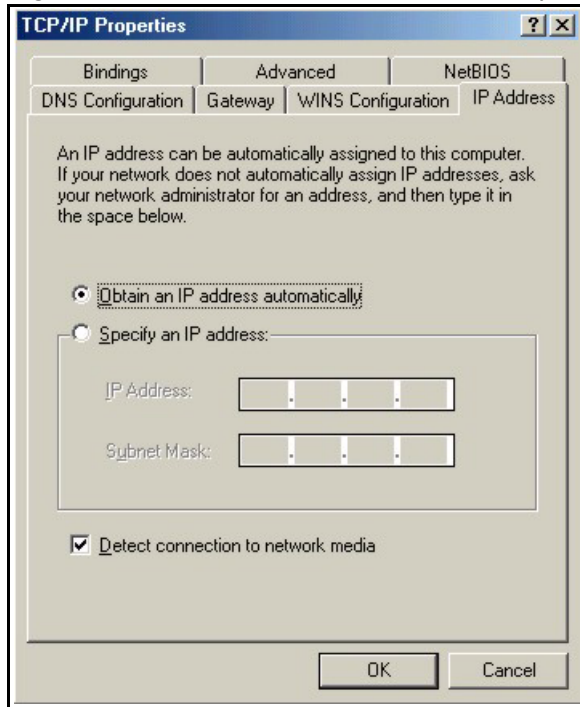
If you need Client for Microsoft Networks:

- 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

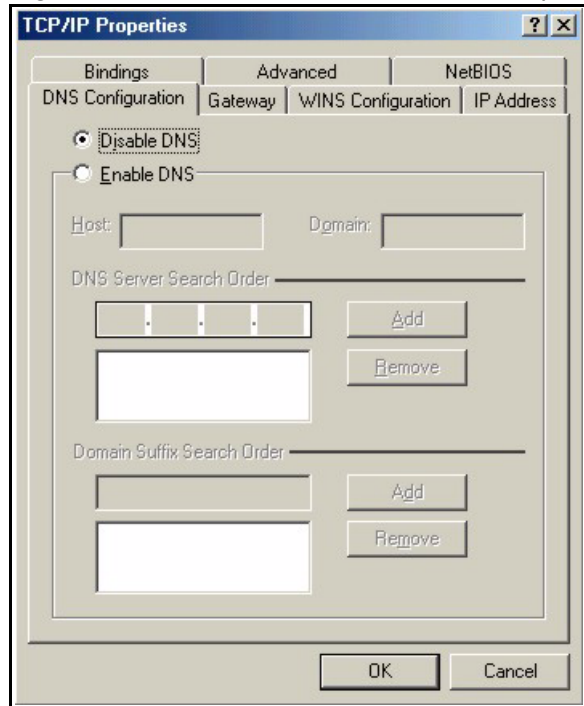
- 1 In the **Network** window **Configuration** tab, select your network adapter's TCP/IP entry and click **Properties**
- 2 Click the **IP Address** tab.
 - If your IP address is dynamic, select **Obtain an IP address automatically**.
 - If you have a static IP address, select **Specify an IP address**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

Figure 101 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 102 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.

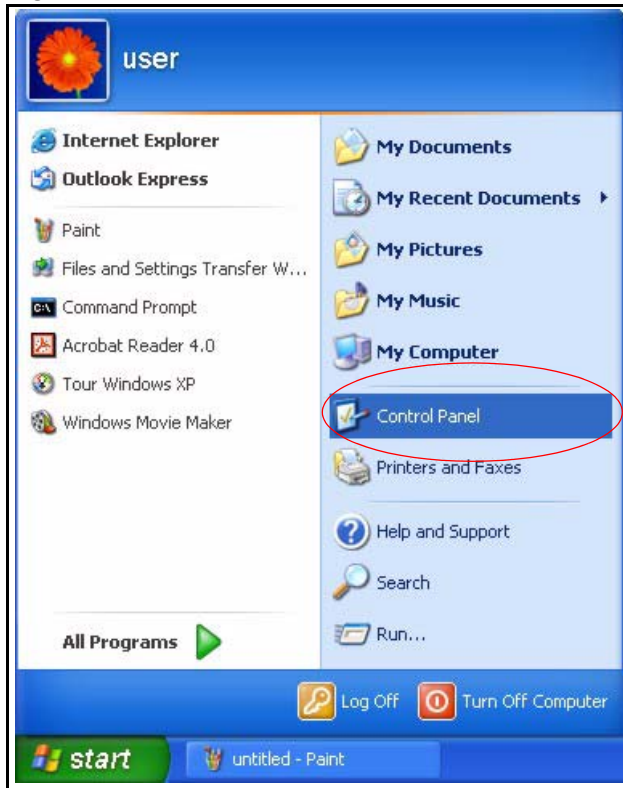
Verifying Settings

- 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.

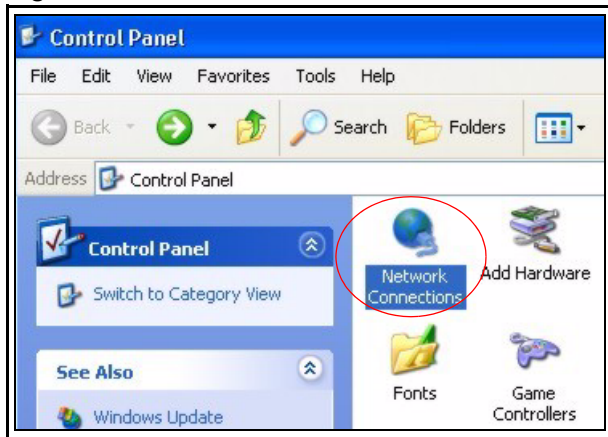
Windows 2000/NT/XP

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

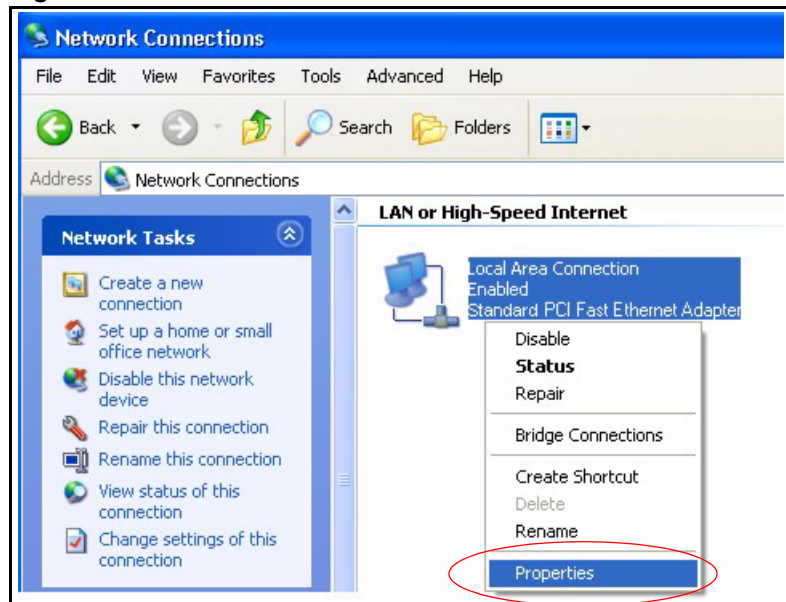
- 1 Click **start** (**Start** in Windows 2000/NT), **Settings**, **Control Panel**.

Figure 103 Windows XP: Start Menu

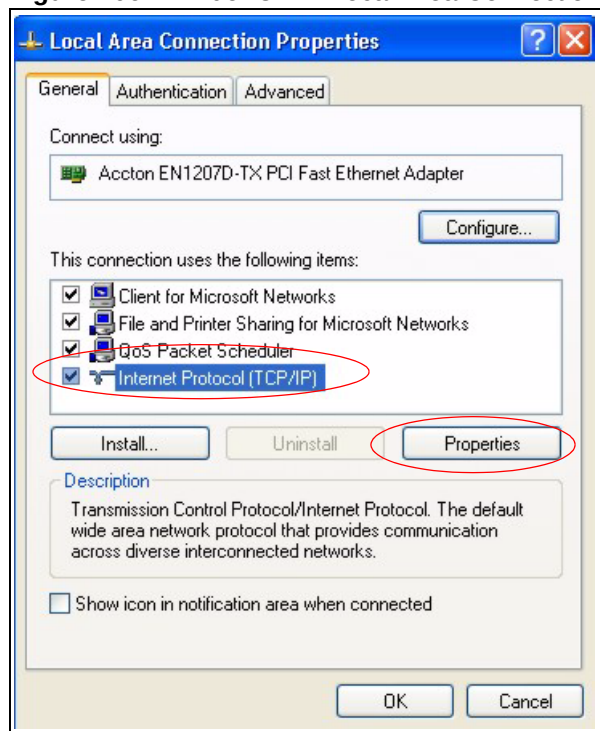
- 2 In the **Control Panel**, double-click **Network Connections** (**Network and Dial-up Connections** in Windows 2000/NT).

Figure 104 Windows XP: Control Panel

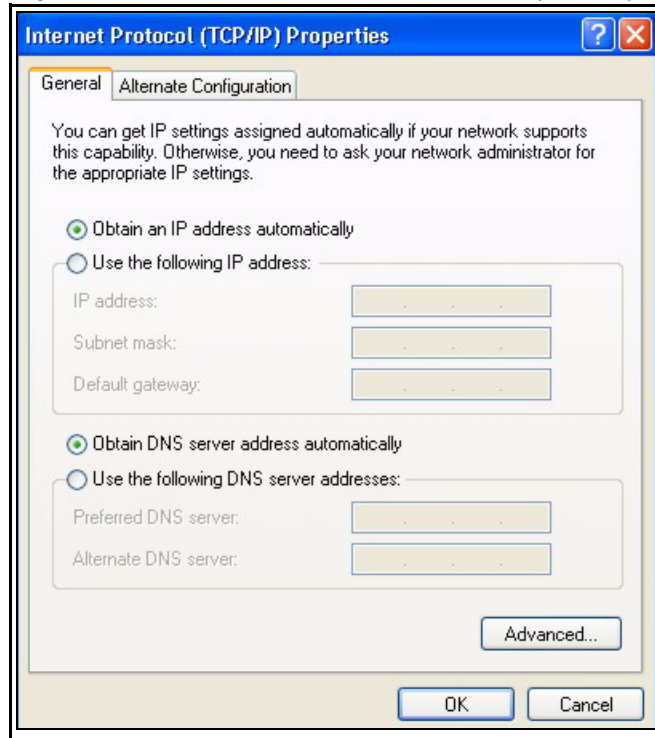
- 3 Right-click **Local Area Connection** and then click **Properties**.

Figure 105 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 106 Windows XP: Local Area Connection Properties

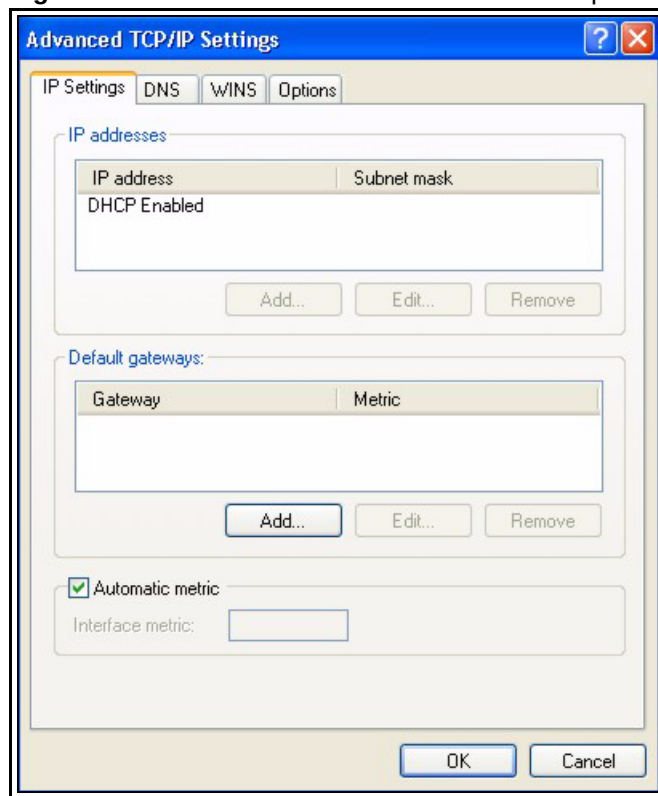
- 5** The **Internet Protocol TCP/IP Properties** window opens (the **General** tab in Windows XP).
- If you have a dynamic IP address click **Obtain an IP address automatically**.
 - If you have a static IP address click **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields.
 - Click **Advanced**.

Figure 107 Windows XP: Internet Protocol (TCP/IP) Properties

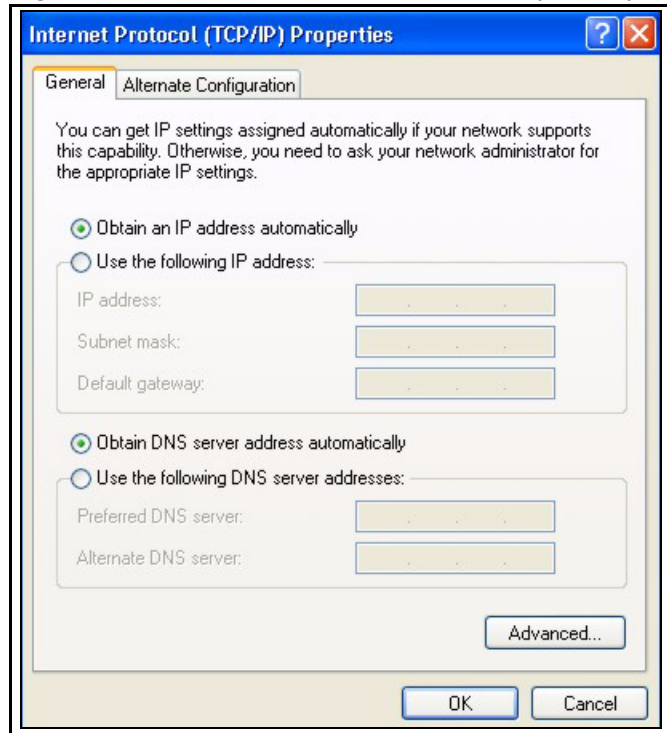
- 6 If you do not know your gateway's IP address, remove any previously installed gateways in the **IP Settings** tab and click **OK**.

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 108 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 109 Windows XP: Internet Protocol (TCP/IP) Properties

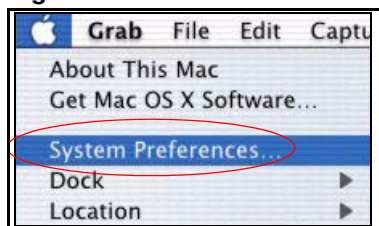
- 8** Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.
- 9** Click **Close** (**OK** in Windows 2000/NT) to close the **Local Area Connection Properties** window.
- 10** Close the **Network Connections** window (**Network and Dial-up Connections** in Windows 2000/NT).
- 11** Restart your computer (if prompted).

Verifying Settings

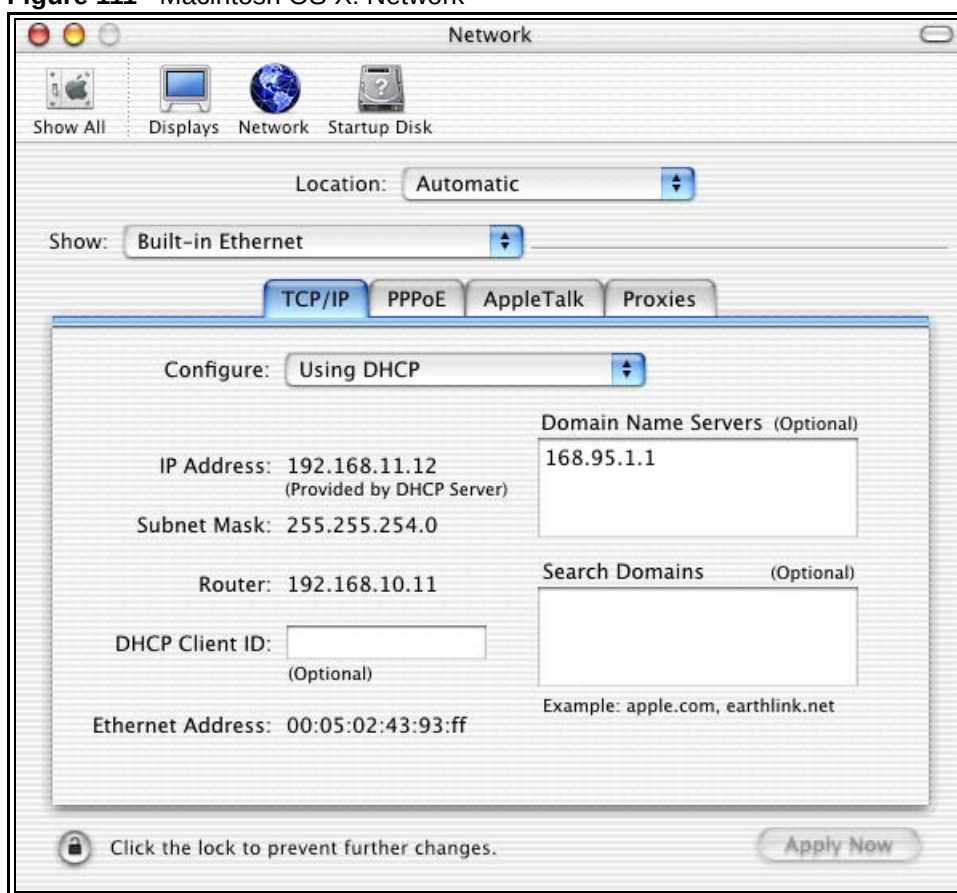
- 1** Click **Start**, **All Programs**, **Accessories** and then **Command Prompt**.
- 2** In the **Command Prompt** window, type "ipconfig" and then press [ENTER]. You can also open **Network Connections**, right-click a network connection, click **Status** and then click the **Support** tab.

Macintosh OS X

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

Figure 110 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 111 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.



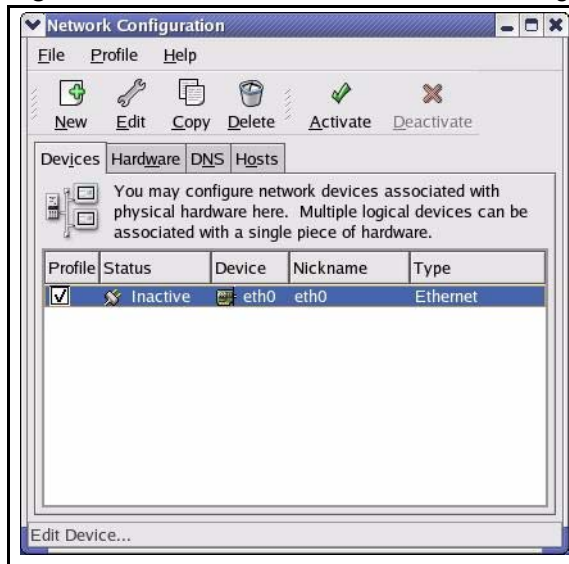
Make sure you are logged in as the root administrator.

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**.

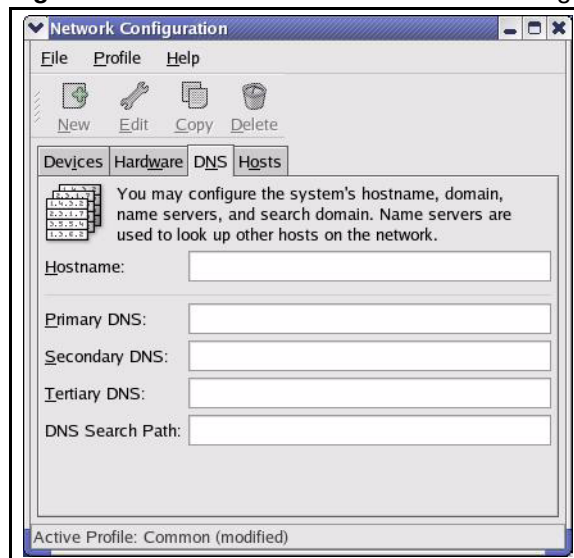
Figure 112 Red Hat 9.0: KDE: Network Configuration: Devices



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

Figure 113 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 114 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 115 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 116 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 117 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 118 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 119 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 120 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]#
```

Pop-up Windows, JavaScripts and Java Permissions

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

- Web browser pop-up windows from your device.
- JavaScripts (enabled by default).
- Java permissions (enabled by default).



Internet Explorer 6 screens are used here. Screens for other Internet Explorer versions may vary.

Internet Explorer Pop-up Blockers

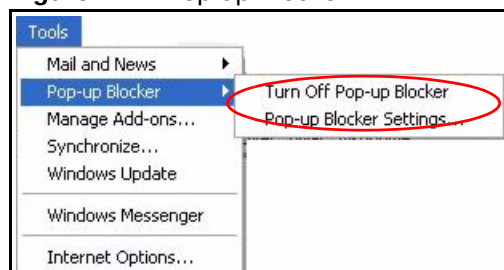
You may have to disable pop-up blocking to log into your device.

Either disable pop-up blocking (enabled by default in Windows XP SP (Service Pack) 2) or allow pop-up blocking and create an exception for your device's IP address.

Disable Pop-up Blockers

- 1 In Internet Explorer, select **Tools, Pop-up Blocker** and then select **Turn Off Pop-up Blocker**.

Figure 121 Pop-up Blocker

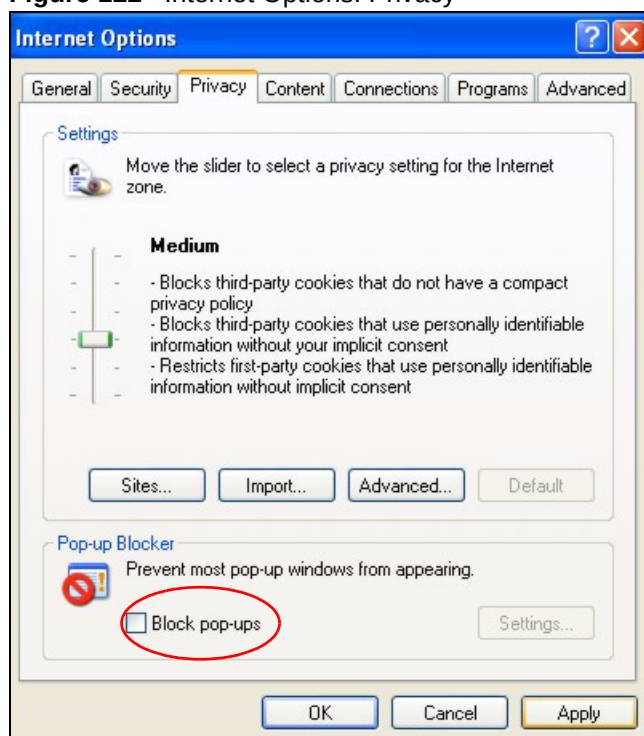


You can also check if pop-up blocking is disabled in the **Pop-up Blocker** section in the **Privacy** tab.

- 1 In Internet Explorer, select **Tools, Internet Options, Privacy**.

- 2 Clear the **Block pop-ups** check box in the **Pop-up Blocker** section of the screen. This disables any web pop-up blockers you may have enabled.

Figure 122 Internet Options: Privacy

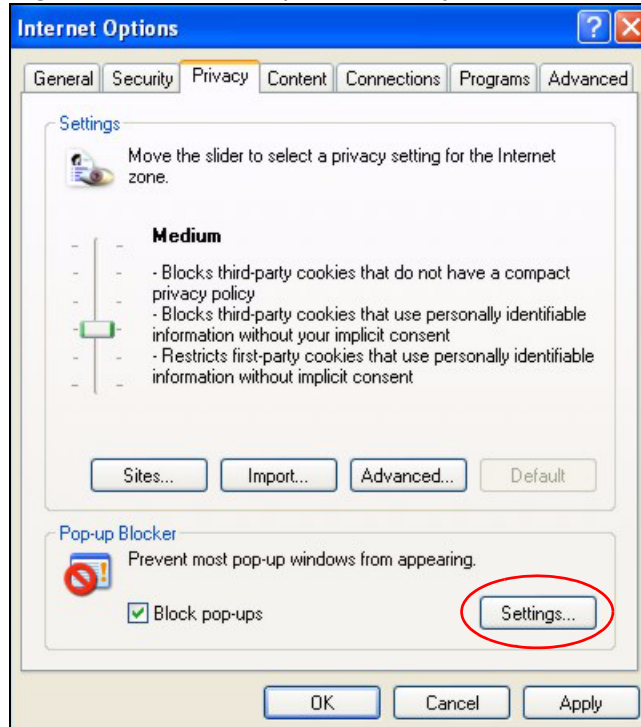


- 3 Click **Apply** to save this setting.

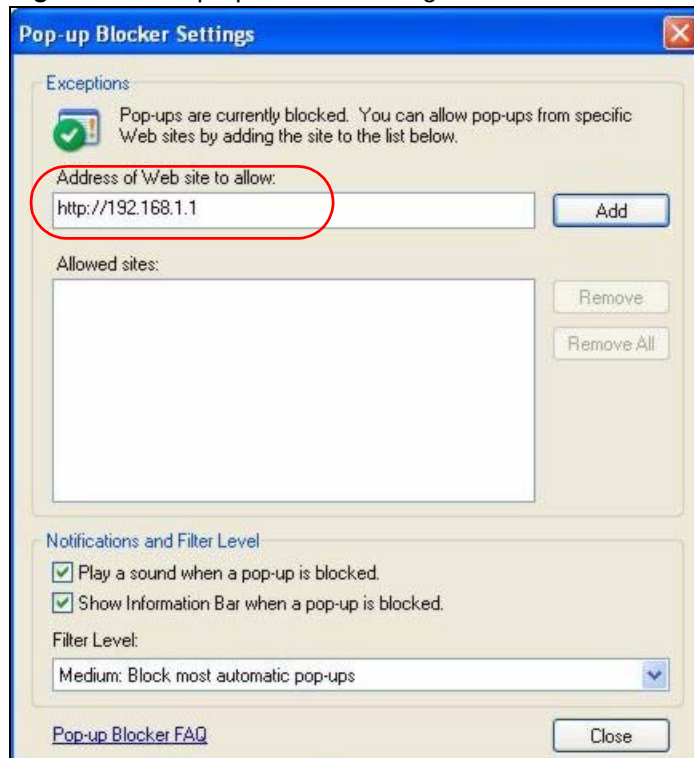
Enable Pop-up Blockers with Exceptions

Alternatively, if you only want to allow pop-up windows from your device, see the following steps.

- 1 In Internet Explorer, select **Tools, Internet Options** and then the **Privacy** tab.
- 2 Select **Settings...** to open the **Pop-up Blocker Settings** screen.

Figure 123 Internet Options: Privacy

- 3 Type the IP address of your device (the web page that you do not want to have blocked) with the prefix "http://". For example, http://192.168.167.1.
- 4 Click **Add** to move the IP address to the list of **Allowed sites**.

Figure 124 Pop-up Blocker Settings

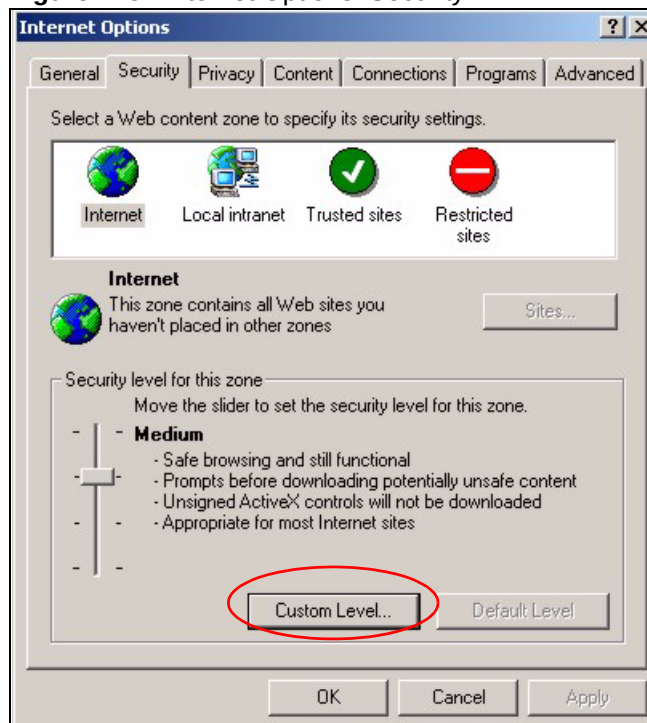
- 5 Click **Close** to return to the **Privacy** screen.
- 6 Click **Apply** to save this setting.

JavaScripts

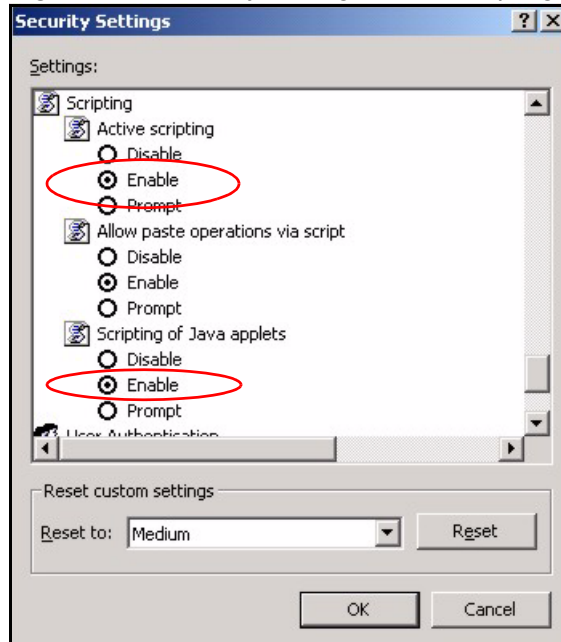
If pages of the web configurator do not display properly in Internet Explorer, check that JavaScripts are allowed.

- 1 In Internet Explorer, click **Tools**, **Internet Options** and then the **Security** tab.

Figure 125 Internet Options: Security

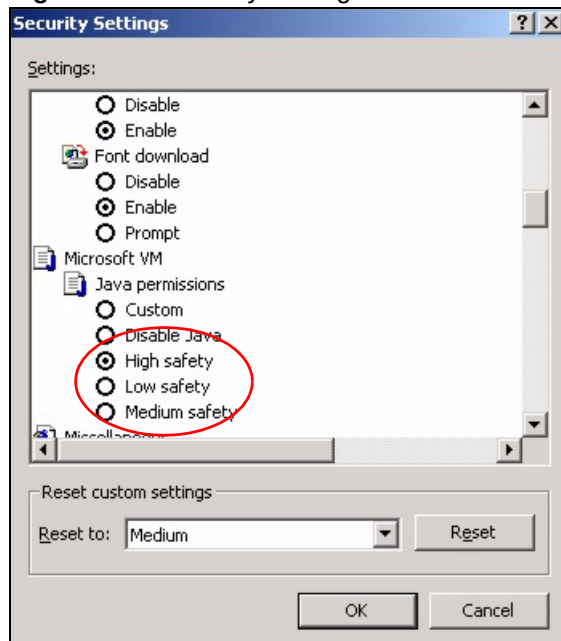


- 2 Click the **Custom Level...** button.
- 3 Scroll down to **Scripting**.
- 4 Under **Active scripting** make sure that **Enable** is selected (the default).
- 5 Under **Scripting of Java applets** make sure that **Enable** is selected (the default).
- 6 Click **OK** to close the window.

Figure 126 Security Settings - Java Scripting

Java Permissions

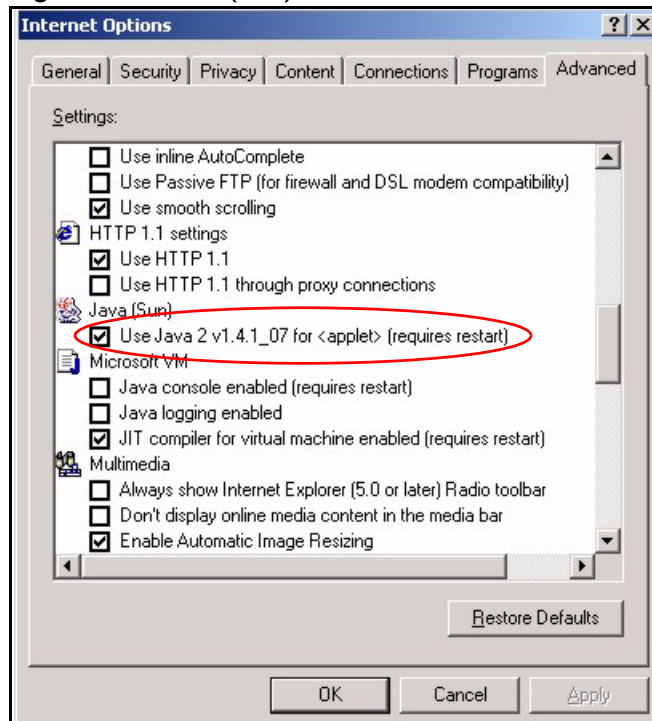
- 1 From Internet Explorer, click **Tools, Internet Options** and then the **Security** tab.
- 2 Click the **Custom Level...** button.
- 3 Scroll down to **Microsoft VM**.
- 4 Under **Java permissions** make sure that a safety level is selected.
- 5 Click **OK** to close the window.

Figure 127 Security Settings - Java

JAVA (Sun)

- 1 From Internet Explorer, click **Tools, Internet Options** and then the **Advanced** tab.
- 2 Make sure that **Use Java 2 for <applet>** under **Java (Sun)** is selected.
- 3 Click **OK** to close the window.

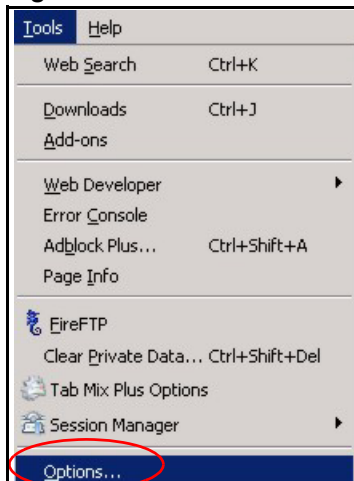
Figure 128 Java (Sun)



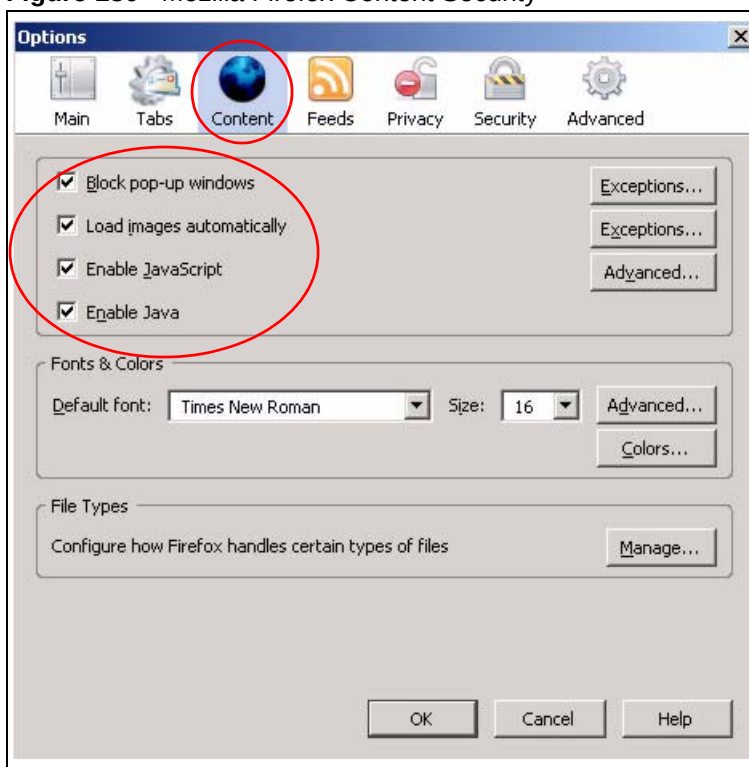
Mozilla Firefox

Mozilla Firefox 2.0 screens are used here. Screens for other versions may vary.

You can enable Java, JavaScripts and pop-ups in one screen. Click **Tools**, then click **Options** in the screen that appears.

Figure 129 Mozilla Firefox: Tools > Options

Click **Content** to show the screen below. Select the check boxes as shown in the following screen.

Figure 130 Mozilla Firefox Content Security

Common Services

The following table lists some commonly-used services and their associated protocols and port numbers. For a comprehensive list of port numbers, ICMP type/code numbers and services, visit the IANA (Internet Assigned Number Authority) web site.

- **Name:** This is a short, descriptive name for the service. You can use this one or create a different one, if you like.
- **Protocol:** This is the type of IP protocol used by the service. If this is **TCP/UDP**, then the service uses the same port number with TCP and UDP. If this is **USER-DEFINED**, the **Port(s)** is the IP protocol number, not the port number.
- **Port(s):** This value depends on the **Protocol**. Please refer to RFC 1700 for further information about port numbers.
 - If the **Protocol** is **TCP**, **UDP**, or **TCP/UDP**, this is the IP port number.
 - If the **Protocol** is **USER**, this is the IP protocol number.
- **Description:** This is a brief explanation of the applications that use this service or the situations in which this service is used.

Table 59 Commonly Used Services

NAME	PROTOCOL	PORT(S)	DESCRIPTION
AH (IPSEC_TUNNEL)	User-Defined	51	The IPSEC AH (Authentication Header) tunneling protocol uses this service.
AIM/New-ICQ	TCP	5190	AOL's Internet Messenger service. It is also used as a listening port by ICQ.
AUTH	TCP	113	Authentication protocol used by some servers.
BGP	TCP	179	Border Gateway Protocol.
BOOTP_CLIENT	UDP	68	DHCP Client.
BOOTP_SERVER	UDP	67	DHCP Server.
CU-SEEME	TCP UDP	7648 24032	A popular videoconferencing solution from White Pines Software.
DNS	TCP/UDP	53	Domain Name Server, a service that matches web names (for example www.zyxel.com) to IP numbers.
ESP (IPSEC_TUNNEL)	User-Defined	50	The IPSEC ESP (Encapsulation Security Protocol) tunneling protocol uses this service.
FINGER	TCP	79	Finger is a UNIX or Internet related command that can be used to find out if a user is logged on.

Table 59 Commonly Used Services (continued)

NAME	PROTOCOL	PORT(S)	DESCRIPTION
FTP	TCP TCP	20 21	File Transfer Program, a program to enable fast transfer of files, including large files that may not be possible by e-mail.
H.323	TCP	1720	NetMeeting uses this protocol.
HTTP	TCP	80	Hyper Text Transfer Protocol - a client/server protocol for the world wide web.
HTTPS	TCP	443	HTTPS is a secured http session often used in e-commerce.
ICMP	User-Defined	1	Internet Control Message Protocol is often used for diagnostic or routing purposes.
ICQ	UDP	4000	This is a popular Internet chat program.
IGMP (MULTICAST)	User-Defined	2	Internet Group Management Protocol is used when sending packets to a specific group of hosts.
IKE	UDP	500	The Internet Key Exchange algorithm is used for key distribution and management.
IRC	TCP/UDP	6667	This is another popular Internet chat program.
MSN Messenger	TCP	1863	Microsoft Networks' messenger service uses this protocol.
NEW-ICQ	TCP	5190	An Internet chat program.
NEWS	TCP	144	A protocol for news groups.
NFS	UDP	2049	Network File System - NFS is a client/server distributed file service that provides transparent file sharing for network environments.
NNTP	TCP	119	Network News Transport Protocol is the delivery mechanism for the USENET newsgroup service.
PING	User-Defined	1	Packet Internet Groper is a protocol that sends out ICMP echo requests to test whether or not a remote host is reachable.
POP3	TCP	110	Post Office Protocol version 3 lets a client computer get e-mail from a POP3 server through a temporary connection (TCP/IP or other).
PPTP	TCP	1723	Point-to-Point Tunneling Protocol enables secure transfer of data over public networks. This is the control channel.
PPTP_TUNNEL (GRE)	User-Defined	47	PPTP (Point-to-Point Tunneling Protocol) enables secure transfer of data over public networks. This is the data channel.
RCMD	TCP	512	Remote Command Service.
REAL_AUDIO	TCP	7070	A streaming audio service that enables real time sound over the web.
REXEC	TCP	514	Remote Execution Daemon.
RLOGIN	TCP	513	Remote Login.
RTELNET	TCP	107	Remote Telnet.

Table 59 Commonly Used Services (continued)

NAME	PROTOCOL	PORT(S)	DESCRIPTION
RTSP	TCP/UDP	554	The Real Time Streaming (media control) Protocol (RTSP) is a remote control for multimedia on the Internet.
SFTP	TCP	115	Simple File Transfer Protocol.
SMTP	TCP	25	Simple Mail Transfer Protocol is the message-exchange standard for the Internet. SMTP enables you to move messages from one e-mail server to another.
SNMP	TCP/UDP	161	Simple Network Management Program.
SNMP-TRAPS	TCP/UDP	162	Traps for use with the SNMP (RFC:1215).
SQL-NET	TCP	1521	Structured Query Language is an interface to access data on many different types of database systems, including mainframes, midrange systems, UNIX systems and network servers.
SSH	TCP/UDP	22	Secure Shell Remote Login Program.
STRM WORKS	UDP	1558	Stream Works Protocol.
SYSLOG	UDP	514	Syslog allows you to send system logs to a UNIX server.
TACACS	UDP	49	Login Host Protocol used for (Terminal Access Controller Access Control System).
TELNET	TCP	23	Telnet is the login and terminal emulation protocol common on the Internet and in UNIX environments. It operates over TCP/IP networks. Its primary function is to allow users to log into remote host systems.
TFTP	UDP	69	Trivial File Transfer Protocol is an Internet file transfer protocol similar to FTP, but uses the UDP (User Datagram Protocol) rather than TCP (Transmission Control Protocol).
VDOLIVE	TCP	7000	Another videoconferencing solution.

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