NSA-220

Network Storage Appliance

User's Guide

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ZyXEL

www.zyxel.com

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.

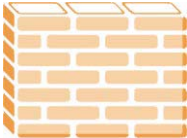**Warnings tell you about things that could harm you or your device.**

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.

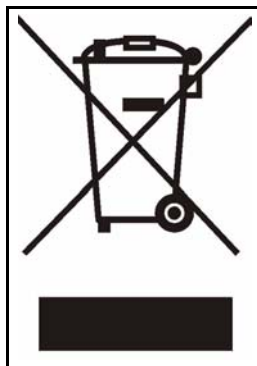| NSA	Computer	Notebook computer
Server	Television	Firewall
Router	Switch	

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

23

Getting to Know Your NSA

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

1.1 NSA Overview

The NSA (Network Storage Appliance) provides file sharing and data backup for your home network.

- Use SATA (Serial Advanced Technology Attachment) I or 3.0 Gbit/s hard disks.
- RAID (Redundant Array of Independent Disks) protects your data even if a hard disk fails.
- You can expand the NSA's storage capacity with USB devices (like hard drives).
- 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.
- The NSA is a media server. Media clients can play the NSA's video, music and photo files. Use the included media client software to make your computers into media clients. You can also use hardware-based media clients like the DMA-1000.
- The NSA has a 10/100/1000 Mbps Ethernet port for connecting to your network.

Figure 1   Example of the NSA in a Home Network
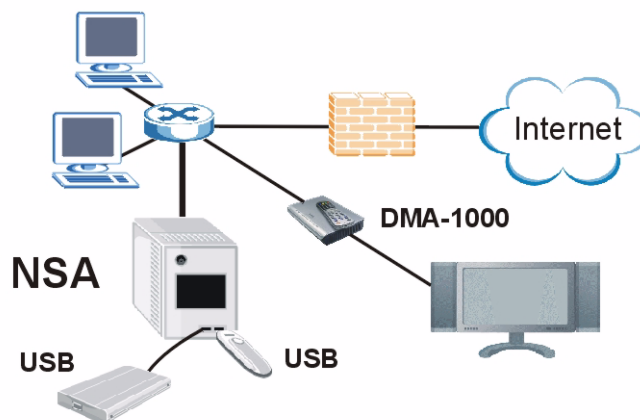
Above is the NSA in a home network. Users back up and share data on the NSA. The DMA-1000 plays the NSA's media files on the TV. A USB hard drive provides extra storage space and files are copied directly from the USB memory stick to the NSA.

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

✍️ See the product specifications appendix 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 10/100Mbps Ethernet connection.
		Blinking	The 100M LAN is sending or receiving packets.
		Off	The NSA does not have a 10/100Mbps Ethernet connection.
	Yellow	On	The NSA has a successful 1000Mbps Ethernet connection.
		Blinking	The 1000M LAN is sending or receiving packets.
		Off	The NSA does not have a 1000Mbps 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.

2

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 via 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 to see how to install and run the NDU.

Figure 4 NDU Main Screen
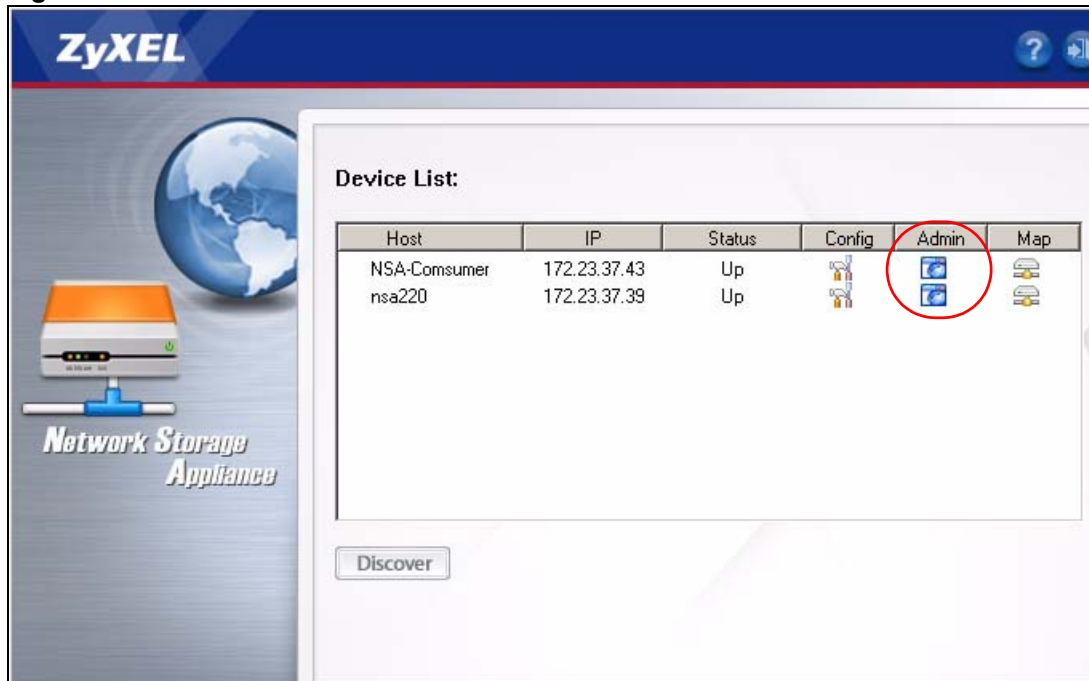
From the NDU main page click an icon under **Admin** to see the web configurator screen login screen.

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
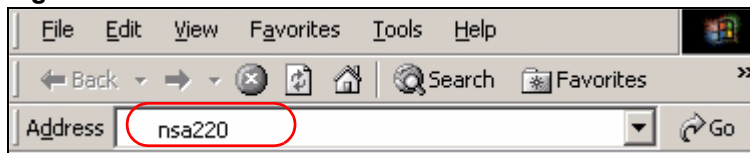
2.3 Login

The default username and password are 'admin' and '1234' respectively. Enter your username and password, then click **Login**. See Chapter 9 on page 85 for how to create other user accounts.

Figure 6   NSA Login Screen

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

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.
	Click the **Help** icon to open a web help page specific to the screen you are currently configuring.
	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	Click this tab to go to screens where you can manage advanced configurations. You will have to log in as the administrator if you are not already logged in as the administrator.

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 **MyNSA** 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
	This share icon represents a share on a volume on the internal hard drives (to which you have access). 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 share icon 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).
Manage It	Click this button to see and configure the management details for a share.

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.

Figure 10 My NSA Share Browsing
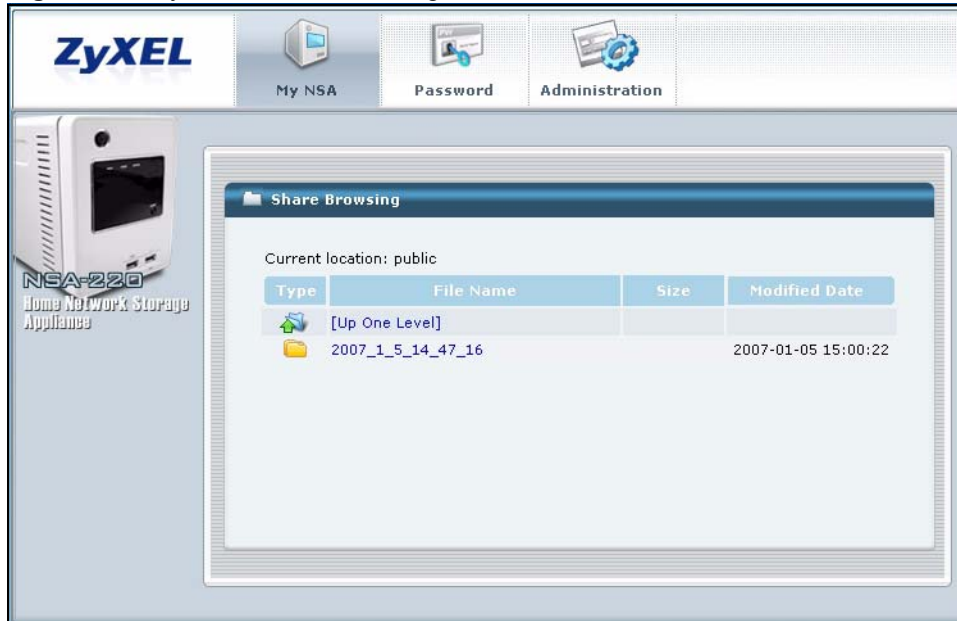
The following table describes the labels in this screen.

Table 4 My NSA Share Browsing

LABEL	DESCRIPTION
Current location	This is the name of the share and folder path that you are in.
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.
File 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. 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).

2.5.2 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 11 My NSA Management Overview
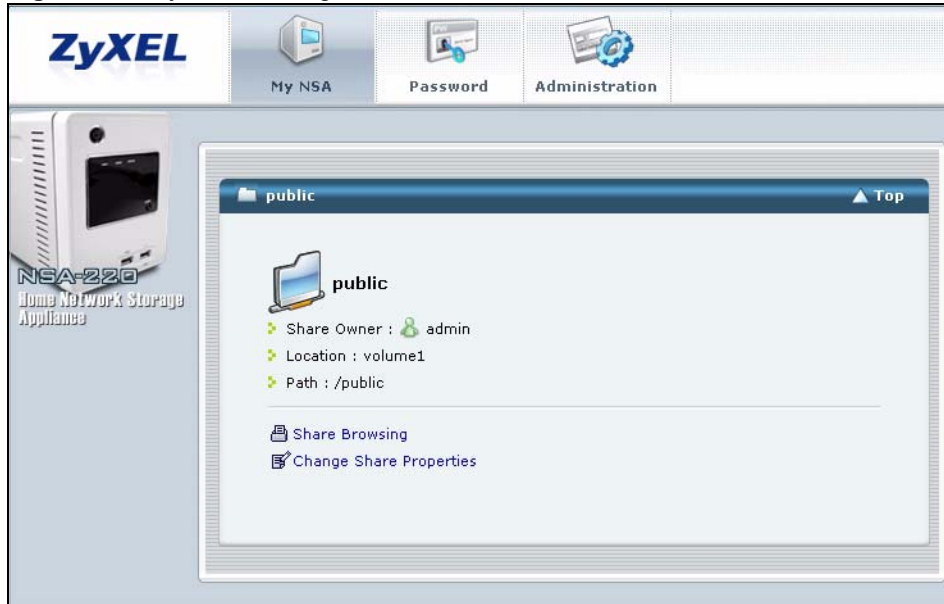
The following table describes the labels in the this screen.

Table 5 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.

2.5.3 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 12   My NSA Change Share Properties

The following table describes the labels in the this screen.

Table 6   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 2.5.4 on page 37 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.
Share Access	Select who can access the files in the share and how much access they are to be given. 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.
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 6 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.
Publish this share to Media Server	Select this option to make the share's files available to media clients.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

2.5.4 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.

2.5.5 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

2.5.6 Password Screen

Click **Password** to open the following screen.

Use this screen to change your password. Enter a new password and confirm it by re-entering it.

Figure 13   Password

The following table describes the labels in this screen.

Table 7   Password

LABEL	DESCRIPTION
Change Password	
New Password	Create a new password for this 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

Click **Administration** in the user-level screens to open the advanced administration screens. If you are not logged in using an administrator account, you will need to log in again.

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

Figure 14 Status
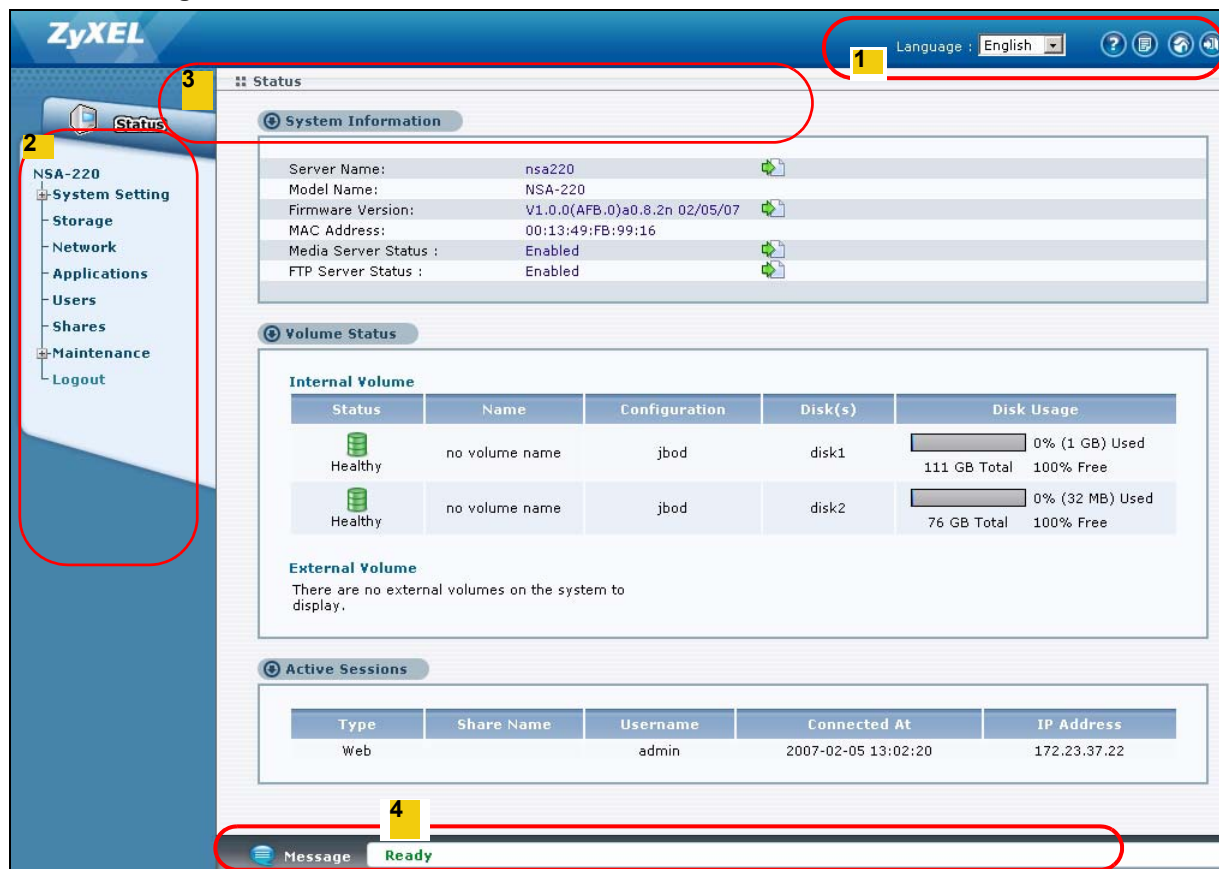
2.6.1 Global Administration Icons

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 8 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 15   Navigation Panel Links
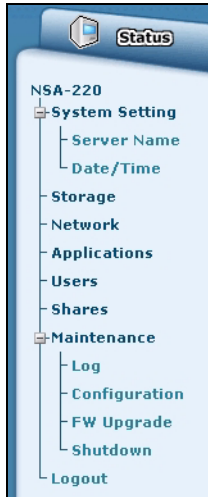
The following table describes the navigation panel screens.

Table 9   Screens Summary

LINK	TAB	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	Use this screen to specify the NSA's server name and workgroup name.
Date/Time	Date & Time	Use this screen to chose a time zone and/or allow the NSA to synchronize with a time server.
Storage	Storage	Use this screen to view volume and disk information. You can also 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	Network Config	Use this screen to assign the NSA a dynamic or static IP address and DNS information.
Applications	FTP	Use this screen to enable FTP file transfer to/from the NSA, set the number of FTP connections allowed and an FTP idle timeout.
	Media Server	Use this screen to enable or disable the media server and select which shares to publish (share with medial clients).
Users	Users	Use this screen to view, create and edit administrator and user accounts to let people use the NSA.
Shares	Shares	Use this screen to view, create and edit shares. Shares are shared folders to which you can allow specific users read/write access rights.
Maintenance	Log	Use this screen to view the NSA's logs.
	Configuration	Use this screen to back up and/or restore the NSA configuration file.
	FW Upgrade	Use this screen to upload new firmware to your NSA.
	Shutdown	Use this screen to 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.

Right after you log in, the **Status** screen is displayed. See 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 10   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.
	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** volume. Click the **Repair** icon to fix a degraded RAID volume after you have replaced the faulty disk.
	This icon represents a **Down** volume. Click the **Initialize** icon to create a volume.
	This icon represents a **Healthy** disk.
	Click the **Scan Disk** icon to scan a hard disk 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.
	Click the **Repair** icon to resychronize a RAID volume after you replace a faulty hard disk.

Tutorials

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

3.1 Tutorials Introduction

The following tutorials cover how you use 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.

3.2 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) and click **Administration** to go to the configuration screens.

Figure 16   My NSA

2 Click **Users** to open the **Users** screen. Then click **Create a New Account.**

Figure 17 Users
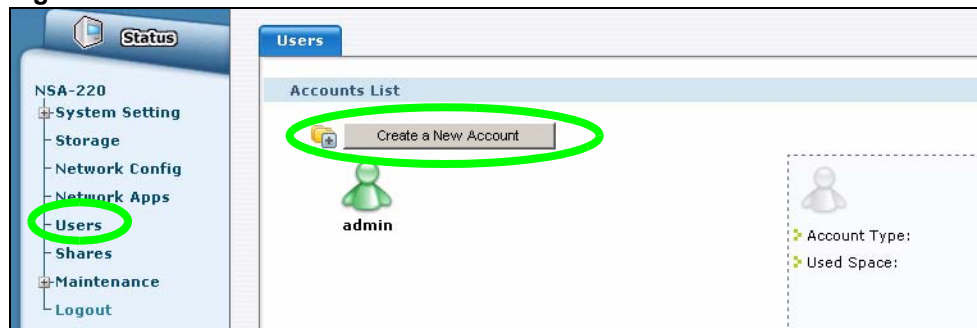
3 Configure the screen as follows and write down the username and password to give to Jimmy. If the username and password are the same as Jimmy's Windows login, Jimmy will not need to enter a username and password when he logs into his share from his computer. Set the **Account Type** to **User** so Jimmy doesn't get to configure the whole NSA. Click **Apply** to create the account.

Figure 18 Users > Create Example

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

Figure 19 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 3.3 on page 44 to create shares for Jimmy and Kevin.

3.3 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 > Create a New Share**.

Figure 20 Shares

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

Figure 21 Shares > Create Example

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

Figure 22 Shares > Create > Browse > Create Folder Example

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

Figure 23   Shares > Create > Browse > New Folder Example
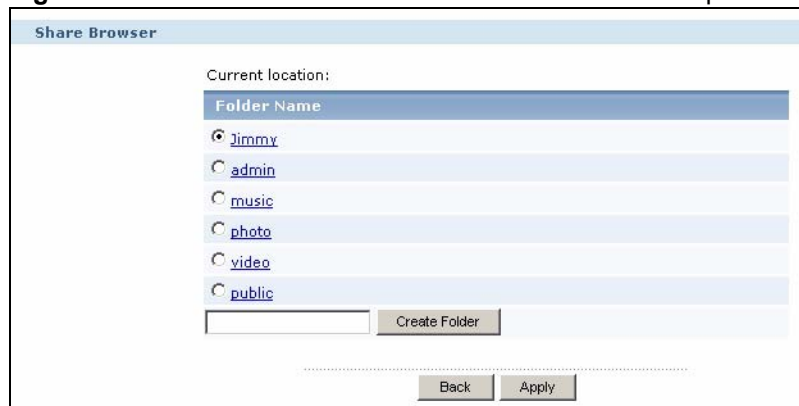
5 Configure the screen as follows and click **Apply**.

Figure 24   Shares > Create Example
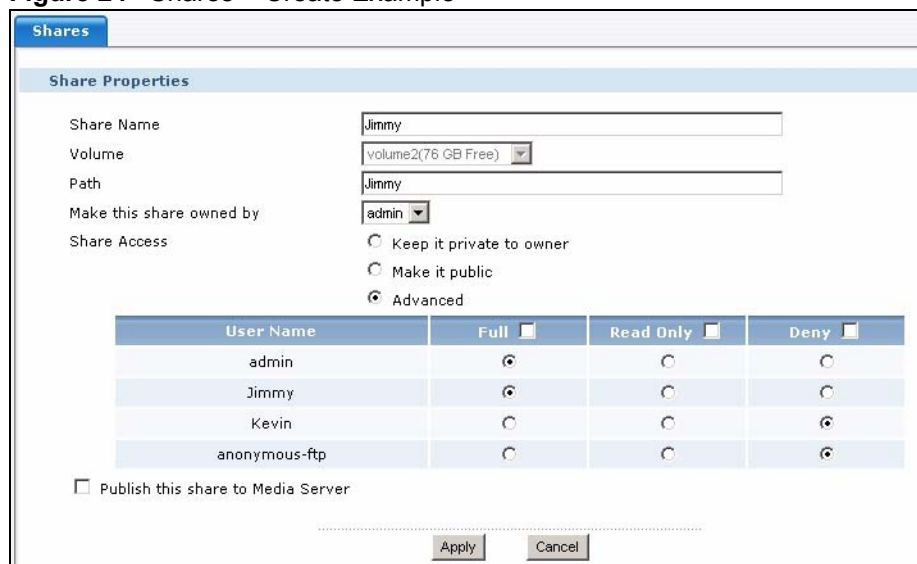
Now that Bob has created Jimmy's share, he can go through the steps again to create another share for Kevin. Then he can see the rest of the tutorials for how to use the shares.

3.4 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. In this example, Bob has already installed the NDU on Jimmy's computer (see the Quick Start Guide for details). Here he maps Jimmy's share to Jimmy's computer.

1 Start Windows Explorer and click **Tools > Map Network Drive**.

Figure 25   NSA Top Level
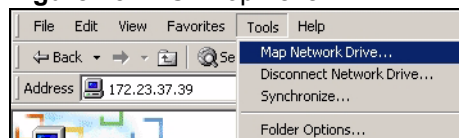
2 Select the network drive that you want to map NSA to from the **Drive** list box. This example uses **I**. Then browse to and select the share on the NSA. Click **Finish**.

Figure 26 Map Network Drive
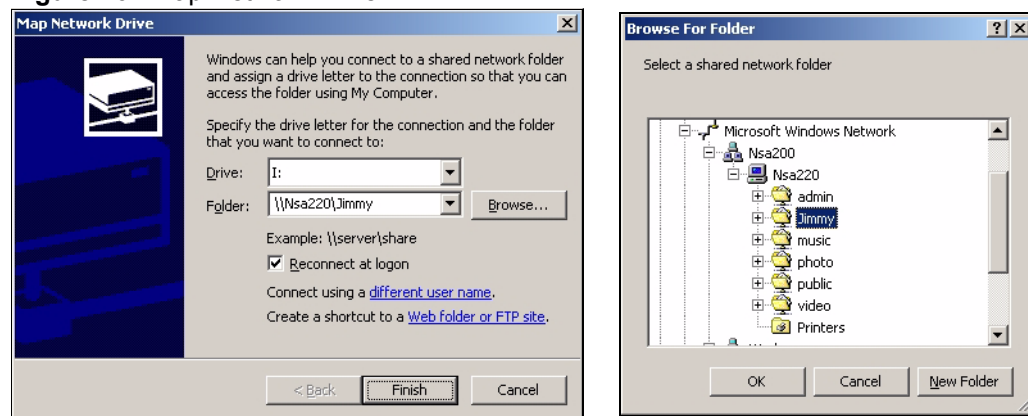
3 Enter the username and password for Jimmy's account and click **OK**. You do not need to do this if the username and password are the same as Jimmy's Windows login.

Figure 27 Enter Network Password
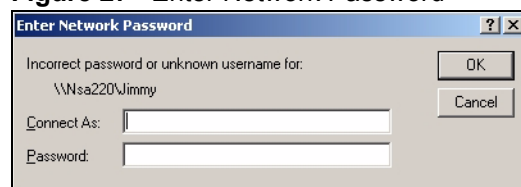
4 After the mapping is done, you can then simply copy and paste or drag and drop files from/to your local computer's drives to or from this network folder. Just like the NSA's share was another folder on your computer.

Figure 28 Example Share Mapped (Folders View)
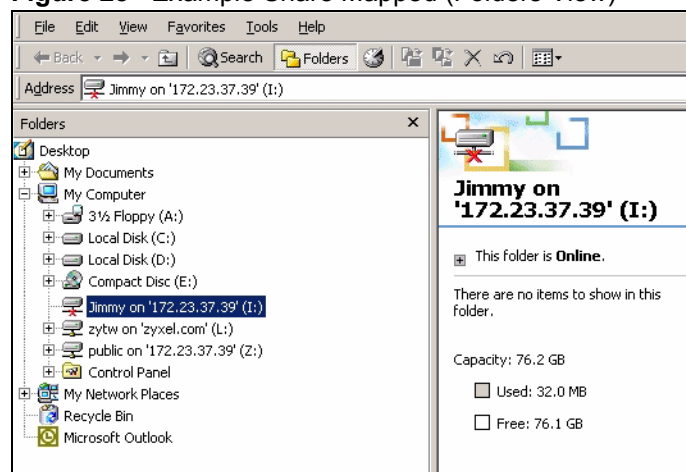
Now that Bob has mapped Jimmy's share to Jimmy's computer, he can go through the steps again to map Kevin's share to Kevin's computer.

3.5 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 29   FTP Example: Typing the FTP Target
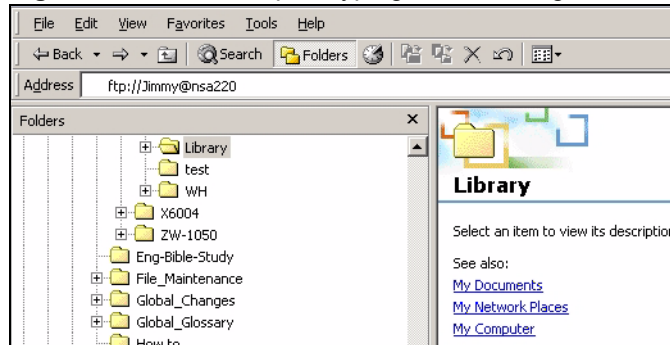
2 Enter your password and click **Login**.

Figure 30   FTP Example: Enter the Password
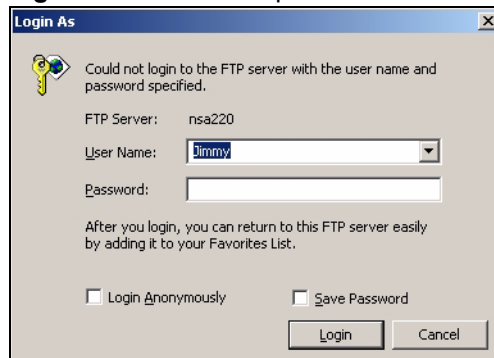
3 Now you can access files and copy files from/to your local computer's drives to or from this network folder. [1]

---

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

Figure 31 FTP Example: Logged In
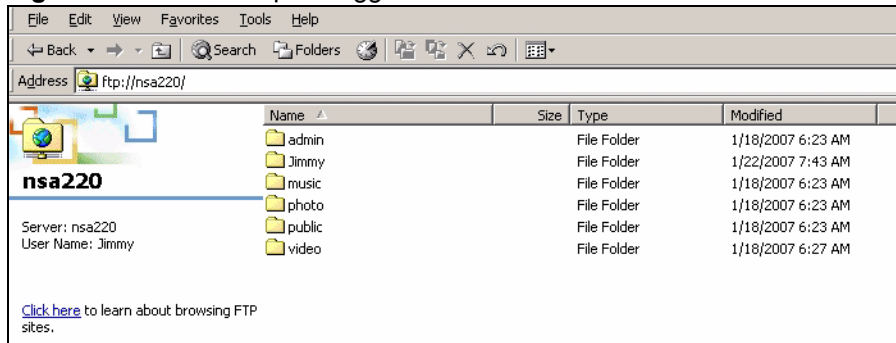
3.6 Accessing a Share Through the Web Configurator

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.

Figure 32 My NSA User Login
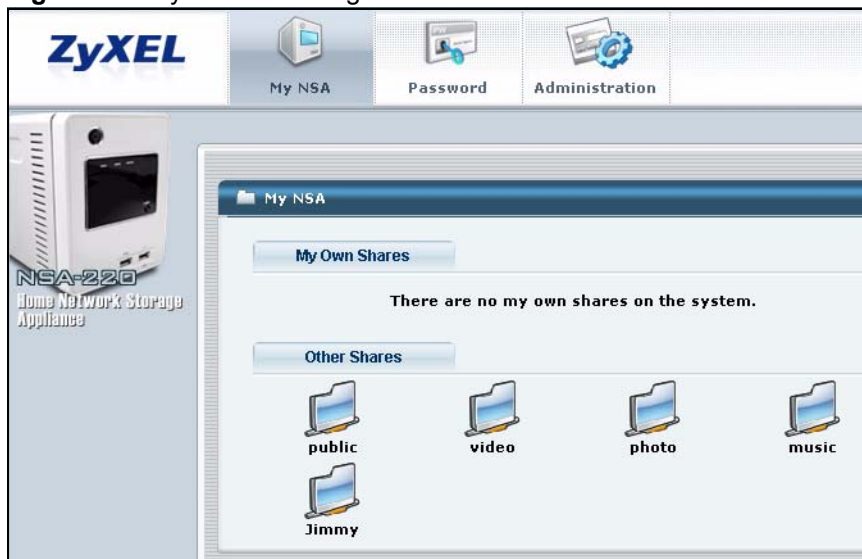
2 Click a share to see the top level of the share's contents. Here is the Jimmy share.

Figure 33 My NSA User Login
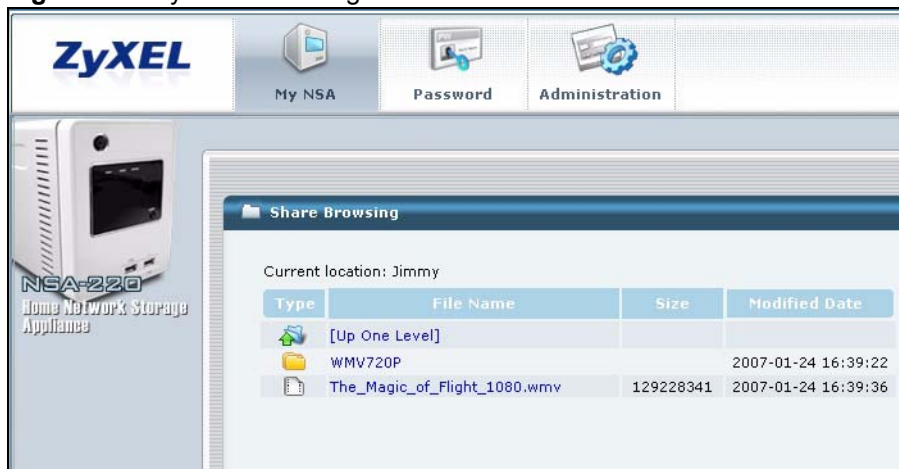
3 Click a folder's file name to browse the folder. You can open files or copy them to your computer. However at the time of writing you cannot use the web configurator to upload files to the NSA (use CIFS or FTP to upload files, see Section 3.4 on page 46 and Section 3.5 on page 48).

4 Click the logout icon when your are done (see Table 2 on page 32).

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 log in to the administrator screens. To view the status screens, click **Status** on the top-left of the navigation panel.

Figure 34   Status

The following table describes the labels in this screen.

Table 11   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.
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 6.6 on page 69.
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.
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.

Table 11 Status (continued)

LABEL	DESCRIPTION
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 34 on page 51.

Figure 35 Session Example (Windows)
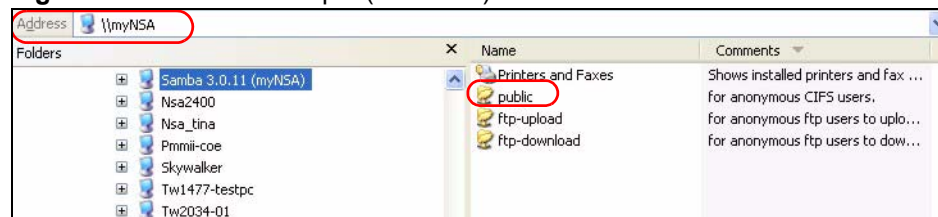
PART II
Status, System, Storage, and Network

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.
- Chose a time zone and/or allow the NSA to synchronize with a time server.
- Create and edit volumes (see 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

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.

Click **System Setting > Server Name** to open the following screen.

Figure 36   System Setting > Server Name

The following table describes the labels in these screens.

Table 12   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 the following. a-zA-Z0-9 '()+,/:=?;!*#@$_%-
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 37   System Setting > Date/Time

The following table describes the labels in this screen.

Table 13   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.
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.

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Table 13 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 **o'clock** 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 first Sunday of April. 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 select **First**, **Sunday**, **April** and type 2 in the **o'clock** field. 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 **Last**, **Sunday**, **March**. The time you type in the **o'clock** field 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 last Sunday of October. 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 **Last**, **Sunday**, **October** and type 2 in the **o'clock** field. 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 **Last**, **Sunday**, **October**. The time you type in the **o'clock** field 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 **Storage** screens to create and manage NSA volumes (internal and external) and disks.

6.2 Storage Overview Screen

Click **Storage** in the Navigation panel to display the following screen.

Figure 38   Storage
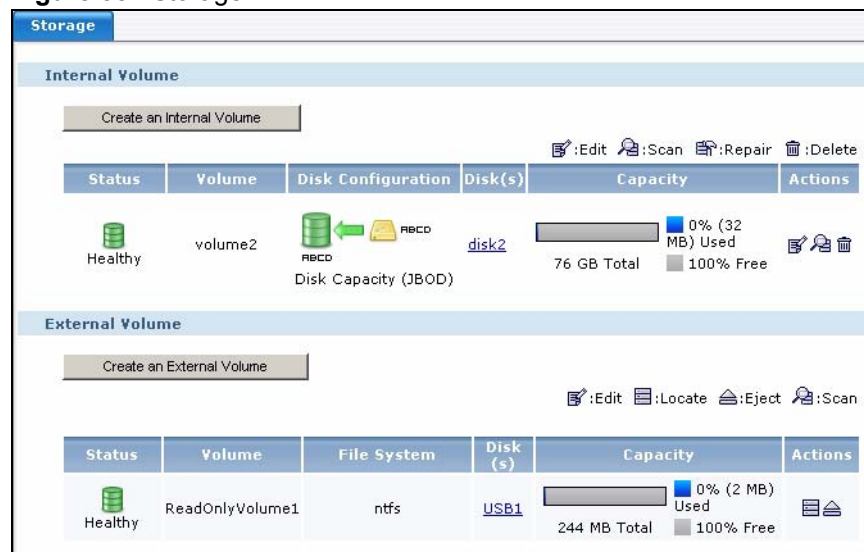
The following table describes the labels in this screen.

Table 14 Storage > Overview

LABEL	DESCRIPTION
Internal/External Volume	These tables display information on all internal volumes (created on NSA internal disk drives) and external volumes (created on external disk drives attached to the NSA USB ports). See the volume screen for field details.
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, Resynching, 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 39 Delete a Volume Warning Screen
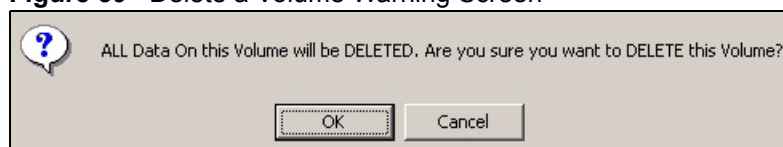
6.3 Volumes and RAID

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

RAID (Redundant Array of Independent Disks) or JBOD is the storage method that the NSA 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 15   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

6.3.1 Choosing A Storage Method For a Volume

The following is a guide to help you choose a storage method for the various number of disks supported on the NSA. See Section 6.4 on page 65 for theoretical background on JBOD and the RAID levels used on the NSA. Typical applications for each method are also shown there.

6.3.1.1 One Disk

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

6.3.1.2 Two Disks:

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

- up to two JBOD volumes
- one RAID 0 or RAID 1 volume
  - Choose JBOD for flexibility and maximum usage of disk space for data. You can either add an additional disk to your one-disk JBOD volume (and you don't have to re-create shares, access rights etc.) or create a different JBOD volume (and create new shares, access rights and so on).

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- 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.

6.3.2 Volume Status

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

The NSA 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 your USB disk was formatted as NTFS. It is read-only for the NSA.
- **Resync** when you create or repair a RAID volume.
- **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 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.

$\mathscr{L}$ There is no explicit message from CIFS that tells users their volume is degraded or down.

6.3.3 Resynchronizing a RAID 1 Volume

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

✎ You should not restart the NSA while the NSA is resynchronizing 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, but it is not recommended.

6.4 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 ar blocks of data from the B and C files.

6.4.1 JBOD

JBOD allows you to combine multiple physical disk drives into a single virtual one, so they appear as a single large disk. JBOD can be used to turn 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 16   JBOD

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

6.4.2 RAID 0

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

Table 17   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.

6.4.3 RAID 1

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

Table 18   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.

6.4.4 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 firewall and/or IDP (Intrusion Detection and Prevention) device to protect it. Preferably it should be a hardware-based firewall with stateful packet inspection, anti-virus, and IDP (like the ZyWALL UTM products).
- 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).

6.5 Disks

Here is information on the NSA internal disks and external disks attached to the USB port(s).

6.5.1 External Disks

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

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

If your USB storage device uses a NTFS file system, then the NSA can read files from it, but cannot write files to it. If you want to be able to write files to that storage device, you need to reformat it. You should back up any data on the device that you want to keep (to an internal drive for example) and click the **Storage** screen's **Create an External Volume** button to reformat the external hard drive. You can then both read and write to that hard drive and restore your data to it.

• Linux File Systems: ReiserFS, EXT2, and EXT3.

6.5.2 Disk Replacement Restrictions

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

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

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

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

6.5.3 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.

6.6 Creating a New Internal Volume

Click the **Create a New Internal Volume** button in the **Volume** screen as shown in Figure 38 on page 61 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 40 Create a New Internal Volume

The following table describes the labels in this screen.

Table 19 Create a New Internal Volume

LABEL	DESCRIPTION
System Performance (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.
Data Protection (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.
Disk Capacity (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.
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.

Table 19 Create a New Internal Volume (continued)

LABEL	DESCRIPTION
Apply	Click this button to save your changes back to the NSA and create the volume.
Cancel	Click this button to begin configuring this screen afresh.

6.7 Editing an Internal Volume

Click an internal volume's **Edit** icon in the **Volume** screen as shown in Figure 38 on page 61 to change the internal disk drive volume's name.

Figure 41   Edit an Internal Volume

The following table describes the labels in this screen.

Table 20   Edit 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 " ".
Type	This displays **Internal Volume** indicating that the volume is on a hard disk installed in the NSA.
Configuration	
Capacity	This field shows total disk size, the percentage of the volume being used and the percentage that is available.
Apply	Click this button to save your changes back to the NSA and create the volume.
Cancel	Click this button to begin configuring this screen afresh.

6.8 Creating a New External Volume

Click the **Create a New External Volume** button in the **Volume** screen as shown in Figure 38 on page 61 to create a new NSA internal disk drive volume.

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

Figure 42 Create a New External Volume

The following table describes the labels in this screen.

Table 21 Create a New 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 old 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 begin configuring this screen afresh.

6.9 Editing an External Volume

Click an external (USB) volume's **Edit** icon in the **Volume** screen as shown in to change the external disk drive volume's name.

Figure 43   Edit an External Volume

The following table describes the labels in this screen.

Table 22   Edit an External Volume

LABEL	DESCRIPTION
Volume Name	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.
Type	This displays **External Volume** indicating that the volume is on an external device connected to a NSA USB port.
File System	
Capacity	This field shows total disk size, the percentage of the volume being used and the percentage that is available.
Apply	Click this button to save your changes back to the NSA and create the volume.
Cancel	Click this button to begin configuring this screen afresh.

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.

7.2 Network Config Screen

Click **Network** 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 44   Network > Network Config

The following table describes the labels in this screen.

Table 23   Network Config > Network Config

LABEL	DESCRIPTION
IP Address	
Obtain an IP address automatically	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.
Use Fixed IP Address	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.
Obtain DNS server address automatically	Select the option to have the NSA get a DNS server address automatically.
Use the following DNS server addresses	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.
Secondary DNS Server	Type a secondary DNS server IP address.

Table 23 Network Config > Network Config

LABEL	DESCRIPTION
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.
Cancel	Click **Cancel** to begin configuring this screen afresh.

Application Screens

This chapter discusses the application screens.

8.1 Application Screens

Use the application screens to:

- Enable FTP file transfer to/from the NSA, set the number of FTP connections allowed and an FTP idle timeout.
- Enable or disable the media server and select which shares to publish (share with media clients).

8.2 FTP

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

- 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.
- FTP is not a secure protocol. Your file transfers could be subject to snooping.

8.3 FTP Screen

Click **Applications > FTP** to open the following screen.

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

Figure 45 Applications > FTP

The following table describes the labels in this screen.

Table 24 Applications > FTP

LABEL	DESCRIPTION
FTP	
Enable FTP	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 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.
Apply	Click **Apply** to save your changes back to the NSA.
Reset	Click **Reset** to begin configuring this screen afresh.

8.4 Media Server

The NSA can function as a media server where you store multimedia files (videos, music, and photos). By default, computers on your network can use media client software (included on the CD) to play multimedia files stored in the **Public**, **Video**, **Music** and **Photo** shares (you can also apply the multimedia server function to other shares). Hardware-based media clients like the DMA-1000 can also play the files. See Appendix A on page 126 for the supported multimedia file formats.

✎ The NSA provides no security for the multimedia server function. Any DLNA-compliant media client on your network can play the multimedia files.

8.5 Media Server Screen

Click **Applications** > **Media Server** to open the following screen.

Use this screen to turn the media server off and on and see which shares the NSA will publish (share with media clients).

Figure 46   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 can allow media clients to distinguish between multiple media servers on your network.
Enable Media Server	Select this option to turn on the media server function.
Unpublished Shares	This list box displays the shares that the NSA does not share with the media clients.
Publish Selected Share(s)	Select one or more shares in the **Unpublished Shares** box and click this button to share the shares with media clients.
Published Shares	This list box displays the shares that the NSA shares with the media clients.
Unpublish Selected Share(s)	Select one or more shares in the **Published Shares** box and click this button to not share the shares with media clients.
Apply	Click **Apply** to save your changes back to the NSA.
Reset	Click **Reset** to begin configuring this screen afresh.

PART III

User Accounts and Shares

81

9

Users

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 47 Users
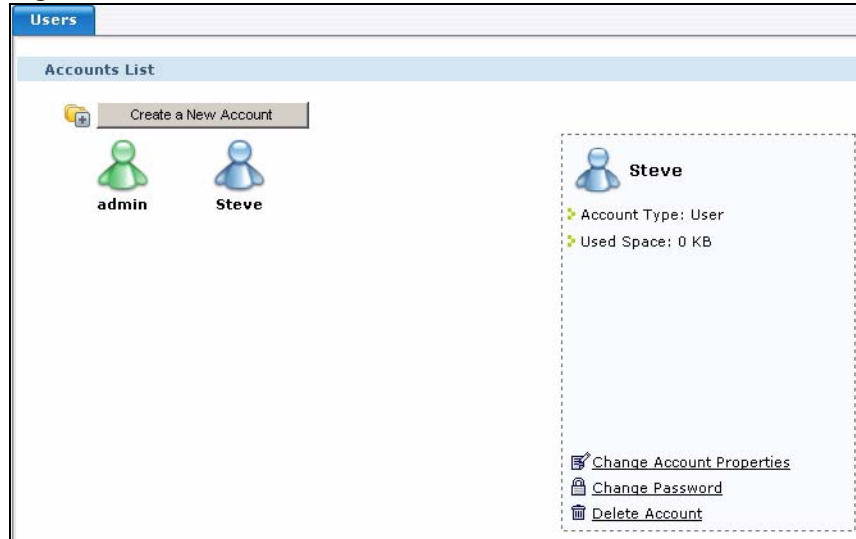
The following table describes the labels in this screen.

Table 26 Users

LABEL	DESCRIPTION
Accounts List	
Create a New 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.
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 27 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 a User Account

Click the **Create a New Account** button in the **Users** screen to create a new NSA user account with NSA access password. Click the **Change Account Properties** button in the screen shown previously to edit an existing account.

9.3.1 Add or Edit a User Account Screen

Use this screen to add a user account.

Figure 48   Users > Add or Edit an Account

The following table describes the labels in this screen.

Table 28   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 9.3.2 on page 85 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 configuration and management access to the NSA.
	Select **User** to give 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 begin configuring this screen afresh.

9.3.2 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 Change Password Screen

Go to the **Users** screen and select a user account, then click **Change Password** to modify the account's password.

Figure 49   Users > Change Password

The following table describes the labels in this screen.

Table 29 Users > Change Password

LABEL	DESCRIPTION
New Password	Create a new password for this user. You can type from one to 14 single-byte (no Chinese characters allowed for example) ASCII characters. See Section 9.3.2 on page 85 for more details on usernames.
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.

9.5 Delete Account Screen

In the **Users** screen, select an account and click **Delete Account** to open this screen.

Use this screen to remove a user account.

Figure 50   Users > Delete Account

The following table describes the labels in this screen.

Table 30   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.

10

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 31   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 51 Shares
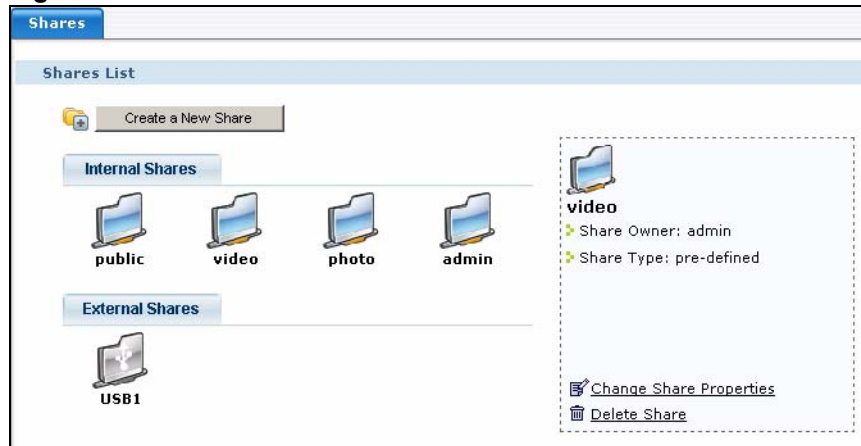
The following table describes the labels in this screen. See Table 31 on page 89 for icon details.

Table 32 Shares

LABEL	DESCRIPTION
Create a New Share	Click this button to add a share.
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 a New Share

Click the **Create a New Share** button in the **Shares** screen to open the following screen. Use this screen to create a new shared folder with optional access password.

Figure 52 Shares > Add Share

The following table describes the labels in this screen.

Table 33 Shares > Add Share

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 2.5.4 on page 37 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.
Path	Browse 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 2.5.5 on page 38 for more information on share paths.
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.
Share Access	Use this part of the screen to assign access rights (full, read only or deny) to users. **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.
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.

Table 33   Shares > Add Share (continued)

LABEL	DESCRIPTION
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: No one can use the share if you deny access to all users. Thus denying all users access is not recommended.
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.
Apply	Click this button to save your changes back to the NSA.
Cancel	Click this button to begin configuring this screen afresh.

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 53   Share Path Browse

The following table describes the labels in this screen.

Table 34   Share Path Browse

LABEL	DESCRIPTION
Folder Name	This section lists the volume's existing folders. Select the one for which you want to create a share. You can also click the folder's name to navigate to a sub-folder within the folder.
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 2.5.4 on page 37 for more information on folder names.
Back	Click this button to return to the previous screen without keeping selecting a folder.
Apply	Click this button to return to the previous screen with your folder selection.

PART IV

Protection, Media Client, Maintenance, & Troubleshooting

95

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 54   Maintenance > Log

The following table describes the labels in this screen.

Table 35   Maintenance > Log

LABEL	DESCRIPTION
Refresh	Click this button to update the log display.
Purge all Logs	Click this button to erase all logs from the NSA.

Table 35   Maintenance > Log (continued)

LABEL	DESCRIPTION
#	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 36 on page 98 for details.
Severity	This displays how serious the log is rated by the NSA. See Table 37 on page 98 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 36   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 37   Log Severity Levels

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

11.5 Log Messages

Here are some example log messages.

Table 38   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
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

Table 38 Log Messages (continued)

CLASS	SEVERITY	MESSAGE
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 55   Maintenance > Configuration

The following table describes the labels in this screen.

Table 39   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 56   Maintenance > FW Upgrade

The following table describes the labels in this screen.

Table 40 Maintenance > FW Upgrade

LABEL	DESCRIPTION
Firmware Upgrade	
Firmware File	Type the location of the firmware file you want to upload
Browse	Click **Browse** to find the file on your computer
Upgrade	Click **Upgrade** to upload the new firmware. The NSA 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 57   Maintenance > Shutdown
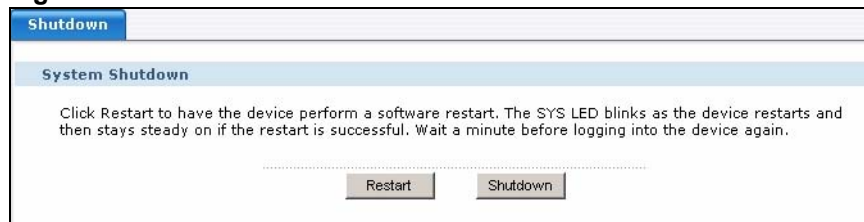
The following table describes the labels in this screen.

Table 41 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 58   Maintenance > Shutdown > Confirm Restart
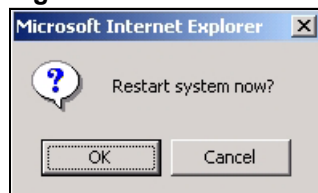
When you click the **Shutdown** button a pop-up screen will appear asking you to confirm. Click **OK** to continue or **Cancel** to quit the shutdown.

Figure 59   Maintenance > Shutdown > Confirm Shutdown

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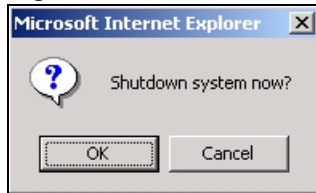
Protecting Your Data

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 42   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 6.4 on page 65 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 reset the device to go back to the factory default configuration.

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

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.

13

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.

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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.

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

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 6.5.2 on page 68).
  • 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 114 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 73 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 B on page 129 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 C on page 143. With Internet Explorer 6, you may also have to enable scripting of safe ActiveX controls. See Section 15.3.2 on page 115.

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.

15.3.1.1 Using the Reset Button

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 114.

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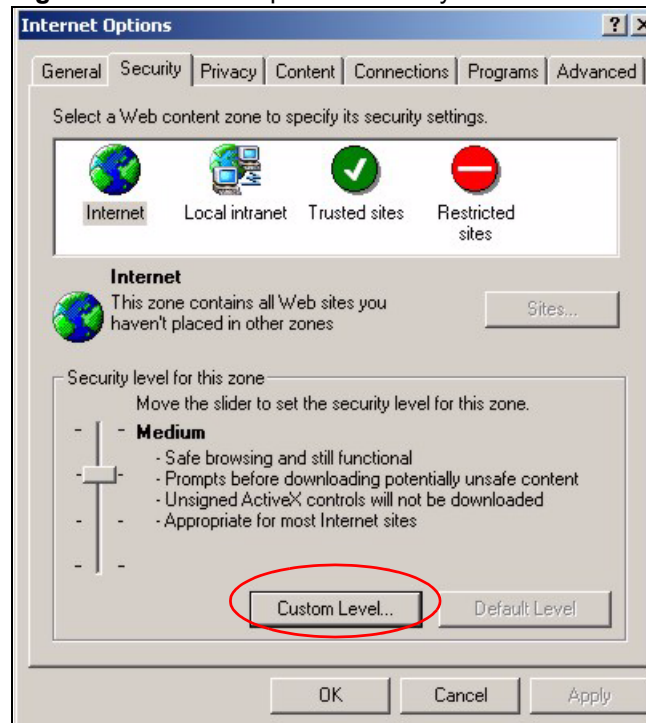
2 Click the **Custom Level...** button.
3 Under **Script ActiveX controls marked safe for scripting**, make sure that **Enable** is selected (the default).
4 Click **OK** to close the window.

Figure 61   Security Settings - Script Safe ActiveX Controls

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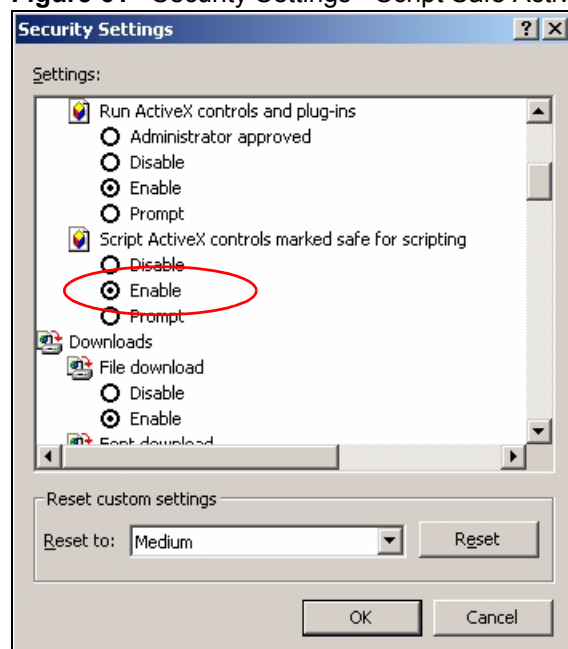
I can see the login screen, but I cannot log in to the NSA.

- 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 114 to reset the device.

?

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

Use Section 15.3.2 on page 115 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 111.
- 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 61 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 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 A on page 126 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 A on page 126 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.

PART V

Appendices and Index

Product Specifications

See also for a general overview of the key features.

Feature Tables

Physical Features

These are the main external physical features.

Table 43   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).

Firmware Features

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

Table 44   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) lest your Windows XP computers browser and play media files stored on the NSA.

Table 44 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.
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.

Specification Tables

The NSA hardware specifications are shown in the following table.

Table 45 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
Compatible Hard Disks[A]	SATA I and SATA 3.0 Gbit/s (Serial Advanced Technology Attachment) compatible hard drives.

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Table 45 NSA Hardware Specifications (continued)

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 (10 Base-T/100 Base-TX/1000 Base-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
Reset Button	Restores factory default username and password. It also sets the NSA to DHCP client. If no DHCP server is found, the subnet mask defaults to 255.255.255.0 (24 bits).
Operating Temperature	0º C ~ 45º C
AC Input	Voltage: 100 - 240 V at 50 - 60 Hz Current: 3.42 A
Storage Temperature	-30º C ~ 60º 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 46 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 46   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 47   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 47 Supported Standards and Recommendations

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

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Supported Media Server Content Formats

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

Table 48 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.

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 49   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

Compatible Hard Disks

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

Table 50

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

B

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 62 WIndows 95/98/Me: Network: Configuration
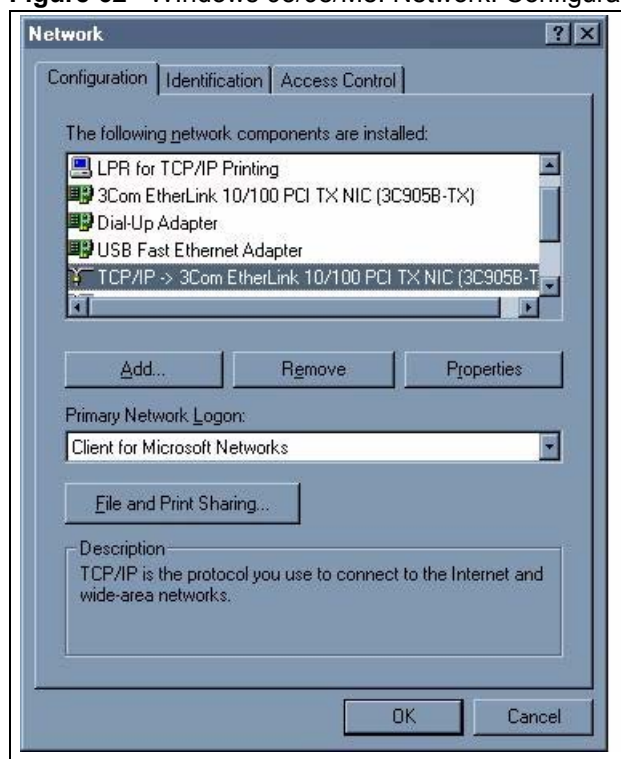
Installing Components

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 63 Windows 95/98/Me: TCP/IP Properties: IP Address
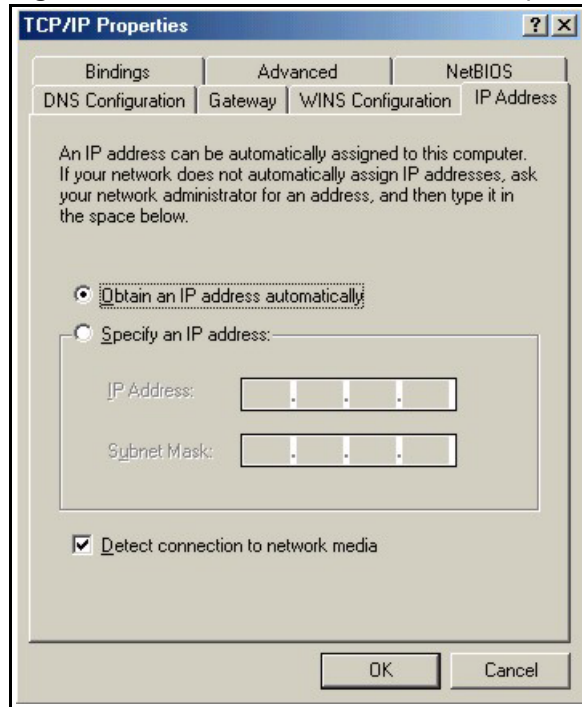
3 Click the **DNS** Configuration tab.
- If you do not know your DNS information, select **Disable DNS**.
- If you know your DNS information, select **Enable DNS** and type the information in the fields below (you may not need to fill them all in).

Figure 64 Windows 95/98/Me: TCP/IP Properties: DNS Configuration
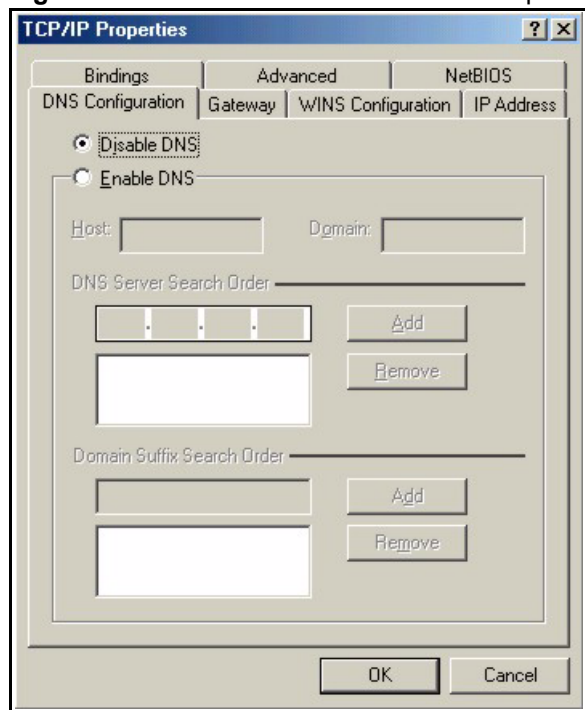
4 Click the **Gateway** tab.
- If you do not know your gateway's IP address, remove previously installed gateways.
- If you have a gateway IP address, type it in the **New gateway field** and click **Add**.

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 65 Windows XP: Start Menu

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

Figure 66 Windows XP: Control Panel

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

Figure 67 Windows XP: Control Panel: Network Connections: Properties
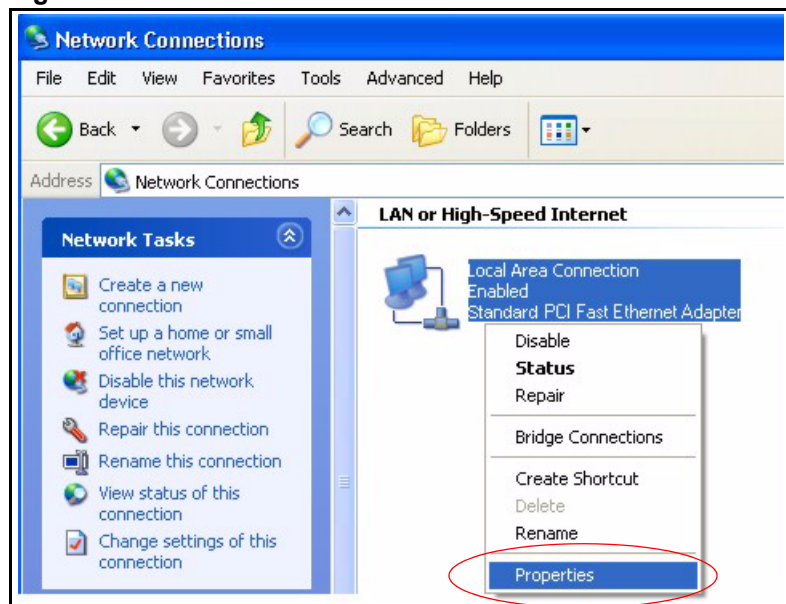
4   Select **Internet Protocol (TCP/IP)** (under the **General** tab in Win XP) and then click **Properties**.

Figure 68 Windows XP: Local Area Connection Properties
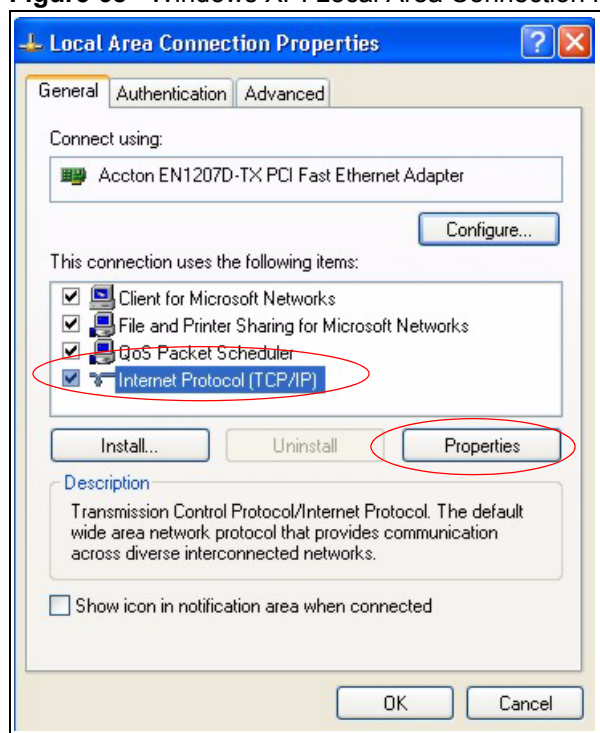
5   The **Internet Protocol TCP/IP Properties** window opens (the **General tab** in Windows XP).
   • If you have a dynamic IP address click **Obtain an IP address automatically**.
   • If you have a static IP address click **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields.
   • Click **Advanced**.

Figure 69 Windows XP: Internet Protocol (TCP/IP) Properties
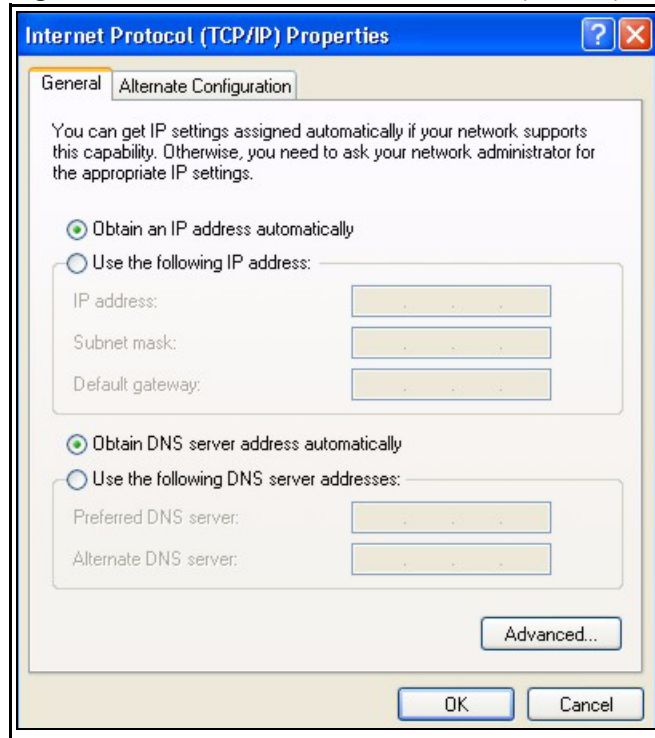
6 If you do not know your gateway's IP address, remove any previously installed gateways in the **IP Settings** tab and click **OK**.

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 70   Windows XP: Advanced TCP/IP Properties
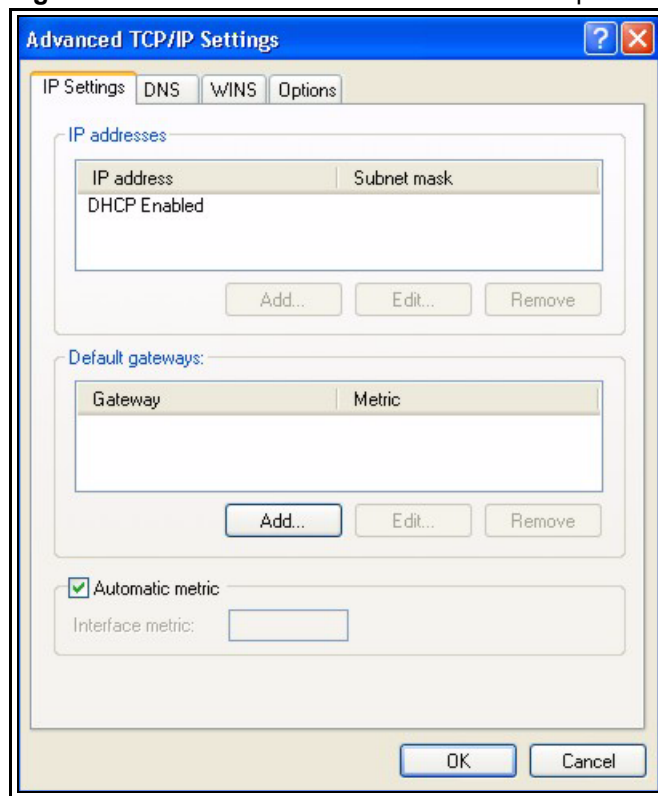
7   In the **Internet Protocol TCP/IP Properties** window (the **General** tab in Windows
XP):
   • Click **Obtain DNS server address automatically** if you do not know your DNS
     server IP address(es).
   • If you know your DNS server IP address(es), click **Use the following DNS server
     addresses**, 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 71   Windows XP: Internet Protocol (TCP/IP) Properties
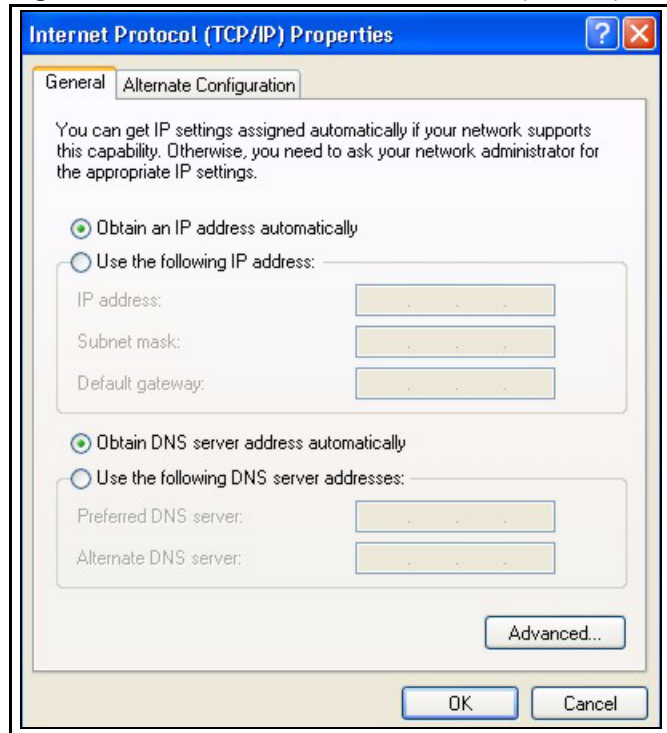
8   Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

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 72 Macintosh OS X: Apple Menu
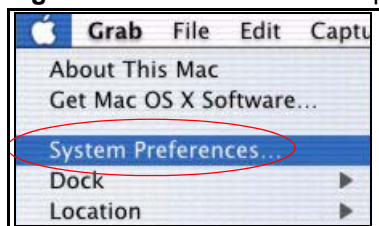
2 Click **Network** in the icon bar.
- Select **Automatic** from the **Location** list.
- Select **Built-in Ethernet** from the **Show** list.
- Click the **TCP/IP** tab.

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

Figure 73 Macintosh OS X: Network
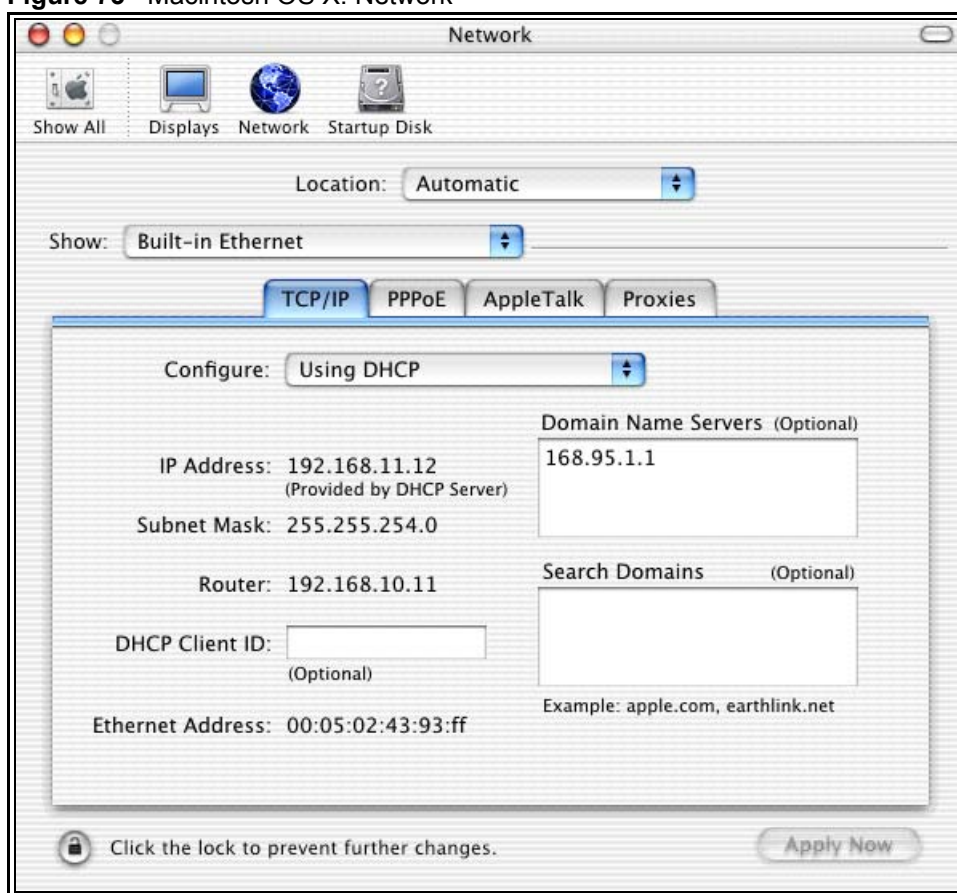
4 For statically assigned settings, do the following:
- From the **Configure** box, select **Manually**.
- Type your IP address in the **IP Address** box.
- Type your subnet mask in the **Subnet mask** box.
- Type the IP address of your gateway in the **Router address** box.

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 74 Red Hat 9.0: KDE: Network Configuration: Devices
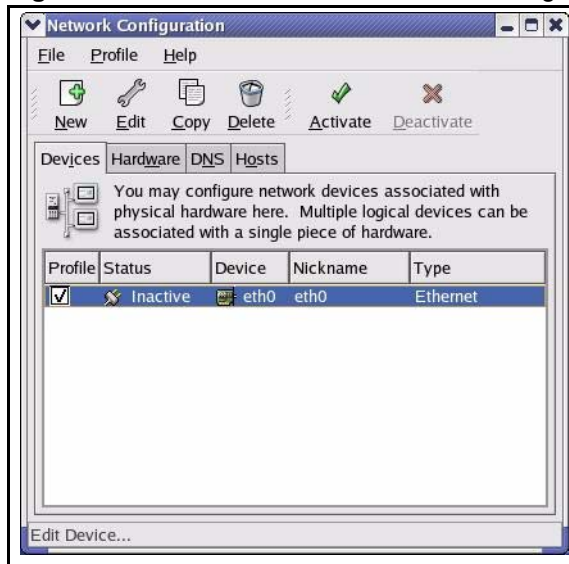
2 Double-click on the profile of the network card you wish to configure. The **Ethernet Device General** screen displays as shown.

Figure 75   Red Hat 9.0: KDE: Ethernet Device: General
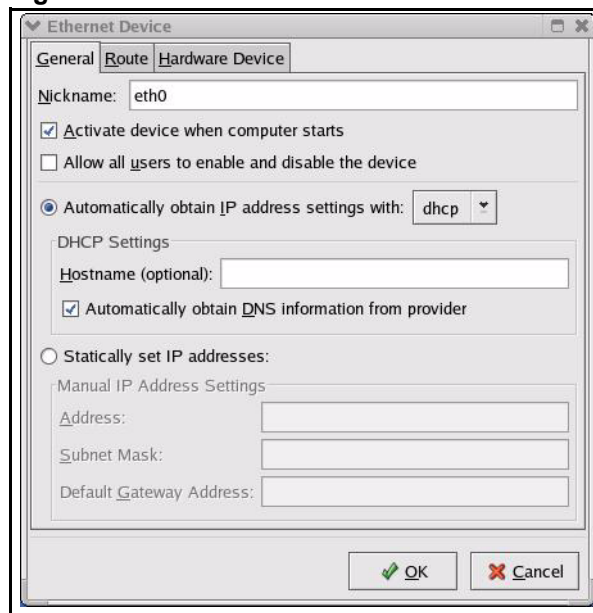
- If you have a dynamic IP address, click **Automatically obtain IP address settings with** and select **dhcp** from the drop down list.
- If you have a static IP address, click **Statically set IP Addresses** and fill in the **Address**, **Subnet mask**, and **Default Gateway Address** fields.

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 76   Red Hat 9.0: KDE: Network Configuration: DNS
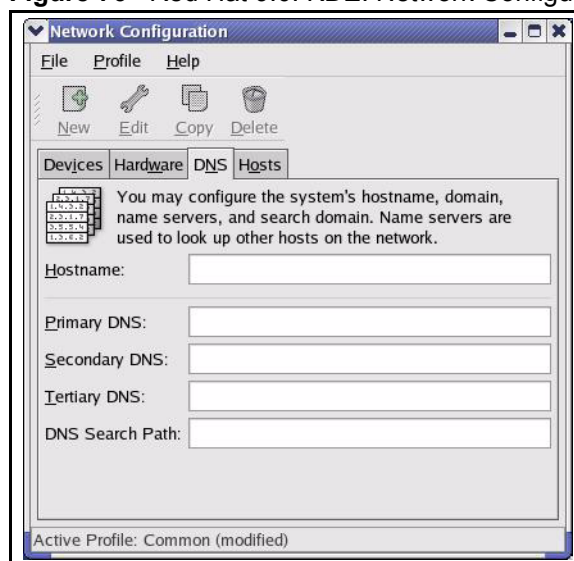
5   Click the **Devices** tab.

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

Figure 77 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 78 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 79 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 80 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 81 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 82 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

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

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

Internet Explorer Pop-ups

You may have to disable pop-up blocking (allow pop-ups) in order to use your device web configurator.

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.

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

Disable pop-up Blockers

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

Figure 83 Pop-up Blocker
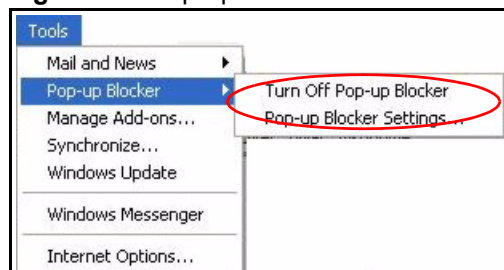
You can also check if pop-up blocking is disabled in the **Pop-up Blocker** section in the **Privacy** tab.

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 84 Internet Options: Privacy
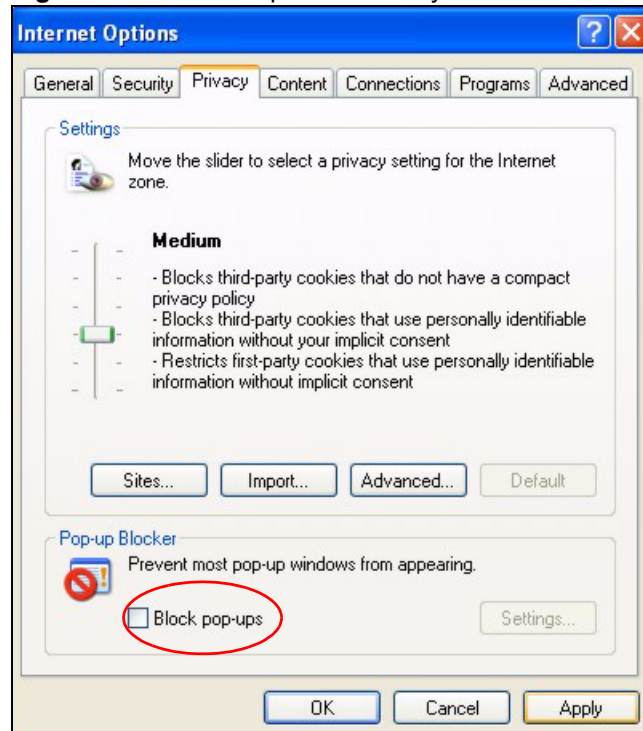
3 Click **Apply** to save this setting.

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 85   Internet Options: Privacy
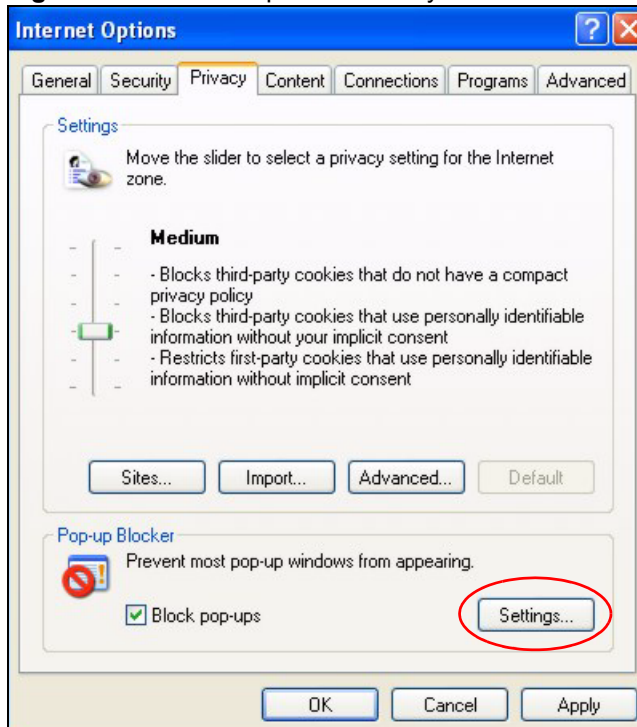
3 Type the IP address of your device (the web page that you do not want to have blocked) with the prefix "http://". For example, http://192.168.167.1.

4 Click **Add** to move the IP address to the list of **Allowed sites**.

Figure 86   Pop-up Blocker Settings
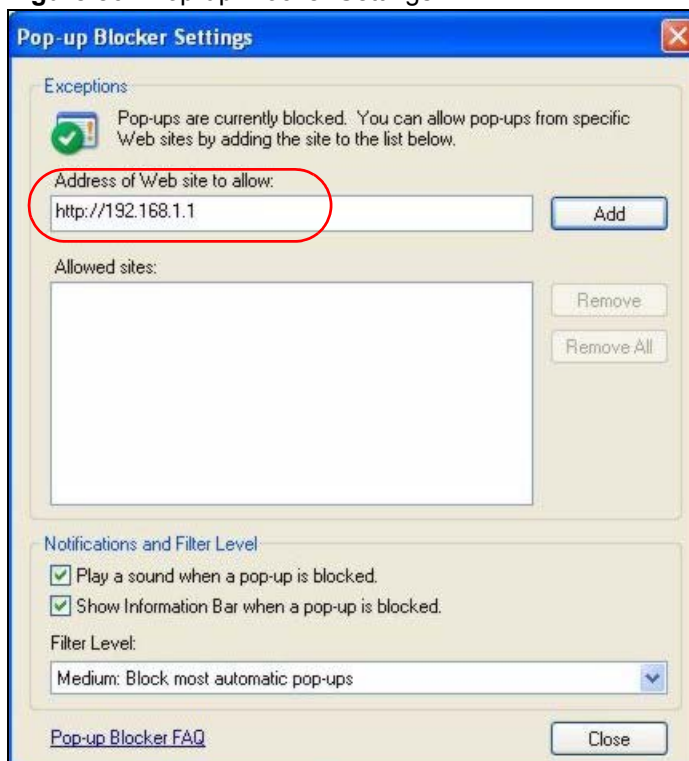
5 Click **Close** to return to the **Privacy** screen.

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 87   Internet Options: Security
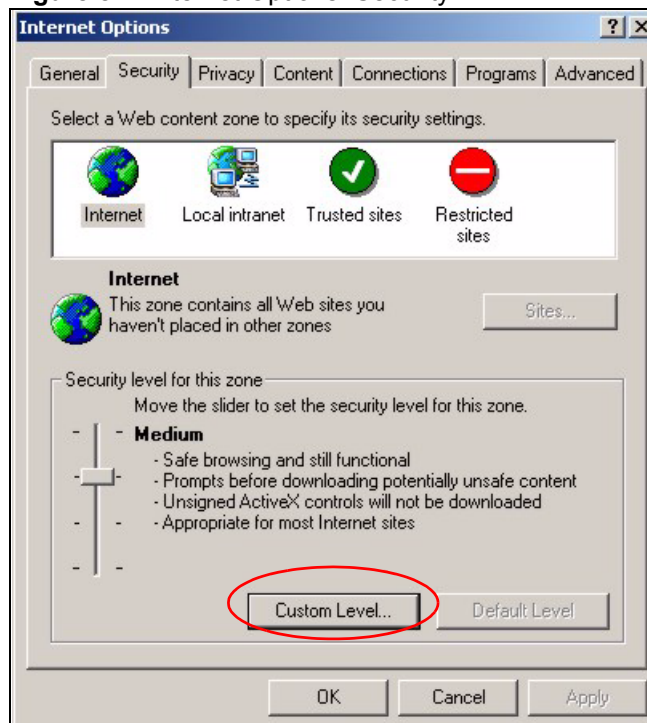
2 Click the **Custom Level...** button.

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 88 Security Settings - Java Scripting
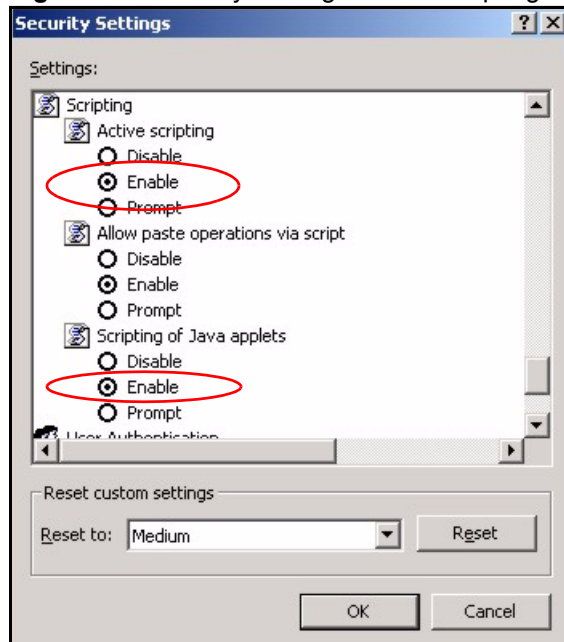
Java Permissions

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 89 Security Settings - Java
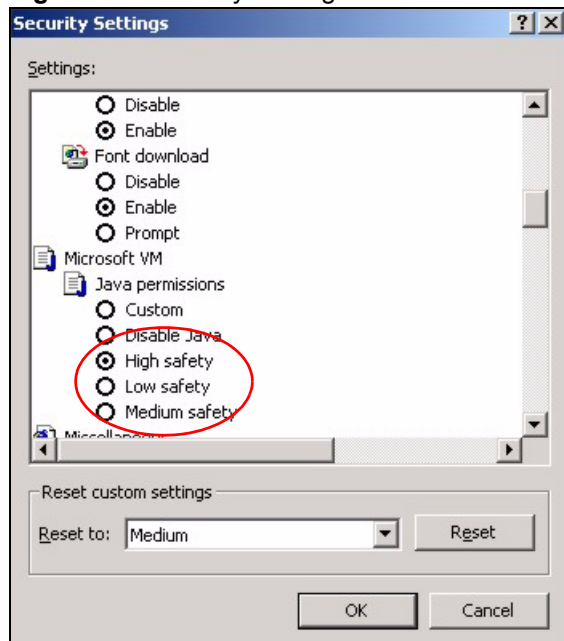
JAVA (Sun)

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 90 Java (Sun)
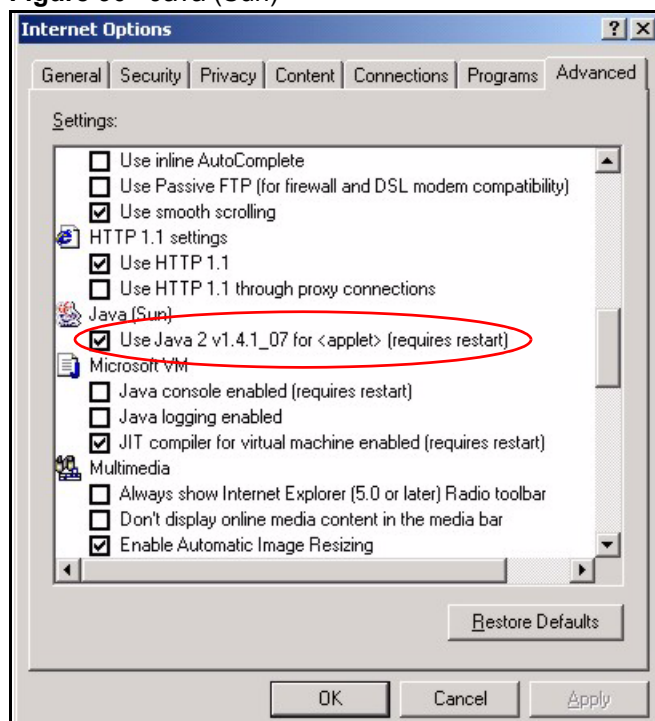
Mozilla Firefox

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 > Options > Content**.

Figure 91 Mozilla Firefox: Tools > Options

Select the check boxes as shown in the following screen.

Figure 92 Mozilla Firefox Content Security
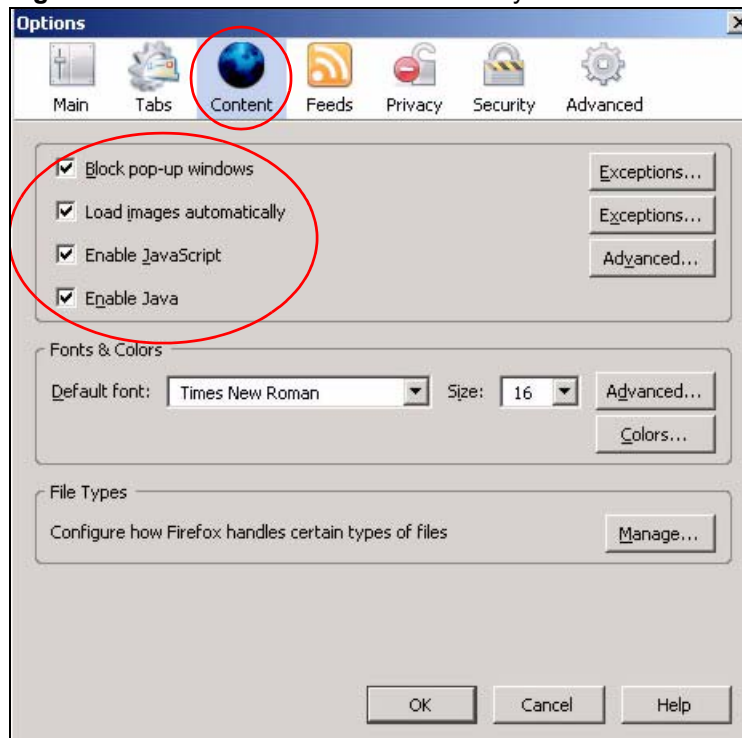
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