

# NETGEAR ReadyNAS Duo User Guide



## NETGEAR®

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## Technical Support

Registration on the website or over the phone is required before you can use our telephone support service. The phone numbers for worldwide regional customer support centers are on the Warranty and Support Information card that came with your product.

Go to <http://kbserver.netgear.com> for product updates and Web support.

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## Product and Publication Details

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# About This Manual

Congratulations on your purchase of a ReadyNAS™ Duo from NETGEAR, Inc. If you have not already done so, please read the printed *Installation Guide* provided with your product and the *ReadyNAS Setup Manual* on the *Installation CD*.

The *ReadyNAS Setup Manual* takes you step-by-step through the Setup Wizard and quickly prepares the ReadyNAS Duo for your network. The *NETGEAR® ReadyNAS Duo User Guide* explains each of the available options in detail, including many of the advanced options not described during the Setup Wizard process. The manual includes:

[Chapter 1, “Configuring Your ReadyNAS Duo,”](#) describes all the menus and tabs available in the FrontView Advanced Control mode.

[Chapter 2, “Accessing Shares from Your Operating System.”](#) If you have already configured the ReadyNAS Duo and you need help in accessing the shares on the ReadyNAS Duo, skip to this chapter.

[Chapter 3, “Maintenance and Administration”:](#)

- If a disk fails, learn about the proper procedure for replacing the failed disk in [“Replacing a Failed Disk.”](#)
- If you need to reinstall the firmware or reset the system back to the factory default configuration, see [“Resetting Your System \(System Switch\)”](#) for an explanation of both.
- [“Changing User Passwords”](#) covers users other than administrators can access FrontView to change their password.

[Appendix A, “ReadyNAS Duo Glossary,”](#) covers questions on what constitutes a valid input for hostname, workgroup, or password.

[Appendix B, “General Glossary,”](#) provides definitions for some of the technical terminologies used in this document.

## Conventions, Formats, and Scope

---

The conventions, formats, and scope of this manual are described in the following paragraphs:

- **Typographical Conventions.** This manual uses the following typographical conventions:

<i>Italic</i>	Emphasis, books, CDs, file and server names, extensions
<b>Bold</b>	User input, IP addresses, GUI screen text
Fixed	Command prompts, CLI text, code
<i>italic</i>	URL links

- **Formats.** This manual uses the following formats to highlight special messages:

	<b>Note:</b> This format is used to highlight information of importance or special interest.
---	--

	<b>Tip:</b> This format is used to highlight a procedure that will save time or resources.
---	--

	<b>Warning:</b> Ignoring this type of note might result in a malfunction or damage to the equipment.
---	--

	<b>Danger:</b> This is a safety warning. Failure to take heed of this notice might result in personal injury or death.
---	--

- **Scope.** This manual is written for the ReadyNAS Duo according to these specifications:

Product Version	1.1
Manual Publication Date	April 2008

## How to Use This Manual

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The HTML version of this manual includes the following:

- Buttons,  and , for browsing forward or backward through the manual one page at a time.
- A  button that displays the table of contents and a  button that displays an index. Double-click on a link in the table of contents or index to navigate directly to where the topic is described in the manual.
- A  button to access the full NETGEAR, Inc. online knowledge base for the product model.
- Links to PDF versions of the full manual and individual chapters.

## How to Print This Manual

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To print this manual, you can choose one of the following options, according to your needs.

- **Printing a page from HTML.** Each page in the HTML version of the manual is dedicated to a major topic. Select File > Print from the browser menu to print the page contents.
- **Printing from PDF.** Your computer must have the free Adobe Acrobat Reader installed for you to view and print PDF files. The Acrobat Reader is available on the Adobe website at <http://www.adobe.com>.
  - **Printing a PDF chapter.** Use the **PDF of This Chapter** link at the top left of any page.
    - Click the **PDF of This Chapter** link at the top left of any page in the chapter you want to print. The PDF version of the chapter you were viewing opens in a browser window.
    - Click the print icon in the upper left corner of your browser window.
  - **Printing a PDF version of the complete manual.** Use the **Complete PDF Manual** link at the top left of any page.
    - Click the **Complete PDF Manual** link at the top left of any page in the manual. The PDF version of the complete manual opens in a browser window.

- Click the print icon in the upper left corner of your browser window.



**Tip:** If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.

## Revision History

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Part Number	Version Number	Date	Description
202-10336-01	1.0	Feb. 2008	First publication
202-103336-01	1.1	April 2008	Documentation modifications

# Chapter 1

## Configuring Your ReadyNAS Duo

The Advanced Control mode shows all of the settings available in the Setup Wizard plus some more advanced features. The basic network settings and other, optional, more advanced features are included in this chapter.

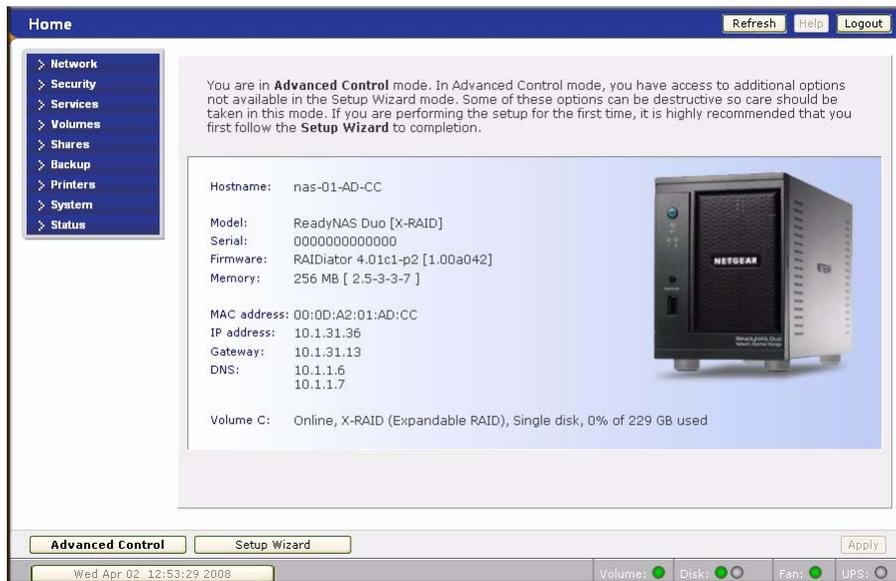


Figure 1-1

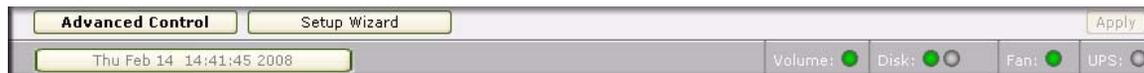
When you first switch to this mode, you see the menus on the left that allow you to quickly jump to the screen you want.

As you click the menu buttons, you notice a similar theme across all screens. At the top right corner is the command bar that typically provides options to return to the Home screen, refresh the browser window, display Help where available, or to log out of this session. For security reasons, **Logout** acts only as a reminder to close the current browser session, which is necessary to securely log out.



Figure 1-2

Toward the bottom left, there are two buttons that allow you to switch back and forth between the Setup Wizard mode and the Advanced Control mode. At the bottom of the screen is the status bar including the date button on the left which, which clicked, links you to the Clock screen. The status lights to the right give a quick glimpse of the system device status.



**Figure 1-3**

Move the mouse pointer over the status light to display device information, or click a status light to display the status in more detail. Above the Status Lights is the **Apply** button. Use this to save any changes on the current screen.

You can access your Network settings by selecting Network from the main menu. From the Network menu, you can then navigate to your basic network settings screens such as Interfaces, Global Settings, WINS and DHCP.

## Setting Up Your Network Connection

---

This section allows you to refine your local network interface settings as well as your global settings that allow access to your workgroup and share folders.

### Ethernet Interface Settings

Select Network > Interfaces, and then select the Ethernet tab. From this screen you can specify your network interface-specific settings.

In the **Standard Setting** section, you can specify the IP address, network mask, speed/duplex mode, and MTU settings. In most networks where a DHCP server is enabled, you can simply specify the **Use values from a DHCP server** option to automatically set the IP address and network mask.

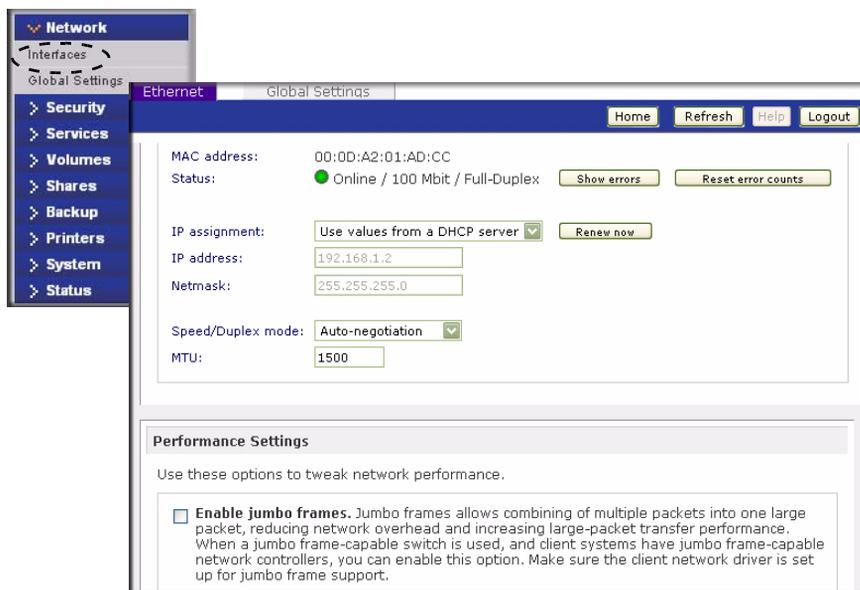


Figure 1-4

- **IP Assignment.** Select either **Use values from a DHCP server** or **Use values below**.
  - If you elect to assign the IP address using **Use values from a DHCP server**, NETGEAR advises that you set the lease time on the DHCP server/router to a value of at least a day. Otherwise, you might notice that the ReadyNAS Duo IP address changes even when ReadyNAS Duo has been powered down for only a few minutes. Most DHCP servers allow you to assign a static IP address for specified MAC addresses. If you have this option, this would be a good way to ensure your ReadyNAS Duo maintains the same IP address even in DHCP mode.
  - If you assign a static IP address by selecting **Use values below**, be aware that the browser will lose connection to the ReadyNAS Duo device after the IP address has been changed. To reconnect after assigning a static IP address, open RAIDar and click **Rescan** to locate the device, and then reconnect.
- **Speed/Duplex Mode.** If you have a managed switch that works best if the devices are forced to a particular speed or duplex mode, you can select the setting you want. NETGEAR advises that you keep the setting in an Auto-negotiation mode otherwise.

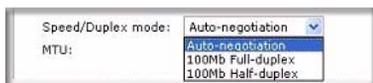
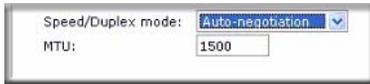


Figure 1-5

- **MTU.** In some network environments, changing the default MTU value can fix throughput problems. NETGEAR advises that you leave the default setting otherwise.



**Figure 1-6**

In the **Performance Setting** area, the **Enable jumbo frames** option allows you to optimize the ReadyNAS Duo for large data transfers such as multiple streams of video playback. Select this option if your NIC and your gigabit switch support jumbo frames.



**Note:** The ReadyNAS Duo supports a 7936 byte frame size, so for optimal performance, a switch capable of this frame size or larger should also be used.

## Global Network Settings

It is important that all of your Network settings are correctly specified. When you first install the ReadyNAS Duo, the default settings are used. However, you can customize some of these settings; for example, you could change your Workgroup name.

- **Hostname**

The Hostname you specify is used to advertise the ReadyNAS Duo on your network. You can use the hostname to address the ReadyNAS Duo in place of the IP address when accessing the ReadyNAS Duo from Windows, or over OS X using SMB. This is also the name that appears in the RAIDar scan list.

The default hostname is **nas-** followed by the last three bytes of your primary MAC address.

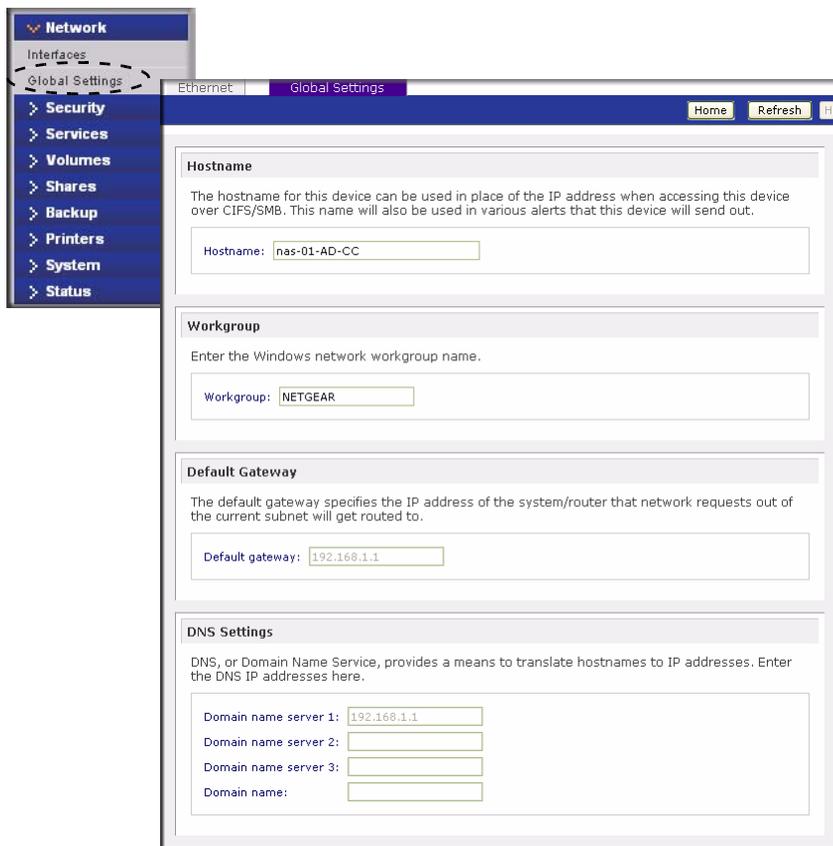
- **Default Gateway**

The Default Gateway specifies the IP address of the system where your network traffic is routed if the destination is outside your subnet. In most homes and smaller offices, this is the IP address of the router connected to the cable modem or your DSL service.

If you selected the DHCP option in the Ethernet or Wireless tab, the Default Gateway field is automatically populated with the setting from your DHCP server. If you selected the Static option, you can manually specify the IP addresses of the default gateway server here.

- **Workgroup**

The Workgroup is the file location name where your ReadyNAS Duo share folders reside. The default name is NETGEAR. This name is broadcast on your Network. This name can be changed to a name that is more familiar and recognizable. Just enter a new name and click **Apply**.



**Figure 1-7**

- **DNS Settings**

The DNS area allows you to specify up to three Domain Name Service servers for hostname resolution. The DNS service translates host names into IP addresses.

If you selected the DHCP option in the Ethernet or Wireless tab, the Domain Name Server fields are automatically populated with the DNS settings from your DHCP server. If you selected the Static option, you can manually specify the IP addresses of the DNS servers and the domain name here.

## Setting Up Security

The Security tab allows you to set the administrator password, administer security, and set up the password recovery feature on the ReadyNAS Duo. You will also be able to set up your User and Group Accounts.

### Admin Password

The Admin Password tab allows you to change the administrator user password. The administrator user is the only user that can access FrontView, and this user has administrative privileges when accessing shares. Be sure to set a password different from the default password, and make sure that this password is kept in a safe place. Anyone who obtains this password can effectively change or erase the data on the ReadyNAS Duo.



The screenshot shows the 'Admin Password' configuration page in the ReadyNAS Duo web interface. The left sidebar contains a navigation menu with 'Security' expanded to show 'Admin Password' and 'User & Group Accounts'. The main content area has a blue header with 'Admin Password' and 'Accounts' tabs, and 'Home' and 'Refresh' buttons. Below the header is a warning message: 'To change the admin password you will need to additionally specify a password recovery question, the expected answer, and an email address. In case you forget the admin password, you can reset the password by answering the password recovery question correctly and specifying the email address where the new admin password will be sent. **There is no other way to recover a lost password without setting the device back to factory default or reinstalling the firmware.**' The form contains five fields: 'New admin password:' (empty), 'Retype admin password:' (empty), 'Password recovery question:' (filled with 'nephew's middle name'), 'Password recovery answer:' (filled with 'Kent'), and 'Password recovery email address:' (filled with 'mike@abcd.com').

Figure 1-8

As a safeguard, you are requested to enter a password recovery question, the expected answer, and an e-mail address. If, in the future, you forget the password, you can go to [https://<ReadyNAS ip\\_address>/password\\_recovery](https://<ReadyNAS ip_address>/password_recovery). Successfully answering the questions there resets the Admin Password, and that new password is sent to the e-mail address you enter on this screen.

Figure 1-9

## Setting Up User and Group Accounts

In the **User & Group Accounts** security mode, the Accounts tab screen allows you to manage user and group accounts on the ReadyNAS Duo.

### Managing Users

To manage user accounts:

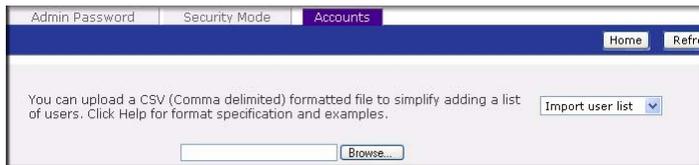
1. Select **Manage Users** from the drop-down menu.
2. Click the **Add User** tab to add a new user. You can add up to five users at a time. For each user, add the following information:
  - User name,
  - E-mail address
  - User ID
  - Select a group from the **Group** pull-down menu.
  - Password
  - Disk quota.
3. Click **Apply** to save your settings.

Name	Email	UID	Primary Group	Password	Used	Quota (MB)	Delete
Paul	pjones@abc.cc	1002	Home	••••••	0 MB	0	<input type="checkbox"/>
Smithy	jsmith@xyz.co	1003	Home	••••••	0 MB	0	<input type="checkbox"/>

Figure 1-10

Only the user name field is required; however, you should specify a user e-mail address if you intend to set up disk quotas. Without an e-mail address, the user will not be warned when disk usage approaches the specified disk quota limit. If you do not wish to assign a disk quota, enter 0.

If you wish to add a large number of users, select **Import user list** from the pull-down menu.



**Figure 1-11**

Here, you can upload a CSV (Comma Separated Value) formatted file containing the user account information. The format of the file is:

```
name1,password1,group1,email1,uid1,quota1
name2,password2,group2,email2,uid2,quota2
name3,password3,group3,email3,uid3,quota3
:
```

Please note the following:

- Spaces around commas are ignored.
- The name and password fields are required.
- If a listed group account does not exist, it is automatically created.
- Group and quota are set to the defaults if not specified.
- E-mail notification is not sent to the user if the field is omitted or left blank.
- UID is automatically generated if not specified.
- Empty fields are replaced with account defaults.

Examples of acceptable formats are as follows (note that you can omit follow-on commas and fields if you wish to accept the system defaults for those fields, or you can leave the fields empty):

```
fred,hello123
```

In this example, user **fred** has a password set to **hello123**, belongs to the default group, receives no e-mail notification, has a UID assigned automatically, and has a default quota.

```
barney,23stone,,barney@bedrock.com
```

In this example, user **barney** has a password set to **23stone**, belongs to the default group, receives e-mail notification sent to barney@bedrock.com, has a UID assigned automatically, and has a default quota.

wilma,imhiswif,ourgroup,wilma@bedrock.com,225,50

In this example, user **wilma** has a password **imhiswif**, belongs to the group **ourgroup**, receives e-mail notification sent to wilma@bedrock.com, has a UID set to 225, and a quota set to 50 MB.

## Managing Groups

To add a new group:

1. Select **Manage Groups** from the drop-down menu in the upper right corner.
2. Select the **Add Group** tab if it is not already selected. You can add up to five groups at a time. If you expect to have just one big set of users for one group, you can forego adding a new group and accept the default users group.
3. Click **Apply** to save your settings.

If you want, a user can belong to multiple groups. Once you have created user accounts, you can specify secondary groups that the user can belong to. This allows for finer-grain settings for share access. For instance, you can have user Smithy in the General group also belong to the Finance group so Smithy can access shares restricted to only the Finance Group.

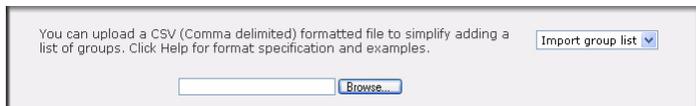
When adding a new group, you can specify the amount of disk space you wish to allocate that group by setting a disk quota. A value of 0 denotes no limit. You can also set the Group ID, or GID, of the group that you are adding. You can leave this field blank and let the system automatically assign this value unless you wish to match your GID to your NFS clients.



Figure 1-12

After adding your groups, you can view or change your groups by clicking the alphabetical index tab, or click **All** to list all groups.

If you wish to add a large number of groups, select **Import group list** from the pull-down menu.



**Figure 1-13**

You can upload a CSV (Comma Separated Value) formatted file containing the group account information. The format of the file is:

```
name1,gid1,quota1,member11:member12:member13
name2,gid2,quota2,member21:member22:member23
name3,gid3,quota3,member31:member32:member33
```

:

Please note the following:

- Spaces around commas are ignored.
- The name field is required.
- Quota is set to default if not specified.
- GID is automatically generated if not specified.
- Empty fields are replaced with account defaults.
- Group members are optional.

Examples of acceptable formats are as follows (note that you can omit follow-on commas and fields if you wish to accept the system defaults for those fields, or you can leave the fields empty):

```
flintstones
```

In this example, the group `flintstones` is created with an automatically assigned GID and default quota.

```
rubble,1007,5000,barney:betty
```

In this example, the group `rubble` has a GID of 1007, a quota of 5000 MB, with members `barney` and `betty`.

## Setting Accounts Preferences

You can set various account defaults by selecting **Preferences** option from the pull-down menu.



Figure 1-14

## Selecting Services for Share Access

The Services screen allows you to manage various services for share access. This in effect controls the type of clients you wish to allow access to the ReadyNAS Duo. Four types of services are available: Standard File Protocols, Streaming Services, Discovery Services and Installed AddOns. These different services are explained in the following sections.

### Standard File Protocols

The standard file protocols are common file-sharing services that allow your workstation clients to transfer files to and from the ReadyNAS Duo using built-in file manager-over-network file protocols supported by the client operating system. The available services are:

- **CIFS** (Common Internet File Service). Sometimes referred to as SMB. This protocol is used mainly by Microsoft Windows clients, and sometimes by Mac OS X clients. Under Windows, when you click on My Network Places Network Neighborhood, you are going across CIFS. This service is enabled by default and cannot be disabled.
- **NFS** (Network File Service). NFS is used by Linux and Unix clients. Mac OS 9/X users can access NFS shares as well through console shell access. The ReadyNAS Duo supports NFS v3 over UDP and TCP.
- **AFP** (Apple File Protocol). Mac OS 9 and OS X works best using this protocol as it handles an extensive character set. However, in mixed PC and Mac environments, it is advisable to use CIFS/SMB, unless enhanced character set support is necessary on the Mac. The ReadyNAS Duo supports AFP 3.1.

- **FTP** (File Transfer Protocol). Widely used in public file upload and download sites. ReadyNAS Duo supports anonymous or user access for FTP clients, regardless of the security mode selected. If you wish, you can elect to set up port forwarding to nonstandard ports for better security when accessing files over the Internet.
- **HTTP** (Hypertext Transfer Protocol). Used by Web browsers. ReadyNAS Duo supports HTTP file manager, allowing Web browsers to read and write to shares using the Web browser. This service can be disabled in lieu of HTTPS to allow for a more secure transmission of passwords and data. With the option to redirect default Web access to a specified share, you can transparently force access to **http://readynas\_ip** to **http://readynas\_ip/share**. This is useful if you do not want to expose your default share listing page to outsiders. All you need in the target share is an index file such as index.htm or index.html. You have the option of enabling or disabling login authentication to this share.
- **HTTPS** (HTTP with SSL encryption). This service is enabled by default and cannot be disabled. Access to FrontView is strictly through HTTPS for this reason. If you want remote Web access to FrontView or your HTTPS shares, you can specify a nonstandard port (default is 443) that you can forward on your router for better security. You can also regenerate the SSL key based on the hostname or IP address that users will use to address the ReadyNAS Duo. This allows you to bypass the default dummy certificate warnings whenever users access the ReadyNAS Duo over HTTPS.
- **Rsync**. An extremely popular and efficient form of incremental backup made popular in the Linux platform but now available for various other Unix systems as well as Windows and Mac. Enabling rsync service on the ReadyNAS Duo allows clients to use rsync to initiate backups to and from the ReadyNAS Duo.

- > Network
- > Security
- > **Services**
  - Standard File Protocols
  - Streaming Services
  - Discovery Services
  - Installed AddOns
- > Volumes
- > Shares
- > Backup
- > Printers
- > System
- > Status

Select the file sharing protocol you wish to enable. In general, disable the protocols you do not intend to use. You can always enable them later. Click **Help** for more information.

**CIFS** , or Common Internet File System, used predominantly by Windows. Mac OS X also supports this protocol though it may be referred to as SMB.

**NFS** , or Network File System, widely used in Unix or Linux environments. Mac OS X also supports this protocol.

**AFP** , or Apple Filing Protocol, popular in Mac environments. AFP provides better support for a larger range of characters in filenames and is preferred where this is important.
 

Advertise AFP service over Bonjour  
 Advertise AFP service over AppleTalk

**FTP** , or File Transfer Protocol, used extensively for basic file upload and downloads. If you will be making FTP service available to this device outside the firewall, you can specify a custom port for added security.
 

Port:   
 Authentication mode:   
 Allow upload resumes:   
 Passive ports:  -   
 Masquerade as:

**HTTP** , or Hypertext Transfer Protocol, used everywhere web browsers exist. Default access to the NAS over HTTP will show a share list. If you want to use the NAS as a web server, you can specify a share where access will be redirected and you can enable or disable login authentication to that share. Please keep in mind that you will only be allowed to redirect to a share that is set up for **read-only** access over HTTP.
 

Redirect default web access to this share:   
 Login authentication on this share:

**HTTPS** , or HTTP with SSL encryption, used where secure web access is desired. If you will be making HTTPS service available to this device outside the firewall, you can specify an additional port for this purpose for added security.
 

Port 1:   
 Port 2:   
 SSL key host:

**Rsync** , a popular incremental backup protocol used in Unix and Linux environments.

Figure 1-15

## Streaming Services

The built-in streaming services on the ReadyNAS Duo allow you to stream multi-media content directly from the ReadyNAS Duo, without the need to have your PC or Mac powered on.

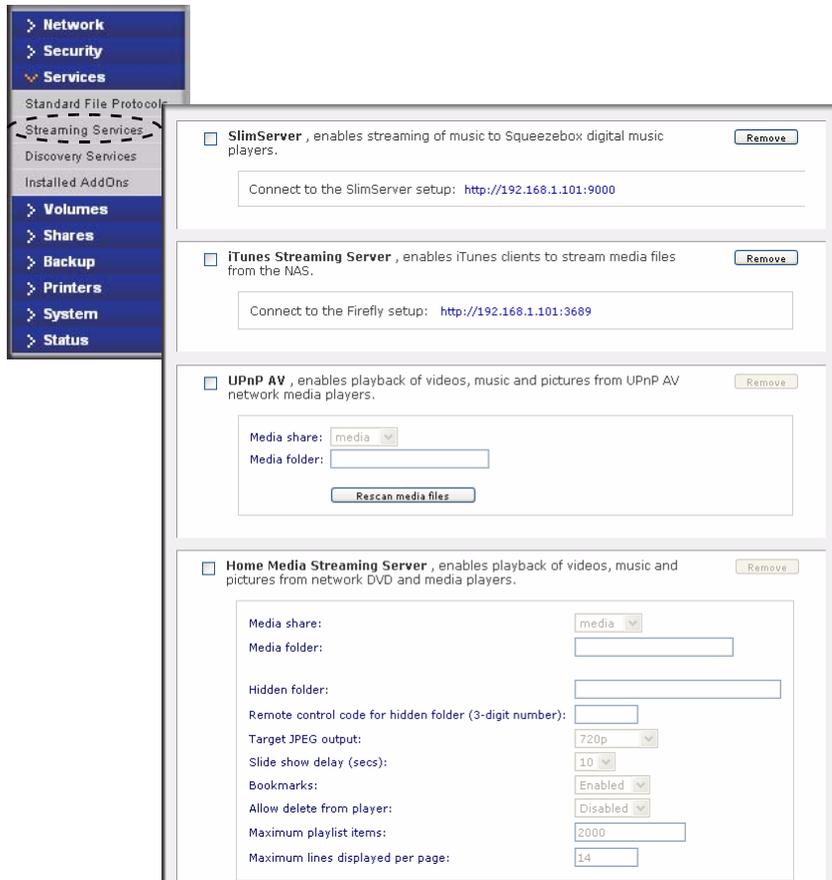


Figure 1-16

- **SlimServer** provides music streaming to the popular Squeezebox music players from Slim Devices. You can click the http setup link for more detailed configuration options.
- **iTunes Streaming Server** enables iTunes clients to stream media files straight from the ReadyNAS Duo. You can click the http setup link for more detailed configuration options.
- **UPnP AV** provides media streaming service to stand-alone networked home media adapters and networked DVD players that support the UPnP AV protocol or are Digital Living Network Alliance (DLNA) standard compliant. The ReadyNAS Duo comes with a reserved media share that is advertised and recognized by the players. Simply copy your media files to the Videos, Music, and Pictures folders in that share to display them on your player. If you wish, you can specify a different media path where your files reside.

- **Home Media Streaming Server** provides streaming of videos, music, and pictures to popular networked DVD players. The streaming players often utilize the streaming client developed by Syabas. Similar to UPnP AV, this service is used to stream videos, music, and pictures from the reserved media share to these adapters. If you wish to change the location where the media files are stored, you can specify a different share and folder path. Note that this path is shared between the UPnP AV and this service.

## Discovery Services

- **Bonjour service** provides a simple way of discovering various services on the ReadyNAS Duo. Bonjour currently provides an easy way to connect to FrontView, IPP printing, and AFP services. OS X has built-in Bonjour support, and you can download Bonjour for Windows from Apple's website.
- **UPnP** provides a means for UPnP-enabled clients to discover the ReadyNAS Duo on your LAN.

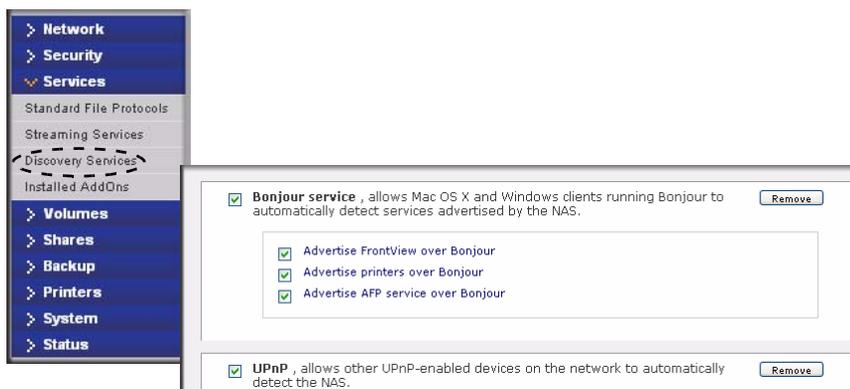


Figure 1-17

## Installed AddOns

Two add-ons allow you to download files unattended using the Bit Torrent technology and share your photos on the ReadyNAS photo-share site.

- **Bit Torrent.** The ReadyNAS Duo enables peer-to-peer file sharing and allows the ReadyNAS Duo to queue and index torrent download files.
- **ReadyNAS Photos.** The ReadyNAS Duo allows you to share photos with select users on the Internet. You must install ReadyNAS Photos software which is available on the ReadyNAS site. Simply click Install ReadyNAS Photos and follow the on-screen prompts. Once you have

enabled this feature and downloaded the software, you will be able to share photos located in your Pictures folder.

To download ReadyNAS Photos software:

1. Click **Install ReadyNAS Photos**. The ReadyNAS Photos Installers screen displays.

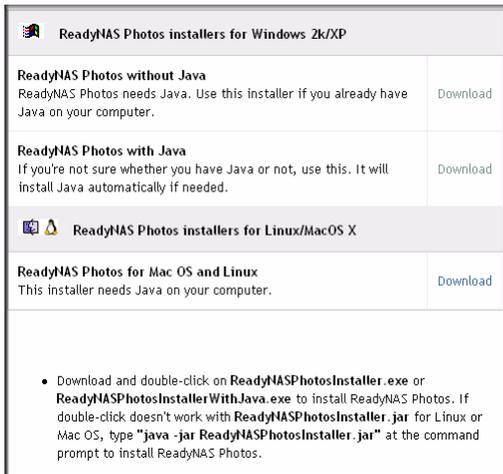


Figure 1-18

2. Select the install version that is appropriate for your operating system. When the installation has completed, the ReadyNAS Photos icon  will be installed on your desktop.
3. Create a ReadyNAS Photos profile. You will need the User ID and Password that you selected to log in to ReadyNAS Photos.



Figure 1-19

- When the ReadyNAS Photos login screen displays, enter your User ID and Password and click the arrow.



Figure 1-20

- A screen similar to the one below will display. Connect ReadyNAS Photos to your ReadyNAS Duo by clicking **Connect**.



Figure 1-21

- The Add New Album screen displays. Click on the **Click here to add album** link to add your first album. To add subsequent albums, select Import Albums from the menu bar.



Figure 1-22

- From the Import Albums screen select the Photo Albums you want to add from the Bookmarks pull-down menu. Highlight the album you want to add and click **ADD**, and then click **START**. The new album will display.

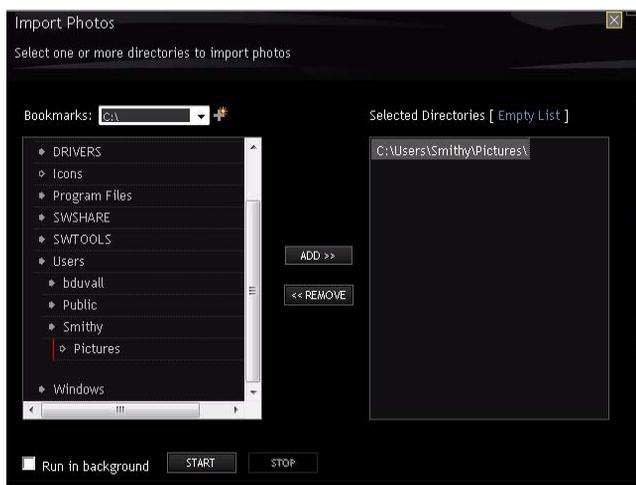
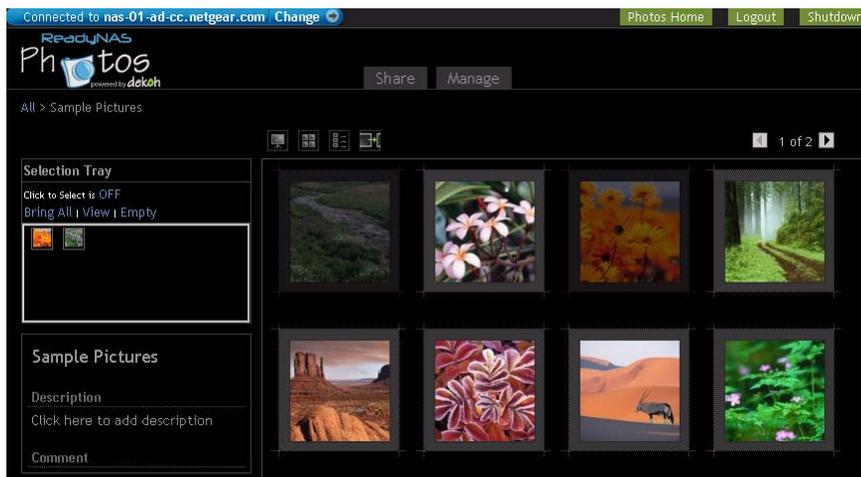


Figure 1-23

8. Double-click on the album image to open the album. You can rotate or delete any photos prior to sharing your photos. You can also select a specific photos to share by moving each photo thumbnail into the Selection Tray.



**Figure 1-24**

9. After you have corrected your photos or selected certain photos to share, select Share from the menu. The Share Dialog will display.
  - a. Enter the email address or User ID of each buddy.
  - b. Select either the **Share this Album** radio button or the **Share Items in Selection Tray** to determine which photos to share.
  - c. From the pull-down menu, select the photo album name (if you are sharing an album) or, if you are sending select photos from the selection tray, then you can create a specific name.
  - d. Enter a message to accompany to the photos.

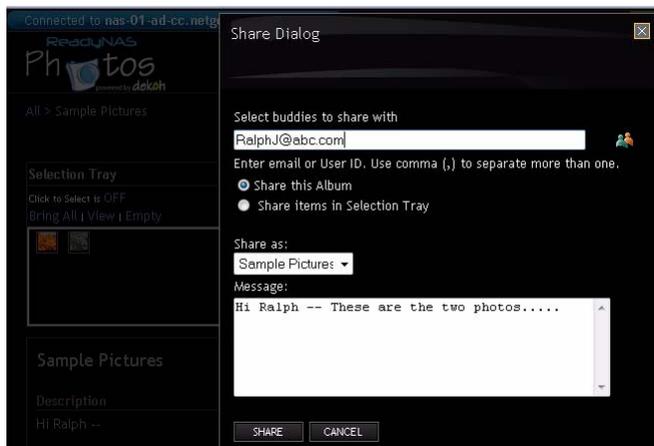


Figure 1-25

10. Click **Share**. An email will be sent to your share buddy; you will also be notified by email that the shared photos have been sent.

## Understanding Volume Management

---

The ReadyNAS Duo uses X-RAID, an NETGEAR-patented expandable RAID technology. Some benefits of X-RAID technology are:

- One-volume technology, but supports volume expansion, either by with the addition of more disks or the replacement of an existing disk with larger capacity disks.
- You can start out with one disk, and add an additional more disk when you need it.
- Volume management is automatic. Add a second disk, and it becomes a mirror to the first—the expansion occurring while redundancy is maintained.

### Volume Management for X-RAID

The X-RAID technology offers a simplified approach to volume management. X-RAID works on the premise that what most people want to do with their data volume over time is either adding redundancy or expanding it without the headaches usually associated with doing that. By using simple rules, X-RAID is able to hide all the complexities yet provide volume management features previously available only in enterprise-level storage solutions.

- **X-RAID Redundancy Overhead.** To maintain redundancy from disk failure, X-RAID requires a one-disk overhead. In a two-disk X-RAID volume, the usable capacity is one disk.

- **X-RAID has One Data Volume.** X-RAID devices have only one data volume. This volume encompasses one to two disks, utilizing the capacity of the smallest disk from each disk. For instance, if you had one 80 GB disk and one 250 GB disk, only 80 GB from is used in the volume. (The leftover space on the 250 GB disk is reclaimed only when the 80 GB disk is replaced with a 250 GB or greater capacity disk. See [“Replacing Your Disk for More Capacity”](#) on page 1-21.)

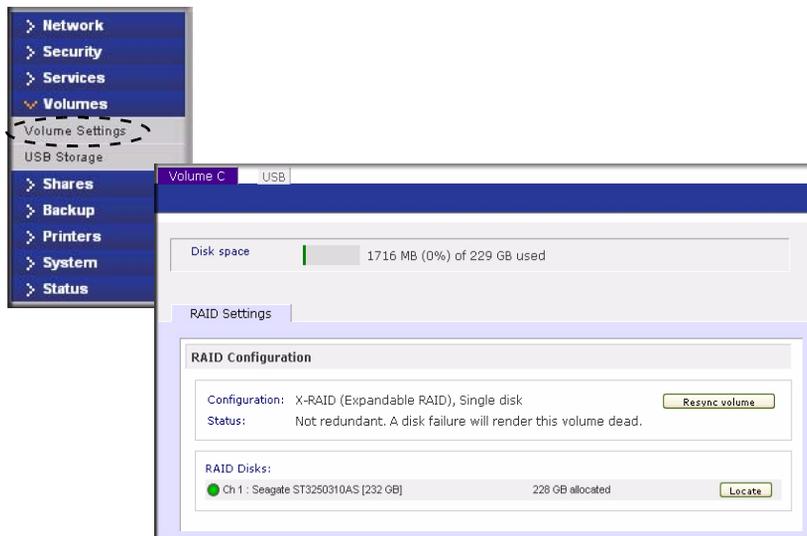


Figure 1-26

## Adding a Second Disk for Redundancy

A one-disk X-RAID device has no redundancy and provides no protection from a disk failure. However, if and when you feel the need for redundancy, simply power down the device, add a new disk with at least the capacity of the first disk, and power on. Depending on the size of the disk, within a few hours, your data volume will be fully redundant. The process occurs in the background, so access to the ReadyNAS Duo is not interrupted.

After you receive your e-mail, the ReadyNAS Duo will have been expanded with the capacity from your new disk(s).

## Replacing Your Disk for More Capacity

A year or so down the line when you find the need more disk space, and 600 GB disks are available at an attractive price, you can expand your volume capacity by replacing the existing disks. Keep in mind that you must power down several times to replace out your old disks.

First, power down the ReadyNAS Duo, replace the first disk with the large-capacity disk, and then reboot. If your ReadyNAS Duo supports hot-swapping, you can hot-swap the disk without powering down. The ReadyNAS Duo will detect that a new disk was put in place and resynchronizes the disk with data from the removed disk. This process takes several hours, depending on disk capacity. The disk is initialized and scanned for bad sectors first before the rsync process is started. The total time from the start of initialization to the end of resynchronization can be around 5 hours or more, depending on disk capacity. You will be notified by e-mail upon completion.

## USB Storage

The USB tab displays the USB disk and flash devices connected to the ReadyNAS Duo, and offers various options for these devices. A flash device appears as **USB\_FLASH\_1** and a disk device appears as **USB\_HDD\_1**. If you have multiple devices, they appear appended by an increasing device number; for example, **USB\_HDD\_2**. If the device contains multiple partitions, the partitions are listed beneath the main device entry.



Figure 1-27

Partitions on the storage devices must be one of the following file system formats:

- FAT32
- NTFS
- Ext2
- Ext3

To the right of the access icons are command options for the device. The following commands are available:

<b>Disconnect</b>	This option prepares the USB partition for disconnection by correctly unmounting the file system. In most cases, you can safely disconnect the device without first unmounting; however, the Disconnect command ensures that any data still in the write cache is written out to the disks and that the file system is properly closed. The Disconnect option unmounts all partitions on the device. Once disconnected, physically remove and re-connect to the ReadyNAS Duo to regain access the USB device,.
<b>Locate</b>	In cases where you attach multiple storage devices and wish to determine which device corresponds to the device listing, the Locate command causes the device LED to blink, if present.
<b>Format FAT32</b>	This option formats the device as a FAT32 file system. FAT32 format is easily recognizable by most newer Windows, Linux, and Unix operating systems.
<b>Format EXT3</b>	This option formats the device as an EXT3 file system. Select this option if you will be accessing the USB device mainly from Linux systems or ReadyNAS Duo devices. The advantage of EXT3 over FAT32 is that file ownership and mode information can be retained using this format, whereas this capability is not there with FAT32. Although not natively present in the base operating system, Ext3 support for Windows and OS X can be added. The installation images can be downloaded from the Web.

When the USB device is unmounted, you have the option of renaming it. The next time the same device is connected, it will use the new name rather than the default **USB\_FLASH\_n** or **USB\_HDD\_n** naming scheme.

The USB storage shares are listed in the Share screen, and access restrictions can be specified there. The share names reflect the USB device names.

### USB Flash Device Option

Toward the lower portion of the USB Storage screen is the USB Flash Device Option section (see [Figure 1-27 on page 1-22](#)). There, you can elect to copy the content of a USB flash device automatically on connection to a specified share. Files are copied into a unique timestamp folder to prevent overwriting previous contents. This is useful for uploading pictures from digital cameras and music from MP3 players without needing to power on a PC.

In User security mode, an additional option to set the ownership of the copied files is available.

## Managing Your Shares

The Shares menu provides all the options pertaining to share services for the ReadyNAS Duo device. This entails share management (including data and print shares), volume management, and share service management.

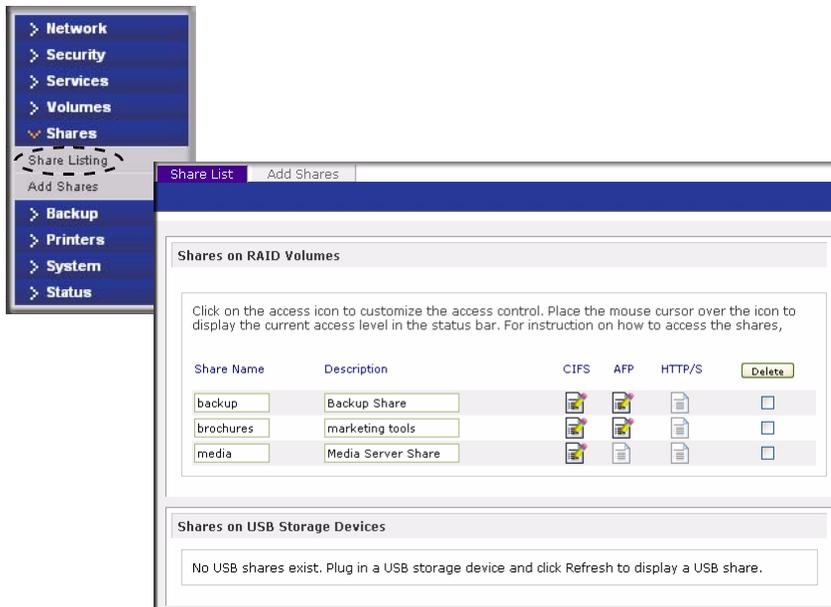


Figure 1-28

## Adding Shares

To add a share:

1. From the main menu, select **Volumes > Volume Settings**. If more than one volume is configured, click on the volume for which you want to add the share.

- Then select Shares > Add Shares. Deselect the Public Access checkbox if you want to enable user authentication for access to this share using CIFS and/or AFP protocols.

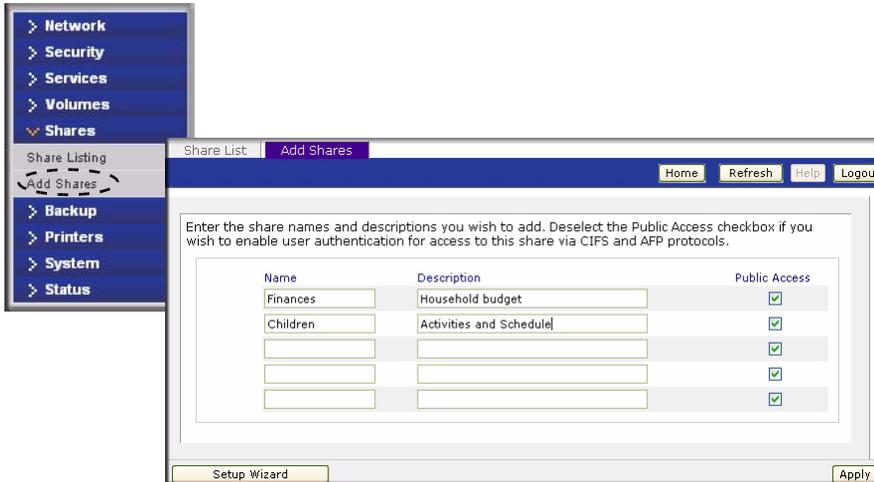


Figure 1-29

- Click **Apply**.

## Managing Shares

Once you have added shares, you can manually fine-tune share access by selecting Share List. This screen has two views, one for Share Security mode and one for User and Domain mode. They are similar except for the password and disk quota prompts which appear only in Share mode.

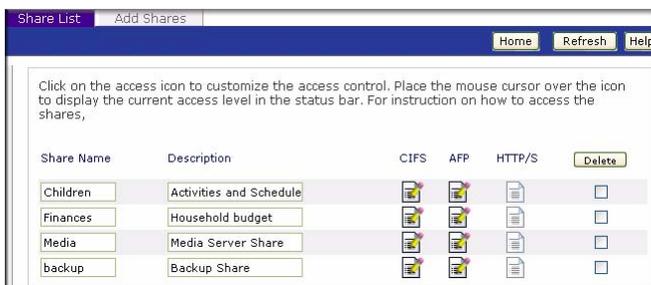


Figure 1-30

If you want to delete a share, select the check box on the far right of the share listing and click **Delete**.

The columns to the left of the Delete check box represent the services that are currently available. The access icons in those columns summarize the status of the service and the access rights to the

share for each of the services. Move the mouse pointer over the access icons to view the access settings.



**Figure 1-31**

The settings are as follows:

- **Disabled.** Access to this share is disabled.
- **Read-only Access.** Access to this share is read-only.
- **Read/Write Access.** Access to this share is read/write.
- **Read Access with exceptions.** Either (1) access to this share is read-only and allowed only for specified hosts, (2) access is read-only except for one or more users or groups that are granted read/write permission, or (3) access is disabled except for one or more users or groups that are granted read-only privilege.
- **Write Access with exceptions** – Either (1) access to this share is read/write and allowed only for specified hosts, (2) access is read/write except for one or more users or groups that are restricted to read-only access, or (3) access is disabled except for one or more users or groups that are granted read/write privilege.

You can click on the access icons to display the Share Options screen, where you can set the access rules for each file protocol. Keep in mind that access options differ between protocols.

## Setting Share Access

From the Share List screen, click the CIFS link  adjacent to the Share whose share access you want to change. In the following example, we selected the Children share; the CIFS (Windows) share options screen looks like the following:



Share Name: Children      Default Access: Read/write

**Share Access Restrictions**

Share access for the file protocol can be restricted using the access list(s) below.

Separate entries with comma

Hosts allowed access:

Read-only users:

Read-only groups:

Write-enabled users:

Write-enabled groups:

Allow guest access

**Figure 1-32**

To set share access:

1. Select the Default Access pull-down menu at the top, select the access to be granted.
2. Select the **Hosts allowed access** check box and specify one or more hosts that you wish to restrict access to in the adjacent field.

For example, select **read-only** for Default Access and list the hosts to whom you wish to allow access. Access from all other hosts will be denied. To allow only host 192.168.2.101 read-only access to the share, specify the following:

- Default: **Read-only**
- Hosts allowed access: **192.168.2.101**

Multiple hosts can be separated with commas (see [Appendix B, “General Glossary”](#) for information about valid host formats.) For example, if you wish to limit share access to particular hosts, you can enter host IP addresses or valid DNS hostnames in the **Host allowed access** field. In addition, you can enter a range of hosts using common IP range expressions such as:

**192.168.2., 192.168.2.0/255.255.255.0, 192.168.2.0/24**

These designations all allow hosts with IP addresses 192.168.2.1 through 192.168.2.254.

Toward the bottom of the CIFS screen are the Share Display Option, Recycle Bin, and Advanced CIFS Permissions. Refer to the descriptions for these options in the sections that follow.

**Share Access Restriction.** If you wish to limit share access to particular users and/or groups, you can enter their names in the **Read-only users**, **Read-only groups**, **Write-enabled users**, and **Write-enabled group** fields. The names must be valid accounts, either on the ReadyNAS Duo or on the domain controller.

For instance, if you wish to allow read-only access to all and read/write access only user **fred** and group **engr**, you would set the following:

- Default: **Read-only**
- Write-enabled users: **fred**
- Write-enabled groups: **engr**

If you wish to limit this access only to hosts 192.168.2.101 and 192.168.2.102, set the following:

- Default: **Read-only**
- Hosts allowed access: **192.168.2.101, 192.168.2.102**
- Write-enabled users: **fred**
- Write-enabled groups: **engr**

If you wish to specify some users and groups for read-only access and some for read/write access, and disallow all other users and groups, enter the following:

- Default: **Disabled**
- Hosts allowed access: **192.168.2.101, 192.168.2.102**
- Read-only users: **mary, joe**
- Read-only groups: **marketing, finance**
- Write-enabled users: **fred**
- Write-enabled groups: **engr**

Note that access control differs slightly from service to service.

**Share Display Option.** Restricting access to a share does not prevent users from seeing the share in the browse list. In certain instances, you might not want this, such as for backup shares that you might want to prevent users from seeing.

To hide a share, select the **Hide this share...** check box. Users who have access to this share must specify the path explicitly. For example, to access a hidden share, enter **\\host\share** in the Windows Explorer address bar.

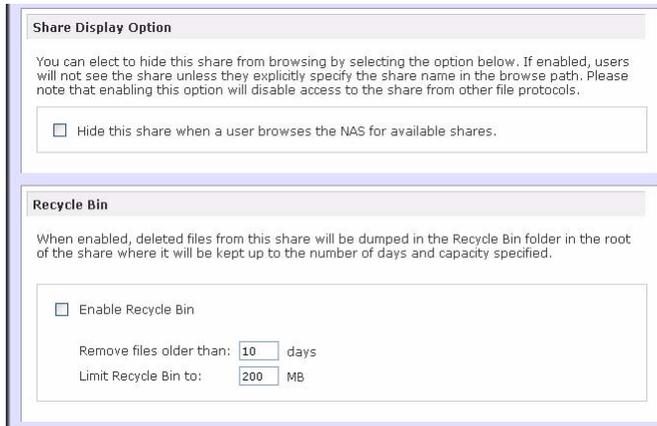


Figure 1-33

**Recycle Bin.** The ReadyNAS Duo can have a Recycle Bin for each share for Windows users. The **Enable Recycle Bin** option is shown at the bottom of the CIFS screen.

When this check box is selected, whenever you delete a file, the file gets inserted into the Recycle Bin folder in the share rather than being permanently deleted. This allows for a grace period during which users can restore deleted files.

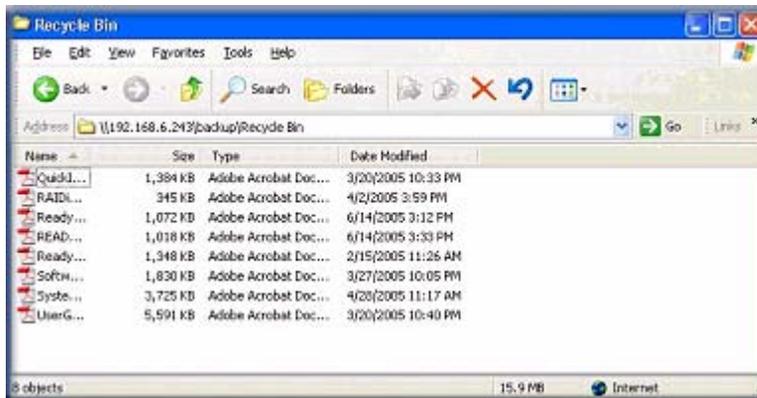


Figure 1-34

You can specify how long to keep the files in the Recycle Bin and how large the Recycle Bin can get before files get permanently erased.

**Advanced CIFS Permission.** The Advanced CIFS Permission section offers options for setting the default permission of new files and folders created through CIFS. The default permission of newly created files is read/write for the owner and owner's group and read-only for

others (that is, everyone). Permission for newly created folders is read/write for everyone. If the default does not satisfy your security requirement, you can change it here.

Opportunistic locking (often referred to as oplocks) enhances CIFS performance by allowing files residing on the NAS to be cached locally on the Windows client, thus eliminating network latency when the files are constantly accessed.



**Figure 1-35**

## Advanced Options

The Advanced Options tab offers advanced low-level file manipulation options that can affect remote file access through all file protocol interfaces. Care should be taken before you use these options as anything that changes ownership and permissions might not be easily reversible.

**Advanced Share Permission**

The following options are provided to override the default settings for shares and should be used with caution.

Share folder owner:

Share folder group:

Share folder owner rights:

Share folder group rights:

Share folder everyone rights:

Set ownership and permission for existing files and folders in this share to the above settings. This option is useful in cases where you are changing security levels and need to work around file access problems.

Grant rename and delete privileges to non-owner of files.

---

**Advanced Share Utilities**

The following options provide miscellaneous share and share content functionality.

Use this option to adjust the timestamps of the contents of the share. This can be used to fix issues with incremental backups and sources/destinations that change local timestamps on Daylight Savings changes. Enter a positive number to push timestamps ahead, negative numbers to push them back.

Shift share content timestamps by:  minutes

Figure 1-36

**Advanced Share Permission.** The Advanced Share Permission section offers the options to override the default ownership and permission of the share folder on the embedded file system and to permeate these settings to all files and folders residing on the selected share. The **Set ownership and permission for existing files and folders** option performs a one-time change. Depending on the size of the share, this can take a while to finish.

You can also grant rename and delete privilege to non-owners of the files option. In a collaborative environment, you might want to enable this option. In a more security-conscious environment, you might want to disable this option.

## USB Shares

USB storage devices are shared using the name of the device appended with the partition number. You can change the base device name in Volumes > USB Storage, if you want. The ReadyNAS Duo attempts to remember the name as long as there is a unique ID associated with the USB device so that the next time the device is connected, the same share name(s) will be available. Share access restrictions are not saved across disconnects, however.

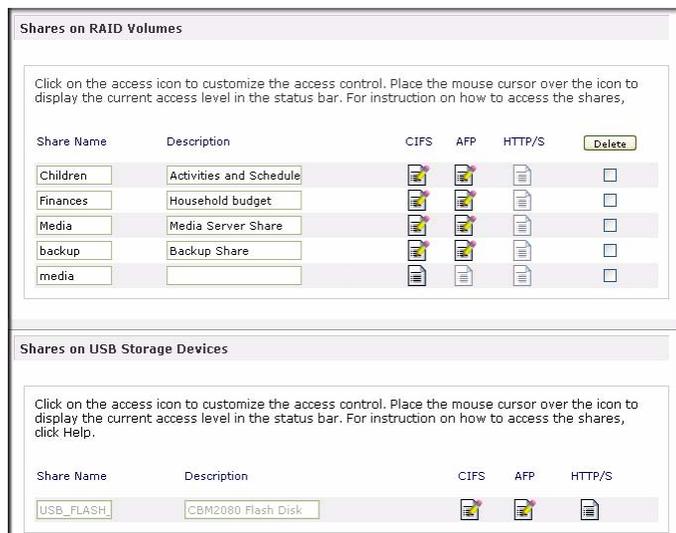


Figure 1-37



**Note:** Although access authorization is based on user login in non-Share mode, files saved on the USB device, regardless of the user account, are with UID 0. This is to allow easy sharing of the USB device with other ReadyNAS Duo and PC systems.

## Configuring Backup Jobs

The Backup Manager integrated with the ReadyNAS Duo allows the ReadyNAS Duo to act as a powerful backup appliance. Backup tasks can be controlled directly from the ReadyNAS Duo without the need for a client-based backup application.

With the flexibility to support incremental backups over CIFS/SMB, NFS, and rsync protocols, and full backups over FTP and HTTP protocols, the ReadyNAS Duo can act as a simple central repository for both home and office environments. And with multiple ReadyNAS Duo systems, you can set up one ReadyNAS Duo to back up another directly.

## Adding a New Backup Job

To create a new backup job, select **Add a New Backup Job**. A 4-step procedure screen for creating a job displays.

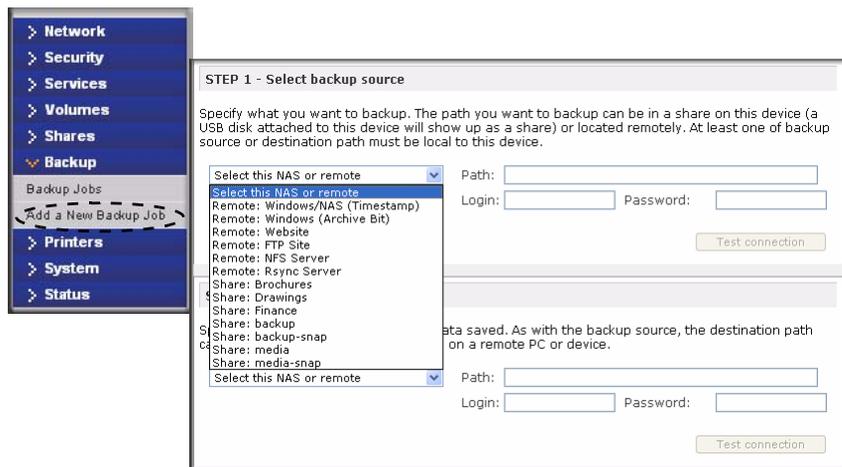


Figure 1-38

### Step 1 – Select Backup Source

The backup source can be located remotely, or it can be a public or a private home share, or all home shares on the ReadyNAS Duo.

A USB device appears as a share, so if you want to back up a USB device, select a share name. If you want to back up data from a remote source, select from one of the following:

- **Windows/NAS (Timestamp)**. Select this if you wish to back up a share from a Windows PC. Incremental backups use timestamps to determine whether files should be backed up.
- **Windows/NAS (Archive Bit)**. Select this if you wish to back up a share from a Windows PC. Incremental backups use the archive bit of files, similar to Windows, to determine whether they should be backed up.
- **Website**. Select this if you wish to back up a website or a website directory. The backed up files include files in the default index file and all associated files, as well as all index file links to web page image files.
- **FTP site**. Select this if you wish to back up an FTP site or a path from that site.
- **NFS server**. Select this option if you wish to back up from a Linux or UNIX server across NFS. Mac OS X users can also use this option by setting up a NFS share from the console terminal.

- **Rsync server.** Select this if you wish to perform backups from a rsync server. Rsync was originally available for Linux and other flavors of UNIX, but has lately become popular under Windows and Mac for its efficient use of incremental file transfers. This is the preferred backup method between two ReadyNAS Duo devices.

Once you have selected a backup source, you can enter the path from that source. If you selected a ReadyNAS Duo share, you can either leave the path blank to backup the entire share, or enter a folder path. Note that you should use forward slashes (/), in place of backslashes (\).

If you selected a remote source, each remote protocol uses a slightly different notation for the path. If the path field is empty, selecting the remote source in the pull-down menu shows an example format of the path. Following are some examples:

- Examples of an FTP path:

**ftp://myserver/mypath/mydir**

**ftp://myserver/mypath/mydir/myfile**

- Examples of a website path:

**http://www.mywebsite.com**

**http://192.168.0.101/mypath/mydir**

- Examples of a Windows or remote NAS path:

**//myserver/myshare**

**//myserver/myshare/myfolder**

**//192.168.0.101/myshare/myfolder**

- Examples of an NFS path:

**myserver:/mypath**

**192.168.0.101:/mypath/myfolder**

- Examples of a Rsync path:

**myserver::mymodule/mypath**

**192.168.0.101::mymodule/mypath**

- Examples of a local path:

**myfolder**

**media/Videos**

**My Folder**

## My Documents/My Pictures

With a remote source, you might need to enter a login and password to access the share. If you are accessing a password-protected share on a remote ReadyNAS Duo server configured for Share security mode, enter the name of the share name for login.

To make sure that you have proper access to the backup source, click **Test Connection** before continuing.

## Step 2 – Select Backup Destination

The Step 2 process is almost identical to Step 1 except that you are now specifying the backup destination. If you selected a remote backup source, you need to select a public or a private home share on the ReadyNAS Duo (either the source or destination must be local to the ReadyNAS Duo). If you selected a ReadyNAS Duo share for the source, you can either enter another local ReadyNAS Duo share for the destination, or you can specify a remote backup destination.

The screenshot displays two steps in a configuration wizard. Step 1, titled 'STEP 1 - Select backup source', includes a text box with instructions: 'Specify what you want to backup. The path you want to backup can be in a share on this device (a USB disk attached to this device will show up as a share) or located remotely. At least one of backup source or destination path must be local to this device.' Below this are fields for 'Share: backup' (a dropdown menu), 'Path:', 'Login:', and 'Password:'. A 'Test connection' button is located at the bottom right of this section. Step 2, titled 'STEP 2 - Select backup destination', includes a text box with instructions: 'Specify where you want your backup data saved. As with the backup source, the destination path can be a share on this device or a path on a remote PC or device.' Below this are fields for 'Remote: Windows/NAS (Timestamp)' (a dropdown menu), 'Path: Example: //host/share/path', 'Login: admin', and 'Password:'. A 'Test connection' button is located at the bottom right of this section.

Figure 1-39

The remote backup destination can be a Windows PC/ReadyNAS Duo system, an NFS server, or a rsync server. Note that you can select **rsync** for a remote ReadyNAS Duo if it is configured to serve data over rsync.

## Step 3 – Choose Backup Schedule

You can select a backup schedule as frequently as once every 4 hours daily or just once a week. The backup schedule is offset by 5 minutes from the hour to allow you to schedule snapshots on the hour (snapshots are almost instantaneous) and perform backups of those snapshots (see [“USB Storage” on page 1-22](#) to set up a snapshot schedule).

If you wish, you can elect not to schedule the backup job so that you can invoke it manually instead by clearing (deselecting) the **Perform backup every...** check box. (You might want to do this if your ReadyNAS Duo has a backup button.)

The screenshot shows a web-based configuration interface for backup scheduling. It is divided into two sections: 'STEP 3 - Choose backup schedule' and 'STEP 4 - Choose backup options'. In Step 3, the 'Perform backup every' checkbox is checked, with a dropdown set to '24' hours between '00:05' and '23:05'. Below this, a row of checkboxes for days of the week is shown: Sun (unchecked), Mon (checked), Tue (checked), Wed (checked), Thu (checked), Fri (checked), and Sat (unchecked). A 'Select All Days' button is also present. Step 4 contains a 'Schedule full backup' dropdown set to 'First time', a field for 'On backup completion, send' set to 'errors only', and three unchecked checkboxes with descriptive text and warnings regarding file removal and ownership changes.

Figure 1-40

## Step 4 – Choose Backup Options

In this last step, you can set up how you want backups to be performed. To set up a backup schedule:

1. **Schedule a full backup.** Select when you want full backups to be performed. You can elect to do this just the first time, every week, every 2 weeks, every 3 weeks, every 4 weeks, or every time this backup job is invoked.

The first full backup is performed at the next scheduled occurrence of the backup depending on the schedule you specify, and the next full backup is performed at the weekly interval you choose calculated from this first backup. Incremental backup is performed between the full backup cycles.

Backups of a Web or FTP site only have the option to do a full backup every time.

2. **Send a backup log.** Backup logs can be sent to the users on the Alert contact list when the backup is complete. It is a good idea to select this option to make sure that files are backed up

as expected. You can elect to send only errors encountered during backup, full backup logs consisting of file listings (can be large), or status and errors (status refers to completion status).



**Note:** Backup log e-mails are restricted to approximately 10K lines. To view the full backup log (regardless of length), select Status > Logs and click the **Download All Logs** link.

3. **Remove files from backup destination.** Select if you want to erase the destination path contents before the backup is performed. Be careful not to reverse your backup source and destination as doing so can delete your source files for good. It is safer to not select this option unless your device is running low on space. Do experiment with a test share to make sure you understand this option.
4. **Remove deleted files on backup target for rsync.** By default, files deleted in the backup source will not get deleted in the backup destination. With rsync, you have the option of simulating mirror mode by removing files in the backup destination deleted from the backup source since the last backup. Select this option if you wish to do this. Experiment with a test share to make sure that you understand this option.
5. **Change ownership of backup files.** The Backup Manager attempts to maintain original file ownership whenever possible; however, this might cause problems in Share Security mode when backup files are accessed. To work around this, you have the option of automatically changing the ownership of the backed-up files to match the ownership of the share. This allows anyone who can access the backup share to have full access to the backed-up files.
6. Click **Apply** to save your settings.

Before trusting your backup job to a schedule, it is a good practice to manually perform the backup to make sure that access to the remote backup source or destination is granted, and that the backup job can be done within the backup frequency you selected. This can be done after you save the backup job.

## Viewing the Backup Schedule

After saving the backup job, a new job appears in the Backup Schedule section of the Backup Jobs screen.

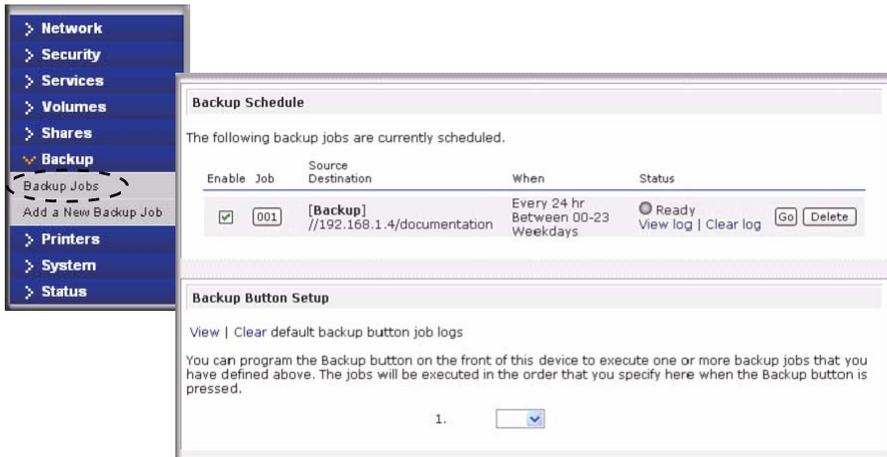


Figure 1-41

A summary of the backup jobs that have been scheduled are shown; jobs are numbered beginning at 001.

To manage your backup jobs:

1. Click the Job number icon to modify the selected backup job.
2. Enable or disable job scheduling by selecting/clearing the **Enable** check box. Disabling the job does not delete the job, but removes it from the automatic scheduling queue.
3. Click **Delete** to permanently remove the job.
4. Click **Go** to manually start the backup job. The status changes when the backup starts, when an error is encountered, or when the job has finished.
5. Select the **View Log** link to check a detailed status of the backup.
6. click **Clear Logs** to refresh and clear the current log detail.

## Programming the Backup Button

On ReadyNAS Duo systems that have the Backup Button feature, you can program the button to execute one or more pre-defined backup jobs.



Figure 1-42

Simply select the backup jobs in the order that you want them run and click **Apply**. Pressing the Backup Button once starts the job(s).

## Viewing the Backup Log

You can view the backup log while the job is in progress or after it has finished.

```
Backup finished Mon Aug 7 19:09:20 PDT 2006
INCREMENTAL Backup started. Mon Aug 7 19:08:08 PDT 2006

Job: 001
Protocol: cifs
Source: //192.168.6.157/Competition/dataS
Destination: [Backup/]

/job_001//dataS/Book1_april7_inv.xls' -> '/Backup/Book1_april7_inv.xls'
/job_001//dataS/Book1_april7_ord.xls' -> '/Backup/Book1_april7_ord.xls'
/job_001//dataS/Book1_april7_bck.xls' -> '/Backup/Book1_april7_bck.xls'
/job_001//dataS/Book1_april14_inv.xls' -> '/Backup/Book1_april14_inv.xls'
/job_001//dataS/Book1_april14_ord.xls' -> '/Backup/Book1_april14_ord.xls'
/job_001//dataS/Book1_april14_bck.xls' -> '/Backup/Book1_april14_bck.xls'
/job_001//dataS/Book1_april21_inv.xls' -> '/Backup/Book1_april21_inv.xls'
/job_001//dataS/Book1_april21_bck.xls' -> '/Backup/Book1_april21_bck.xls'
/job_001//dataS/Book1_april21_ord.xls' -> '/Backup/Book1_april21_ord.xls'
/job_001//dataS/Book3_JAN_ord.xls' -> '/Backup/Book3_JAN_ord.xls'
/job_001//dataS/Book1_april28_bck.xls' -> '/Backup/Book1_april28_bck.xls'
/job_001//dataS/Book2_APR_inv.xls' -> '/Backup/Book2_APR_inv.xls'
/job_001//dataS/Book1_april28_inv.xls' -> '/Backup/Book1_april28_inv.xls'
/job_001//dataS/Book1_april28_ord.xls' -> '/Backup/Book1_april28_ord.xls'
/job_001//dataS/Book2_FEB_inv.xls' -> '/Backup/Book2_FEB_inv.xls'
/job_001//dataS/Book3_APR_ord.xls' -> '/Backup/Book3_APR_ord.xls'
/job_001//dataS/Book2_JAN_inv.xls' -> '/Backup/Book2_JAN_inv.xls'
/job_001//dataS/Book2_MAR_inv.xls' -> '/Backup/Book2_MAR_inv.xls'
/job_001//dataS/Book3_FEB_ord.xls' -> '/Backup/Book3_FEB_ord.xls'
```

Figure 1-43

The log format might differ depending on the backup source and destination type that was selected, but you can see when the job was started and finished, and whether it was completed successfully or with errors.

## Editing a Backup Job

To edit a backup job, you can either click the 3-digit job number button in the Backup Jobs screen, or you can click the **Edit Backup Job** link while viewing that job log. You can then make appropriate changes or adjustments to the job.

## Setting Up Printers

---

The ReadyNAS Duo device supports automatic recognition of USB printers. If you have not already done so, you can connect a printer now, wait a few seconds, and click **Refresh** to display detected printers. The print share name automatically reflects the manufacturer and model of your printer and is listed in the USB Printers section of the Print Queue service screen.

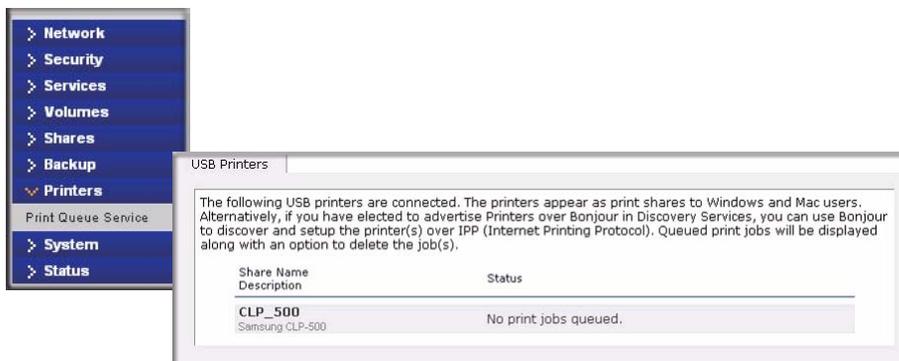


Figure 1-44

## Print Shares over CIFS/SMB

The ReadyNAS Duo can act as a print server for up to two USB printers for your Windows or Mac clients.

To set up a printer in Windows:

1. Click **Browse** in RAIDar or simply enter `\\hostname` in the Windows Explorer address bar to list all data and printer shares on the ReadyNAS Duo.
2. Double-click the printer icon to assign a Windows driver.



Figure 1-45

## IPP Printing

The ReadyNAS Duo also supports the IETF standard Internet Printing Protocol (IPP) over HTTP. Any client supporting IPP printing (IPP is available natively on the latest Windows XP OS and OS X) can now use this protocol to utilize printers connected to the ReadyNAS Duo. The simplest way to utilize IPP printing is to use Bonjour to discover and set up the print queue. Bonjour is built into OS X and can be installed on Windows computers (Bonjour for Windows is available for download from the Apple website at <http://www.apple.com/macosx/features/bonjour/>).

## Managing Print Queues

From time to time, printers might run out of ink or paper, or simply jam up, forcing you to deal with the print jobs stuck in a queue. The ReadyNAS Duo has a built-in print queue management to handle this. Simply select the USB Printers tab or click **Refresh** to display the printers and the jobs queued up for any “stuck” printers.

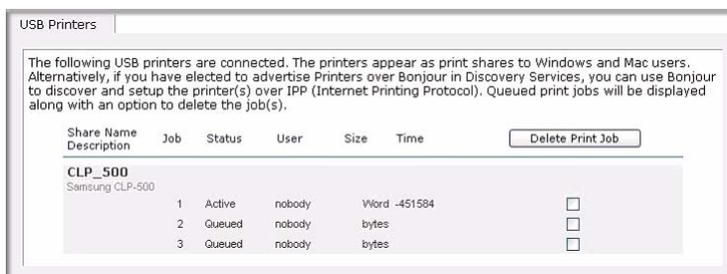


Figure 1-46

Select the radio button next to the print job and click **Delete Print Job** to remove a job (or all jobs) from the print queue.

## Managing Your ReadyNAS Duo System

To set up and manage your ReadyNAS Duo effectively, make sure that you review the settings in the following sections, and implement any necessary modifications or updates.

### Clock

An accurate time setting on the Clock screen is required to ensure proper file timestamps. You can access the Clock screen by selecting System > Clock from the main menu.

### System Time

The Select Timezone section and the Select Current Time section of the Clock screen allow you to set the Timezone, and the Date and Time.

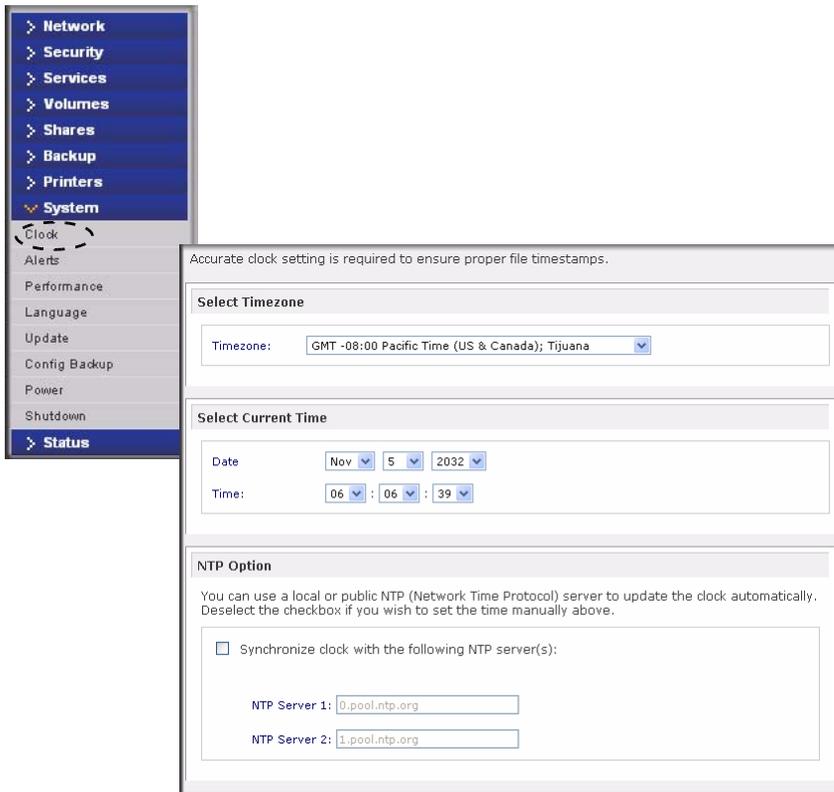


Figure 1-47

## NTP Option

You can elect to synchronize the system time on the device with a remote NTP (Network Time Protocol) server. You can elect to keep the default servers or enter up to two NTP servers closer to your locale. You can find an available public NTP servers by searching the Web.

## Alerts

In the event of a device or an enclosure failure, a quota violation, low-disk space warning, and other system events requiring your attention, e-mail alerts are sent. The Alerts screen is accessed by selecting System > Alerts from the main menu.

### Alerts Contacts

The Contacts tab allows you to specify up to three e-mail addresses where system alerts will be sent. The ReadyNAS Duo device has a robust system monitoring feature and sends e-mail alerts if something appears to be wrong or when a device has failed. Make sure to enter a primary e-mail address and a backup one if possible.

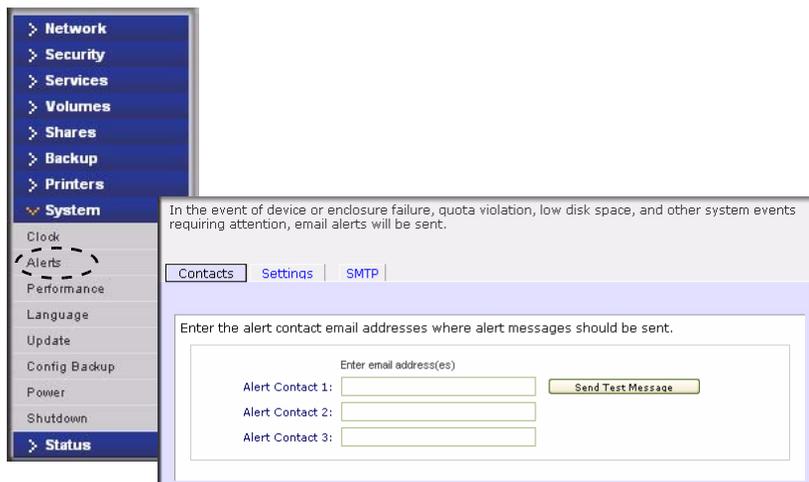
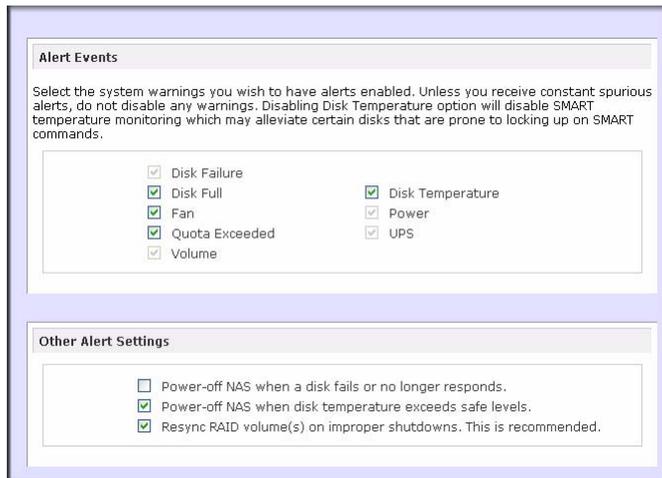


Figure 1-48

Some e-mail addresses can be tied to a mobile phone. This is a great way to monitor the device when you are away from your desk.

## Alerts Settings

This ReadyNAS Duo device has been preconfigured with mandatory and optional alerts for various system device warnings and failures. The Settings tab allows you to control the settings for the optional alerts.



**Figure 1-49**

NETGEAR strongly recommends that you keep all alerts enabled; however, you might choose to disable an alert if you are aware of a problem and wish to temporarily disable it.

At the bottom of the screen in the Other Alert Settings section, there are a couple of additional options of note. Selecting the **Power-off NAS when a disk fails or no longer responds** option gracefully powers off the ReadyNAS Duo if a disk failure or a disk remove event is detected. Selecting the **Power-off NAS when disk temperature exceeds safe level** gracefully powers off the ReadyNAS Duo when the disk temperature exceeds the nominal range.

## SMTP

The ReadyNAS Duo device has a built-in e-mail message transfer agent (MTA) that is set up to send alert e-mail messages from the device. Some corporate environments, however, might have a firewall that blocks untrusted MTAs from sending out messages.

If you were unable to receive the test message from the Alerts Settings tab, it might have been blocked by the firewall. In that case, specify an appropriate SMTP server in this tab.

In the event of device or enclosure failure, quota violation, low disk space, and other system events requiring attention, email alerts will be sent.

Contacts Settings SMTP

If your firewall setting prevents alert messages from being sent by the embedded SMTP server, or if your ISP blocks SMTP port 25, enter a remote SMTP server that alert email messages can be routed through. Some SMTP servers will reject non-fully qualified hostnames, so you may need to change the hostname of this device to FQDN format in the Network tab, i.e. use **myhost.domain.com** instead of **myhost**.

SMTP server:

SMTP port:

User:

Password:

Figure 1-50

Internet Service Providers (ISPs) for home might also block untrusted MTAs. Furthermore, they might allow you to specify their SMTP server but requires that you enter a user login and password to send out e-mail—this is common with most DSL services. If this is the case, simply enter the user name and password in the fields provided.

## Performance

If you wish to tweak the system performance, select Performance from the main menu. Note that some of the settings suggest that you utilize an Uninterruptible Power Supply (UPS) before enabling that option:

- NETGEAR recommends that you select the **Disable full data journaling** only if the NAS has UPS protection. Without battery backup, there is a small chance that parity written to a disk in a RAID set might become out of sync with the data disks if a power failure suddenly occurs, possibly causing incorrect data to be recovered if one disk fails. Without full data journaling, disk write performance increases substantially.

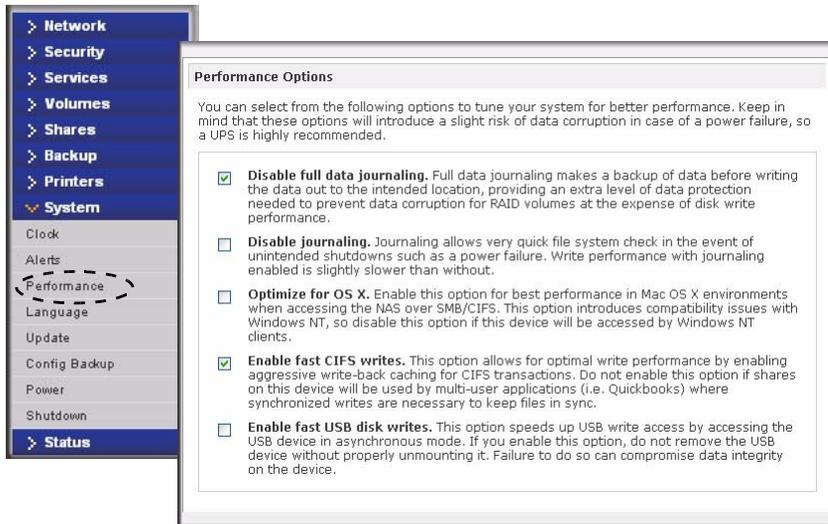


Figure 1-51

- Select **Disable journaling** if you understand the consequences of this action, and you do not mind a long file system check (only after unexpected power failures). File system journaling allows disk checks of only a few seconds versus possibly an hour or longer without journaling. Disabling journaling improves disk write performance slightly.

	<p><b>Note:</b> You can buy a UPS with USB monitoring at a very reasonable cost. By safely allowing the performance options to be checked, you can effectively double your write performance and provide uninterrupted service of your ReadyNAS Duo for a very low price.</p>
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- The **Optimize for OS X** option provides the best performance in Mac OS X environments when connected to the ReadyNAS Duo through the SMB/CIFS protocol. This option, however, introduces compatibility issues with Windows NT 4.0; do not enable this option if this device will be accessed by Windows NT 4.0 clients.
- The **Enable fast CIFS writes** option allows for fast write performance by enabling aggressive write-back caching over CIFS. Do not enable this option in multi-user application environments such as Quick Books where synchronized writes are necessary to keep files in sync.
- The **Force CIFS filename case-sensitivity** option provides substantial performance improvement when you access CIFS shares when many files are being copied; however, before enabling this option, understand the ramifications.

- Since Windows runs in case-insensitive mode, one side-effect of enabling this option is that two file names with different cases (for example, ABC and abc) appear as two files but, when you open one file, the other file might actually open.
- Another effect of this option is that, in Explorer, you now need to enter the exact case for search strings for the Find option (that is, searching for “abc” no longer returns file “ABC”).
- Some Windows applications that assume case-insensitive operations (for example, **BackupExec**) may have problems. Do not enable this option if you have clients accessing the NAS running Windows NT/95 or earlier.
- The **Enable fast USB disk writes** option speeds up USB write access by allowing access to the USB device in asynchronous mode. If you enable this option, do not remove the USB device without properly unmounting it. Failure to do so can compromise data integrity on the device.

### Adding a UPS for Performance

Adding a UPS to the NAS is an easy way to protect against power failures, but as mentioned in [“Performance” on page 1-45](#), a UPS can also safely allow for a more aggressive performance setting. Simply connect the NAS power cable to the UPS, and connect the UPS USB monitoring cable between the UPS and the NAS. The UPS is detected automatically and shows up in the Status bar. You can move the mouse pointer over the UPS LED icon to display the current UPS information and battery life.



**Note:** Note that alert notification and automatic system optimization is available only with UPS that utilizes a USB monitoring interface.

You are notified by e-mail whenever the status of the UPS changes; for example, when a power failure forces the UPS to be in battery mode or when the battery is low. When the battery is low, the NAS device automatically shuts down safely.

Make sure to adjust the optimization settings in the Performance screen if you wish to take advantage of the available options.

## Language

The Language Setting screen offers the option of setting the ReadyNAS Duo device to the appropriate character set for file names.

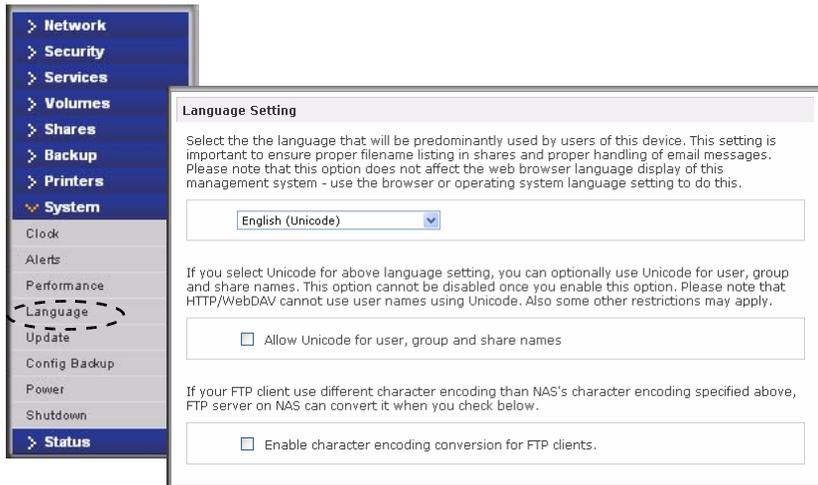


Figure 1-52

For example, selecting Japanese allows you to share files with Japanese names in Windows Explorer.



Figure 1-53

It is best to select the appropriate language based on the region where the device will be operated.



**Note:** This option does not set the web browser language display—browser settings must be done using the browser language option.

If you wish, you can select the **Allow Unicode for user, group and share names** check box to allow for greater flexibility in non-English speaking regions. This option, once selected, cannot be reversed.



**Note:** HTTP and WebDAV access do not work with Unicode user names. Other restrictions might exist.

If your FTP client uses different character encoding from the NAS character encoding specified in Unicode, the NAS FTP server will convert it if you select the **Enable character encoding conversion for FTP clients** check box.

## Updating ReadyNAS Duo

The ReadyNAS Duo device offers the option of upgrading the operating firmware either automatically using the Remote Update option or by manually loading an update image downloaded from the NETGEAR Support website.

### Remote Update

The preferred and quicker method if the ReadyNAS Duo has Internet access is the Remote update option. Select Update from the main menu and then select the Remote tab. Click **Check for Updates** to check for updates on the NETGEAR update server.

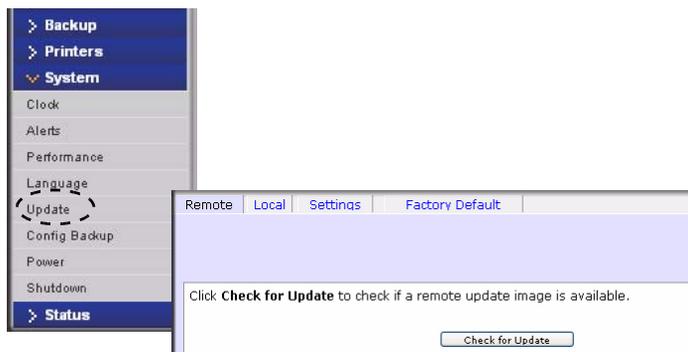


Figure 1-54

If you wish to continue, click **Perform System Update**. After the update image has been downloaded, you will be asked to reboot the system. The update process updates only the firmware image and does not modify your data volume. However, it is always a good idea to back up your important data whenever you perform an update.

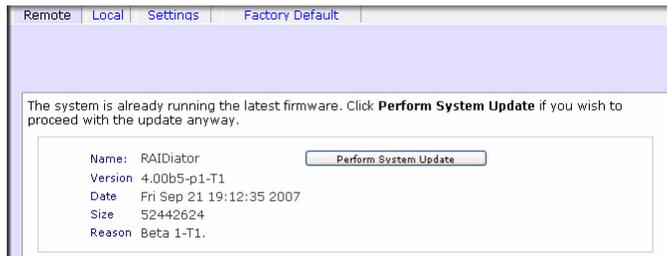


Figure 1-55

## Local Update

When the ReadyNAS Duo device is not connected to the Internet, or Internet access is blocked, you can download an update file from the Support site and upload that file to the ReadyNAS Duo by selecting the Local update tab. The update file can be a RAIDiator firmware image or an add-on package.

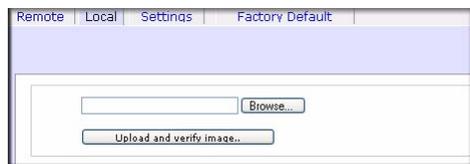


Figure 1-56

Click **Browse** to select the update file and then click **Upload and verify image**. The process takes several minutes after which you are requested to reboot the system and proceed with the upgrade.



**Warning:** *Do not* click the browser Refresh button during the update process.

## Settings

If you do have a reliable Internet connection, you can enable the automatic update check and download options in the Settings tab.

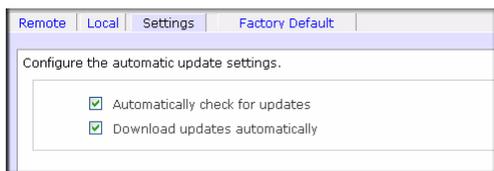


Figure 1-57

If you select the **Automatically check for updates** check box, the ReadyNAS Duo does not download the actual firmware update, but notifies you when an update is available. If you select the **Download updates automatically** check box, the update image is downloaded, and you are notified by e-mail to reboot the device to perform the update.

## Factory Default

The Factory Default tab allows you to reset the ReadyNAS Duo device back to its factory default state. Choose this option carefully as **All Data Will Be Lost** unless you back up any data that you wish to keep prior to clicking **Perform Factory Default**.

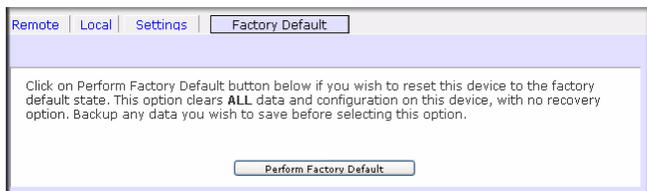


Figure 1-58

If you select this option, you are asked to confirm the command by typing: **FACTORY**.

	<p><b>Warning:</b> Resetting to Factory Default erases everything, including data shares, volume(s), user and group accounts, and configuration information. There is no way to recover after you confirm this command.</p>
---	---

## Power Management

The ReadyNAS Duo offers a couple of power management options to reduce system power consumption, both while the system is in use and when it is not in use.

## Disk Spin-Down Option

You can elect to spin down your ReadyNAS Duo disks after a specified time of inactivity. The disks will spin up as needed. To enable spin-down mode, select the **Enable disk spin-down after...** check box, and specify the minutes of inactivity before spin up.

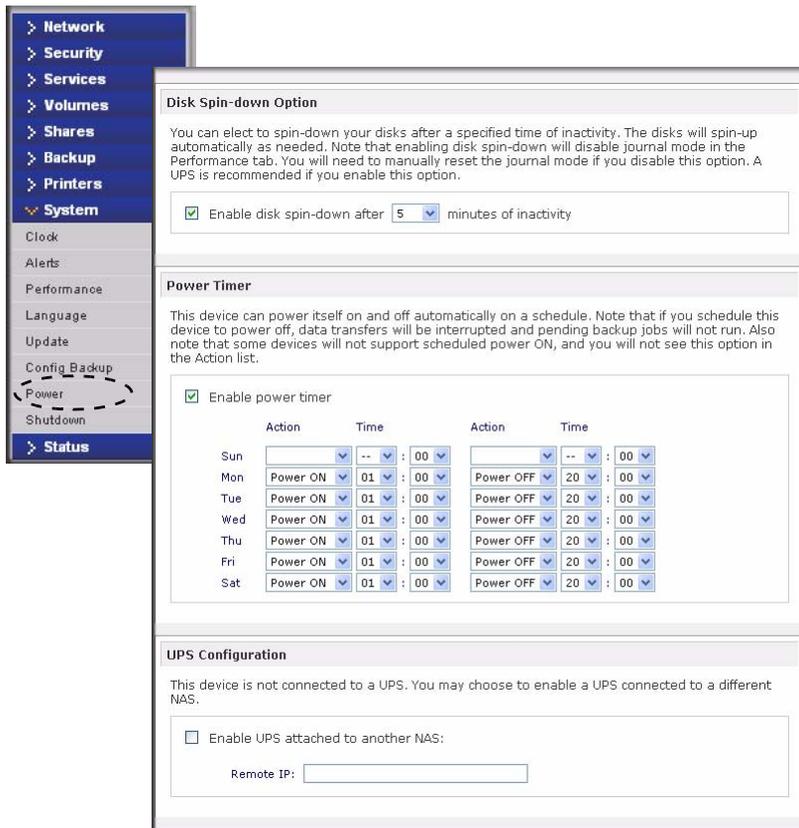


Figure 1-59



**Note:** Enabling disk spin-down disables journal mode. Once enabled, if you decide to disable disk spin-down, you need to manually re-enable journal mode if desired. NETGEAR recommends UPS if you utilize this option.

## Power Timer

The ReadyNAS Duo can be scheduled to power off and power back on (on certain models) automatically (see [Figure 1-59](#)). Select the **Enable power timer** check box and enter the action

and time. (The **Power ON** option is available on the ReadyNAS Duo NV through an add-on package.)<sup>1</sup> The **Power ON** option does not appear if the ReadyNAS Duo hardware does not support this feature.



**Note:** When the ReadyNAS Duo is powered off, any file transfers and backup jobs are interrupted, and backup jobs scheduled during the power off state do not run.

## UPS Configuration

If this device is not connection to a UPS device, you may elect to enable a UPS connection to another NAS device. Select the **Enable UPS attached to another NAS** check box and enter the IP Address in the **Remote IP** field. NETGEAR recommends that you enable this feature if you have enabled the Disk Spin-Down option.

If you use this option, the ReadyNAS Duo is shut down automatically when a battery-low condition is detected on a UPS connected to another ReadyNAS Duo. This is useful when a UPS is shared by multiple ReadyNAS Duo units, even though only one ReadyNAS Duo is monitoring the battery status.

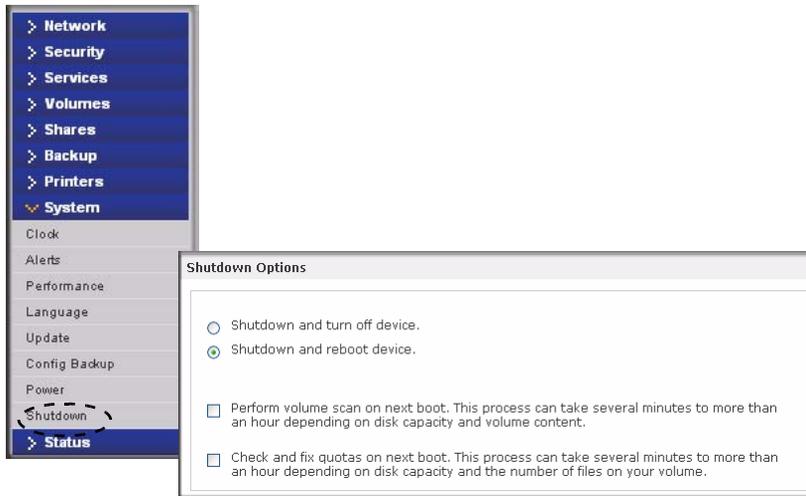
As an option, the ReadyNAS Duo can remotely monitor the UPS when connected to a PC running Network UPS Tools (NUT). For more information about NUT, see <http://www.networkupstools.org>.

## Shutdown

The Shutdown Options screen offers the option to either power off or reboot the ReadyNAS Duo device. You also have the option of performing either a full file system check or a quota check on the next boot. Both these options can take several minutes to several hours depending on the size of your volume and the number of files in the volume. You do not need to select these options unless you suspect there might be data or quota integrity problems.

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1. Please refer to the Release Notes for RAIDiator 3 on the NETGEAR Support site for more information.



**Figure 1-60**

When you reboot or shut down the ReadyNAS Duo, you must close the browser window and use RAIDar to reconnect to FrontView.

# Chapter 2

## Accessing Shares from Your Operating System

This chapter presents examples of how shares on the ReadyNAS Duo device can be accessed by the various operating systems. If you have problems accessing your shares, make sure to enable the corresponding service by selecting Shares > Share Listing screen. Also make sure that the default access of the share is set to Read-only or Read/write.

### Windows

---

To see a share listing in Windows, either click Browse in RAIDar or enter `//<hostname>` or `//<ip_address>` in the Explorer address bar. Hostname is the NAS hostname assigned in Network > Global Settings. The default hostname is set to **nas-** followed by the last three hex bytes of the device MAC address.

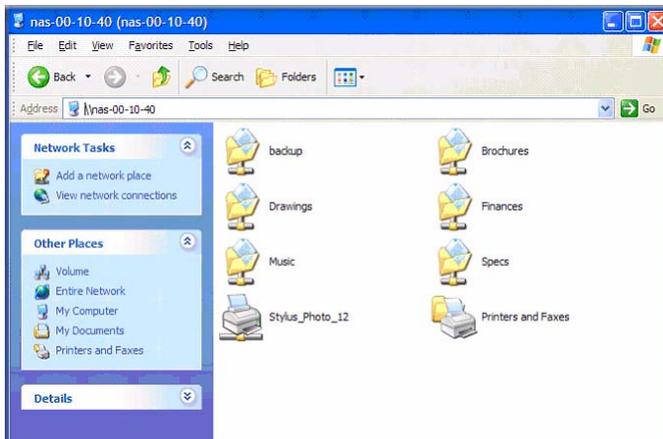


Figure 2-1

To access the share in Windows, specify the hostname followed by the share name in the Explorer address bar, for example: `//<hostname>/backup`, as follows:

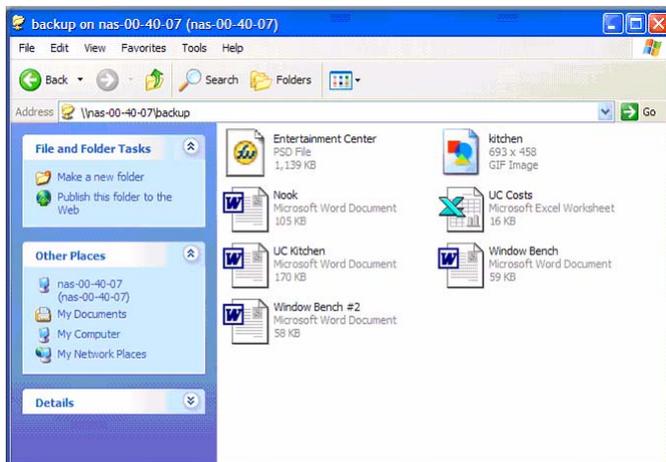


Figure 2-2

## MAC OS X

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To access the same share over AFP with OS X, select Network from the Finder Go > Network menu.



Figure 2-3

From here, there are two ways to access your AFP share, depending on how you have chosen to advertise your AFP share.

## AFP over Bonjour

To access the AFP share advertised over Bonjour on Mac OS X, select Network from the Finder Go menu to see a listing of available networks.

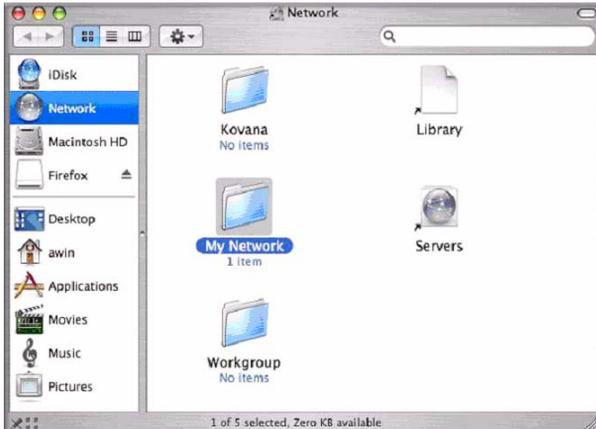


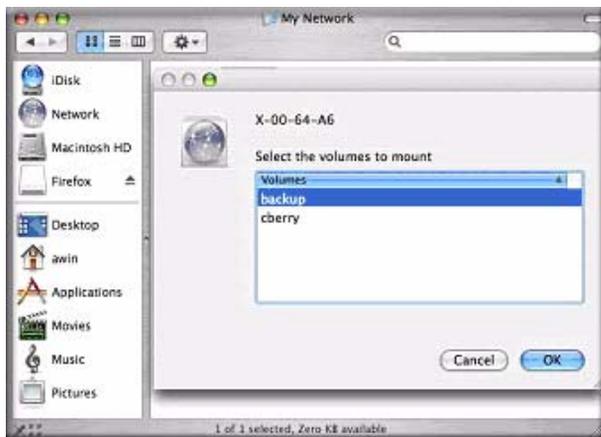
Figure 2-4

Open the My Network folder to display the ReadyNAS Duo hostname.



Figure 2-5

In Share security mode, select the **Guest** radio button to access the shares and click **Connect**. In User or Domain security mode, enter the user name and password you wish to use to connect to the ReadyNAS Duo.



**Figure 2-6**

From the Volumes field, select the share you want to access and click **OK**.

## AFP over AppleTalk

If you chose to advertise your AFP service over AppleTalk, a listing of available networks is displayed.

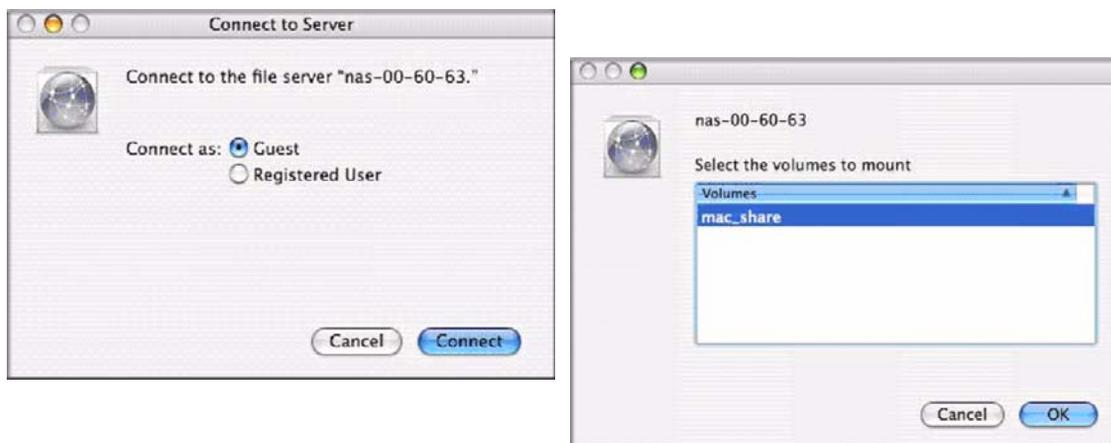


**Figure 2-7**

Open the My Network folder to display the ReadyNAS Duo hostname. Select the one that has the hostname only. You are prompted with a connection box.

**Figure 2-8**

Select **Guest** and click **Connect**. Then, select the share you want to connect to and click **OK**.

**Figure 2-9**

In Share security mode, you need to specify only the user name and password—if you have set up a password for your share. If you have not set up a user name, enter the share name in place of the user name. In User or Domain security mode, enter the user name and password you wish to use to connect to the ReadyNAS Duo.

You should see the same file listing as you would in Windows Explorer.

## MAC OS 9

To access the same share under Mac OS 9, select **Connect to Server** from the Finder menu, choose the NAS device entry from the AppleTalk section, and click **Connect**.

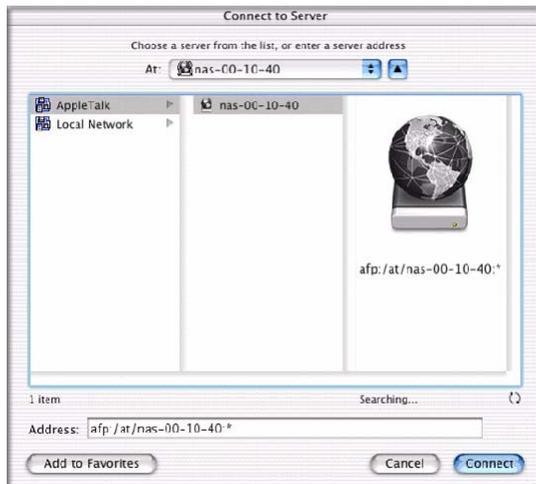


Figure 2-10

When you are prompted to log in, enter the **share name** and **password** if the ReadyNAS Duo is configured for Share security mode, otherwise enter a valid **user account** and **password** otherwise, and click **Connect**.

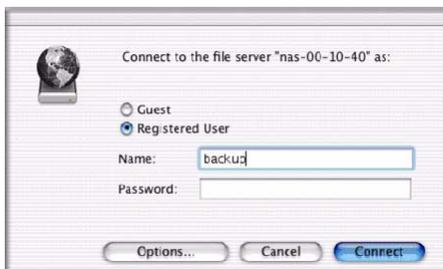
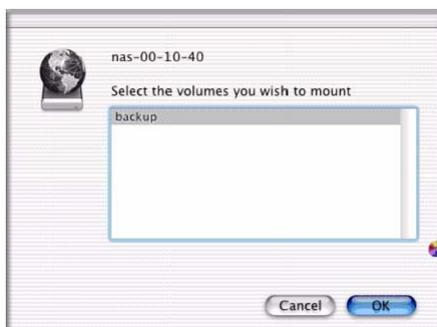


Figure 2-11

If no share password is set in Share mode, you can select the **Guest** radio button and leave the **password** field blank. If your login is successful, are given a listing of one or more shares. Select the share you wish to connect to and click **OK**.

**Figure 2-12**

You should see the same files in the share that you do in Windows Explorer.

**Figure 2-13**

## Linux/Unix

To access this share from a Linux or Unix client, you will need to mount the share over NFS by entering:

```
mount <ipaddr>:/<backup /backup>
```

where **backup** is the share name. Running the **ls** command in the mounted path displays the share content.

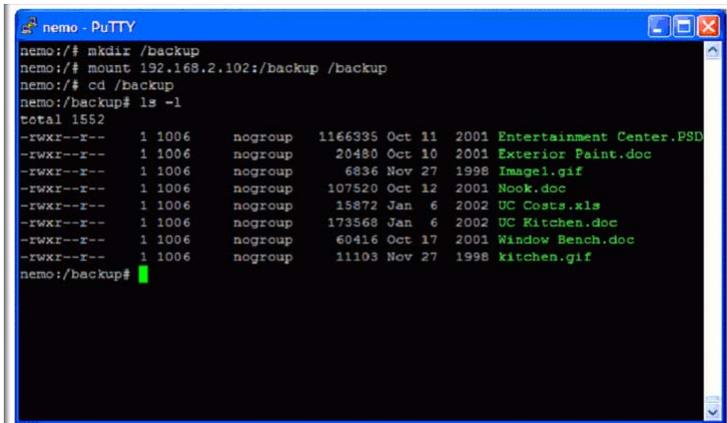


Figure 2-14



**Note:** The ReadyNAS Duo does not support NIS as it is unable to correlate NIS information with CIFS logins. In mixed environments where you want CIFS and NFS integration, you can set the security to User mode and manually specify the UID and GID of the user and group accounts to match your NIS or other Linux/Unix server settings. The ReadyNAS Duo can import a comma-delimited file containing the user and group information to coordinate Linux/Unix login settings (see “[Managing Users](#)” on page 1-7 for more information).

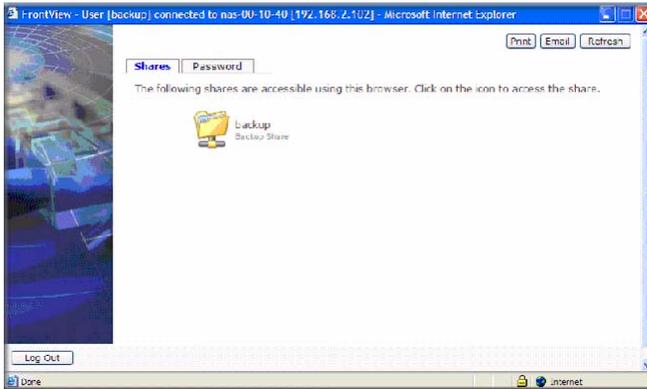
## Web Browser

To access the same share using a Web browser, enter **http://<ipaddr>** in the browser address bar. You can use **https** if you want a secure encrypted connection. You will be prompted to log in.



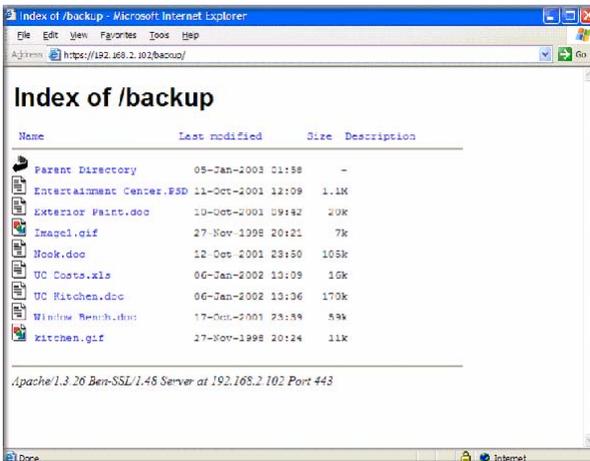
Figure 2-15

If the ReadyNAS Duo is in Share security mode, enter the share name and share password. Otherwise, log in with a valid user name and password if the ReadyNAS Duo is in User or Domain mode.



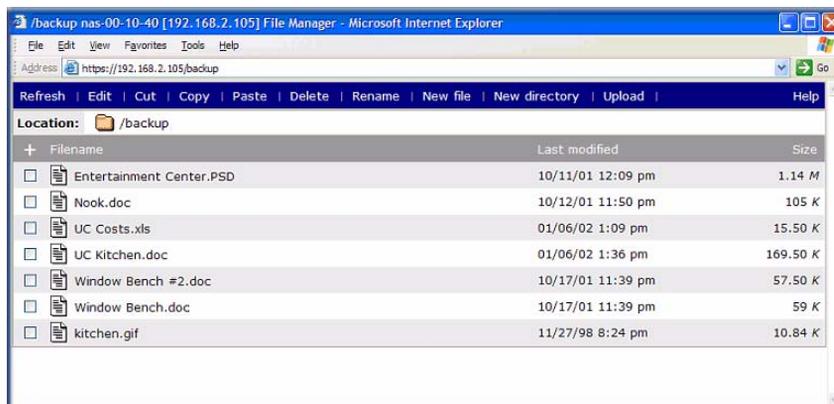
**Figure 2-16**

If the Share access is read-only, only the file manager displays.



**Figure 2-17**

If the Share is also writable, the file manager displays options for creating, modifying, and deleting files, as follows.

**Figure 2-18**

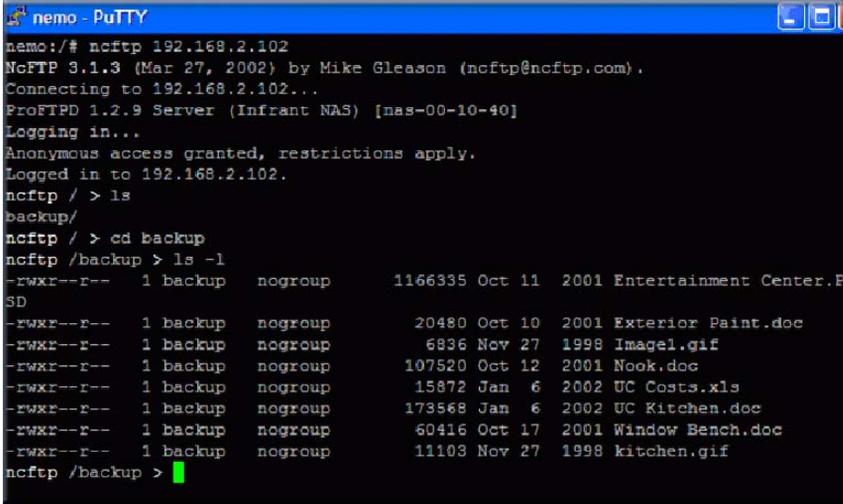
One useful application for a Web share is to set up an internal company website. You can copy HTML files to the Web share using Windows, Mac, NFS, or HTTP. When you set HTTP access to read-only, html files, including *index.htm* and *index.html*, can be viewed using any web browser.



**Note:** Files created under the Web file manager can be deleted only under this file manager. The only exception is for the admin user; the admin user can change or delete any files created through the web. Files not created from this file manager can be modified within the file manager but cannot be deleted here.

## FTP/FTPS

To access the share via FTP in Share security mode, log in as “anonymous” and use your e-mail address for the password.



```
nemo - PuTTY
nemo:/# ncftp 192.168.2.102
NcFTP 3.1.3 (Mar 27, 2002) by Mike Gleason (ncftp@ncftp.com).
Connecting to 192.168.2.102...
ProFTPD 1.2.9 Server (Infrant NAS) [nas-00-10-40]
Logging in...
Anonymous access granted, restrictions apply.
Logged in to 192.168.2.102.
ncftp / > ls
backup/
ncftp / > cd backup
ncftp /backup > ls -l
-rwxr--r--  1 backup  nogroup    1166335 Oct 11  2001 Entertainment Center.F
SD
-rwxr--r--  1 backup  nogroup      20480 Oct 10  2001 Exterior Paint.doc
-rwxr--r--  1 backup  nogroup      6836 Nov 27  1998 Imagem1.gif
-rwxr--r--  1 backup  nogroup    107520 Oct 12  2001 Nook.doc
-rwxr--r--  1 backup  nogroup     15872 Jan  6  2002 UC Costs.xls
-rwxr--r--  1 backup  nogroup    173568 Jan  6  2002 UC Kitchen.doc
-rwxr--r--  1 backup  nogroup    60416 Oct 17  2001 Window Bench.doc
-rwxr--r--  1 backup  nogroup     11103 Nov 27  1998 kitchen.gif
ncftp /backup >
```

Figure 2-19



**Note:** Enabling FTP access in Share mode opens up the share to anyone on your network who has an FTP client. NETGEAR recommends that you enable FTP access only to shares you are comfortable making public on your network.

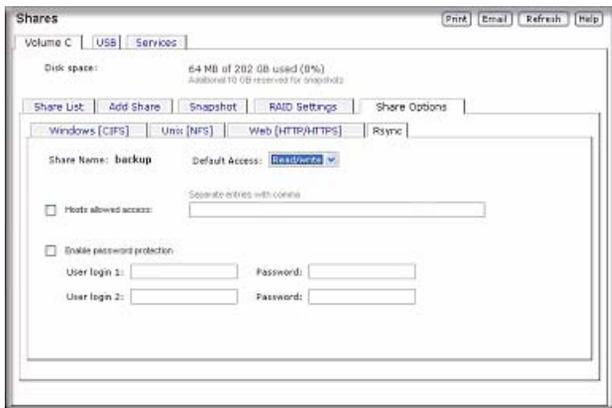


**Warning:** Disk usage using FTP in Share mode *does not* count towards the share disk quota, so carefully choose how you advertise an FTP share.

For better security, use an FTPS (FTP-SSL) client to connect to the ReadyNAS Duo FTP service. With FTPS, both the password and data are encrypted.

## Rsync

Access to the share through rsync is identical regardless of the security mode. If you specified a user or password in the rsync share access tab, you will need to specify this when accessing the rsync share. Unlike other protocols, rsync uses arbitrary user name and password that is specific only for rsync access. The user account you specify does not need to exist on the ReadyNAS Duo or a domain controller.



**Figure 2-20**

Here is an example of a way for a Linux client to list the content of a ReadyNAS Duo rsync share with no user name and password defined:

```
# rsync <ipaddr>::backup
```

To recursively copy the content of a share to /tmp:

```
# rsync -a <ipaddr>::backup /tmp
```

To do the same except with a login **user** and password **hello**, enter:

```
# rsync -a user@<ipaddr>::backup /tmp
Password: *****
```



**Note:** The ReadyNAS Duo does not support Rsync over SSH.

---

## Networked DVD Players and UPnP AV Media Adapters

---

Networked DVD players and UPnP AV Media adapters detect the ReadyNAS Duo if either the Home Media Streaming Server or the UPnP AV services are enabled. The content of the Streaming Services media share on the ReadyNAS Duo is available to these players for playback.<sup>1</sup> Multiple players can be connected to the ReadyNAS Duo and can play the media files concurrently.

Make sure that you enable the appropriate service in the Services tab before invoking the service.

The screenshot displays the 'Services' configuration page in the ReadyNAS Duo web interface. It features two main sections:

- UPnP AV:** This section is currently disabled, indicated by an unchecked checkbox. It includes a 'Media share' dropdown menu set to 'media', an empty 'Media folder' text input, and a 'Rescan media files' button. A 'Remove' button is located in the top right corner of this section.
- Home Media Streaming Server:** This section is enabled, indicated by a checked checkbox. It includes a 'Media share' dropdown menu set to 'media', an empty 'Media folder' text input, an empty 'Hidden folder' text input, an empty 'Remote control code for hidden folder (3-digit number)' text input, a 'Target JPEG output' dropdown menu set to '720p', a 'Slide show delay (secs)' dropdown menu set to '10', a 'Bookmarks' dropdown menu set to 'Enabled', an 'Allow delete from player' dropdown menu set to 'Disabled', a 'Maximum playlist items' text input set to '2000', and a 'Maximum lines displayed per page' text input set to '14'. A 'Remove' button is located in the top right corner of this section.

**Figure 2-21**

Consult the Device Compatibility list for information about which DVD players and media adapters work with the ReadyNAS Duo.

---

1. Consult the player manual for information on the file formats that it supports.



# Chapter 3

## Maintenance and Administration

### Viewing System Status

---

The Status menu contains links to the Health screen and Logs screen that provide system status information.

### Health

The Health screen displays the status of each disk, and the fan, temperature, and UPS status in detail. When available, normal expected values are provided.



**Figure 3-1**

For each disk, you can click **SMART+** (Self-Monitoring, Analysis and Reporting Technology) to display the content of the internal disk log.

SMART Information for Disk 1	
Model:	ST3500630AS
Serial:	5G0131X8
Firmware:	3.AAK
SMART Attribute	
Spin Up Time	0
Start Stop Count	5
Reallocated Sector Ct	0
Power On Hours	217
Spin Retry Count	0
Power Cycle Count	5
Current Pending Sector	0
Offline Uncorrectable	0
UDMA_CRC Error Count	0
Multi Zone Error Rate	0
TA Increase Count	0
ATA Error Count	
	0
Extended Attribute	
Hot-add events	0
Hot-remove events	0
Lp stat events	3
Power glitches	0
Hard disk resets	0
Retries	0
Repaired sectors	0

Figure 3-2

To recalibrate the fan, click **Recalibrate**.

## Logs

Select Status > Logs to access the Clear Logs screen. The Clear Logs screen provides information about the status of management tasks, including a timestamp.

Severity	Date	Message
●	Sun Oct 3 07:14:17 PDT 2032	Backup log cleared. [Job button]
●	Sun Oct 3 07:10:48 PDT 2032	Backup log cleared. [Job button]
●	Sat Oct 2 10:36:52 PDT 2032	Successfully applied security setting.
●	Sat Oct 2 09:49:49 PDT 2032	[Finance] added with default access.
●	Sat Oct 2 09:49:47 PDT 2032	[Drawings] added with default access.
●	Sat Oct 2 09:49:44 PDT 2032	[Brochures] added with default access.
●	Sat Oct 2 09:24:01 PDT 2032	Snapshot successfully taken.
●	Sat Oct 2 09:03:09 PDT 2032	Blinking disk 3
●	Sat Oct 2 09:02:53 PDT 2032	Blinking disk 2
●	Sat Oct 2 07:30:51 PDT 2032	Successfully applied security setting.
●	Sat Oct 2 07:27:45 PDT 2032	User successfully deleted [bdurvall].
●	Sat Oct 2 07:27:03 PDT 2032	User successfully added [francine].
●	Sat Oct 2 07:26:13 PDT 2032	User successfully added [mike].
●	Sat Oct 2 07:17:57 PDT 2032	User successfully added [bdurvall].
●	Sat Oct 2 07:13:33 PDT 2032	Successfully applied security setting.

Figure 3-3

The **Download All Logs** link is available in case you need to analyze low-level log information. If you click this link, a zip of all the logs is provided.

## Replacing a Failed Disk

When a disk fails in your ReadyNAS Duo device, you are notified of the failure by e-mail. The failed disk location can be seen in the FrontView status bar at the bottom by selecting Status > Health.



Figure 3-4

On the front of the ReadyNAS Duo device, a failed disk is identified by an amber LED. The left most LED is disk channel 1; the next one is disk channel 2. Take note of the failed channel.

## Ordering a Replacement Disk

On the main menu, select Status > Health. Take note of the disk vendor and model utilized on your ReadyNAS Duo system. It is best to replace a failed disk with the same disk model. Contact the disk vendor, and arrange to have the disk replaced if the disk is still under warranty. A disk RMA from the vendor requires that you provide the serial number of the disk. To locate the serial number, open the case and take out the failed disk (see the following sections for replacement instructions for your disk model).

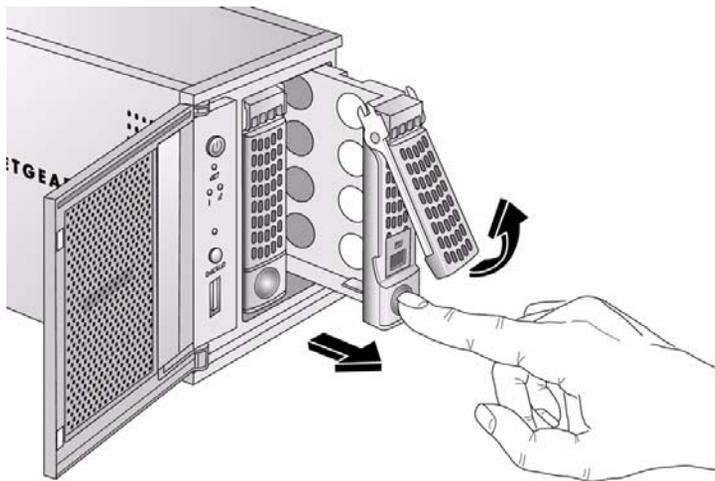
If the disk is no longer under warranty, you can obtain a disk of the same capacity or larger from your ReadyNAS Duo retailer.

## Replacing a Failed Disk on the ReadyNAS Duo

When a Disk Status LED blinks slowly, it is an indication of a failed disk. The ReadyNAS Duo supports hotswap bays, so there is no need to power down the device.

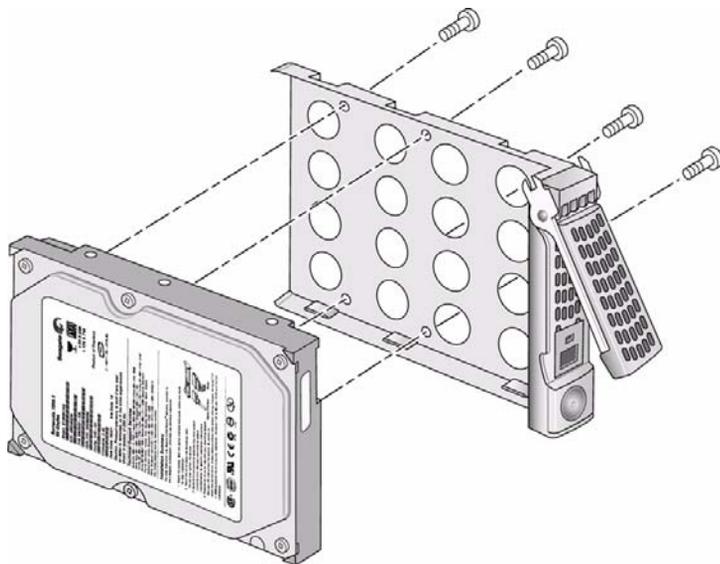
To replace the disk:

1. Open the disk tray door.
2. Press the button under the failed disk. The latch pops out.



**Figure 3-5**

3. Pull out the disk tray and remove the screws.
4. Replace the failed disk, reassemble, and slide the disk tray back in. Make sure that the hard disk connectors are facing away from you when you reassemble the disk.



**Figure 3-6**

The ReadyNAS Duo system performs RAID synchronization in the background, and notifies you by e-mail when synchronization is complete.

---

## Resynchronizing the Volume

---

If you had to power off to replace the failed disk, turn on the power on the ReadyNAS Duo.

The RAID volume automatically resynchronizes with the new disk in the background. The process takes several hours depending on disk size. During the resync process, the ReadyNAS Duo can be used as normal, although access will be slower until the volume is finished resynchronizing.

You will be notified by e-mail when the resync process is complete.

---

## Resetting Your System (System Switch)

---

Refer to the *Installation Guide* included in the shipping box (a PDF of the *Installation Guide* is also on your *Installation CD*) for the location of the System Reset switch on the back of the ReadyNAS Duo.

The System Reset switch allows you to perform two functions:

1. Reinstall the ReadyNAS Duo firmware.
2. Reset the ReadyNAS Duo back to the factory default settings.

Typically, you should not need to resort to options (1) and (2) unless you exhausted all other means of recovering your system. You might want to reinstall the ReadyNAS Duo firmware as a first step, if the ReadyNAS Duo had been working normally but a configuration change makes it inaccessible. If this does not work or you wish to set the ReadyNAS Duo back to a factory default state, you can do so following these instructions below:

- **To re-install the ReadyNAS Duo firmware:** Use a paper clip to depress the switch while the system is off. Continue to depress the reset switch while powering on the system for approximately 5 seconds until the disk LEDs flash *once* to signify that the command has been accepted. The firmware installation takes several minutes to complete. The Status LED in the front will be solid green when the process is complete. The installation does not affect the data on the ReadyNAS Duo.



**Warning:** Make sure that you do not continue to press the reset switch after the LEDs flash once, otherwise a Factory Default will occur that erases your data. (see below)

- **To set the ReadyNAS Duo device to Factory Default:** Use the same process, except you must hold the System Reset switch for 30 seconds after powering on the system. You will see the disk LEDs flash for a *second* time to signify that the command has been accepted.



**Warning:** This process reinstalls the firmware and resets all disk configurations, *wiping out any data* you might have on the NAS.

## Changing User Passwords

---

There are two ways in which user passwords can be changed in the User security mode. The first way is for the administrator to change the passwords by selecting Security > User & Group Accounts and then selecting **Manage Users** from the pull-down menu. The other and preferred way is to allow users to change their own passwords. This relieves the administrator from this task and encourages users to change their passwords on a more regular basis for enhanced security.

Users can use the Web browser and their existing password to log in to [https://<ip\\_addr>/](https://<ip_addr>/) to access the Web share listing page. Then select the Password tab, and follow the prompts to set a new password

The screenshot shows a web interface with two tabs: "Shares" and "Password". The "Password" tab is active. Below the tabs, there is a light purple background area containing the following text and form elements:

If you wish to change your password, enter new password below and click **Change Password**.

User Account: Fred

New Password:

Retype Password:

**Figure 3-7**



# Appendix A

## ReadyNAS Duo Glossary

### Domain or Workgroup Name

A valid domain or workgroup name must conform to the following restrictions:

- Name must consist only of characters a–z, A–Z, 0–9, and the symbols \_ (underscore), - (hyphen), and . (period).
- Name must start with a letter.
- Name length must be 15 characters or less.

### Host

A valid IP address or a host name.

### Host Name

A valid host name must conform to the following restrictions:

- Name must consist only of characters a–z, A–Z, 0–9, and the symbols - (hyphen) and . (period).
- Name must start with a letter.
- A short host name length must be 15 characters or less.
- A fully-qualified domain name (FQDN) must have no more than 63 characters in each section separated by . (period), and cannot end with a - (hyphen). Example of a valid FQDN: firstpart.secondpart.thirdpart.com.

### ReadyNAS Duo Host Name

A valid host name except the first part or short host name must be 15 characters or less due to the NetBIOS name length restriction.

### Host Expression

A valid host expression is either a valid host or the common IP expression form specifying a range of addresses in a network, for example:

- 192.168.2.
- 192.168.2.0/255.255.255.0
- 192.168.2.0/24

### Share Name

- Name must consist only of characters a–z, A–Z, 0–9, and the symbols - (hyphen) and . (period).
- Name cannot be an existing user name.
- Name cannot end in **-snap**.

- Name cannot be any one of the following reserved names:

```
bin boot cdrom dev etc floppy frontview home initrd lib lost+found mnt
opt proc root sbin tmp usr var admin administrator images language
quota.user quota.group shares global homes printers diag c d e f g h i
j
```

- Share name can contain Unicode characters if this option is specified in the Language tab.

### Share Password

- The password can be any character except for ' (single quote).
- Share passwords are limited to 8 characters.

### User or Group Name

- Name must only consist of characters a–z, A–Z, 0–9, and the symbols \_ (underscore), - (hyphen), @, and . (period).
- Name cannot be an existing share name.
- Name can contain Unicode characters if this option is specified in the Language tab.

### User Password

- The password can be any character except for ' (single quote).

# Appendix B

## General Glossary

<b>AFP</b>	AppleTalk Filing Protocol is the standard way Mac OS 9 and earlier versions share files across the network.
<b>CIFS</b>	Common Internet File System, a standard protocol that Windows users use to share files across the network. Mac OS X also has the capability to share files using CIFS.
<b>FTP</b>	File Transfer Protocol, a common protocol adopted by many OS to enable remote file download and upload for public sharing.
<b>HTTP</b>	Hypertext Transfer Protocol, the protocol Web browsers use to connect to Web servers for file access, typically Web pages.
<b>HTTPS</b>	HTTP with SSL encryption is used where secure Web access is desired.
<b>NFS</b>	Network File System, a common way Unix and Linux systems share files by making remote file systems appear to reside locally.
<b>Quota</b>	Amount of volume space allocated to a particular user or group account, or to a particular share. The user, group, or share with a set quota cannot exceed disk usage beyond this limit. Quota is typically specified to ensure that no one user, group, or share abuses the available storage space.
<b>RAID</b>	Redundant Array of Independent Disks. Basically it is a method of storing data on multiple disks in a way that if one disk fails, data can still be accessed from the other disks. A RAID level selects how data will be kept redundant, the most popular of which are levels 0, 1, and 5. Contrary to the RAID acronym, RAID level 0 does not provide any redundancy. For more information, see <a href="#">Appendix A, "ReadyNAS Duo Glossary."</a>
<b>Share</b>	A folder on a NAS volume that can be shared among different network file services such as CIFS for Windows, AFP (AppleTalk File Protocol) for Macs, NFS for Unix/Linux, FTP, and HTTP. Access to the share can be customized on a user or group or host-level basis.
<b>Snapshot</b>	An instantaneous, non-changing, read-only image of a volume. Snapshots are useful for backups. While a snapshot is being taken, the original volume can continue to operate normally. Snapshots can also be utilized as a temporary backup in case of viruses. Files can be restored from the snapshot volume if current files are corrupted.
<b>Volume</b>	A file system built on top of a RAID set. This file system consists of shares that are made available through various network file services.
<b>X-RAID</b>	NETGEAR patent-pending Expandable RAID technology.



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