RAIDAGE®

Network Storage

DAGE104UTL-NAS
DAGE208UTL-NAS
DAGE312UTL-NAS

User's Manual

Table of Contents

Chapter 1: Top-Menu-Entry: “System” 5
1.1 System → General 5
1.2 System → Admin Password 6
1.3 System → UPS 7
1.4 System → Sensor (*limited models only*) 8
1.5 System → Update page 8

Chapter 2: Top-Menu-Entry: “Network” 10
2.1 Network → TCP/IP 10
2.2 Network → DNS 12
2.3 Network → Bonding (Teaming) 13
2.4 Network → Routing 14
2.5 Network → Host 15

Chapter 3: Top-Menu-Entry: “Storage” 16
3.1 Storage → Speedy RAID 16
3.2 Basic Steps to Create a RAID 17
3.3 Storage → iSCSI Initiator 20
3.4 Storage → USB/1394 page 21
3.5 Storage → Volume Group page 21
3.6 Storage → Logical Volume page 22

Chapter 4: Top-Menu-Entry: “Account” 25
4.1 Account → Local User page 25
4.2 What is ‘Home’ (Home Directory / Home Folder)? 26
4.3 How to create and use ‘Home Folder’? 27
4.4 Account → Local Group 28
4.5 Account → ADS 30
4.5a Workgroup 30
4.5b Domain 31
4.5c ADS 31
4.5d Joining ADS Server 32
4.5e ADS Option 32
4.6 Account → NIS 33
4.7 Account → LDAP page 34
4.8 Account → Quota 35

Chapter 5: Top-Menu-Entry: “Services” 37
5.1 Service → SMB/CIFS page 37
5.1a Advanced 38
5.1b Edit SMB/CIFS Access Control 39
5.2 Service → NFS 41
5.2a Edit NFS Access Control 41
5.3 Service → AFP/Atalk 43
The Apple Filing Protocol (AFP) 43
5.4 Service → iSCSI Target page: iSCSI Target Service Management 45
5.5 Service → Replication page 46
5.5a Adding a new Replication Schedule 47
5.6 Service → Snapshot page 47
5.6a Adding new Snapshot Schedule 48
5.7 Service → Access Control page 48
5.7a Edit 49
5.8 Tape Backup 50
5.9 Cloud Backup 50

Chapter 6: Top-Menu-Entry: “Features” 52
6.1 Features → FTP Service Management 52
6.2 Features → DHCP Management 53
6.3 Features → Network Time Service Management 54
6.4 Features → UPNP 54
6.5 Features → DDNS Management 55
6.6 Features → Remote Access Management 55

Chapter 7: Top-Menu-Entry: Status” 56
7.1 Status → Statistics 56
7.2 Status → Log 57
7.3 Status → User Access 57
7.4 Status → Notification page 58
7.5 Status → SNMP 58
7.6 SMART (Disk & RAID) 59

Before reading on with this NAS User's Guide, first please familiarize yourself with the following documents for quick and proper reference**:**

Default Admin ID: **root ---**case sensitive

Default Password: **0000 ---**4 zeros

"Quick Start Guide"

- Instructions on how to quickly find the NAS user's network and set a static IP for the NAS, then launch the Web Administrator GUI.

"Setup Workflow"

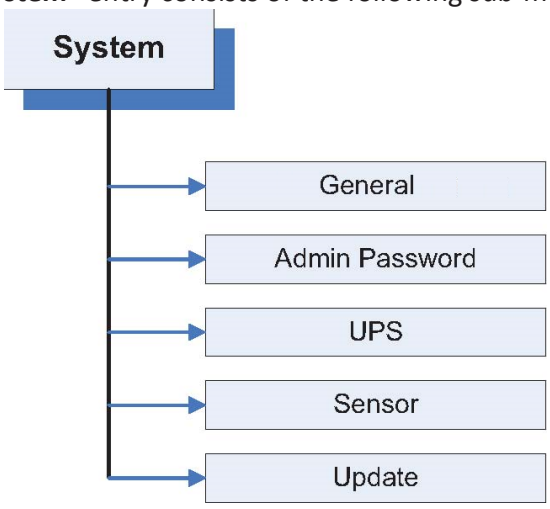
- Illustrates quick steps for creating a SMB/CIFS share and how to access it from Windows clients.

"Menu Layout"

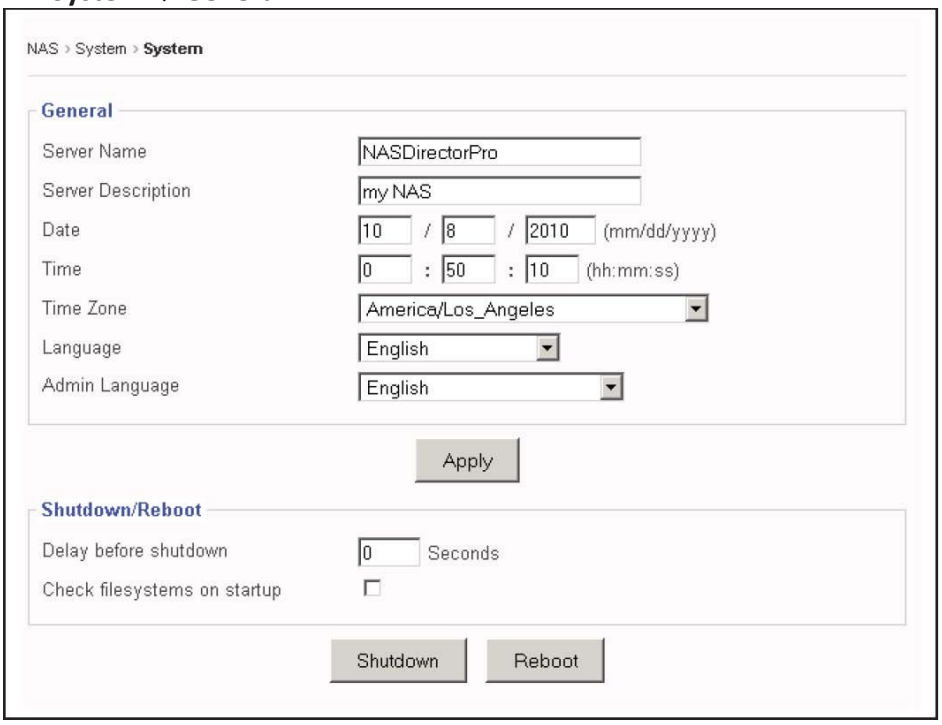
- Illustrates the GUI menu structure for navigating sub-menu items/actions branching out from the top Menu-Entry.

Chapter 1: Top-Menu-Entry: “System”

The **“System”** entry consists of the following sub-menu entries/pages



1.1 System → General



- **Server Name:** The name given to the NAS unit, such as “MyCompanyNAS”, etc.
- **Server Description:** Enter description to help identify usage of this unit. Example: “The NAS backup for my SQL server,” etc.
- **Date / Time / Time Zone:** Enter the current date and time zone of where this NAS is located in.
- **Language:** This setting determines what language the OS will display on the network client. Current supported languages include:
  English (default)

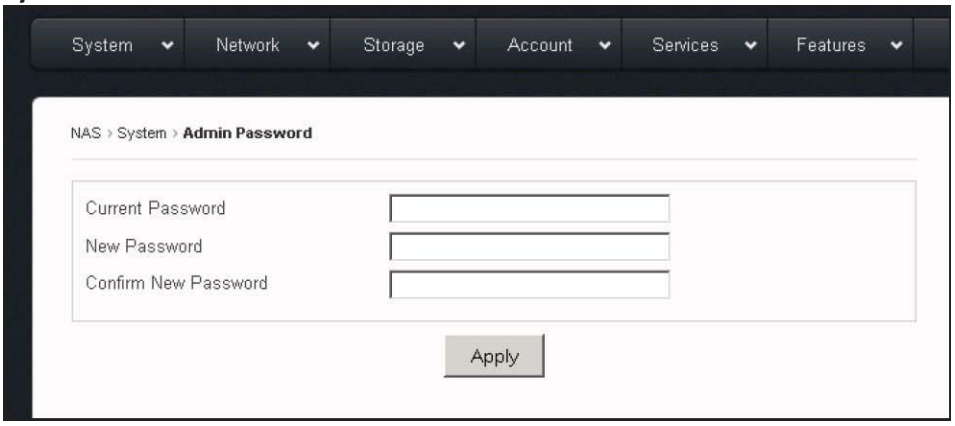
Chinese Simplified
Chinese Traditional
UTF-8

- **Admin Language:** This setting determines what language is displayed on the NAS Admin GUI menu, accessed via web browser. Currently, supported Admin Languages are:
  English (default)
  Simplified_Chinese_UTF8
  Traditional_Chinese_BIG5
  Traditional_Chinese_UTF8

  Note: the setting for "Language" and "Admin Language" are two different settings. Generally, it is advised that they should be set the same. Otherwise, the folder name or share name created by NAS Admin GUI will not be the same as what is displayed on the network client.

- **Apply button:** Click the "**Apply"** button to save any changes and put them into effect.
- **Shutdown button:** Click to safely power off the NAS system.
- **Reboot button:** Click to safely reboot the NAS system.
- **Delay before Shutdown:** Desired number of seconds to wait before initiating the shutdown process. By default, it is set to '0' seconds.
- **Check Filesystems on Startup:** This option will force the NAS OS to do a filesystem check on each XFS volume (network share) every time it boots. By default, this function is turned off.

1.2 System → Admin Password

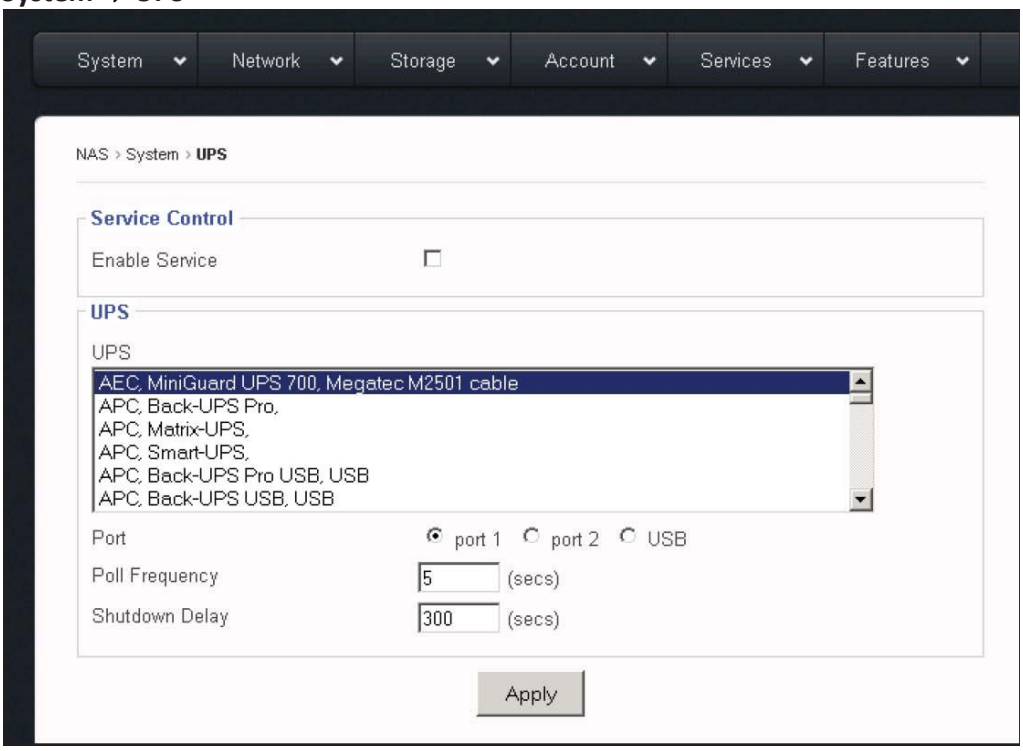


This page is used to change the current admin password to a new password.

- **Current Password:** Key in the current admin password
- **New Password:** Key in the new desired admin password

- **Confirm New Password:** Re-key the new desired admin password to confirm.
- **Apply:** Click the “Apply” to save change of password.

1.3 System → UPS



This page is to enable/disable UPS (un-interrupted power supply) Service, to manage some UPS selections/settings.

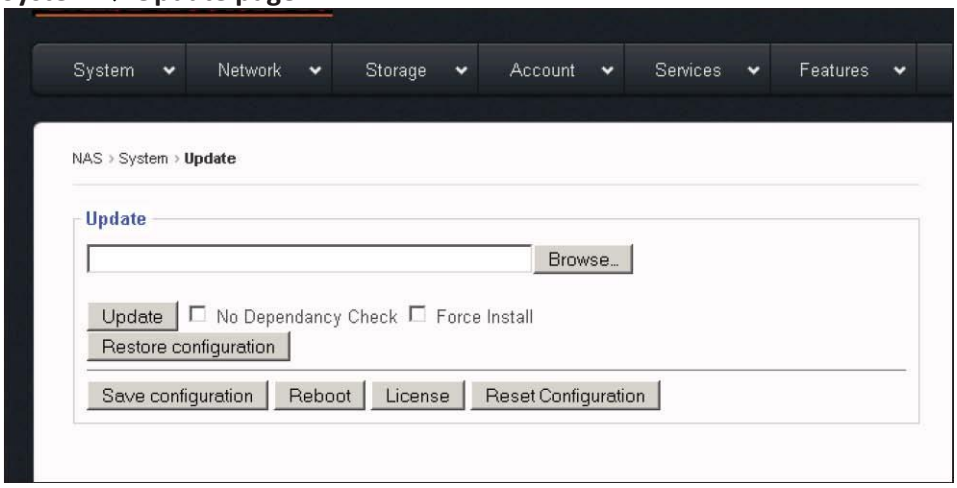
Service Control → Enable Service: Checking this option box will enable UPS service. By default, this service is disabled.

- **UPS:** This window lists the supported UPS brands and models. Scroll down to find more brands and models.
- **Port:** ‘**port 1’** = COM1**; ‘port2’** = COM2**; ‘USB’** = USB port on the NAS system**.** Select the proper Port Type according to what connectivity you have between the NAS and your UPS.
- **Poll Frequency:** This represents how often the system will check the UPS status. By default, if the USP service is enabled, this is pre-set to 5 seconds.
- **Shutdown Delay:** This represents how many seconds to wait before initiating the actual shutdown after receiving the shutdown signal from UPS service. This is pre-set set to 300 seconds.
- **Apply button:** Click the “Apply” button to save the changes to the above fields.

Note: #1: No network UPS is supported, only support UPS is connected via RS232 or USB. #2: For APC UPS, please use the "***simple signal cable***" for the RS232/COM port connection. **DO NOT** use the "***smart signal cable***" which comes with the APC UPS by default.

1.4 System → Sensor *(for DAGE104UTL-NAS and DAGE312UTL-NAS models only)*
This page will display readings for System, CPU, and Fan sensors:
(will not display any info on DAGE208UTL-NAS model)

1.5 System → Update page



This page is used for the following functions:

- **update patch**
- **restore previous configuration**
- **save existing system configuration**
- **reboot the system after updating patch**
- **enter new license to enable and reveal special Feature/Function**
- **reset system configuration back to factory default.**

Update:

Browse: Browse the admin's local computer for the patch file**.**

No Dependency check: From time to time, some specific patches may require check-marking this option in order for the new patch to be installed.

Update button: Click **"Update"** to update the selected patch file. After updating the patch, always reboot the system for the patch to take effect.

Restore configuration:

Browse: Browse the admin's local computer for selecting the previously saved configuration file.

Restore configuration button: This button will restore the selected previous-saved NAS configuration back to the NAS. Reboot for the restored configuration to take effect.

Save configuration: This button is used to export the current NAS configuration into a file and save it onto a local location on the administrator's computer. This file serves two purposes: (1) for future configuration recovery purpose (2) email to technical support for trouble-shooting.

Each time the administrator makes some changes, such as adding users or deleting users, the configuration file needs to be re-saved again. In other words, keep the saved configuration file up to date.

When clicking **"Save configuration"**, the GUI will prompt you to browse and find a location in your computer to save the configuration file.

Note: The saved configuration does not include physical volume info because volume info is stored and associated with the physical volume itself.

Reboot: Use the **Reboot button** to reboot each time after updating the patch. Reboot each time after restoring the configuration file.

License: Use the **License button** to key in a new license for following purposes:

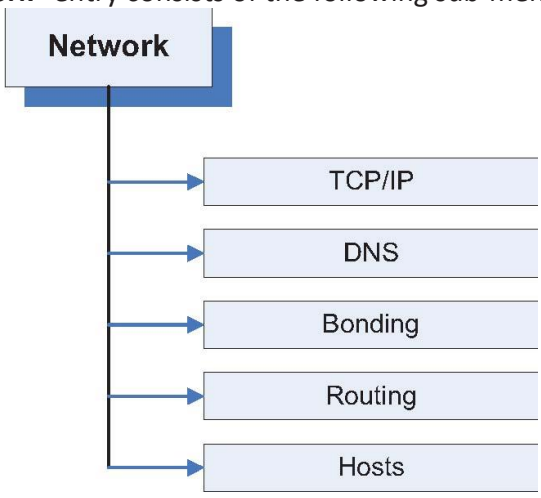
- increase/extend supported capacity
- enable/reveal hidden functions/features

Reset configuration: This button is used to reset system configuration back to factory default. **It will remove all user accounts, either local or imported; it will remove all LVs (logical volumes) and VGs (volume groups), either network share volume or iSCSI volume, thus it will erase all data.** It is useful for administrator who wants to start creating volumes and users all over without worrying any potential hidden corruption on the existing volume or unclear-flags on configuration files.

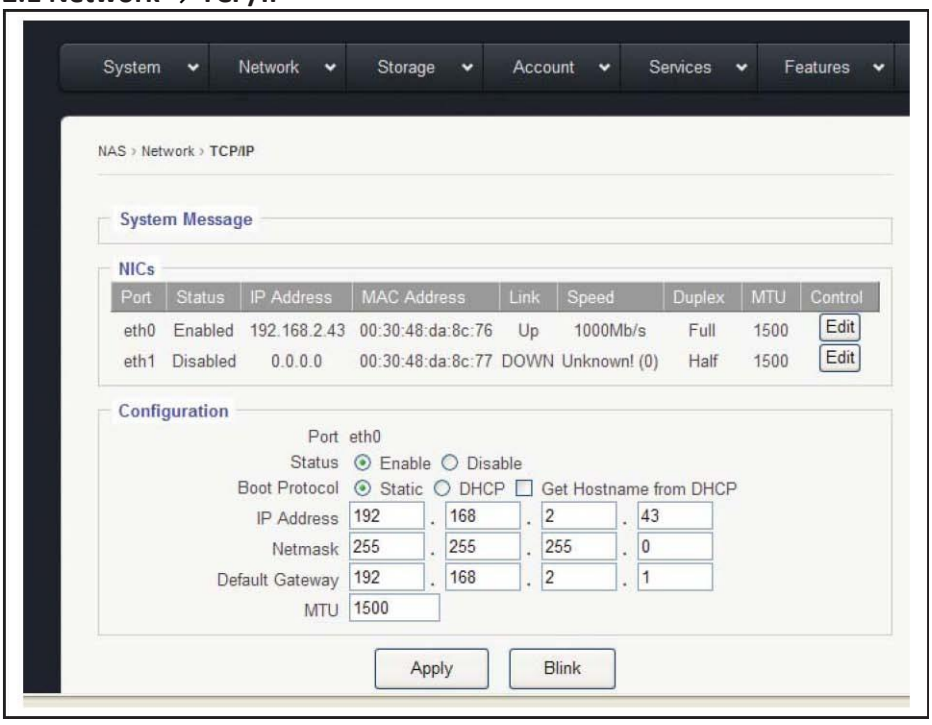
Notes: #1: Since it will erase all data in the NAS, please take extra precaution when using this function. Please make sure either you *have a full backup of the data* in the NAS, or you are sure you don't need the data in the NAS any more.
#2: It will not reset the existing Network Configuration.

Chapter 2: Top-Menu-Entry: “Network”

“Network” entry consists of the following sub-menu entries/pages:



2.1 Network → TCP/IP



On this page, Static IPs can be set for specific NIC ports, along with some other properties**.** NIC Port is identified as **“ethx”,** such as: **eth0, eth1, eth2, and** etc. When clicking the **“Edit” button** of a NIC Port **(ethx),** the corresponding configuration of the selected NIC Port will display in the **“Configuration”** window.

Port: Displays which NIC Port is selected here.

Status: Shows if the port is **Enabled** or **Disabled**

Boot Protocol:

- **Static IP:** Allows the admin to enter the static IP address, Netmask, and Default Gateway for the NIC port**.**
- **DHCP:** When selected, the NIC port will get an IP assigned from the DHCP server in the network. The fields: **IP address**, **Netmask**, and **Default Gateway** will display what values were assigned from the DHCP server.

Click "Apply" button to take effect of the settings

Boot Protocol:

Get Hostname from DHCP: If the Admin has the "reverse look up" enabled and setups in the DHCP Server, then the DHCP server will not only assign an IP to the NIC port, but will also assign a Server Name to the NAS system. The Server Name is the name defined in the "System → General" page. **This option is seldom used.**

MTU: Maximum **T**ransmission **U**nit. The default value is 1500. To enable Jumbo Frame, refer to the actual Ethernet card being used for the proper MTU number. Most of the Ethernet cards have 9000 MTU for Jumbo Frame, but other values besides 9000 exist for MTU.

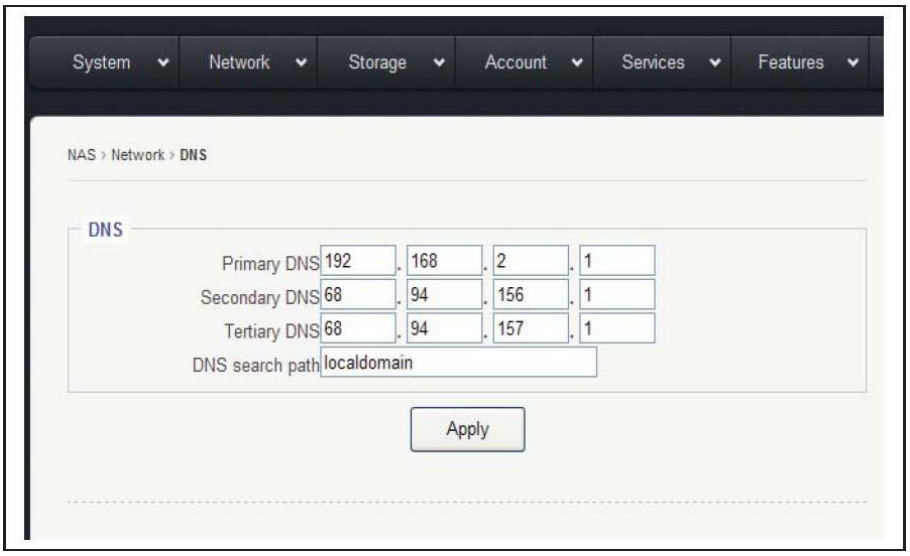
Note: In order to use Jumbo Frame properly, the network switch and the other end of the device accessing the NAS also need to be Jumbo Frame enabled and set to the same MTU. Otherwise, unpredictable results may occur**.**

Apply button: Click to save changes and put into effect new settings. Upon clicking the "**Apply**" button, this message will appear:

The GUI will return after the displayed number of seconds

Blink button: This feature is used to help identify NIC ports. Upon clicking this button, the physical LED on the selected NIC port will flash. This helps the user identify the physical port for each NIC port.

2.2 Network → DNS



DNS -**D**omain **N**ame **S**ystem (DNS) is a database system that translates a computer's fully qualified domain name into an IP address. The computer system that runs the DNS functions is called the DNS Server. In a small network environment, such as a home network or small office network, the DNS could be an internet Router. For bigger companies or corporations, normally there is at least one dedicated DNS server in place.

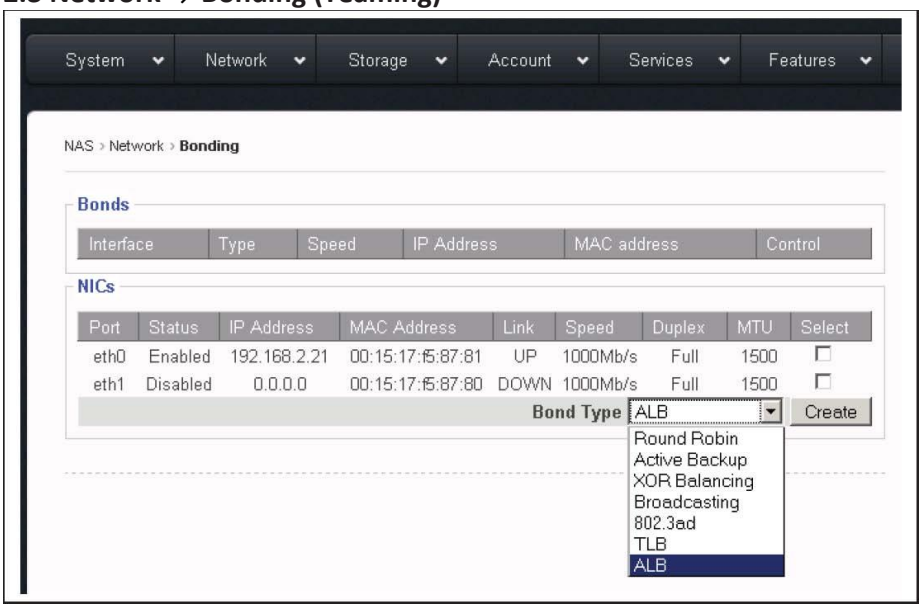
RAIDAGE's NAS implements a "multi DNS" support scheme. If the user has more than one DNS servers, up to 3 DNS Servers' IPs can be listed, and if the **Primary DNS** fails, the NAS will fall back to the **Secondary DNS**, and if the **Second DNS** fails, too, then the NAS will fall back to the **Tertiary (3rd) DNS**.

Primary DNS / Secondary DNS / Tertiary DNS field: Key in the IP address of the corresponding DNS Server. If there is no Secondary or Tertiary DNS, leave the field blank.
DNS Search Path --a DNS search path is a list of Domains to try/search for when the NAS tries to translate a machine name into an IP address.
It is in the Format of: ***mycompany.com mycompany.net mycompany.org***

For small network environment, this does not apply, just simply **"localdomain"** will do.

Click "Apply" button save settings

2.3 Network → Bonding (Teaming)



Bonding is sometimes referred to as **Teaming.** Its purpose is to bond multiple NIC ports together under the same IP to increase bandwidth and/or provide path redundancy.

Bond Type: The RAIDAGE's NAS supports all 7 basic modes of bonding. However, in these days only 2 types are commonly used, **ALB** and **802.3ad**.

Bond Type ALB: **Adaptive-Load-Balancing**. This attempts to redistribute network traffic (outgoing and incoming) quickly based on current conditions. All NIC ports need to hook to the same network switch, and the network switch needs to have special settings for it as long as the switch is a true switch, not a hub. Because of that, the ALB mode is the most commonly used setting for the bonding, which is why we made it the default setting for bonding. Besides increasing network performance, ALB also provides network path failover in case of NIC port failure.

Notes on ALB: #1: **ALB** does not increase Point-to-Point network performance. The performance advantage only shows when there are multiple network clients accessing the NAS. In addition, the performance increased is non-linear, so none of the bonding types will actually provide a linear performance increase.
#2: All NIC Ports in the same bonding must hook to the same network switch. They cannot be connected to different switches.

Bond Type 802.3ad: Dynamic Link Aggregation. This creates aggregation groups that share the same speed and duplex settings. There are two types of 802.3ad: with or without **LACP**. **LACP** stands for **L**ink **A**ggregation **C**ontrol Protocol. The **RAIDAGE's NAS** supports **ONLY** the 802.3ad with **LACP**.

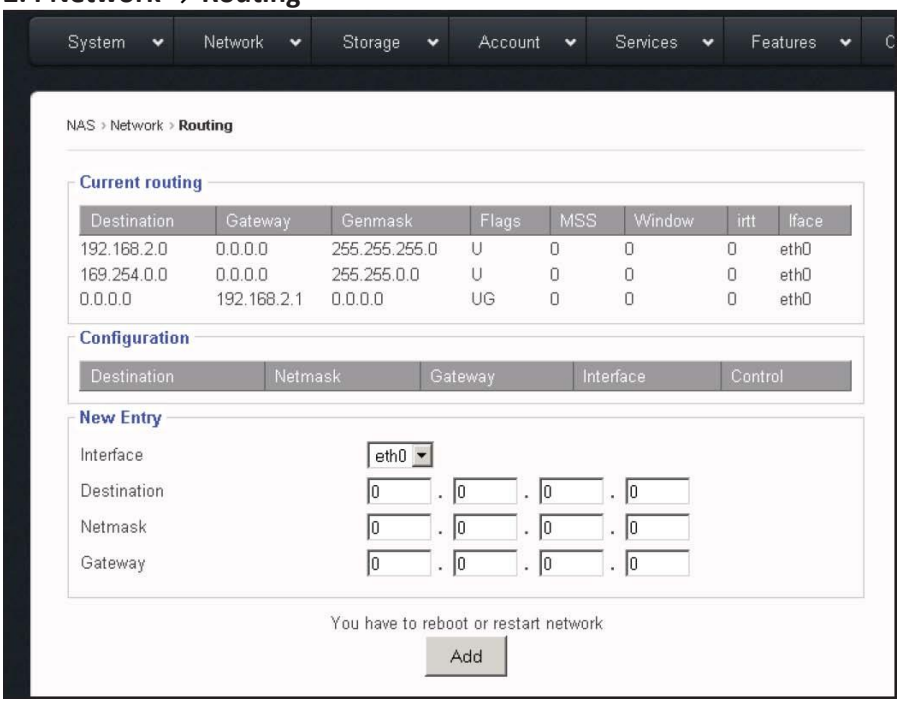
This mode requires a switch that supports IEEE 802.3ad with LACP, and the switch needs to be configured on the specific ports that the NIC ports are connected to.

Setting the Bonding: Select the NIC Ports intended to be bonded together and then click the "**Create" button** to create the bonding.

Rules for Bonding:

- The IP of the bond is always the first NIC Port in the Bond. For example, in the above Bonding page screen, bonding the **eth0** and **eth1** will result in the bond0 with eth0's IP address: **bond0 IP** = **eth0 IP** = **192.168.2.21**
- Multiple bonds are supported, as long as each bond is on a different network. For example: bond0 = 192.168.**1**.100 and bond1 = 192.168.**2**.100 are a valid setting. However: bond0 = 192.168.**1**.100 and bond1 = 192.168.**1**.200 are not a valid setting.

2.4 Network → Routing



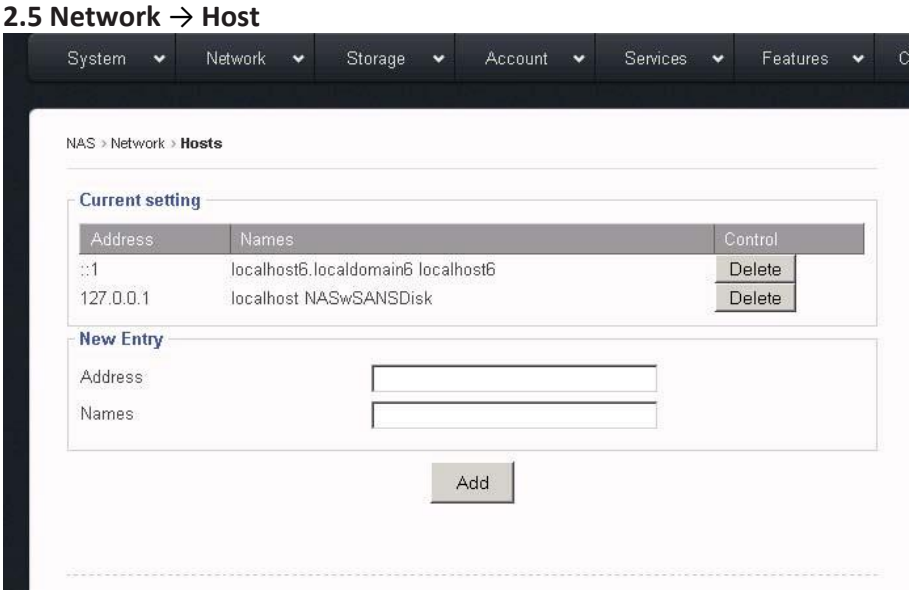
This function/page is dedicated for those sophisticated users who have had multiple networks and gateways in their network environments. For those who don't have multiple networks/gateways, please disregard.

What is the "Routing" page" for?

Each NAS has at least two NICs, and some times more than two NICs. Some corporation users have multiple subnets and need to assign each NIC with its own subnet and with its own Gateway. However, under the "TCP/IP Setting"

page, there is only one option field for “Default Gateway”. The “Routing” page is used to address this need by allowing additional Gateway IP and Destination IP to be associated with designated NIC port.

2.5 Network → Host



The “**Host**” function allows the association of a network client’s name with its IP and store it locally within the NAS. When it comes to finding a network client’s name/ip resolution, the NAS will first look it up locally according to this “**Host**” information, then, go to the DNS server. It is typically useful to enter your ADS server’s info here if intent is to join the NAS System to an existing ADS server.

Note: Do Not Delete the first two existing Entries. Just leave them alone.

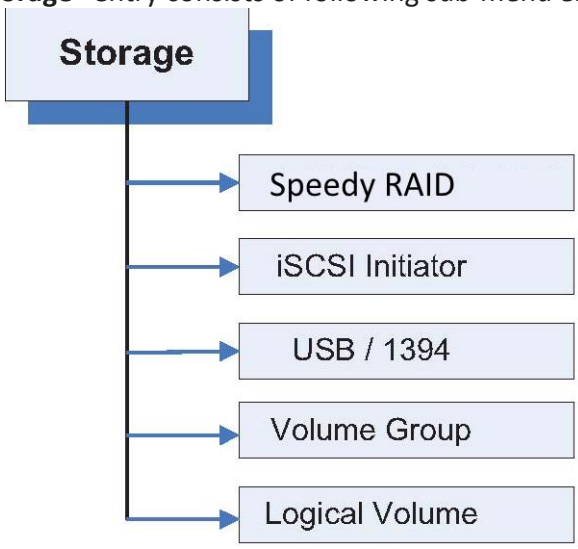
Address: The IP address of the network client, such as: 192.168.2.100
Names: The name of the network client, it can in any of the following formats:

mycompany
mycompany.com
mycompany mycompany.com (multiple names with space in between)

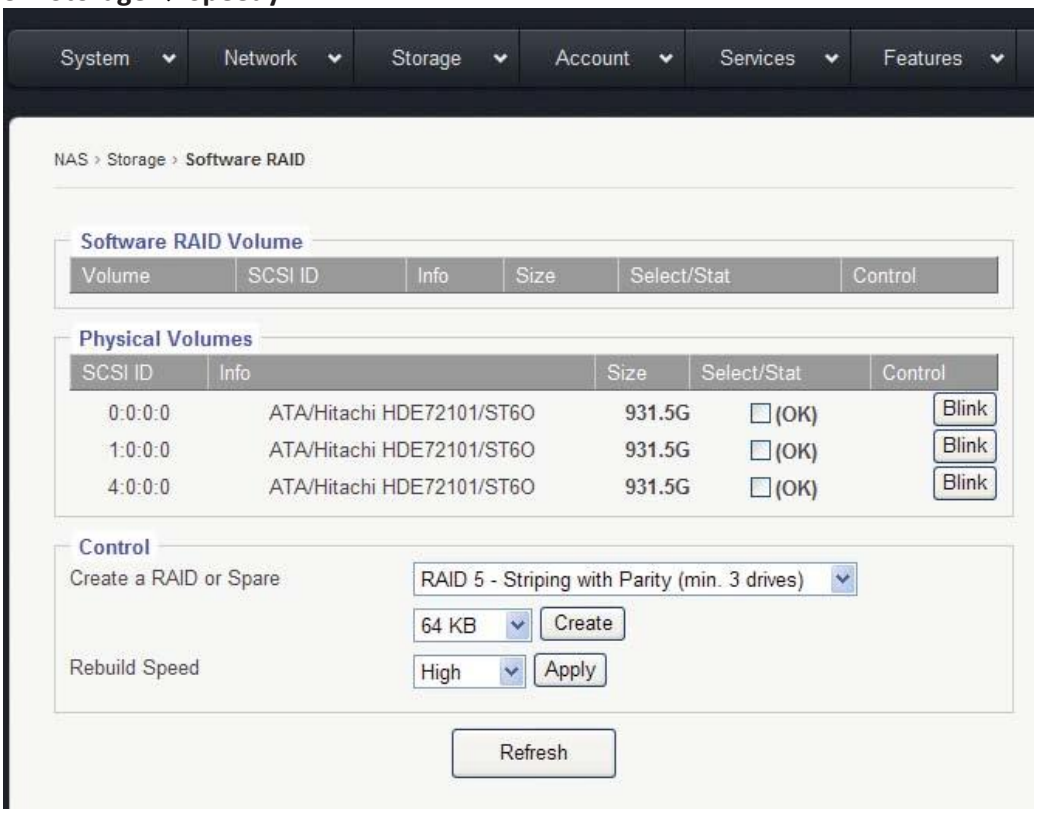
Make sure to click “**Add**” button to save changes.

Chapter 3: Top-Menu-Entry: “Storage”

The **“Storage”** entry consists of following sub-menu entries/pages:



3.1 Storage → Speedy RAID



Under the **“Physical Volumes”** Window:

SCSI ID: Disk ID, in format of:

0:0:0:0 = Disk 1

1:0:0:0 = Disk 2

2:0:0:0 = Disk 3

3:0:0:0 = Disk 4

Info: disk Info, such as: Brand, Model, and Firmware

Size: Disk size

Select/Stat: Disk-selection/disk-status. The empty box means the disk is not selected. Check-marking the box selects his disc. Next to the box is that stat of the disc. “OK” means the disk is at normal status. It could show “Failed” or “Removed” if the disk is bad or removed.

Blink button: This feature blinks the LED on the Physical hard drive tray to help identify which hard drive is being referenced.

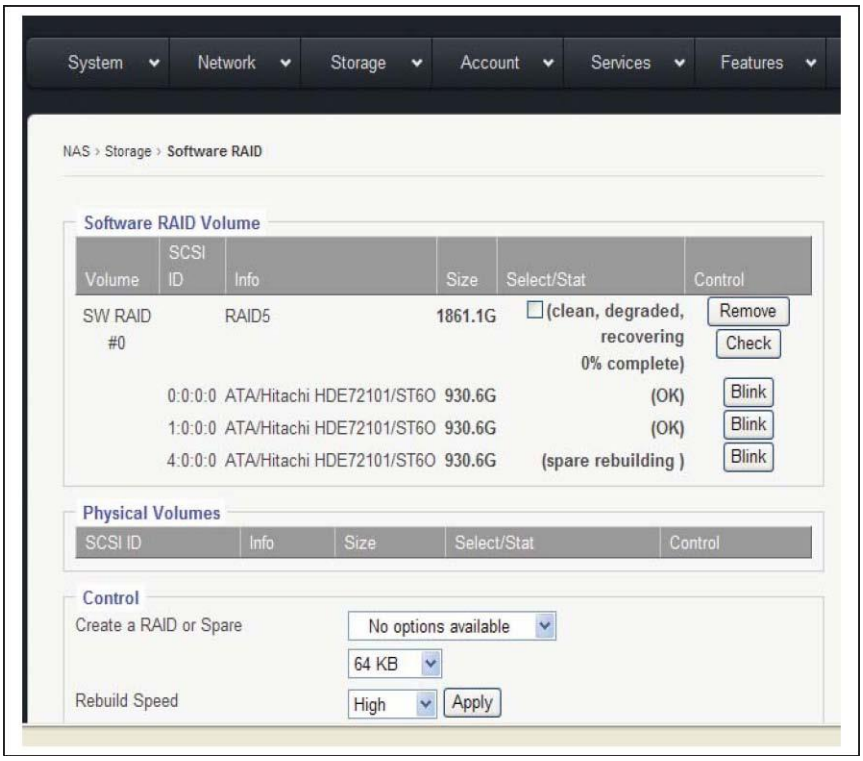
Create a RAID or Spare: When there are no existing RAID volumes, you can only create a RAID and will not be allowed to create a Spare. The Spare is allowed only if you have an existing RAID with RAID-level of: 1, 5, 6, or 10.
Supported RAID-level is: 0, 1, 5, 6, or 10

Stripe Size: The stripe size for the RAID can be anywhere from 4KB ~ 1024KB. Option is selected via the drop down menu. The default size is 64KB.

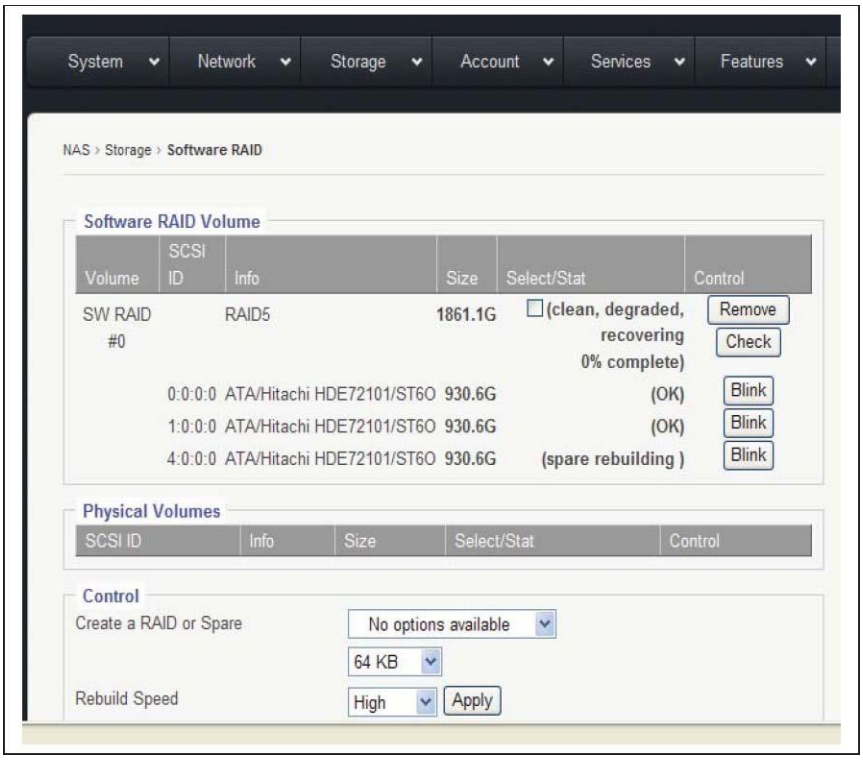
Rebuild Speed: The options are: **High**, **Mid**, and **Low**. This is used to define how much internal storage speed should be allocated to the RAID rebuilding, therefore, reserve a portion of resources for normal data accessing. The higher the rebuild speed is, the less resources it has for normal data access.
For first time RAID creations, always set rebuild speed to “**High**,” to decrease time needed to initialize RAID.

3.2 Basic Steps to Create a RAID:

Step 1: select by check-marking all the disks to be put into the same RAID array.
Step 2: select the RAID-level
Step 3: select the Stripe-Size, or leave it at 64KB
Step 4: click the “Create” button, and the GUI will display the page below:



Notice that the disks selected have disappeared from the "**Physical Volumes**" window, and have shown up in the "**Software RAID Volume**" Window.



Now under the **Software RAID Volume** window, we have:

Volume: SW-RAID#0, if there are more than one SW-RAID, they will be, SW-RAID#1, SW-RAID#2, so forth and so on.

Info: RAID-Level Info, such as RAID5, or RAID0, or RAID6, etc.

Select/Stat: RAID volume-selection/RAID volume-status. When the selection box is empty, its means that the RAID is not selected. Status can be: **Normal**, **Degraded**, **Failed**, **Degraded recovering %**, etc.

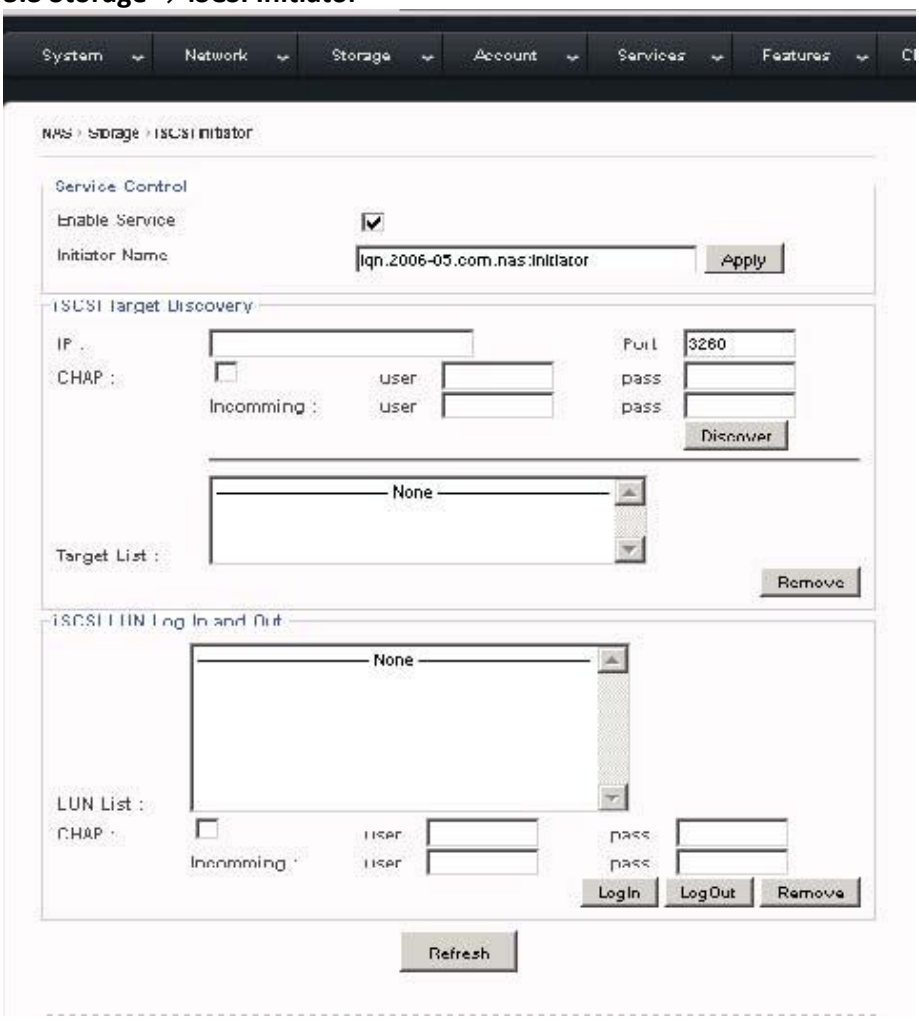
Remove button: Select by check-marking a RAID, and then if the “Remove” button is clicked, the selected RAID volume will be removed/deleted.

Check button: Select by check-marking a RAID, and then if the “Check” button is clicked, the selected RAID volume will run consistency check for RAID-level: 5 or 6.

Create a HotSpare: If the existing RAID-level is 5, 6, or 10, a HotSpare disk can be added to it.

1. Select by check-marking a RAID volume from the **Software RAID Volume** window.
2. Select a disk from the **Physical Volume** window.
3. Click “**Create.**”

3.3 Storage → iSCSI Initiator



RAIDAGE's NAS has a built-in iSCSI initiator function which allows the administrator to pull in a remote iSCSI Target volume as the local physical volume.

Basic Steps to connect to a remote iSCSI Target / LUN:

Step 1: Check-marking "**Enable Service**" option box

Step 2: Key in the remote iSCSI Target's IP address in "**iSCSI Target Discovery →IP**"

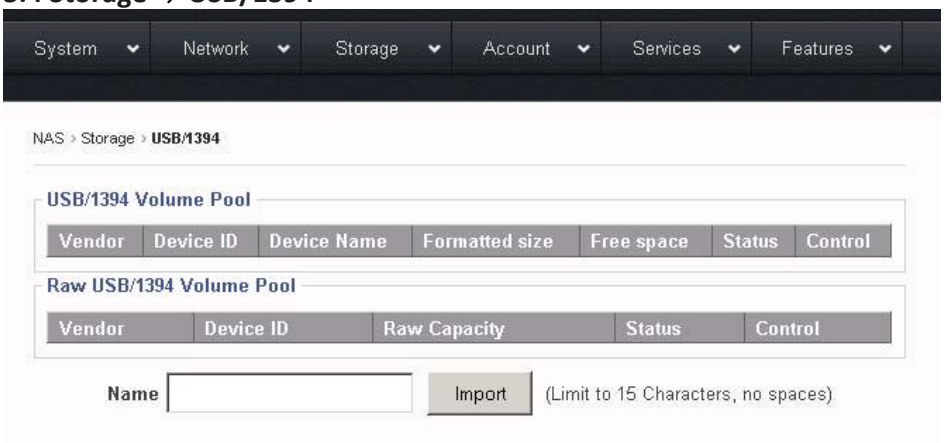
Step 3: Key in the remote iSCSI Target port number if it is not the default 3260.

Step 4: Click the "Discover" button. If the Target IP is correct, the Target name will show up in the "Target List" window and the corresponding iSCSI LUN will show up in the "iSCSI LUN Log In and Out" window.

Step 5: Select the iSCSI LUN and click "Log In."

For CHAP, please refer to the remote iSCSI Target's requirement.

3.4 Storage → USB/1394



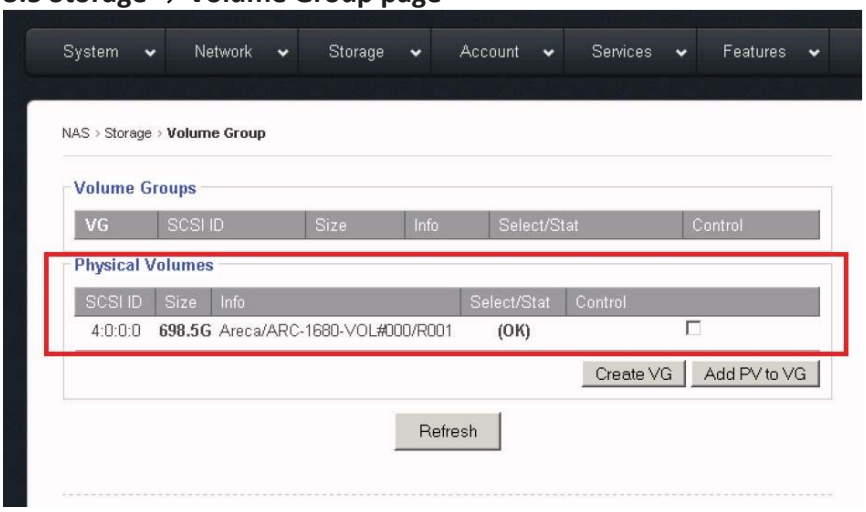
When an USB or 1394 disk is plugged into the system, a device and corresponding capacity will be displayed in the "**Raw USB/1394 Volume Pool**" window. Give it a name in the "**Name**" field and click "**Import**" and the format screen will appear. Once it is formatted, it will show up in the "**USB/1394 Volume Pool**" and be ready to be used.

USB/1394 disk is intended to be removable, and removing a XFS volume while online can disrupt the entire OS and all volumes. Therefore, the USB/1394 volume is defaulted to be "**FAT32**," which in turn limits the volume size to a 2TB maximum.

USB/1394 volume is a logical volume, therefore there is no need to go through the settings in the "**Volume Group**" page and "**Logical Volume**" page.

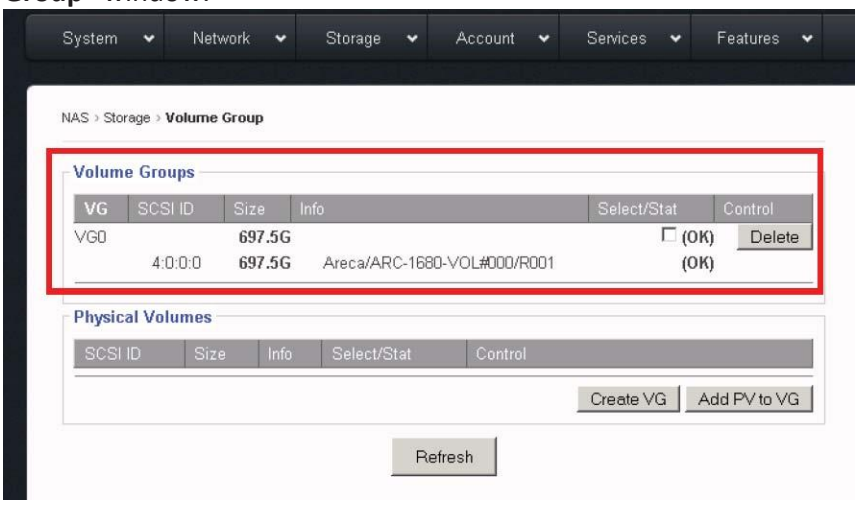
Depending on the chip used in the motherboard/system and the chip used in the external Device, sometimes they are not compatible, so in such a case the USB/1394 disk will not be supported.

3.5 Storage → Volume Group page



After the RAID volume has been created and the NAS restarted, the volume will show up in the "**Physical Volumes**" window.

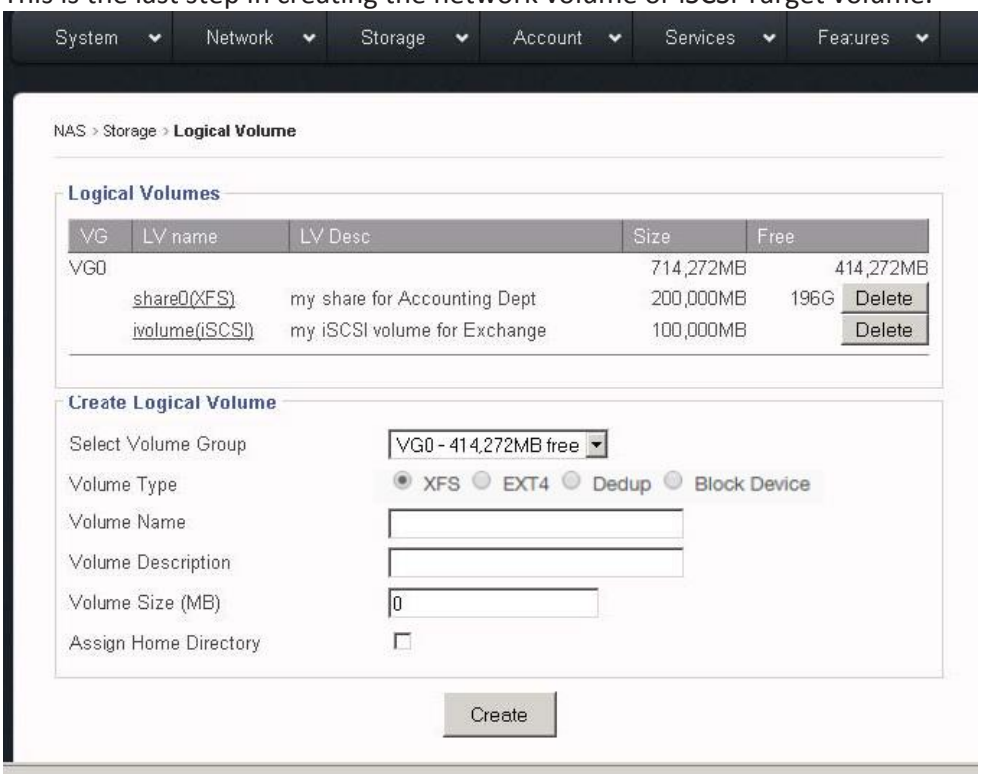
Check-mark to select the **Physical Volume** (aka **PV**), and click the "**Create VG**" button. Now, the selected **PV** will turn into **VG** and display under the "**Volume Group**" window.



With multiple **PV**s, multiple VGs can be created. To increase the size of an existing **VG**, just simply add a new **PV** to the existing **VG** by check-marking both the **PV** and **VG**, and then clicking "**Add PV to VG**". Adding a **PV** to an existing **VG** is also called: **Linear RAID** or **Spanning.**

3.6 Storage → Logical Volume page

This is the last step in creating the network volume or iSCSI Target volume.



This is a typical illustration for how it looks like after a typical XFS share and an iSCSI target volume are created.

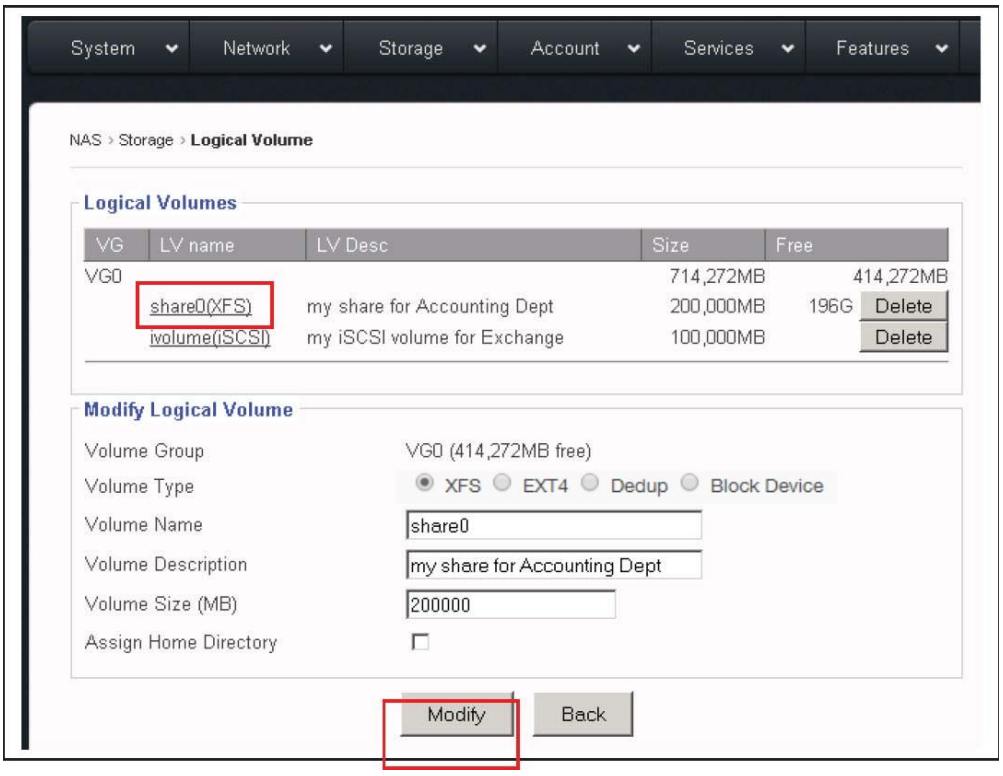
Volume Types:

XFS/EXT4 – a XFS/EXT4 volume is to be created for network share(s). "Assign Home Directory" is an option used to create a "home" folder for each user on that network share. Regardless of how many XFS/EXT4 shares you may have, only one XFS/EXT4 share can be used to create "home" folder.

Block Device (iSCSI) – an iSCSI volume is used to create the iSCSI target volume, and it will act as a local disk to the remote iSCSI initiator.
iSCSI target volume has an extra field: LUN# By default, the LUN# = 0. However, if you are using multiple iSCSI target volumes from multiple NAS units **with VMWare ESX,** then you might need to adjust the LUN# on them so that no two iSCSI target volumes will have the same LUN#. Otherwise, ESX will assign the exact same ID to all the volumes and won't connect properly.

VG0 – It has 714,272MB in size, it has two LVs created on it, and it has 414,272MB free space for more LVs.
share0 – It is a XFS share from VG0, it has size of 200,000MB, which is all free.
ivolume – It is an iSCSI target volume from VG0, it has size of 100,000MB, and since contents of an iSCSI volume is solely controlled by the iSCSI initiator, and the NAS will not show the Free space of it.

XFS volume target volume can be deleted by clicking "**Delete.**" But they can also be "Modified."



When clicking on an existing **LV name**, the "**Modify Logical Volume**" window will display the corresponding LV info. In the "**Modify Logical Volume**" window, you can do:

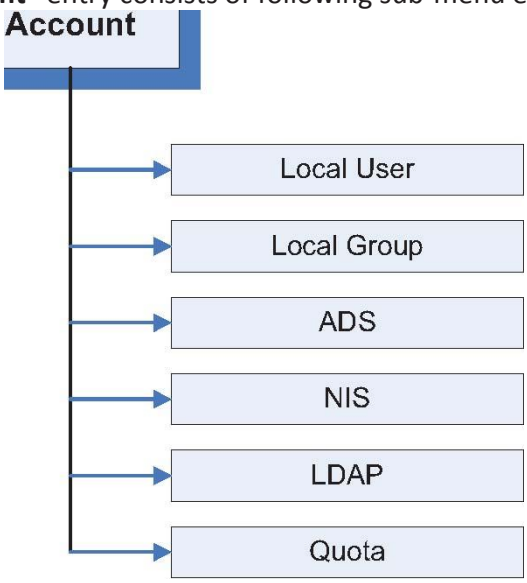
Change the volume name: Enter the new volume name replacing the old volume name.

Increase the volume size: If the VG still has free/available space, then enter the new larger size for the **Volume Size**.

Click "**Modify**" to save and apply changes or click "**Back"** to cancel.

Chapter 4: Top-Menu-Entry: “Account”

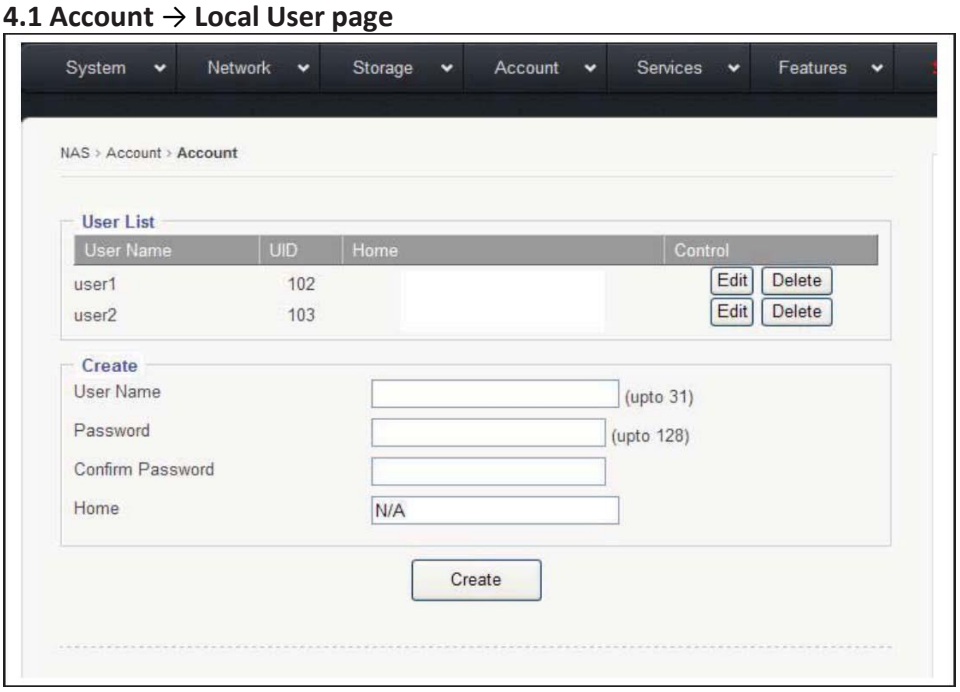
“Account” entry consists of following sub-menu entries/pages:



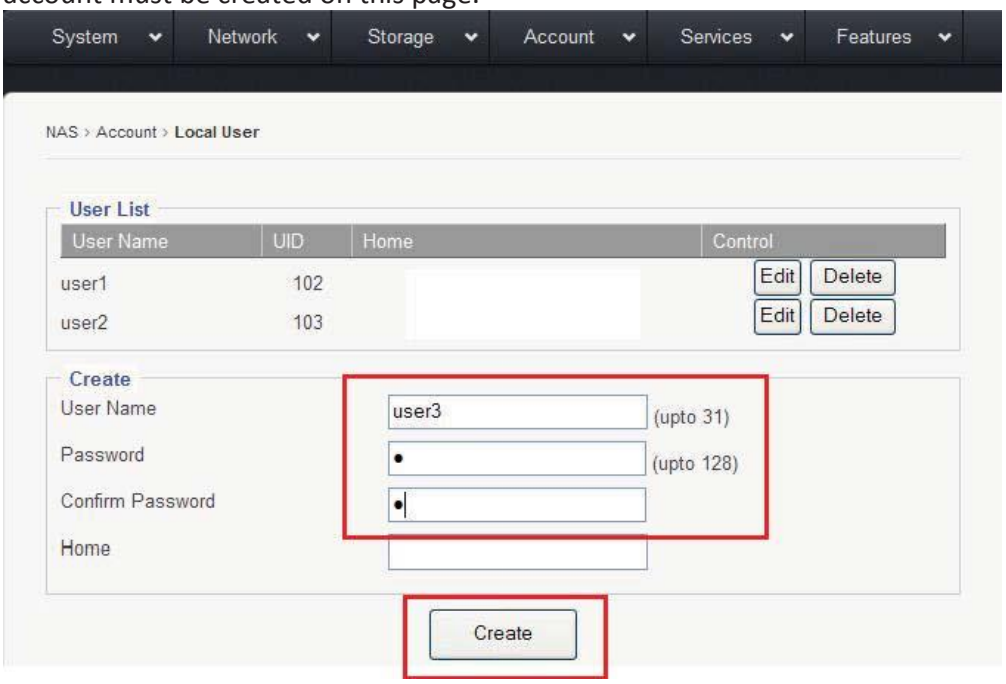
Account entry is used to allow the administrator to do following functions:

- Create local users and local groups
- Join **Windows Active Directory Service Server** or **PDC**
- Join **NIS** server for Unix/Linux **NFS clients**
- Join **LDAP** server for Unix/Linux **NFS clients** (***LDAP for SMB/CIFS clients is not supported***)
- Assign quotas to users and groups

4.1 Account → Local User page



For Mac clients, they are considered local users, user accounts need to be created for them on this page.
For Windows clients on a Workgroup network, they are considered as local users, and need user accounts to be created for them on this page.
In other words, for Windows clients and Mac clients, if they are not syncing their user account info from ADS Server, NIS Server, or LDAP Server, then a local user account must be created on this page.



To create a new local user account:

1. Enter a desired user name, up to 31 characters long
2. Enter a desired password, up to 128 characters long
3. Re-enter to confirm the password
4. Click "**Create**"

4.2 What is 'Home' (Home Directory / Home Folder)?

The '**Home**' option is used to create a sub-folder under the designated XFS volume (network share) for each user with the user's account-name as the folder name. When a user logs into the network share, the user automatically has access to his/her home folder. Other users will not have access to this folder, unless the administrator uses the "**Services → Access Control**" to specifically modify which users are granted access. '**Home Directory**' is also referred to as '**Home Folder**'.

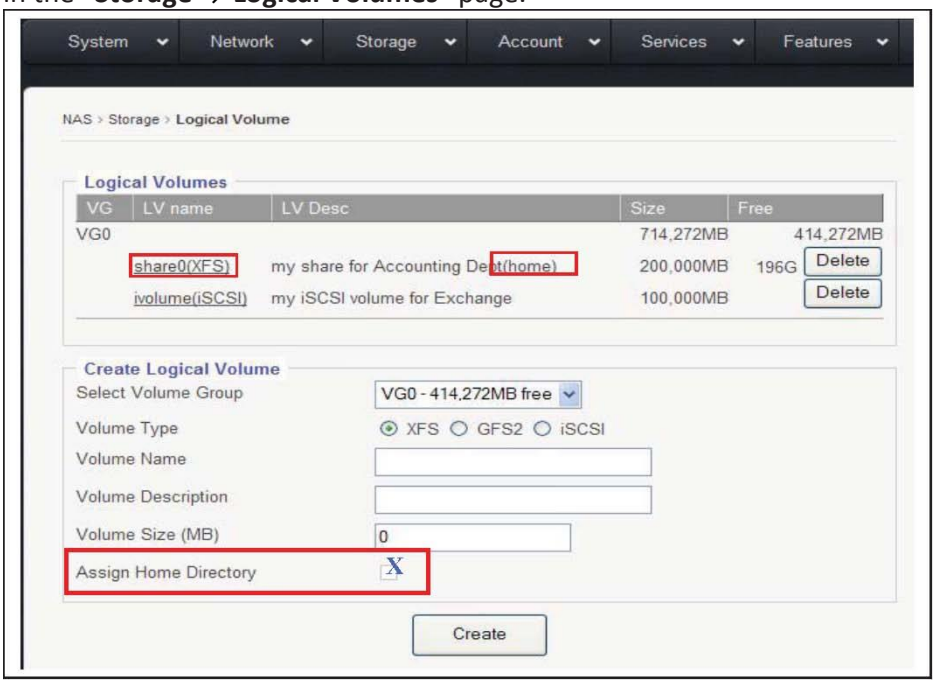
The '**Home**' option is only an option, not a "must." It is purely dependent on the administrator's personal experience and habits. There are no standard rules on when to or when not to use this feature.

Most of the NAS units in the data center do not use this option. But some IT staff found this "**Home**" option to be handy and are very used to it.

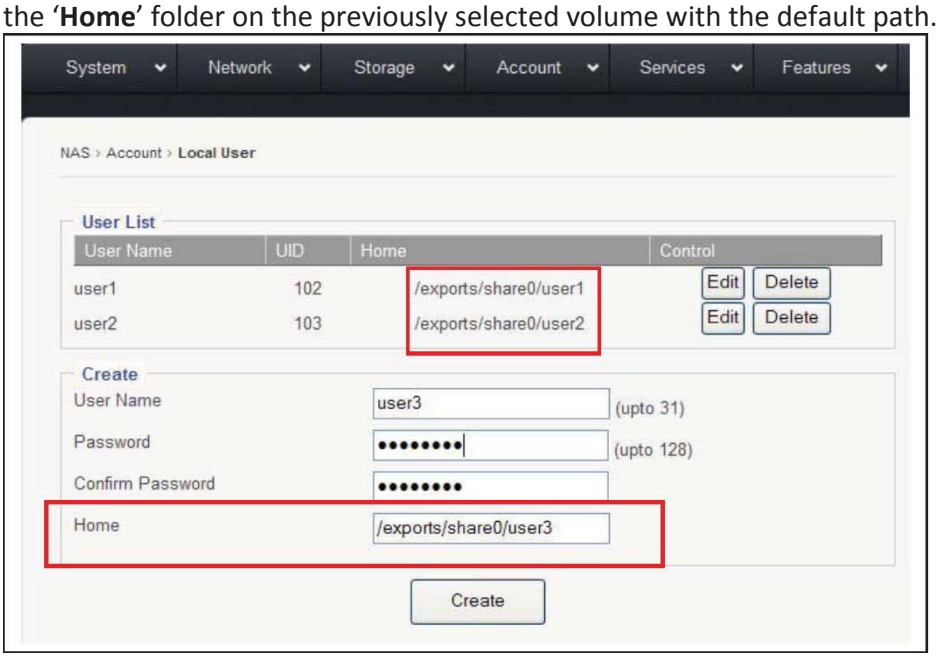
4.3 How to create and use 'Home Folder'?

There are two steps to creating the '**Home Folder**', and one step to assigning access permissions.

Step 1: Enable the "**Assign Home Directory**" option for the selected **XFS volume** in the "**Storage → Logical Volumes**" page.



Step2: When creating a local user, the administrator is given an option to create the '**Home**' folder on the previously selected volume with the default path.



With the given example here: **share0**, **user1**, **user2**, and **user3**; it works like below.
Inside the share folder '**share0**', there are the sub-folders: '**user1**', '**user2**', and '**user3**'; the directory looks like this:
\\share0
\\share0\user1
\\share0\user2
\\share0\user3

When **user1** logins to the share, user1 will see it like this:
\\home
\\share0
\\user1
In here, the "\\home" and "\\user1" and "\\share0\user1" are actually the same folder, it is just being displayed by different names at different locations. The **user1** will have the full access permissions to them by default. If **user1** navigates to \\share0, user1 will see all 3 sub-folders: \\share0\user1, \\share0\user2, \\share0\user3; but only has access rights to the \user1 sub-folder. The access rights for **user1** to other user's home folder can be granted by "**Service → Access Control**," which will be discussed in a later section of this user guide.

When **user2** logs into the share, **user2** will see it like this:
\\home
\\share0
\\user2
In here, the "\\home" and "\\user2" and "\\share0\user2" are actually the same folder, it is just being displayed by different names at different locations.

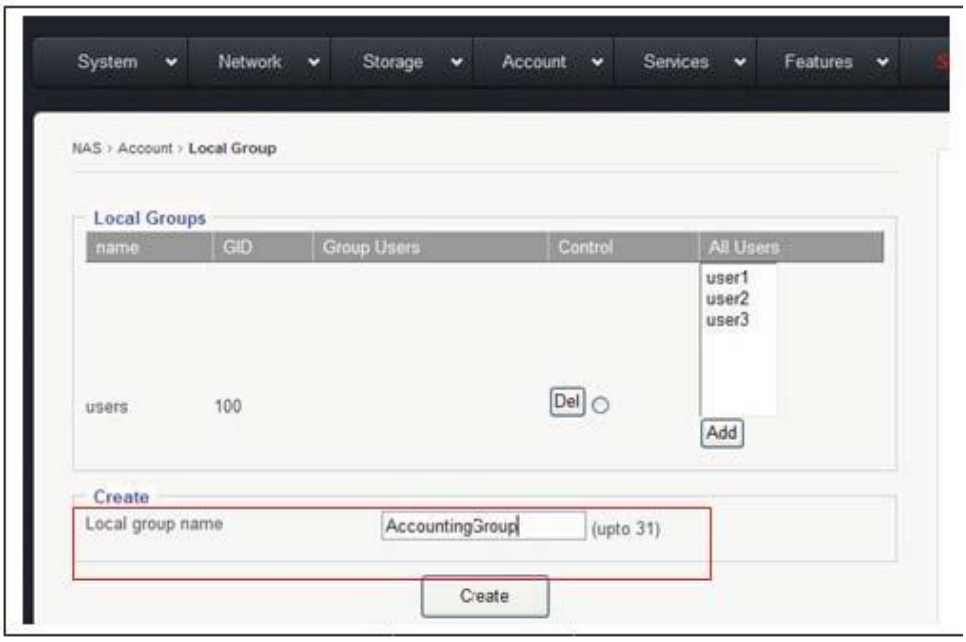
Notice now "\\user1" has been replaced by "\\user2" when **user2** logins.

Step 3: Assign user access permissions to the volume/share in the "**Services → SMB/CIFS**" page. Please refer to the **Top-Menu Entry –Services** section for more details.

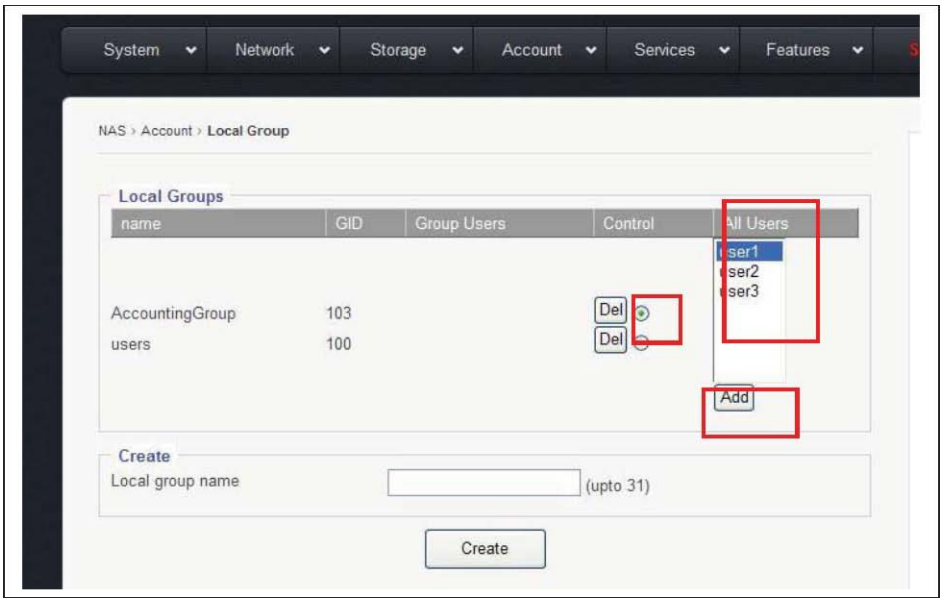
4.4 Account → Local Group

Local Group is used to create a group(s) of local users, so that later on, the administrator can simplify the process on assigning Access Rights for a group of

users who share the same permissions instead of individually assigning rights to each user one by one.



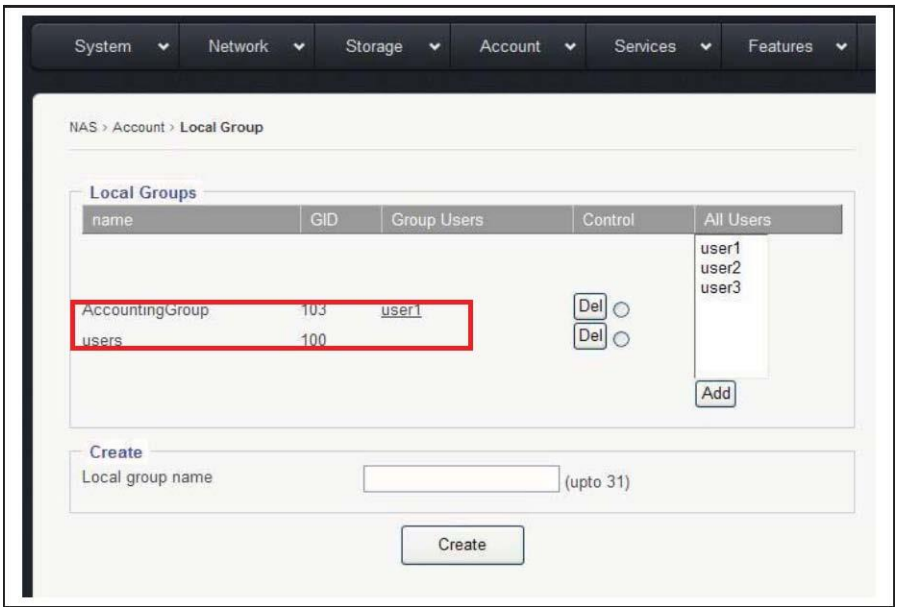
Creating Local Group: Key the group name in the **Local group name** field, up to 31 characters long, without any spaces in between, and then click the "**Create**" button.



Adding Users to the Group.

Once the Group is created, the administrator can start adding users to it.

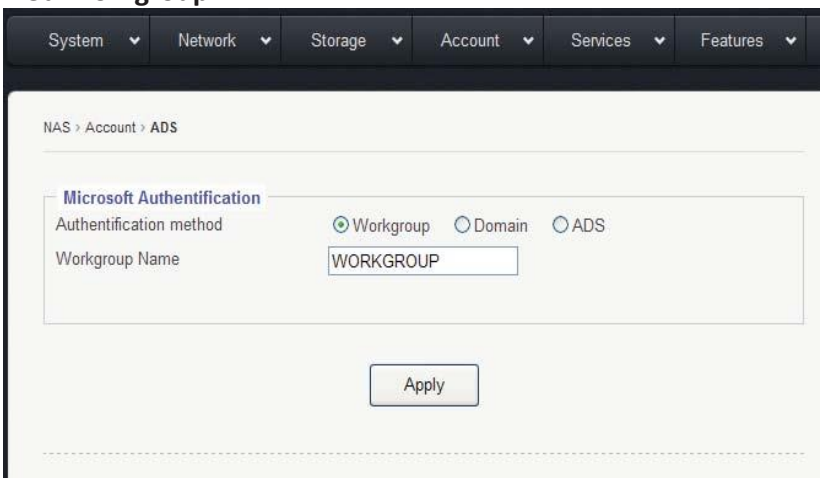
- Select the Group by clicking the little round dot
- Select the user name from the "**All Users**" window
- Click "**Add**" to save changes



4.5 Account → ADS

This section defines if the NAS will be in a stand-alone network (Workgroup), or if it will join the Microsoft PDC server, or if it will join the Microsoft Active Directory Service server.

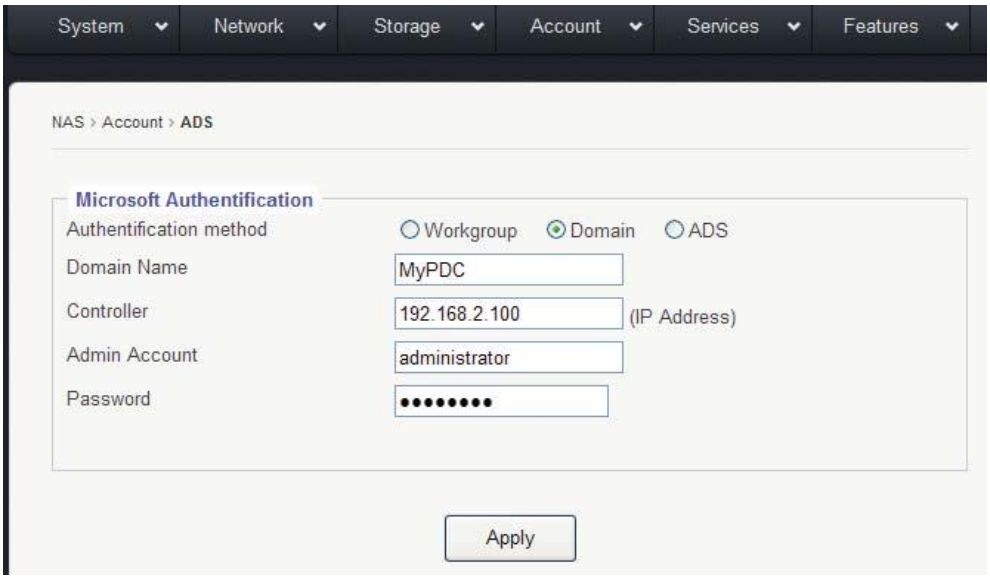
4.5a Workgroup



If PDC or AD Servers are absent in your network or if you have PDC/AD Server in your network but you don't plan to join the NAS to the domain for domain users, and then just select the "**Workgroup**" option.

Either leave the name "**WORKGROUP**" as it is, or you may change it to a desired name, then click "**Apply**" to save the changes.

4.5b Domain

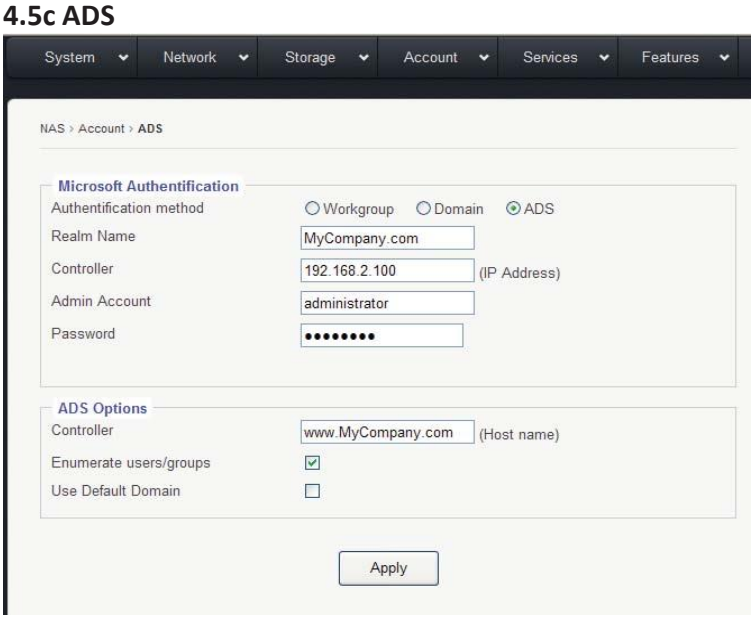


Domain is referring to the **PDC** created on a Windows NT or Windows 2000 Server. If using a Windows **Active Directory Service** server, do not use the "**Domain**" option, instead use the "**ADS**" option instead.

To join a PDC:

- Enter the **Domain Name**
- Enter the PDC's IP address in the "**Controller**" field
- In the "**Admin Account**" field, enter the Administrator ID (it can be a User ID who has the equivalent rights as the Administrator)
- Enter the password for the Administrator on the PDC
- Click "**Apply**"

4.5c ADS



AD here is referring to the Microsoft **Active Directory Service** server. If using a **PDC** based on Windows NT, then please do not use the "**ADS**" option, use the "**Domain**" option instead.

Prerequisites for Joining AD Server:

• **Time Syncing**

The time on the NAS should be in-sync with the ADS server, meaning that the time on the NAS should be set to the same time zone as the ADS server, and the time difference should be less than 2 minutes apart. The time syncing can be achieved by setting the NAS to a common NTP server (refer to **Top-Menu-Entry: Features → NTP**)

• **DNS Server and Local Domain**

Make sure to provide accurate DNS Server information and "DNS search path" (local domain) in the **Top-Menu-Entry: Network → DNS page**.

4.6d Joining ADS Server

Select "ADS" option
Realm Name: = Domain Name = MyCompany.com
Controller: IP address of the ADS server
Admin Count: the administrator's ID, it is normally the "administrator", but it could also be a user ID who has the administrator rights.
Password: the password for the administrator on the ADS server.

4.5e ADS Option:

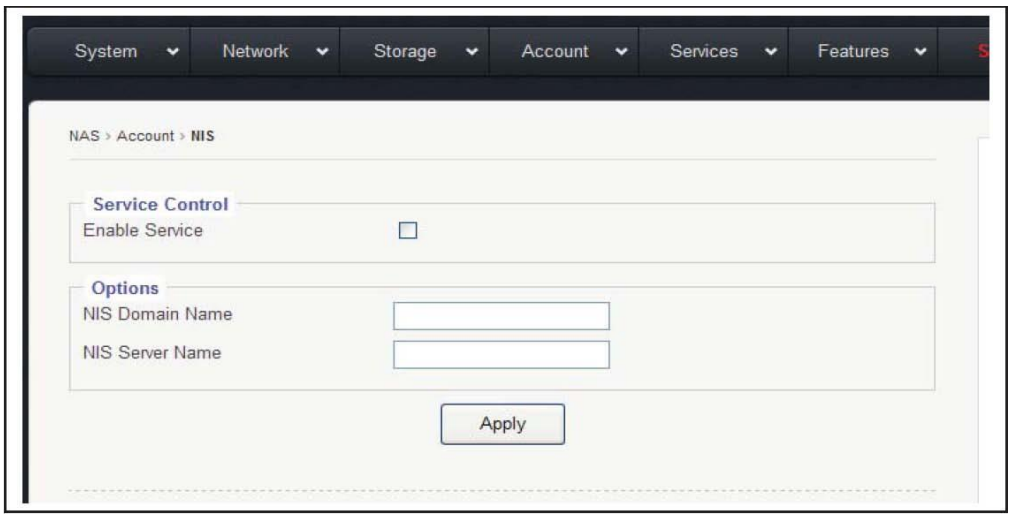
Controller (host name): Provides further detail info of the ADS server. The "host name" here is the **FQDN** (Fully Qualified Domain Name), such as: www.MyCompany.com

Enumerate User/Group: This option defines whether or not to sync users and groups on the ADS server into the NAS. When this option box is checked, the NAS will sync users and groups from the ADS server to the NAS. Depending on the number of users and groups, this syncing process might take anywhere from a few minutes to a few hours. If there are too many ADS users and groups, it becomes unpractical to do so, and the option should be left un-checked. When the ADS server has many users, normally they are divided into a few groups and each group shares the same access permissions characteristics. So

even without importing the users and groups to the NAS, the administrator can manually type in the group names and assign access rights to them, plus a few exceptions on users. **This step is done in the Top-Menu-Entry: Service →** SMP/CIFS sub-menu.
There is no hard-coded standard for how many ADS users are too many to use "Enumerate User/Group" option. Couple hundred ADS users seems to be OK to enable it. Trial and error is the only way to determine actual capacity.

Use Default Domain: To the NAS, ADS user ID is in the format of: 'domain\user'. If "User Default Domain" option is checked, then the user ID can be referred to as 'user' without the 'domain\' in the later on session: T**op-Menu Entry: Service for AC**L.

4.6 Account → NIS

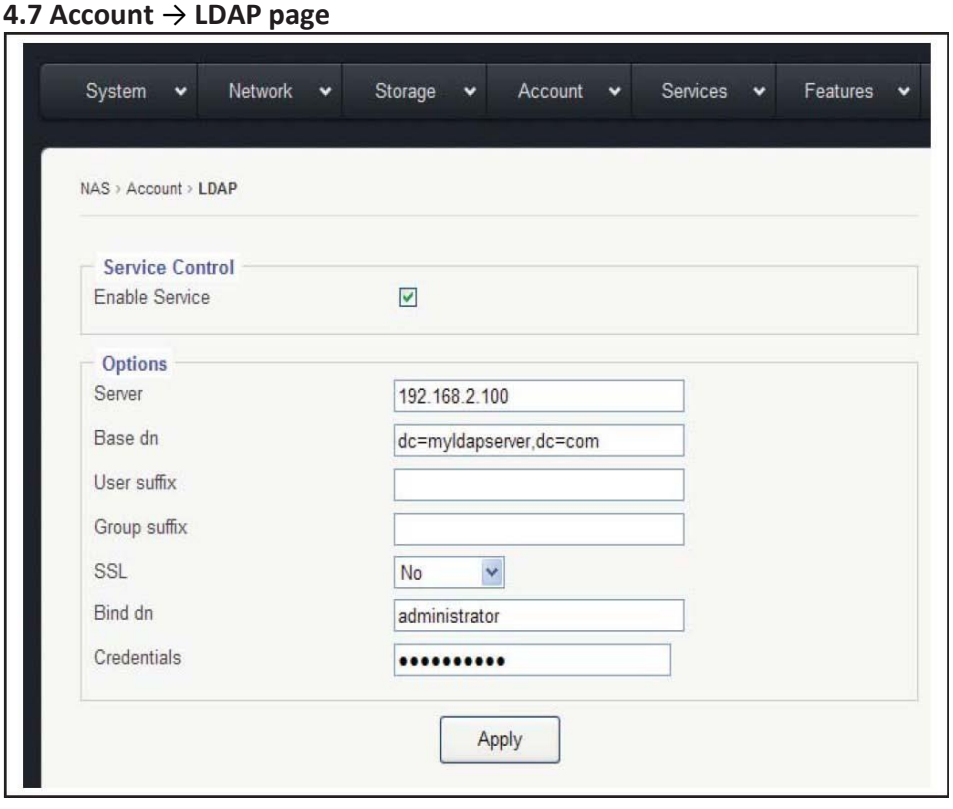


NIS: stands for **N**etwork **I**nformation **S**ervice. It is a naming and administration system for smaller networks. Using NIS, each client or server computer in the system has knowledge about the entire system. A user at any host can get access to files or applications on any host in the network with a single user identification and password. NIS is similar to the Internet's domain name system (DNS) but somewhat simpler and designed for a smaller network. NIS Server is mostly used for Unix/Linux clients.
Not all Unix/Linux network use NIS servers. If you don't have a NIS Server in your network, just simply skip this chapter.
If you do have a NIS server and would like to use one for NAS authentication, then,

- Enable the NIS service
- Key in the NIS Domain Name
- Key in the NIS Server Name

- Click "**Apply**" button

4.7 Account → LDAP page

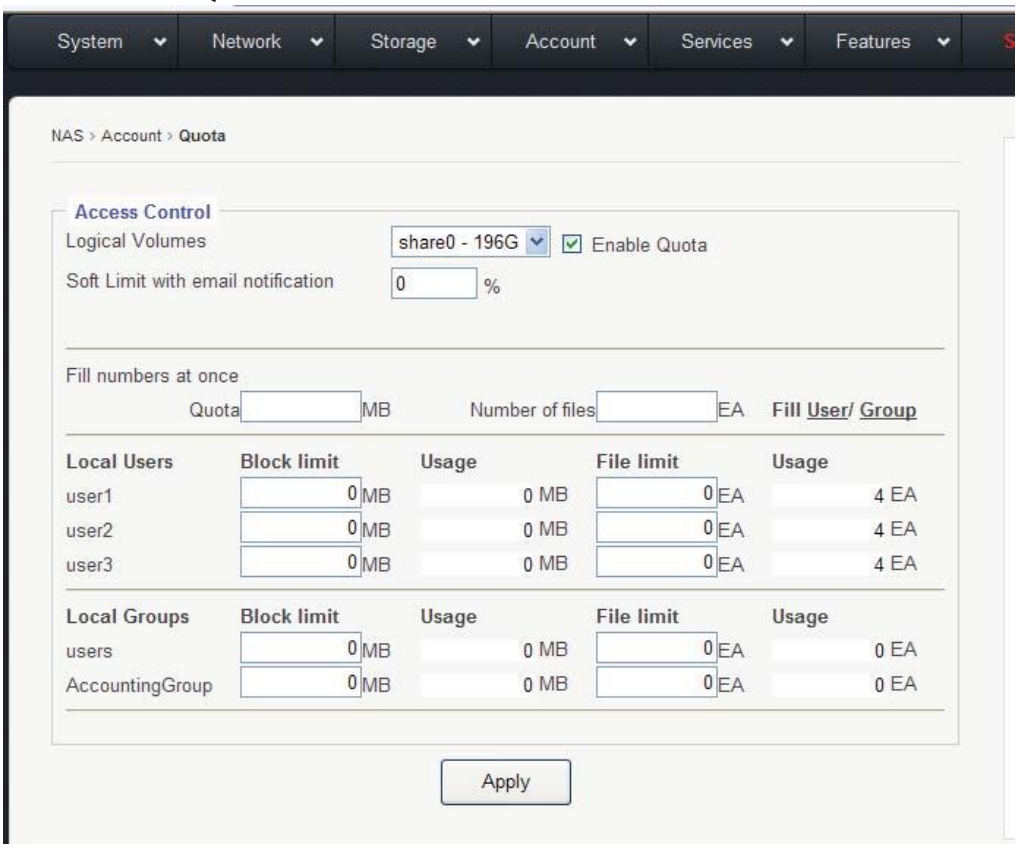


LDAP (Lightweight Directory Access Protocol) is a protocol used to access network directory for user/client authentication.

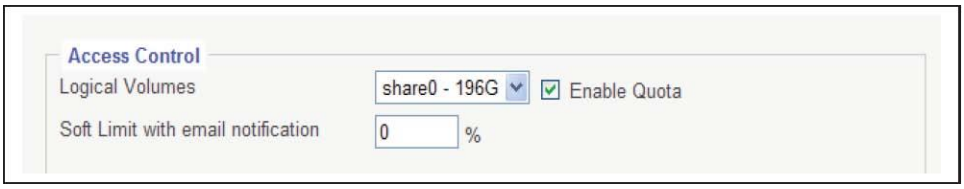
Note: the LDAP service supported by our NAS system is for NFS clients only. LDAP service for SMB/CIFS clients are not supported yet.
(NFS client = Unix / Linux clients; SMB/CIFS clients = Windows clients)

Enable Service: Check option box to enable LDAP service.
Server: Either IP or Name of the LDAP server
Base dn: It is the LDAP Domain name, if the Domain name is: mycompany.com then it is in the format of: dc=mycompany, dc=com
User suffix: Defined by the LDAP admin, used to get the user info from LDAP server.
Group suffix: Defined by the LDAP admin, used to get the group info from LDAP server.
SSL: This displays if an encryption is being used
Bind den: Administrator ID of the LDAP domain.
Credential – Password of the admin ID on the LDAP domain.
Don't forget to click the Apply button!

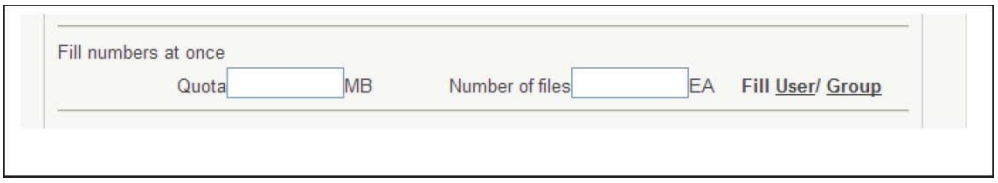
4.8 Account → Quota



Quota means to assign storage limits to users or group of users. Quota can be either by size (MB – number of Megabytes) or by number of files.



Logical Volumes: Pick the Logical Volume which you will assign quota for.
Enable Quota: Check-mark the option box to enable the Quota service.
Soft Limit with email notification: Enter the % for approaching Quota-Full warning. When the used capacity has reached the predefined % here, the system will automatically send out an email notification to the administrator for warning.

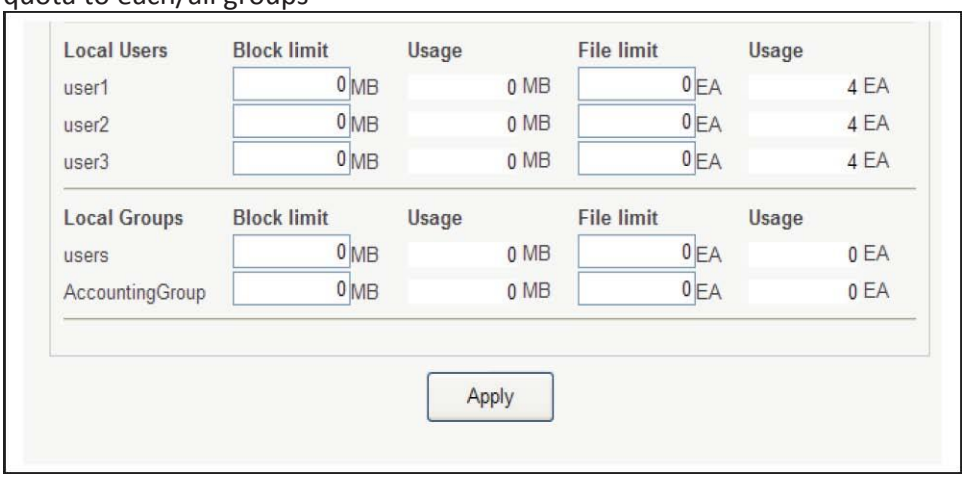


Fill numbers at once – this is used to fill every and all users or groups with the same number of Megabytes or same number of files with **one click-action**, so

that the administrator does not need to assign quota user by user or group by group.

Enter the number of Megabytes in the field**: Quota _____ MB** or enter the Number of files for each user/group, in the field**: Number of files _____ EA**

Click on '**User**' to fill the quota to each/all users or Click on "**Group**" to fill the quota to each/all groups



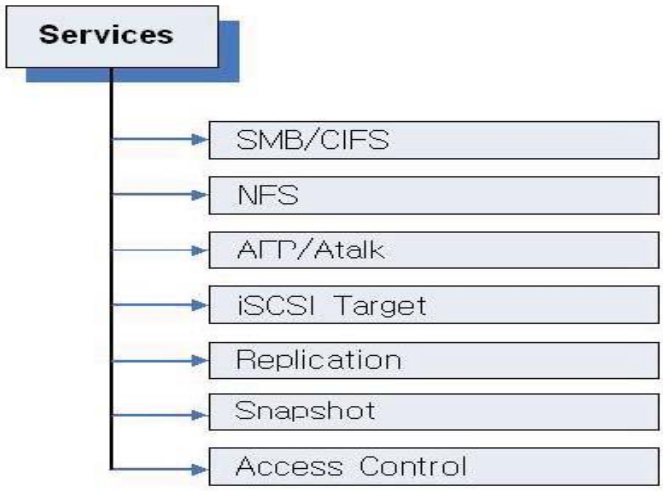
If you are not using the **Fill numbers at once**, then you can manually enter the quota for each user or group here.

Under the '**Local Users**', all users are listed.

Under the '**Local Groups**', all groups are listed.

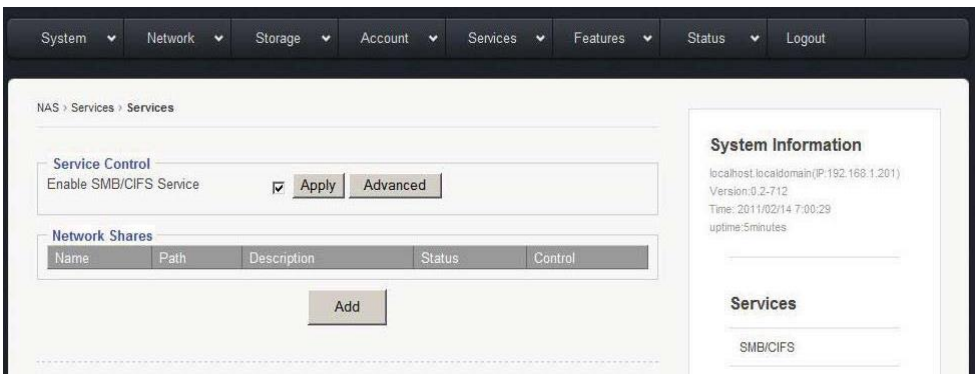
Don't forget to click "**Apply**" button.

Chapter 5: Top-Menu-Entry: “Services”



5.1 Service → SMB/CIFS page

Windows Screen Sharing Service Management: The SMB/CIFS Submenu allows access to settings in order to manage sharing on Windows-based systems. All Logical Volumes created on the NAS are automatically enabled for SMB/CIFS Service.



Enable SMB/CIFS Service

1. Check “Enable SMB/CIFS Service” option box
2. Click “Apply” to save changes

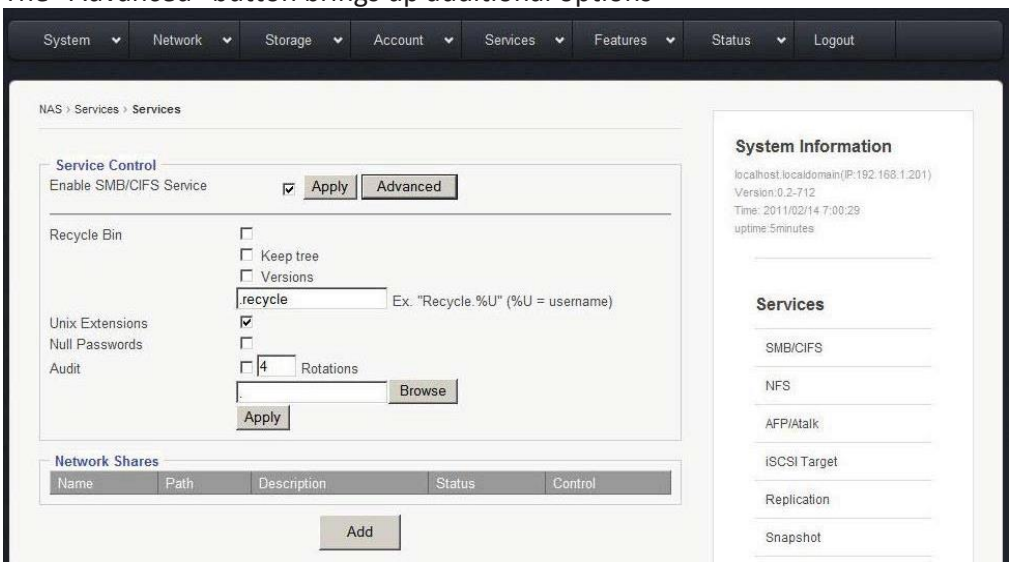
Note: SMB/CIFS Service must be enabled for the NAS to share files on Windows-based systems.

Disable SMB/CIFS Service

1. Uncheck “Enable SMB/CIFS Service” option box
2. Click “Apply” to save changes

5.1a Advanced

The “Advanced” button brings up additional options



Advanced Options:

Recycle Bin: By checking this option box, the Recycle Bin function for SMB/CIFS client is enabled.

Keep Tree: This option specifies if a directory structure should be kept, or if deleted files should be categorized separately in the recycle bin.

Versions: This option lets two files with the same name exist simultaneously in the Recycle Bin. The newer file will be titled “Copy #x of ‘file name.’”

Recycle Bin Text Box: This box defined where deleted files will be saved.

Note: Even if recycle bin is enabled (default “.recycle”), files will not be saved unless the proper command is entered.
To save files to users recycle bin, manually enter ‘Recycle.%U” in the text box. User deleted files will be saved in the format “recycle.user#.” For example: User 1 deleted files will be saved in “recycle.user1.”

Unix Extensions: Unix file extensions allow user to support features such as: symbolic links, hard links, ect. This feature is enabled by default.

Important: On Mac OS 10.4.x and later versions, this feature must be turned off to avoid “ file access permission” issues on Mac clients running SMB protocol.

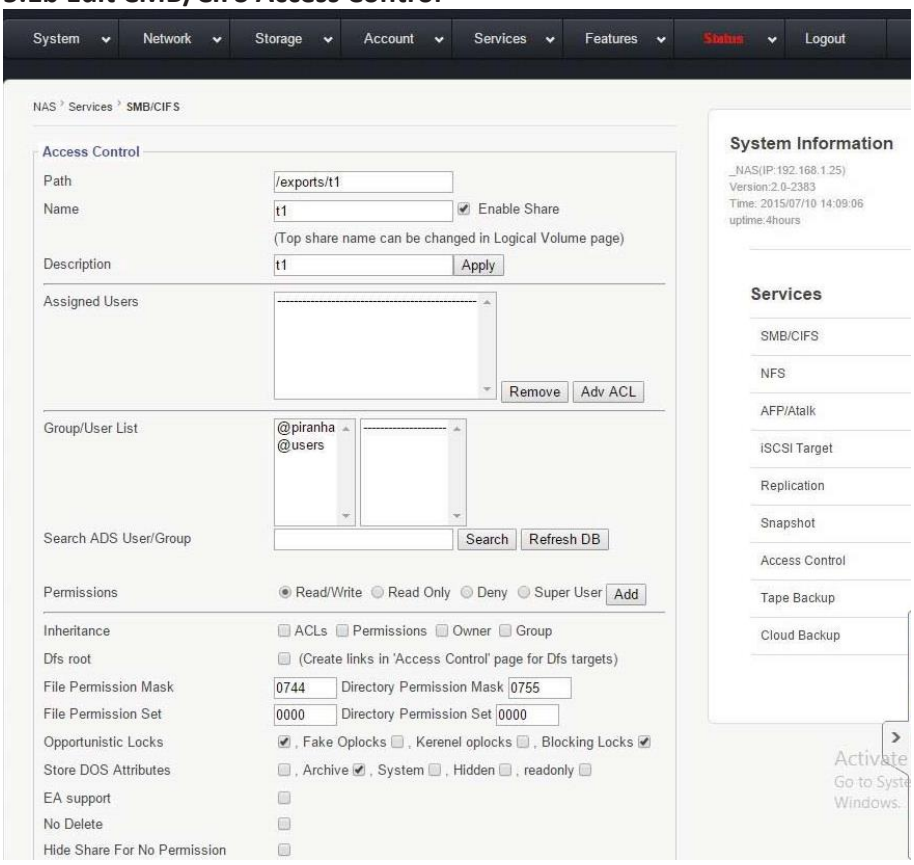
Null Password: This option allows SMB clients to log on without a password.

Audit: In the case of an audit log being greater than 10MB in size, it will be renamed “audit.log.1.” and begin looping to “audit.log.”

Rotations: The number entered into this text box dictates on how many rotations will be saved. For example, entering 4 into the box will result in log files being generated up to “audit.log.4.” Then the program will begin to overwrite “audit.log.1.”

Important: Changes in settings will not be saved unless the “Apply” button is clicked.

5.1b Edit CMB/CIFS Access Control



Path: Path lists the full path/location of a share.

Name: The text box allows you to name a share. There is also a check option box that lets you enable/disable the share.

Descriptions: This text box shows the description given to the share when created.

Group/User List: This window shows available Groups and Users that can be assigned access to certain shares.

Search: This text box allows one to search for a specific Group or User.

Permission: Use this option to assign share access rights to selected users. Use the “Add” Button to apply permission to a group/user.
Inheritance: Use this setting to apply ACL’s, permissions, owner and group properties to sub-folders and files created using the Inheritance option.
DFS Root: This option generates links on the Access Control Page for DFS Targets. Enables multiple NAS Aggregation for SMB/CIFS clients.
File Permission Mask: Sets default permissions for all files created after File Permission Mask option has been enabled.
Directory Permission Mask: The Directory Permission mask sets default permissions to all directories and/or folders created after enabling this option.
File and Directory Mask Formats: A code is used with this format “0” followed by 3 numbers. (0XXX).
The first X refers to the owner of the file/directory
The Second X refers to the group assigned to the file/directory
The third X refers to other users assigned to the file/directory

These numbers “X” Can take a total of 6 values.
4: Read Only
2: Write Only
1: Execute Only
5 (4+1): Read and Execute Only
6 (4+2): Read and Write Only
7 (4+2+1): Read, Execute, and Write

Example:
0742
Owner has all rights
Group assigned can read only
Other groups can write only

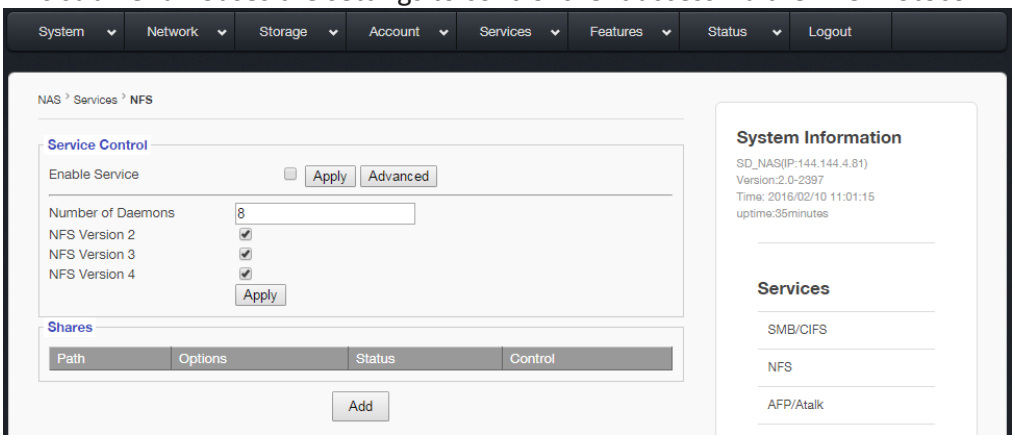
Opportunistic Locks: This option is used to improve performance when multiple people or devices are accessing the same file on one network.
Note: This option is enabled by default.
Store DOS Attributes: Enable this option in order to run legacy MS DOS based programs.
Hide Files: Use this field to manually hide files on a share.
Host IP Blocking: This option is used to give permission or to deny access towards certain hosts, or range of hosts.

Allow: This option allows you to list all users who are allowed to access a share. All others will be denied access.

Deny: This option allows you to list all users who are not allowed access to the share. Those who are not listed will be granted access.

5.2 Service → NFS

This submenu houses the settings to control client access via the NFS Protocol



Enable Service: This option enables NFS service

Number of Daemons: Enter the correct number of Daemons

Shares:

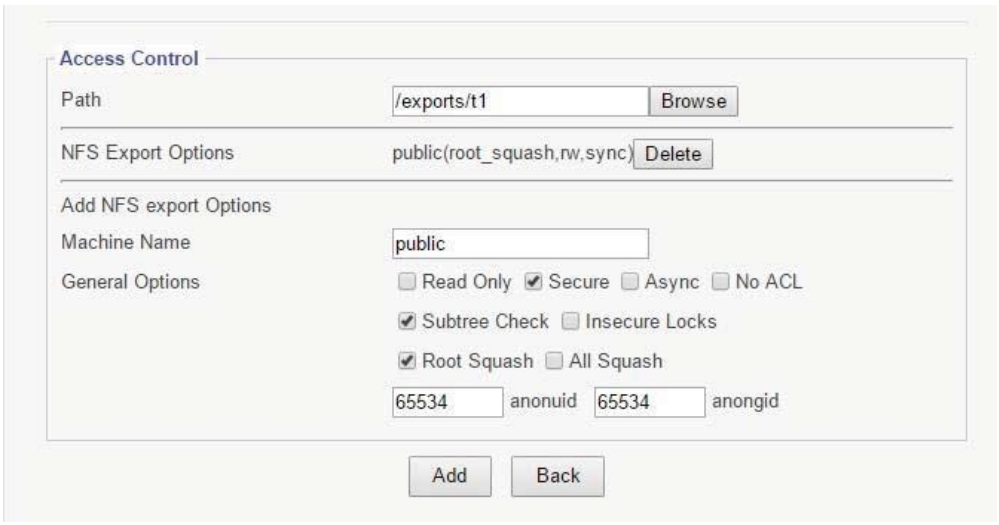
Path- shows the path/location of directory

Options- Shows permissions set to each directory

Status- Shows whether a NFS service is enabled

Control- Use these controls to enable, disable, or to delete NFS shares

5.2a Edit NFS Access Controls



Machine Name: Sets NFS Export Name

General Options:

Read Only- Limits users from writing new data or changing existing data

Secure- Requires requests to be made on internet ports less than IPPORT_RESERVED (1024). To turn off this feature, check “Insecure Locks.” This must be disabled for access on Macintosh.

Async- This option allows NFS server to violate NFS protocol and reply to requests before the disk commits said request. This option usually is correlated with an increase in performance but can also cost data lost in the event of a hard server crash.

No ACL- On systems that do support ACLs, this option tells nfsd not to reveal ACLs to clients. Note: No ACL option only has an effect when the system is patched to support ACLs. Safe for use by NFSv2 and NFSv3 clients.

Subtree check- this option enables or disables subtree checking. Although there are some security implications involved, reliability can improve in certain cases. This refers to the extra step that the server must take to check not only the accessed file, but also the exported tree.

Insecure Locks- This option tells the NFS Server to not require authentication of locking requests. No access checks will be performed if this option is selected.

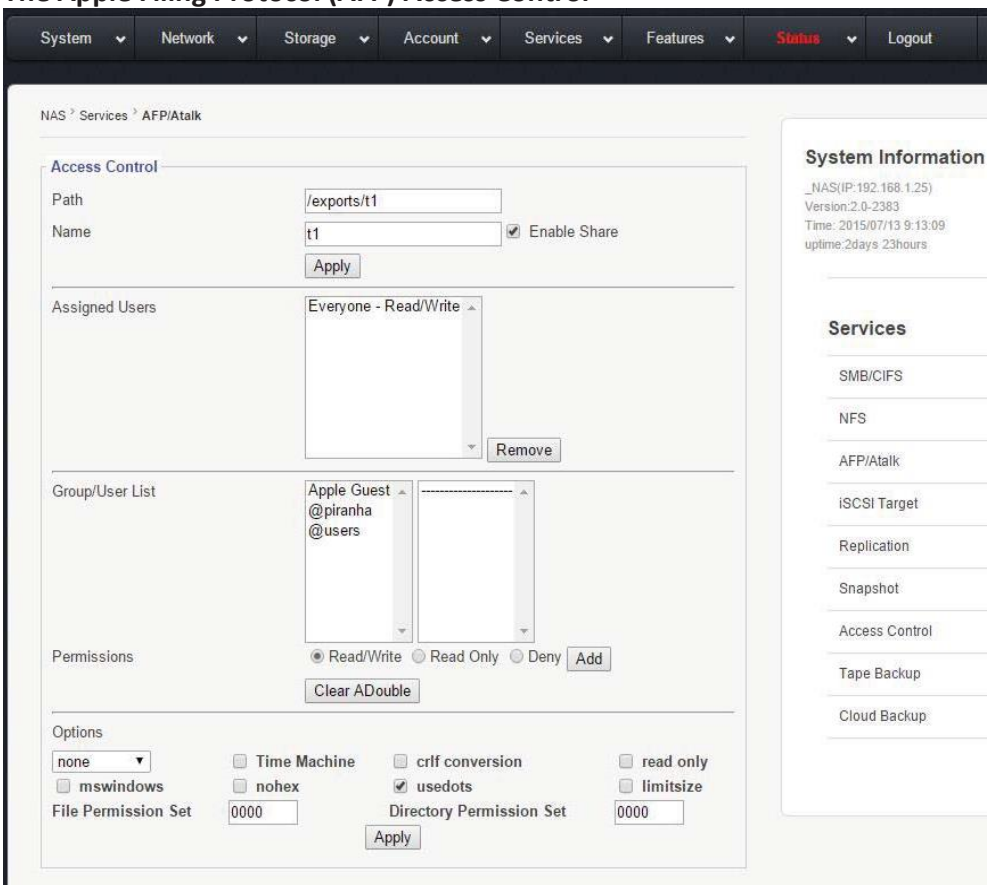
Root Squash- Maps requests between the UID/GID 0 and the anonymous UID/GID.

All Squash- Maps everything between UID/GID 0 and anonymous user.

Anonuid and Anongid- Explicitly set the uid and gid of anonymous user. Usually this feature is used if one wants all users accessing to seem like 1 user.

5.3 Service → AFP/Atalk

The Apple Filing Protocol (AFP) Access Control



Path: Use this function to set the location of the share

Name: Use this function to name the share. The adjacent option box enables or disables the share.

Assigned Users: This window displays users who have been granted access to the share.

User/Group List & Permissions: This window displays all available users who can be granted access to the share. To grant a user access, click on their name and chose an option of: “Read/Write, Read Only, or Deny.” To save change, click “add.”

Options: Drop down bar

None- No changes will be made

Tolower- forces all names to be lower case for both directions of the share.

Toupper- forces all names to be upper case for both directions of the share.

Xlatelower- AFP client sees lower case and client sees upper case.

Xlateupper- AFP client sees upper case and client sees lower case

Mswindows- checking this option box improves performance for Windows NT, 2000 and 2003 systems.

Prodos- This function improves communication with Legacy Apple II OS.

CRLF Conversion- This feature converts line feeds and carriage returns from UNIX to Windows and AFP compatible formats.

Read Only- This option forces read only communication

Nohex-This option disables hex translations for all files but DOT files

Usedots- This option shows file names with configurations that begin with "."

Limitsize- This option limits each file to a 2GB maximum.

File/Directory Permissions Set- Sets default permissions for users accessing files via: AFP. Follow this format:
A code is used with this format "0" followed by 3 numbers. (0XXX).
The first X refers to the owner of the file/directory.
The Second X refers to the group assigned to the file/directory
The third X refers to other users assigned to the file/directory

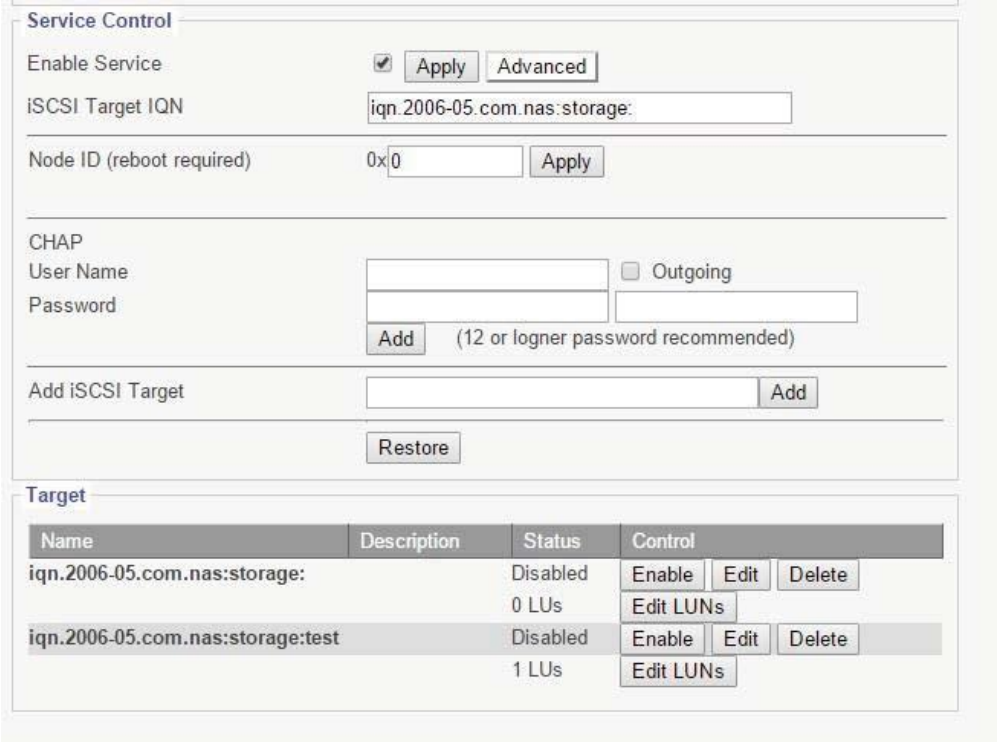
These numbers "X" Can take a total of 6 values.
4: Read Only
2: Write Only
1: Execute Only
5 (4+1): Read and Execute Only
6 (4+2): Read and Write Only
7 (4+2+1): Read, Execute, and Write

Example:
0742
Owner has all rights
Group assigned can read only
Other groups can write only

5.4 Service → iSCSI Target page

iSCSI Target Service Management

This sub menu displays the settings to enable/disable access via iSCSI.



Enable Service: This option box enables iSCSI service when checked.

Target IQN: Shows the IQN of iSCSI target.

Node ID: Up to 8 digits, used to avoid having the same ID generated by VMWare ESX hosts when multiple NAS systems are used on the same network.

CHAP Configuration:

User Name: Enter the desired user name.

Password: Enter the desired password, re-enter in the second text box to confirm correct password.

Outgoing: Use this feature for mutual CHAP authentication. Add: Saves changes of CHAP.

Add iSCSI Target: This feature is used to create a new iSCSI target IQN.

To add iSCSI target:

1. Click “Advanced” to open “add iSCSI” option.
2. Copy “iSCSI Target IQN.”
3. Paste “iSCSI Target IQN” into “Add iSCSI Target” Text box
4. Enter a name after the IQN Target (ie. iqn.2006-05.com.nas:storage:backup)
5. Click “Add” to save changes.

Restore: Use this function to restart SCST services. This helps restore connection with existing iSCSI targets.

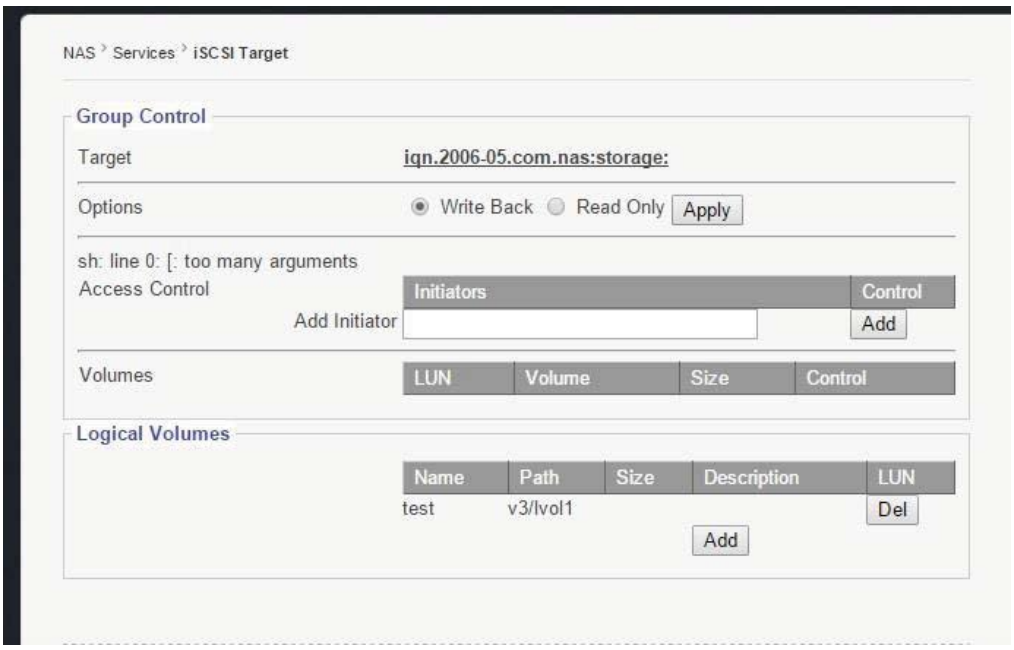
Target:

Enable/Disable- used to grant/prevent access to iSCSI Target

Edit- Use this function to edit iSCSI target functions:. IQN Name, IQN Description, CHAP controls, Host IP Block, and Logical Volumes Assignments.

Edit LUNS- Used to manage block-type logical volume access via iSCSI Target.

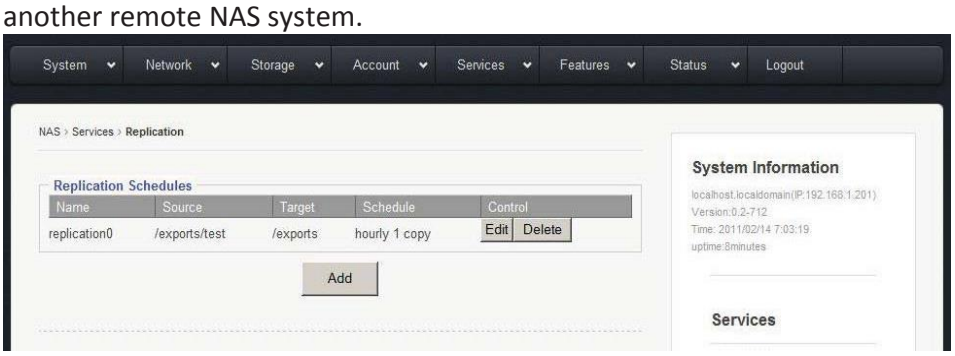
Edit LUNS



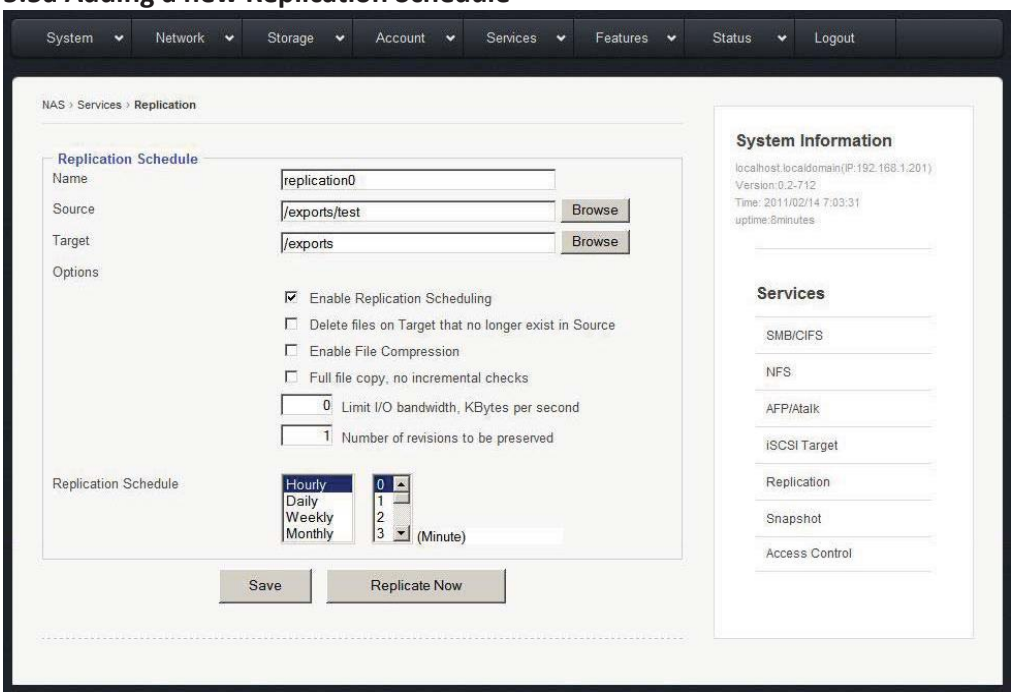
1. Target- shows iSCSI Target selected for editing.
2. Options- Grants permission to write or read only.
3. Access Control- Used to add/delete initiators from the NAS.
4. Volumes- displays current Logical Volumes assigned to this target.
5. Logical Volumes-To add LUN, enter a LUN number and click “add.” Entry will now be visible on the “Volumes” box.

5.5 Service → Replication page

This sub-menu displays the settings to configure the NAS to replicate to another remote NAS system.



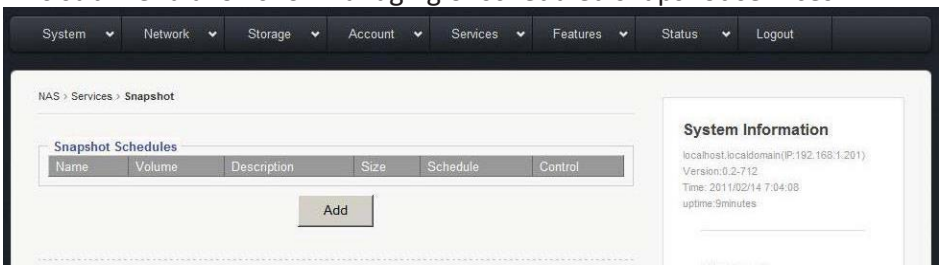
5.5a Adding a new Replication Schedule



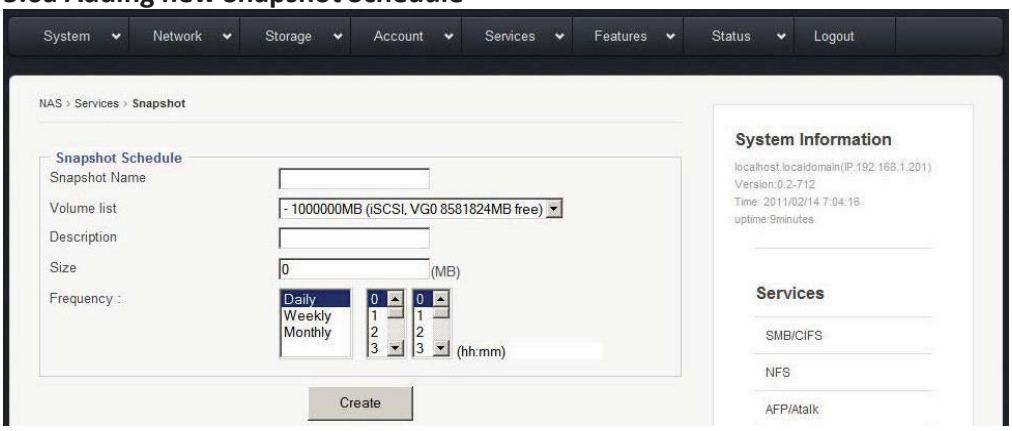
1. Click “add” button to access the Replication Schedule editor screen
2. Name- Set name for replication job
3. Source- click “browse” to find source volume
4. Target- click “browse” to find target volume
5. Enable the “Enable Replication Scheduling” option
6. Enable the “Delete files on Target that no longer exist in Source” option
7. Enable the “File Compression” option if so desired
8. Enable the “Full File Copy, No Incremental Checks” option if desired
9. Enter a value for bandwidth limitation if so desired
10. Enter the number of revisions desired
11. Set desired Replication Schedule
12. Click “save” to apply changes.

5.6 Service → Snapshot page

This sub menu allows for managing of scheduled snapshot services.



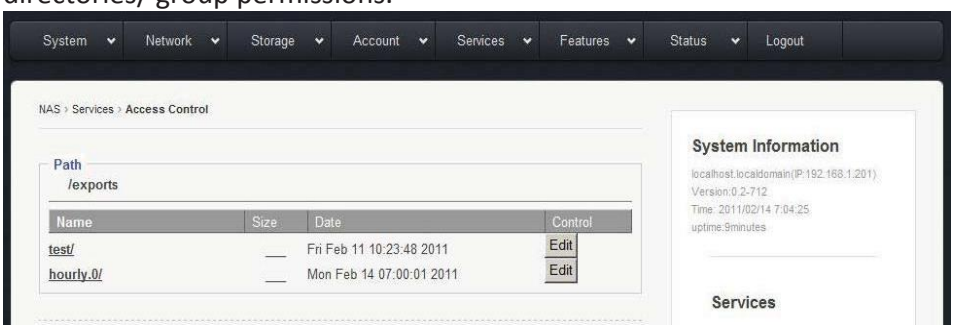
5.6a Adding new Snapshot Schedule



1. Snapshot Name- Enter desired name of snapshot schedule
2. Volume List- Select the desired volume from the drop down menu
3. Description- Enter a description for the snapshot schedule to aid in identification
4. Size- Enter the desired snapshot size
5. Frequency-Set the desired frequency of snapshots
6. Click “Create” to save changes and add the new Snapshot schedule

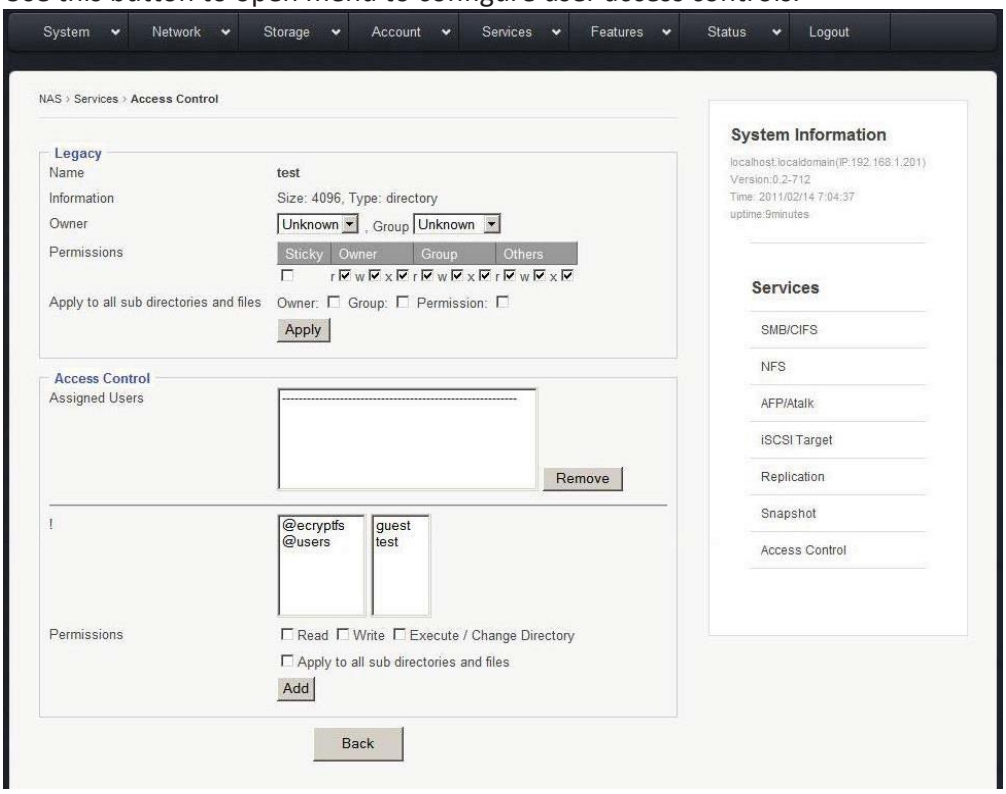
5.7 Service → Access Control page

This sub menu houses the settings to control user access to shared file directories/ group permissions.



5.7a Edit

Use this button to open menu to configure user access controls.



Name: Displays the user that is being edited

Owner: Drop down menu that sets the owner of the share

Group: Drop down menu that sets a group to assign user to

Search User/Group: Feature used to search for a specific user or group

Permissions: Used to set certain permissions granted to owner, group, others, or sticky

Apply to all sub directories and files: Used to choose whom is affected by changes in settings

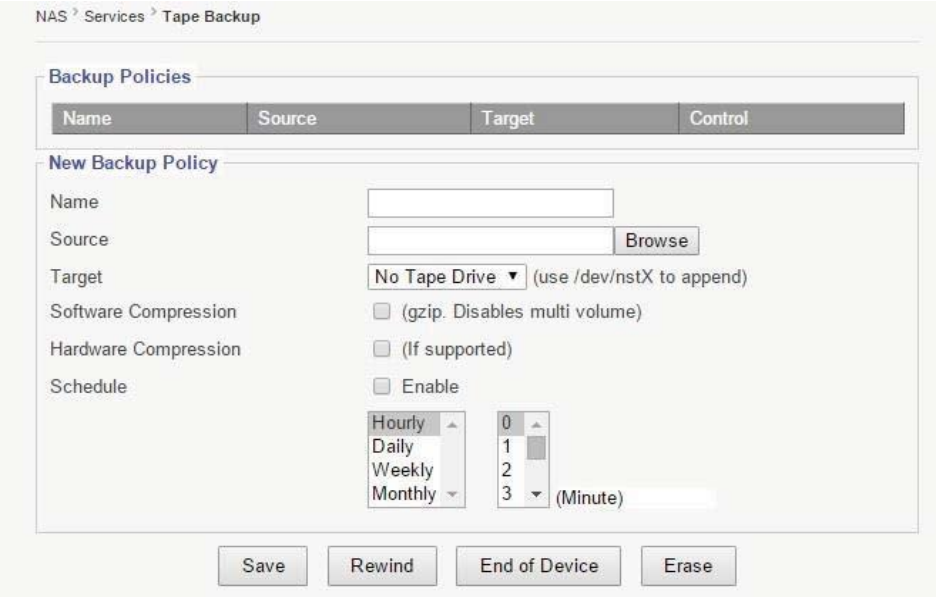
Assigned users: This window displays all users assigned

Group/User List: This window displays each user and group

Permissions: Used to set permissions for selected users or groups

5.8 Tape Backup

This page displays the settings to manage tape backups.



Name: Enter desired name of backup policy

Source: Select the source directory

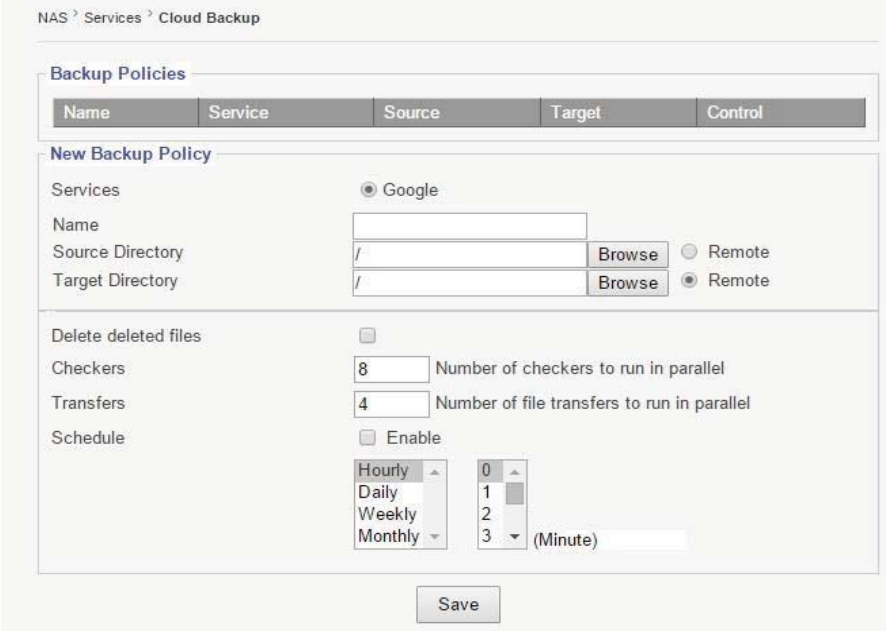
Target: Select device where backup will be written

Software Compression: Enable this option to turn on software compression

Hardware Compression: Enable this option to turn on hardware compression

Schedule: Set the desired schedule of backup frequency

5.9 Cloud Backup



Services: Select service provider for Cloud Backup service

Name: Enter the desired name of the backup

Source Directory: Choose a source directory from the browse list

Target Directory: Choose a target directory from the browse list

Delete deleted files: Checking this option box deletes files that have been deleted

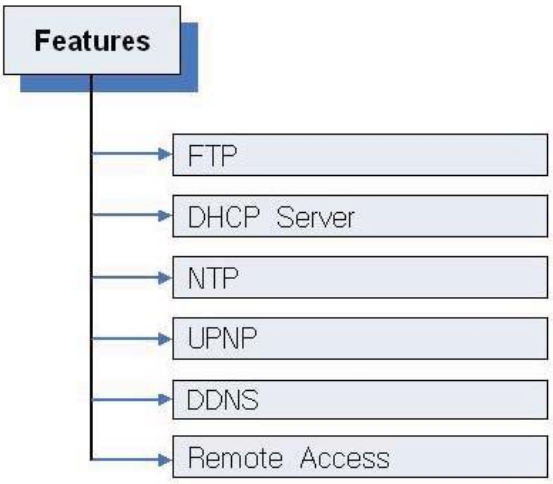
Checkers: Enter number of checkers to run in parallel

Transfers: Enter number of file transfers to run in parallel

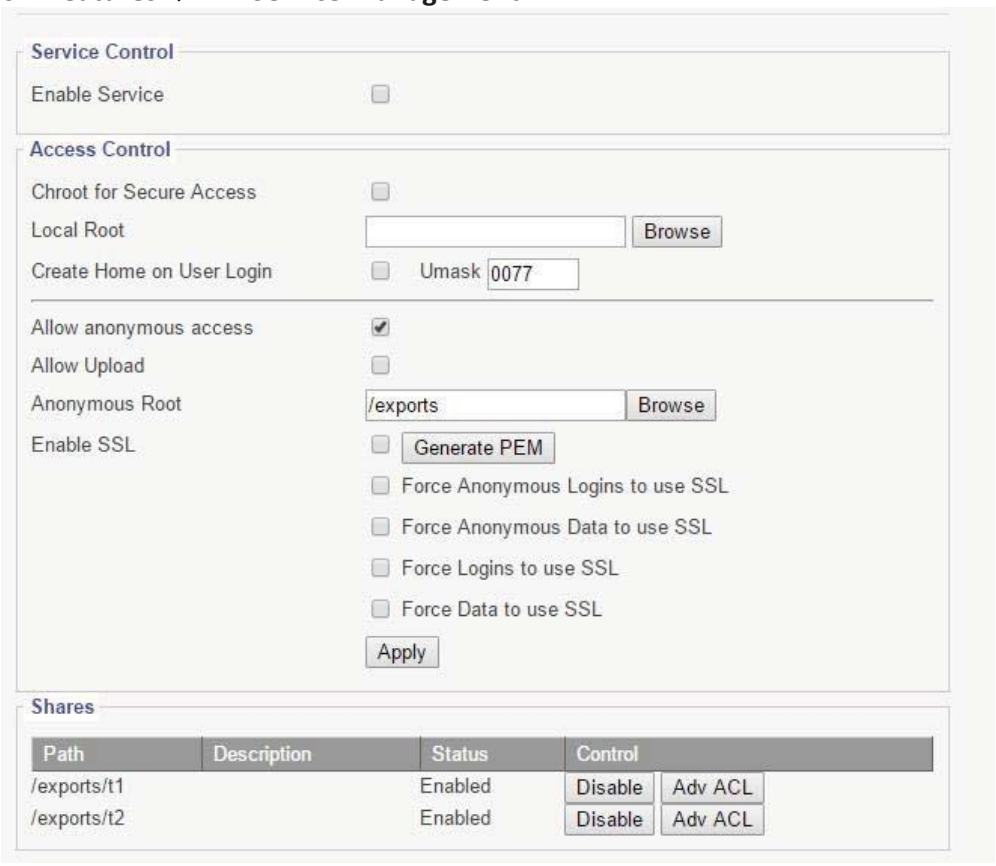
Schedule: Check this option box to enable cloud backup scheduling. Enter schedule desired for cloud backup

Chapter 6: Top-Menu-Entry: "Features"

"Features" entry consists of the following sub-menu entries/pages



6.1 Features → FTP Service Management



Enable Service: This check option box enables FTP Service

Create Home on User Login: Enabling this feature automatically creates a "home" folder for the user

Allow Anonymous Access: Enabling this feature grants anonymous users access to the FTP folder

Allow Upload: Enabling this feature allows users to upload files to the FTP folder

Anonymous Root: Use the browse button to select a location for the Anonymous Root folder

Enable SSL: Enables SSL encrypted communication between User and FTP Service

Generate PEM-Generates certificate for SSL service

Force Anonymous Logins to use SSL- Forces Anonymous Users to only access via SSL

Force Anonymous Data to use SSL-Forces data transmissions to be logged as "Anonymous User" on FTP

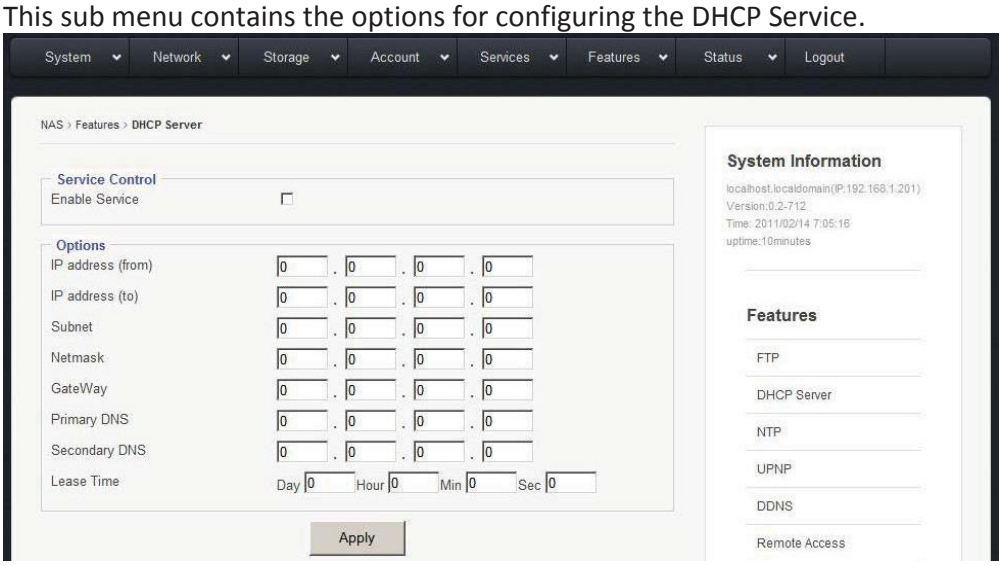
Force Logins to use SSL-Forces all logins to use SSL encryption

Force Data to use SSL-Forces all data to use SSL encryption

Enable/Disable FTP Shares: Click the button to enable/disable FTP Shares

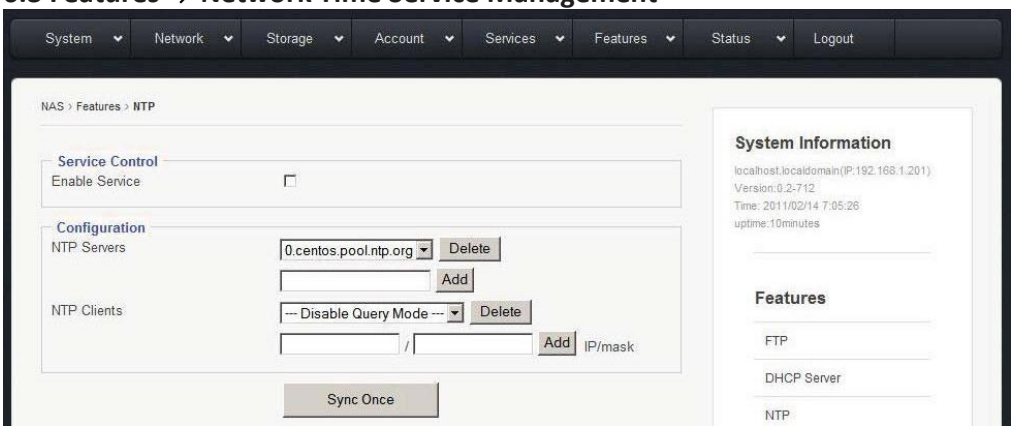
6.2 Features → DHCP Management

This sub menu contains the options for configuring the DHCP Service.



1. Enter IP address range that will be given to clients
2. Enter a desired subnet mask IP
3. Enter a desired netmask IP
4. Enter a desired Gateway IP
5. Enter the Primary DNS IP
6. Enter the Secondary DNS IP
7. Enter the length of lease term desired
8. Select Apply to save changes

6.3 Features → Network Time Service Management



To enable NTP Service:

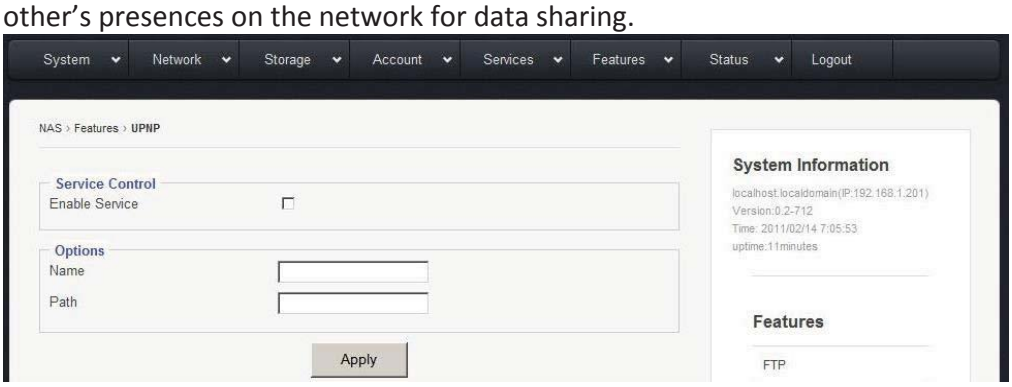
1. Check the “Enable Service” option box
2. Select a pre-existing NTP Server or add a new NTP server by entering its IP address and subnet fields and clicking “add”
3. Click the “Sync Once” button sync NTP Service with the NTP Server

Add/Remove NTP Clients

1. Enter IP address of client
2. Click “add” to add client, click “delete” to remove client
3. Click the “Sync Once” button to sync NTP Service with the NTP Server

6.4 Features → UPNP

UPNP stands for Universal Plug and Play, this feature allows users to see each other’s presences on the network for data sharing.

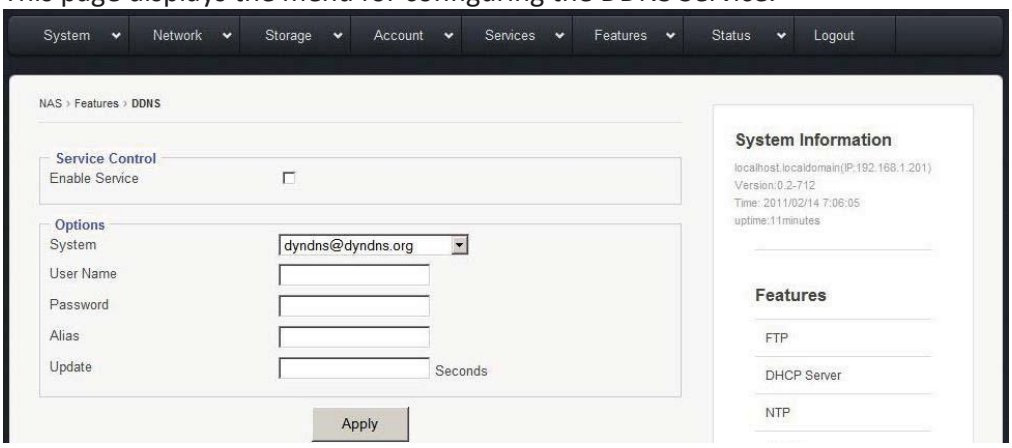


To Enable UPNP:

1. Check “Enable Service” option box
2. Enter a desired “name” of share
3. Enter desired “path” of the share
4. Click “Apply” to save changes

6.5 Features → DDNS Management

This page displays the menu for configuring the DDNS Service.

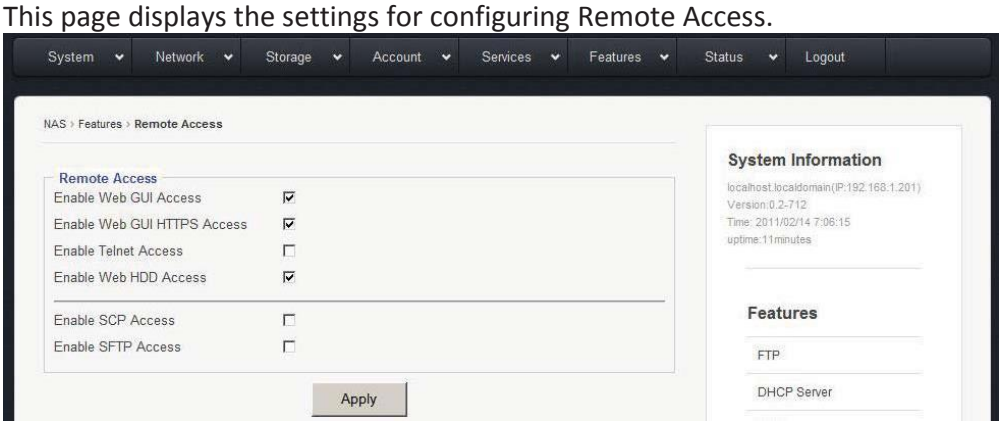


To enable DDNS Service:

1. Check the “Enable Service” option box
2. Select a service via the drop down menu
3. Enter a desired username for the DDNS Service Account
4. Enter a desired password for the DDNS Service Account
5. Enter a DDNS Alias
6. Enter a DDNS Update frequency (seconds)

6.6 Features → Remote Access Management

This page displays the settings for configuring Remote Access.



Enable Web GUI Access: Select this option box to enable web browser access to the Graphical User Interface

Enable Web GUI HTTPS Access: Select this option box to enable secure browser access to the Graphical User Interface

Enable Telnet Access: Select this option box to enable access via Telnet connections

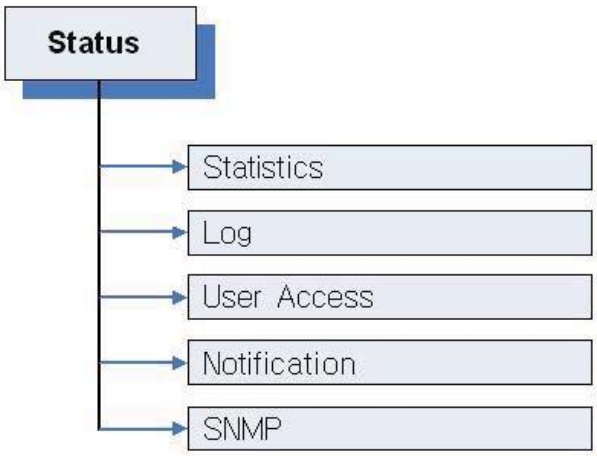
Enable Web HDD Access: Allows users to access their own folder via Web GUI instead of FTP or SMB

SCP Access: Selecting this option box directs the use of a Secure Copy access

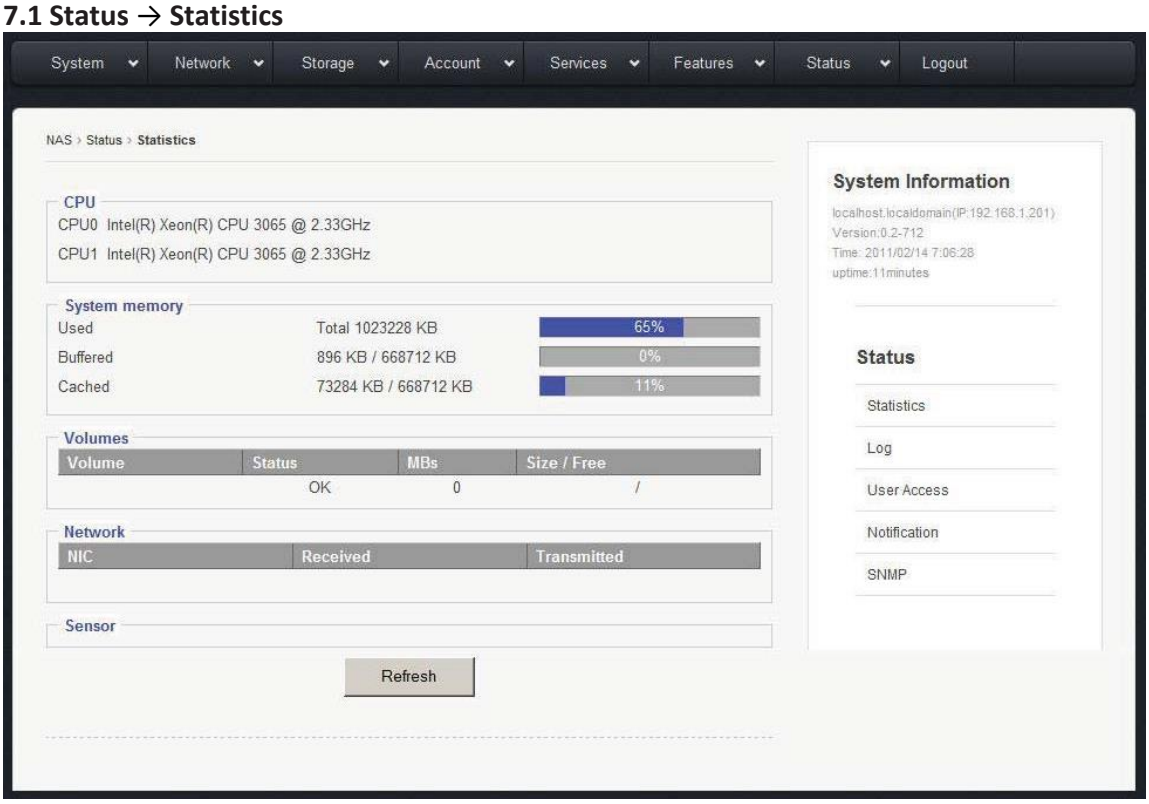
SFTP Access: Enable this option for Secure File Transfer Protocol access

Chapter 7: Top-Menu-Entry: “Status”

“Status” entry consists of the following sub-menu entries/pages: The Status menu shows an array of information to help ensure that your NAS system is running at an optimal level.



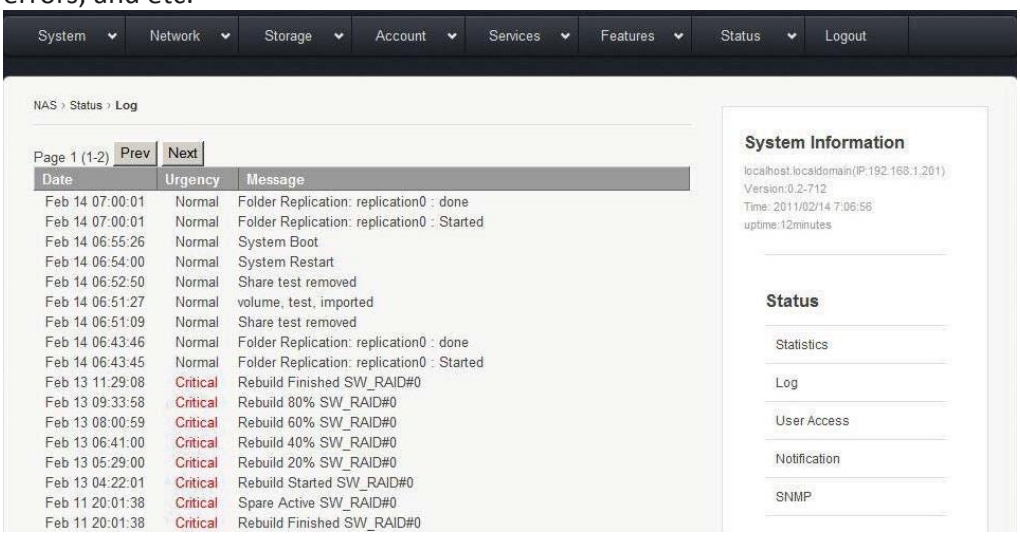
7.1 Status → Statistics

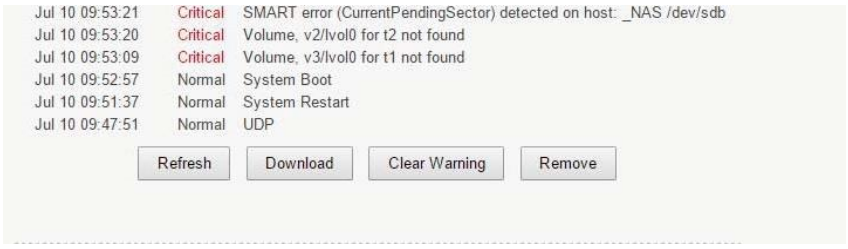


This page provides real time data of CPU, System Memory, Volumes, and Network Usage.

7.2 Status → Log

The log page displays a list of events: shutdowns, reboots, critical software errors, and etc.





Refresh: Updates log to show most recent activity

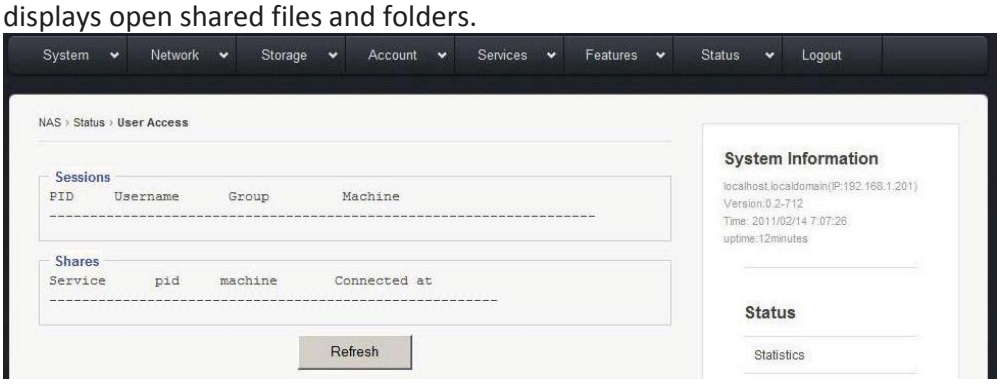
Download: Saves the entire log as a .txt file. (Useful if contacting technical support)

Clear Warning: Removes all outstanding warnings

Remove: Clears entire NAS log

7.3 Status → User Access

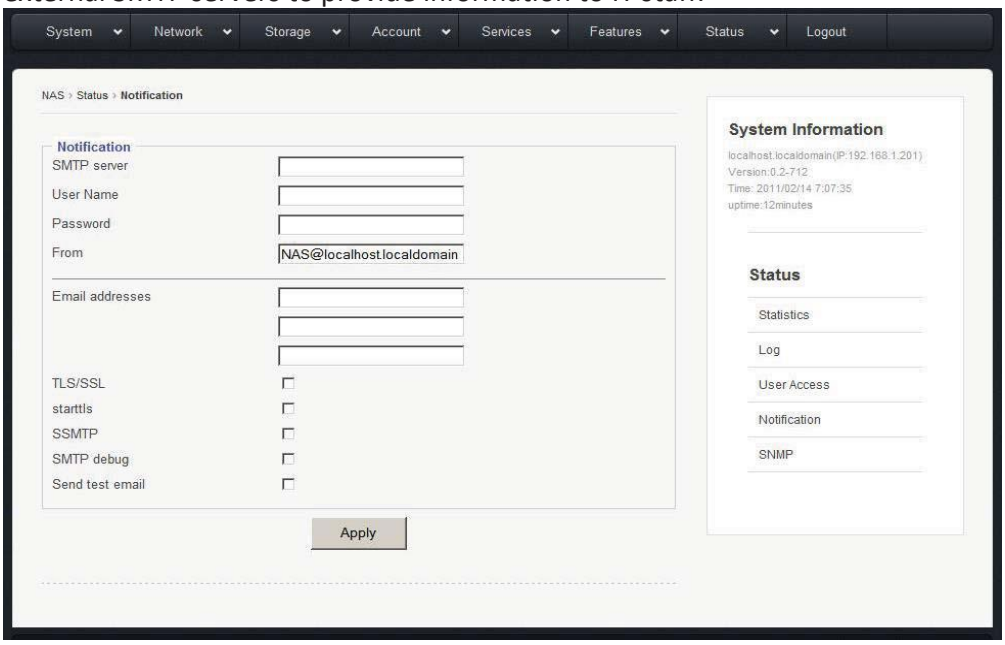
This page displays all users currently connected to the NAS system. The page also displays open shared files and folders.



Hitting Refresh makes the page show the most current data

7.4 Status → Notification page

This menu displays the settings for configuring communication with internal and external SMTP servers to provide information to IT staff.



SMTP Server: Simple Mail Transport Protocol used to send email notifications

User Name: Usually is the email address of the person receiving notifications

Password: Password of User's Mail Account

From: Used to identify device generating notifications (optional)

Email Addresses: Enter email addresses of all persons monitoring and maintaining the NAS

TLS/SSL: Usually required if communicating with SMTP servers, ie smtp.google.com or smtpauth@secureserver.net

Note: SMTP communications may not function without this setting

Starttls: Enabling this feature tells the SMTP application to use TLS

Note: SMTP Server communication may not function without this setting

SSMTP: Enabling this feature sets up the SSMTP program to deliver an email from a local computer to a mailhub. Mainly used for forwarding automated emails to an external email

SMTP Debug: Enabling this feature keeps a log of SMTP communications

Send Test Email: Sends a test email to ensure email system is functioning correctly

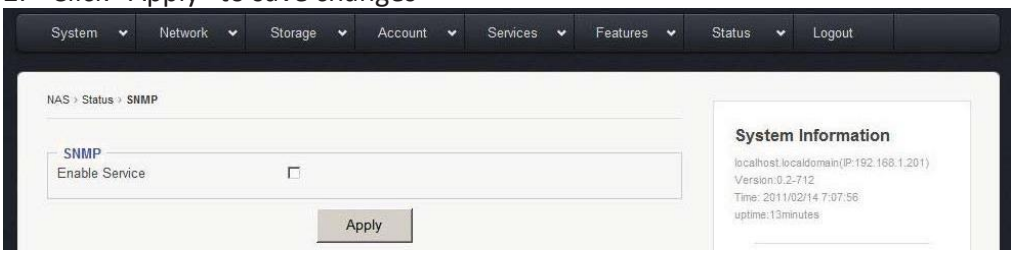
7.5 Status → SNMP

This page displays the setting to enable SNMP Service on the NAS.

SNMP, short for Simple Network Management Protocol is used to manage networks. SNMP can be used to configure network devices such as printers, hubs, switches, and servers.

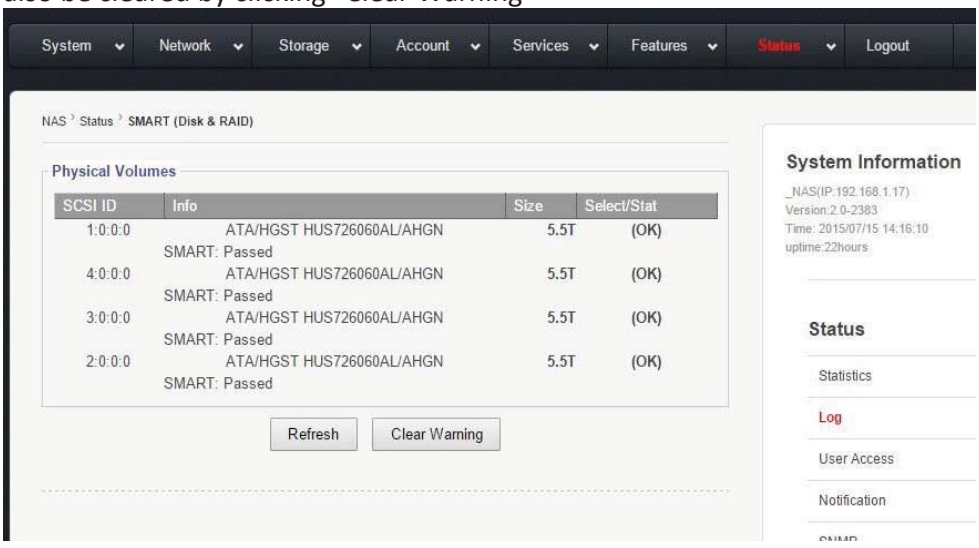
Enable SNMP

1. Check “Enable Service” option box
2. Click “Apply” to save changes



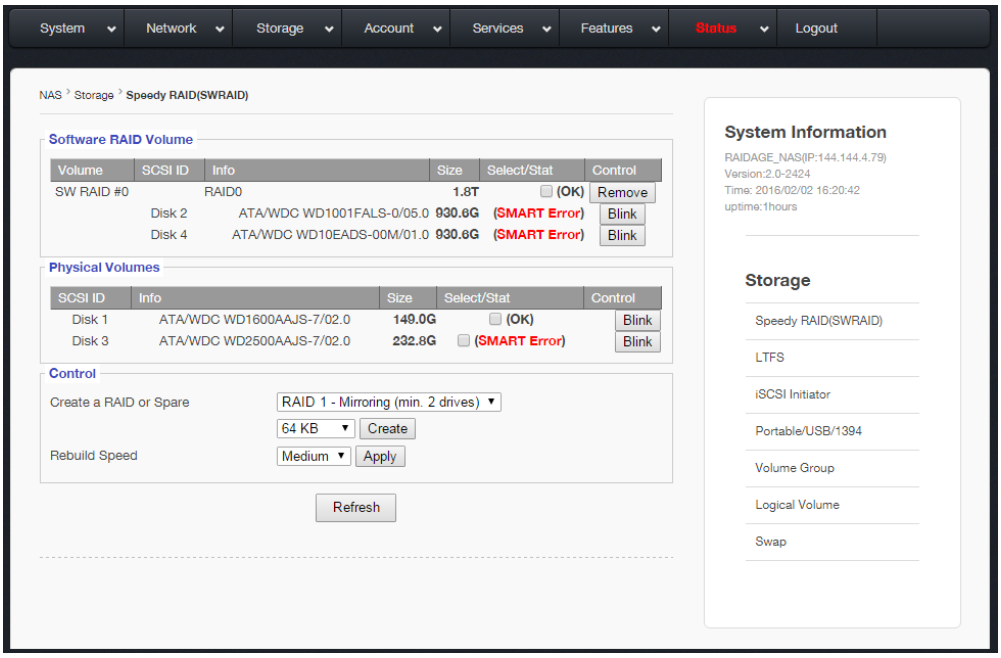
7.6 SMART (Disk & RAID)

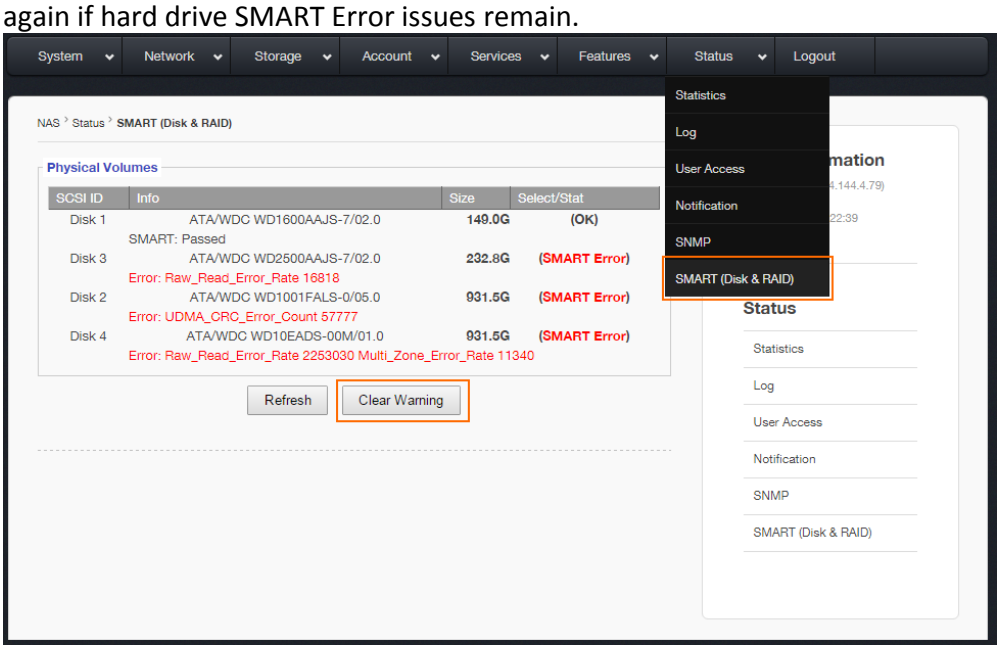
This page monitors each iSCSI connection. The system will also occasionally check the SMART status of each iSCSI connection. A properly functioning system will display “Passed.” If an error is present a warning will be shown in its place. Clicking “Refresh” prompts the system to reveal real-time data. Warnings can also be cleared by clicking “Clear Warning”



Hard Drive SMART Error Alert

If hard drives show SMART Error, the NAS unit will start beeping.



To silence the alert, select “SMART (Disk & RAID)” under “Status” tab.

Click “Clear Warning” – will stop beeping for 5 minutes and will start beeping again if hard drive SMART Error issues remain.