Administrator's Guide for

AnyStor System Manager

Version 4.2

1. Introduction of AnyStor NAS

1.1 AnyStor NAS

With advent of the information overflowing era, the value of information is increasing exponentially to the point that in most companies, the value of 100MB data is evaluated at over 1 Million US$. Along with this overflow of information and explosive growth in its value, the user demand is also increasing considerably to ensure effective Management and sharing of information. Effective storage of ever-increasing information, safeguarding from potential calamity, mistake made by user and intrusion from the exterior as well as accessibility from anywhere and anytime are no longer the demands of special users.

AnyStor is the network based storage solution that effectively fulfills user demand. It is a NAS (Network Attached Storage) system based in the embedded system that provides high speed data transmission through the network. It is an integrated, HA (High Availability) network storage solution that provides effective storage/Management function for large capacity data and that provides perfect data HA (High Availability) ring function. Fast transmission of large capacity data is enabled by the support provided by high performance interfaces such as fibre channel and gigabit Ethernet. Based on a diverse set of reliable support functions, fast and reliable data transmission and Management are possible. Multi protocols including NFS and CIFS are supported, which enables effective storage, Management and sharing of data by the users who operate on a diverse set of platforms while in diverse environments. Remote Management tool of AnyStor, which provides powerful web based Management function, enables a more convenient and effective system and data Management. In particular, the data recovery function, which is based on the high performance back-up and Advanced Snapshot function provided by AnyStor, enables immediate resilience of the data that is damaged from accident, user mistake etc., offering perfect data protection function in preparation for calamity.

1.1.1 AnyStor 100/500

AnyStor 100/500 is a SATA-based NAS system. The diverse high-performance hardware and software of AnyStor 100/500 provide high-speed and reliable services to tens to hundreds of users. AnyStor 100/500 consists of hardware and software. AnyStor1000 software consists of AnyStor 100/500 Series system software, management software and data backup tools. In this chapter, main specifications of AnyStor 100/500 hardware and software are described.

■ **Hardware Specification of AnyStor 100/500**

Category	Main Structure	Misc.
CPU	Dual-Core Intel Xeon 2.0GHz	
Memory	Max.32GB	
Network Card	Dual GbE NIC(10/100/1000) - UTP Type	
Storage	Type : S-ATA Disk	
	RAID Level : 0, 1, 0+1, 3, 5 with spare disk	H/W RAID
Other Items	350W Power Supply P/S	
	Hot swappable SATA storage bay	

- Hardware Specification can be different from this specification with AnyStor Model.

■ **Software Specification of AnyStor (OS of AnyStor)**

Category	Main Structure	Misc.
OS	GBS	
Protocols	CIFS, NFS, SNMP, DHCP, DNS, NIS, HTTP etc.	
Storage Management	Journaling Filesystem	
	Max Number of Volume	256
	Max Volume Size	9TB
	User & Group Quota Support	
	Enhanced Snapshot	
	Storage Vertualization	
System Management	Web Based System Management	
	Tape Backup	
	Network-based Remote Backup	Option

1.1.2 AnyStor NAS 1000/5000/GW

AnyStor NAS 1000/5000/GW is a middle-range NAS system based on SATA/FIBER CHANNEL Storage. The diverse high-performance hardware and software of AnyStor NAS 1000/5000/GW provides high-speed and reliable services to tens to hundreds of users. AnyStor NAS 1000/5000/GW consists of hardware and AnyStor NAS 1000/5000/GW software. AnyStor NAS 1000/5000/GW software consists of NAS system software, management software and data

backup tools.

- **Hardware Configuration of AnyStor NAS 1000/5000/GateWay**

Category	Main Structure	Misc.
Processor	Dual-Core Intel Xeon 2.0GHz*2	
Memory	Max.32GB	
Network Connectivity	Dual GbE NIC(10/100/1000) - UTP Type Max. 6 GbE port	
	Optic GbE(Optional)	
	Support Larger than 17 TB Storage	
	FIBRE CHANNEL & FC Storage Interface Max. 4 FC port	

  - This Specification can be changed to enhance the functionality and performance without any notification.

- **Software Configuration of AnyStor**

Category	Main Structure	Misc.
OS	GBS	
Protocols	CIFS, NFS, SNMP, DHCP, DNS, NIS, HTTP, FTP etc.	
Storage Management	Max Number of Volume	256
	User & Group Quota	
	Enhanced Snapshot	
	Logical Storage virtualization	
System Management	Web Based System Management	
	CLI Based System Management Support with Serial	
	Local Backup	
	NDMP	
	Network Link Aggregation	
	HA Cluster (Active - Active / Active - Standby)	Option
	AnyReplicator	Option

1.2 AnyStor NAS Characteristics and Advantages

► High Performance NAS System, focused on Data

The embedded OS, optimized for the network based data service, supports the high performance interfaces such as Fibre Channel and Gigabit Ethernet. As such, high speed transmission of large capacity data is enabled, and support is provided for the high performance journaling file system, which in turn enables the instant resilience when malfunctioning of the file system occurs. Fast and reliable data transmission and Management is enabled based on diverse Fail-Over function and High Availability support function. HA (High Availability) function of active/standby mode is offered to ensure High Availability support.

► Effective Physical/Logical Storage Management

AnyStor offers physical/logical storage management feature. Integrated management of physical disk is possible. It also offers diverse logical volume management functions of logical volume such as creation, deletion, online modification etc. Management of disk use control (Disk Quota) is possible by user, and the resilience function for the data failure, resulting from user mistake or/and system trouble is provided through the volume snapshot function.

► Data Sharing Support for Diverse Platform Users

File service and data sharing function, which is based on the NFS and CIFS protocol, is provided, and the access by the unauthorized user is completely blocked through diverse access control functions. Since the remote storage can be easily accessed and used as if own disk from any location and any time, companies can store the data that needs to be used by various departments at the center and share the data. Since sales representatives can freely access the data that they need while on the move, it is possible to increase the work effectiveness.

► Perfect Data Management and Configuration of Calamity Resilience System

To offer the stability and reliability of data in an effective manner, AnyStor provides diverse functions. The back-up function of AnyStor helps prepare for unforeseen and sudden accidents by copies of the data that is housed in the NAS in various forms. Also, system's stoppage time is improved innovatively by reducing the resilience time of the NAS to few minutes whereas before, it usually took (takes) couple of tens of minutes to hours by supporting the high performance journaling file system. This can

be highly useful to the financial, securities, e-business and Internet contents companies as well as banks that offer 24 hour non-stop service. In addition, HA (High Availability) function, whereby another NAS replaces the service of the other NAS, even when the latter dies off, is offered.

► **Effective Web Based NAS System Management**

AnyStor offers the web interface that enables remote Management of the NAS system via web. In addition, it offers diverse system Management functions such as system software upgrade via web and system information back-up function etc., and system Management is possible through intuitive interface without the need for special training or manual.

2. Starting AnyStor

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2.1 Booting of AnyStor

When the system is started, you can see the below messages on the console screen if your installation is correct.

```
Starting
GlueStor 4.0 ……

GlueStor is now available…
```

2.2 AnyStor 100/500 Start

2.2.1 Creating RAID

AnyStor 100/500 administers services by configuring unit disks as RAID.
In this chapter, the methods to configure RAID in the forms of “RAID-5” and “RAID-5 + spare disk” are described. When RAID is configured by including spare disk, contents of disk with error are automatically restored to spare disk. Therefore, it further enhances stability of AnyStor S Series.

However, RAID configuration is directly related to data stability. Therefore, make sure to receive technical support from the head office.

2.2.2 AnyStor 100/500 Initial Setting

AnyStor 100/500 holds the IP values entered at the time of O/S installation as the initial values. When connecting to web browser of the corresponding IP, AnyStor management tool is operated and equipment setting becomes possible.

For log-on and network setting, refer to Chapter 3.1 and 3.5.

2.2.3 AnyStor 100/500 Storage Configuration

At the time of product forwarding, the H/W of AnyStor 100/500 is configured with virtual volume. Inquire us when service is required in the case of data loss occurred at the time of disk extension or RAID level change.

3. AnyStor System Management

■ AnyStor NAS provides Web-based remote management interface.

3.1 AnyManager – System Manager

■ AnyManager is a web-based management tool for AnyStor NAS.

3.1.1 Logging in/out

■ **If you wish to log on to AnyManager**

① Operate the Internet Explorer (at least version 4.0) on regular PC.

② Input web URL of AnyStor which you wish to manage.

③ You will see the log-on screen as on Figure 3-1-1.

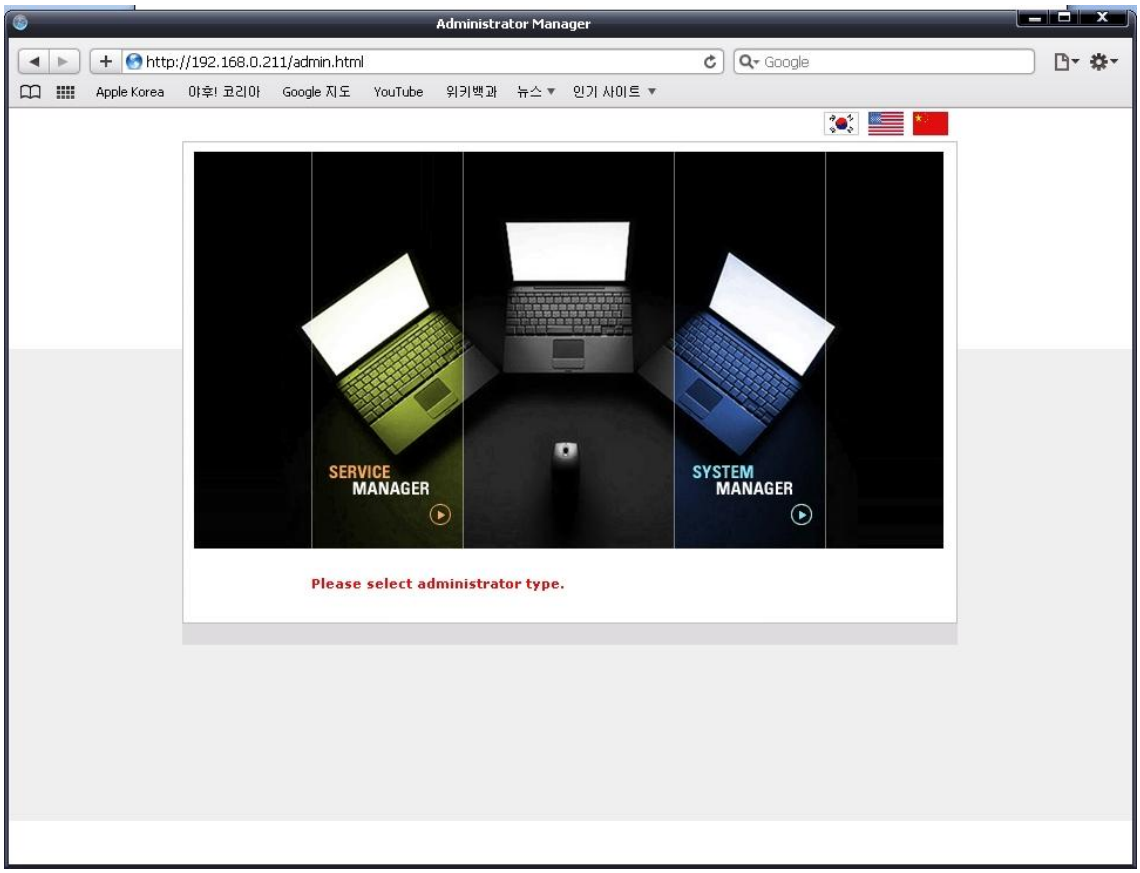


Figure 3-1- 1 AnyManager Welcome Screen

④ System administrator should select “SYSTEM Manager” menu.

■ **Log-on as a System Administrator**

① In case system administrator selects the “System Manager” Menu, the screen as shown on Figure 3-1-2 appears.

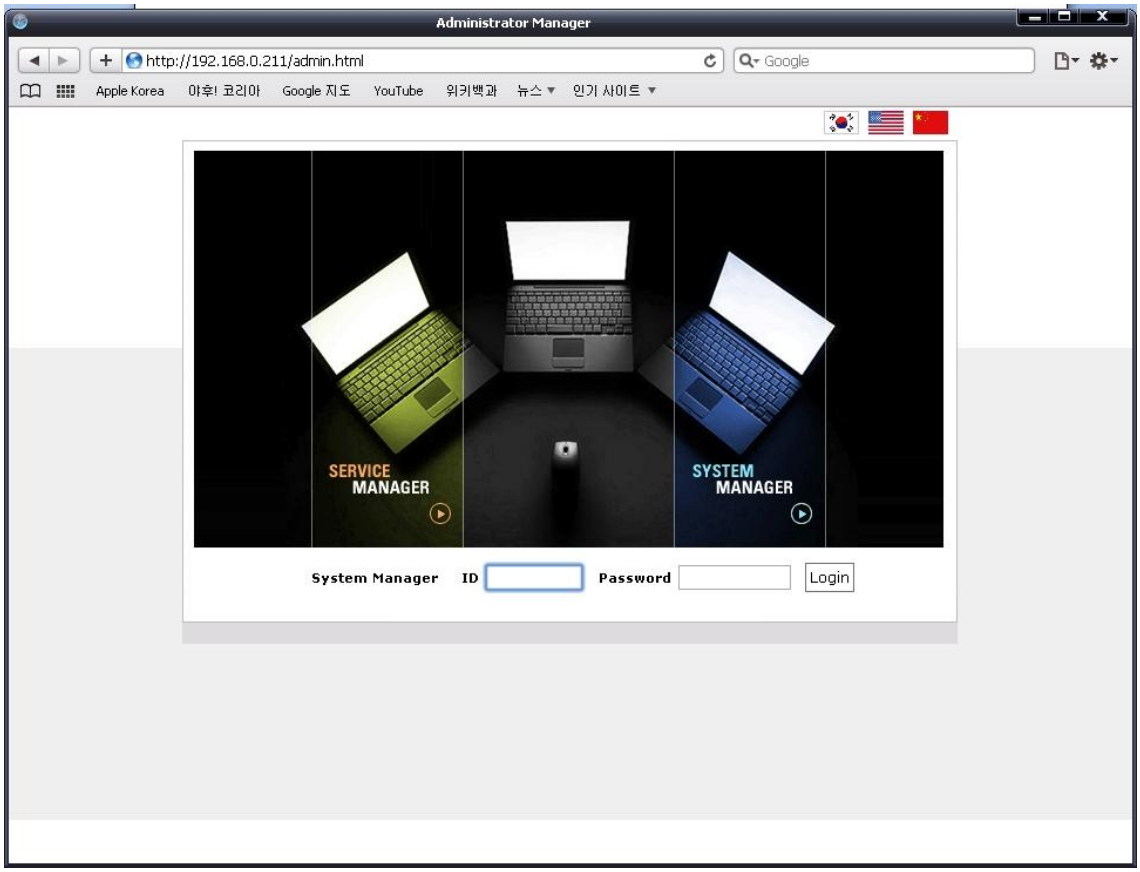


Figure 3-1- 2 Log-on Screen for System Administrator

② Input the Admin password and press on the “Log-On” button. Password can be changed on the [Account]-[Administrator] menu.

③ When logging on as system administrator, you can log-on with **ID :”admin” / Password : “anystor”.**

3.1.2 Main Screen of AnyManager

The main management screen for the management of AnyStor is as follows. Main menu is located at the left side, and the right screen is composed of sub menu that pertains to each main menu and the screen that pertains to the sub menu.

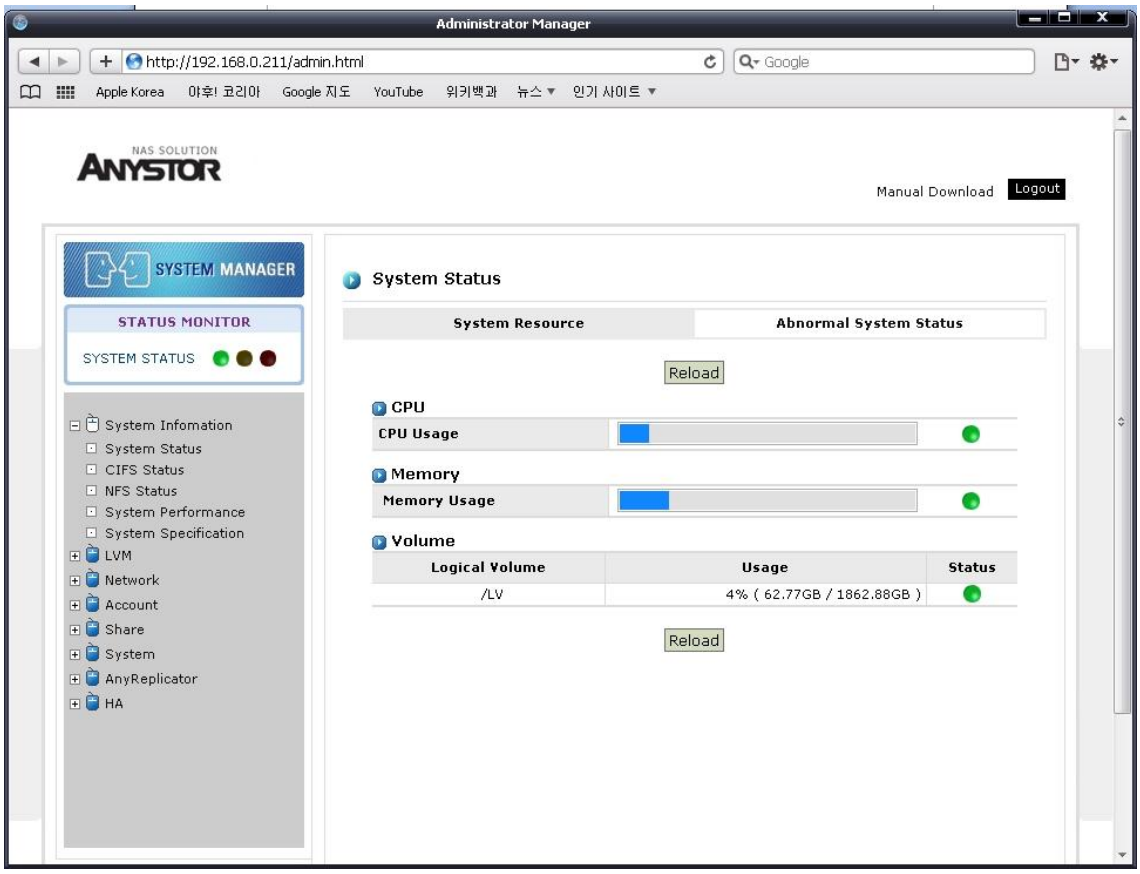


Figure 3-1-3 Main Management Screen of AnyManager

Functions of the main menu, sub menu and each menu are explained briefly on the following table.

MENUS	SUBMENUS	FUNCTIONS
Log Out		AnyStor Session Logout
System Information	System Status	CPU, Memory, Network, System Information, Volume
	CIFS Status	CIFS Service Status
	NFS Status	NFS Service Status
	System Performance	CPU, Memory usage, Storage I/O, Network I/O, History of NFS Server IOPS monitoring

	System Specification	CPU, Memory, NIC, HBA information
LVM	Logical Disk	OS Disk Status and Recovery
	Logical Volume	Physical Disk and Logical Disk Management
	AnyShot	AnyShot Volume Management
	File Browser	File Browser
Network	Network Properties	Network information settings
	Share Network Configuration	CIFS Network Settings and ADS Settings
	Security	Host Access Authority Setting
	NIS Configuration	NIS server and Domain settings
	Link Aggregation	Aggregated Link and Member Configuration
	Routing	Routing table management
Account	User	User Account
	Group	Group Account
	Administrator	Admin Account
	Disk Quota	User & Group Quota
Share	Property	Sharing name and path settings
	CIFS	Global, Host, Group and user privilege
	NFS	Global and Host Privilege
	AppleTalk	Global, Group and user privilege
	ACL Manager	ACL management
	CIFS Audit Log	CIFS audit log
System	Alert	E-mail and info settings about Administrator
	Log	Command, Event and Volume log
	Clock	System date and time, Timezone
	Service	CIFS, NFS, SNMP, NDMP service daemon
	Maintenance	System Config and Log backup, Version upgrade, System Settings
	License	AnyStor License management
	Shutdown	Quick Reboot, Quick poweroff, System check

3.2 Volume Management(LVM)

■ AnyStor Series

Logical Volume Manager (LVM) of AnyManager is characterized by its function which transforms the actual disk into logical volume. It enables diverse forms of volume management such as configuring numerous disks that are physically separated into a large volume, configuring into various smaller volumes and so forth. Also, complex functions such as online volume extension and snapshot, which cannot be performed by actual disks, are offered.

AnyManager's volume management is performed in two stages; logical disk setup and logical volume setup. AnyManager's volume management is described on [Figure 3-2-1]. Over one physical disk, one or more logical disk can be configure, and one logical disk is created into over one logical volume.

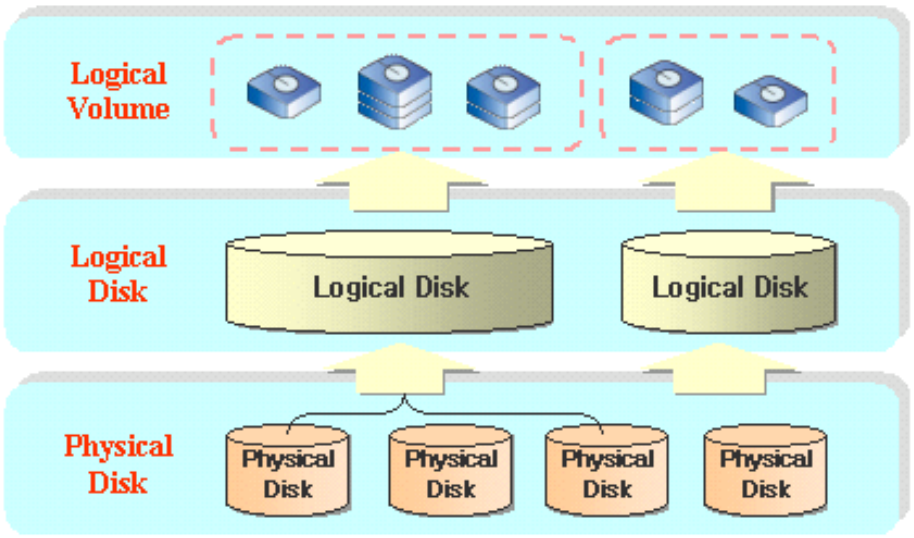


Figure 3-2- 1 Storage Management for AnyManager

3.2.1 Logical Disk Setup

[LVM]-[Logical Disk] menu plays the role of transforming actual disks into virtual logical disks. Over one physical disk can be turned into logical disk. [Figure 3-2-2] shows the GUI for the logical disk setup.

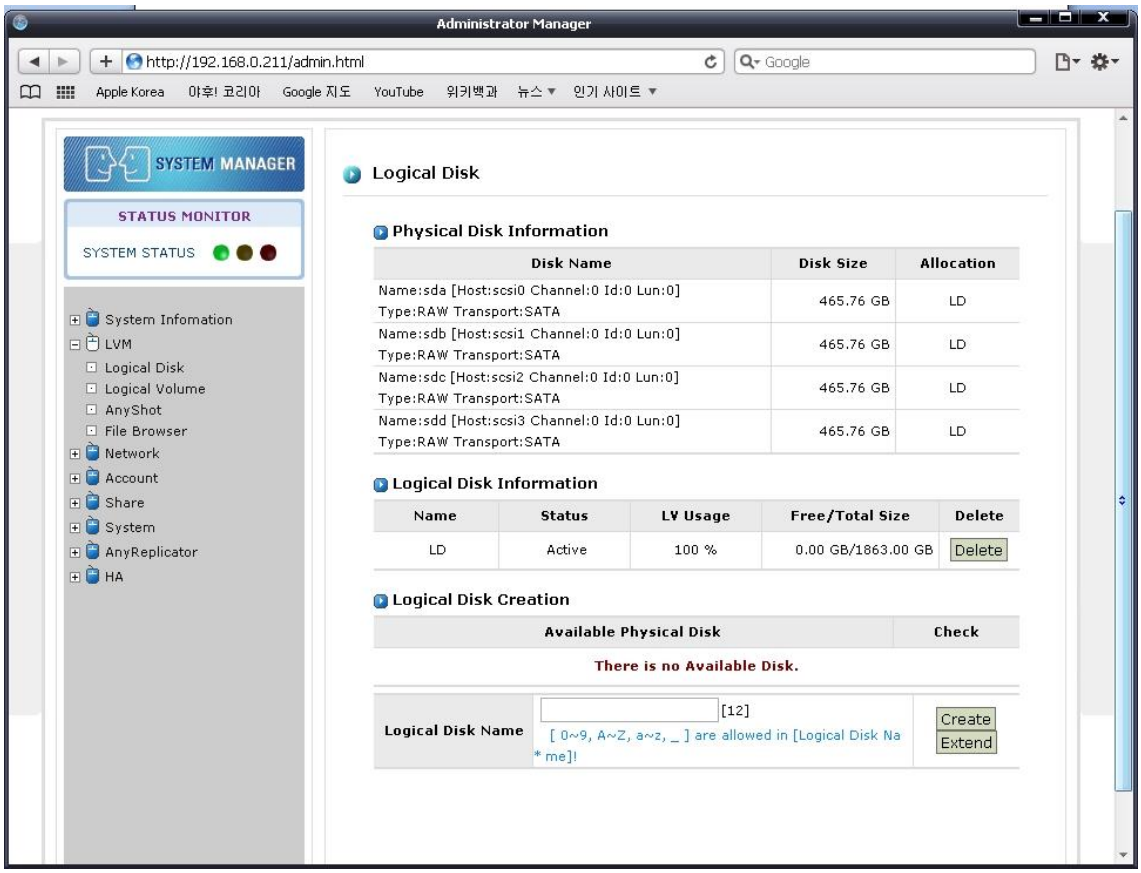


Figure 3-2- 2 Logical Disk Configuration Setup

■ **Physical Disk**

Hard disk (HDD) or RAID could be apparatus for actual disk. AnyStor automatically detects the physical disk, and shows the information via GUI. As shown on [Figure 3-2-2], the information shown via GUI are; disk name, type, disk size and logical disk allocation.

■ **Logical Disk**

Administrator can create logical disk from one or more actual disks. Logical disk can be used as one disk even when there are a number of physical disks. Although the disk partition can be setup as logical disk, this is not recommended. AnyManager provides the information on the created logical disk through the GUI. As shown on [Figure 3-2-2], information on the logical disk name (Disk Name), Status, Usage etc., are provided.

■ **Logical Disk Creation**

① Move to [LVM]-[Logical Disk] menu.

② If there is physical disk that can be used, check for the usable disk on the "Logical Disk Creation" category as shown on [Figure 3-2-3], and click on the "Create" button after naming logical disk

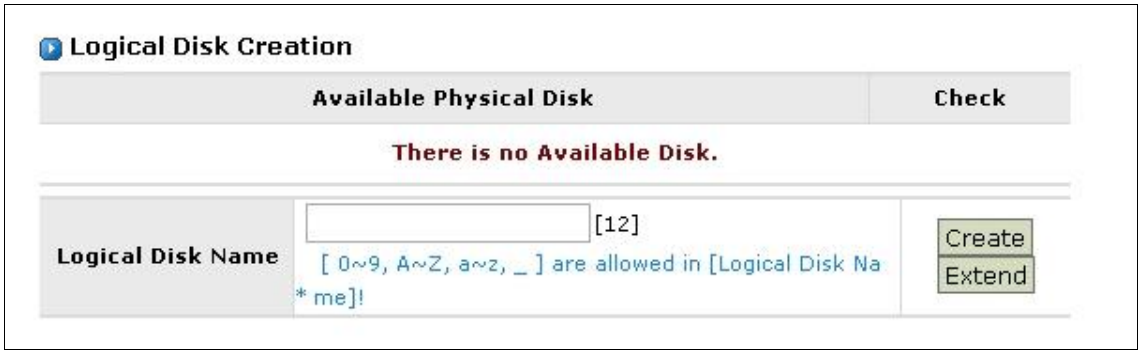


Figure 3-2- 3 Creation of Logical Disk

③ If there is no usable physical disk, no usable disk is marked on the "Logical Disk Creation" category, then logical disk cannot be created.

④ Information on the created logical disk can be checked on the "Logical Disk" category. [Figure 3-2-4] shows the information of logical disk that is created by the above mentioned logical disk creation command.

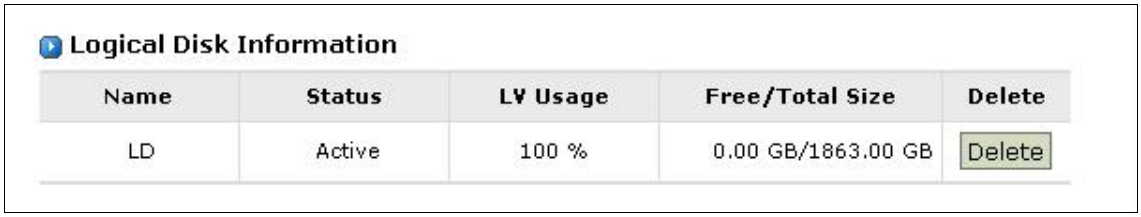


Figure 3-2- 4 Logical Disk Information

✦NOTE: When a logical disk is builted as RAID 5, it may take 2~3 hours to build due to disk building time.

■ **Deleting Logical Disk**

① Deletion is possible on the "Logical Disk" category shown on [Figure 3-2-4]. Deletion of logical disk can be performed by clicking on the "Delete" button of the pertinent logical disk from the "Logical Disk" category.

② Immediate deletion is possible if volume is not created on the pertinent logical disk.

③ If logical volume is included on the pertinent logical disk, deletion is not possible. To delete, it is necessary to remove all the logical volumes that are included inside the logical disk. Instruction for the removal of logical volume is provided on the [Logical Volume] menu.

✦**NOTE:** If numerous I/O occurs, considerable lead time might be needed to display the categories on the logical disk menu. Please wait until the screen appears.

3.2.2 Logical Volume Setup

[Logical Volume] menu plays the role of creating the virtual logical volume based on the logical disk. It is possible to create over one logical volume on a single logical disk. [Figure 3-2-5] shows the GUI for the setup of logical volume. AnyManager provides the snapshot function for the logical volume, and the Management of Snapshot is made possible on the [LVM]-[AnyShot] menu.

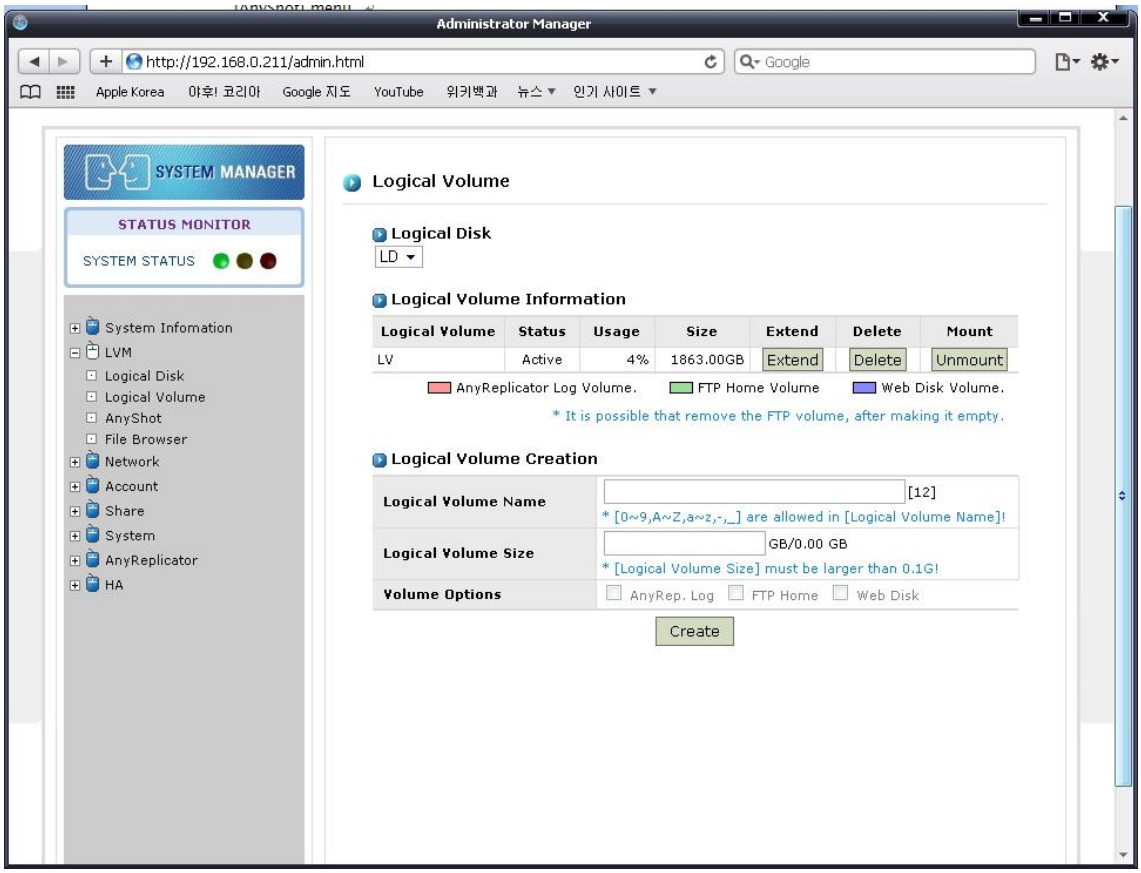


Figure 3-2- 5 Screen for the Management of Logical Volume Setup

■ **Logical Volume**

Logical volume, like the partition of regular disk, can divide the logical disk into various logical volumes. Also, the volume size can be extended, and the file system is created in this domain.

■ **Logical Volume Creation**

① Logical volume is managed on the [LVM]-[Logical Volume] menu.

② First, select the logical disk where the logical volume will be included in order to create the logical volume. [Figure 3-2-5] shows the Figure whereby logical disk denominated as “LD” is selected to create logical volume.

③ When the logical disk is selected, it is possible to see the information on the logical volume that is selected within the logical disk.

④ Logical volume is created in the “Logical Volume Creation” category. [Figure 3-2-6] is an example of creating the volume, named “test1” and with a size of 11GB.

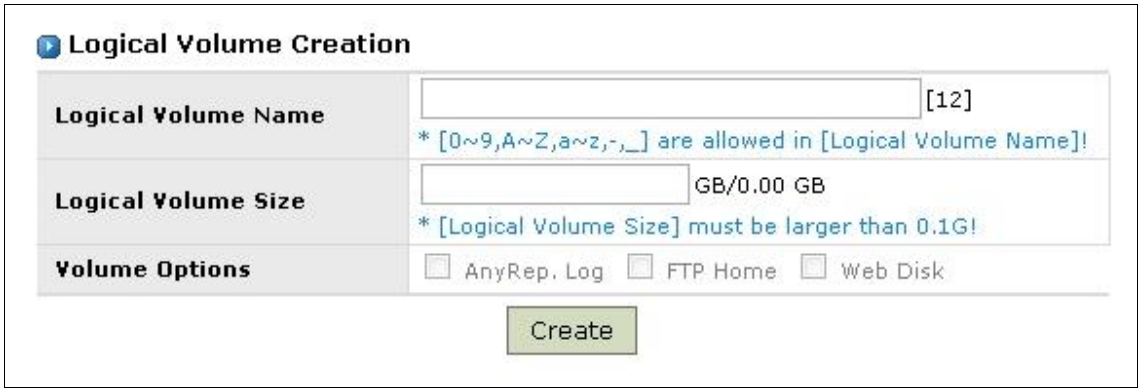


Figure 3-2- 6 Creation of Logical Volume

⑤ Input the name of the desired volume.

⑥ Input the size of the desired volume. At this time, you must check the maximum volume size located at the right. In case of [Figure 3-2-6], the maximum volume size is 17.03GB. Input the volume size within the boundary of maximum volume size. (Minimum volume size is 0.1GB.)

⑦ Click on the "Create" button.

⑧ Logical volume is created when the name and size of the logical volume are given properly. Error message appears when normal input value is not entered. When the error message appears, input appropriate value after checking the message.

⑨ Creation or non-creation of the logical volume can be checked on the "Logical Volume Information." Created volume is automatically mounted for immediate use. When the created volume is not mounted due to abnormal operation of the system, mounting is possible in the "Logical Volume Information" category's "Mount" field.

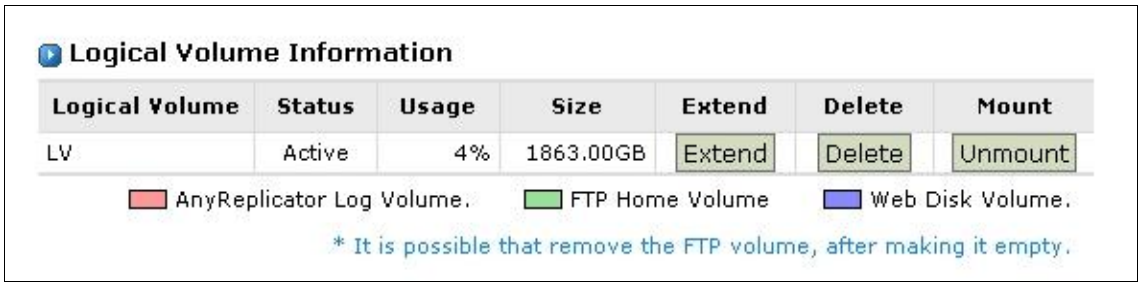


Figure 3-2- 7 Information of Logical Volume

✦**NOTE:** In case I/O occurs, considerable lead time might be needed to display the categories of the logical disk menu. Please wait until the screen appears.

■ **Logical Volume Deletion**

① Deletion of the logical volume is performed on the "Logical Volume Information -> Delete". Deletion is enabled on the "Logical Volume Information" category's "Delete" field.

② Click on the "Delete" button. [Refer to Figure 3-2-8]

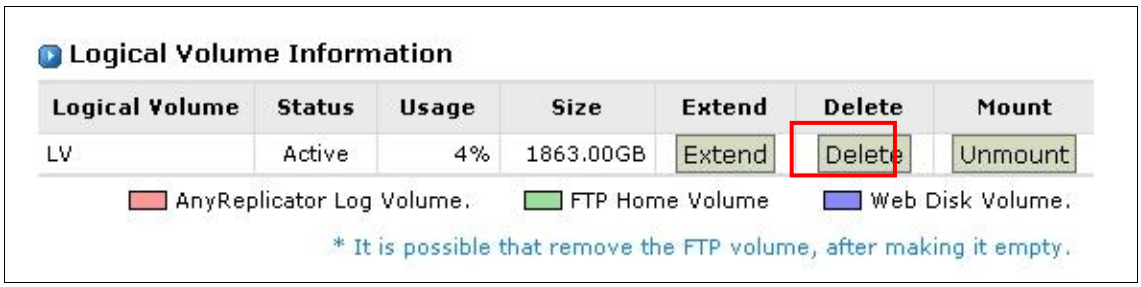


Figure 3-2- 8 Deletion of Logical Volume

③ Select "Confirm" button when the message windows appears.

④ Volume deletion is not possible when the pertinent volume is shared. In this case, deletion is possible when the sharing of pertinent volume is removed on the [Share] menu.

✦**NOTE:** When extensive I/O occurs, deletion of logical volume might take considerable time. Also, it is not possible to delete is there is "AnyShot Volume." If administrator wishes to remove, then all the snapshot volumes need to be removed.

■ **Extension of Logical Volume**

① Extension of logical volume is executed on the "Logical Volume Information". Extension is possible on the "Extend" field of the "Logical Volume Information" category.

② Click on the "Extend" button. [Refer to Figure 3-2-9]

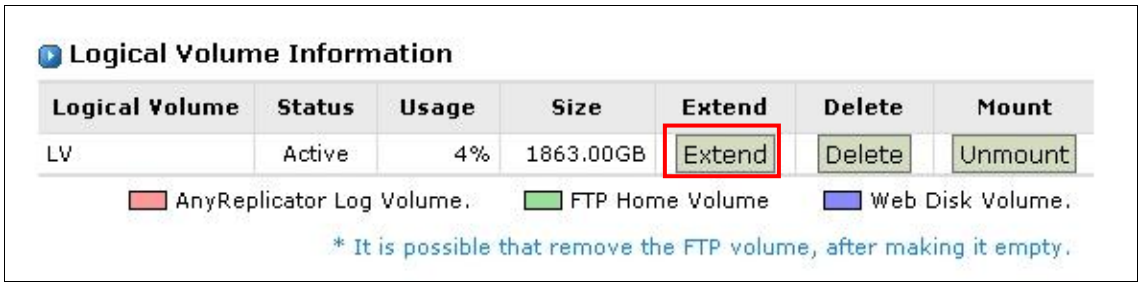


Figure 3-2- 9 Extension of Logical Volume

③ You can see the input window of [Figure 3-2-10] when you click on the "Extend" button

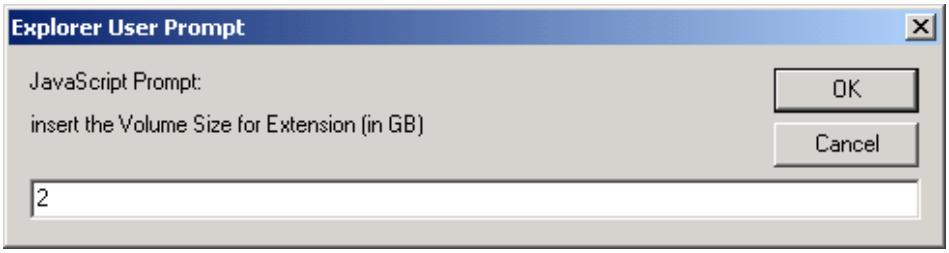


Figure 3-2- 10 Input Window for the Extension of Logical Volume

④ Input the size up to desired extension size. [Figure 3-2-10] is an example of 2GB extension.

⑤ Click on the "Confirm" button if you wish to extend. Click on the "Cancel" button if you wish to cancel.

⑥ Volume extends via online if there is sufficient space within the logical disk for the desired extension size. When the extension is complete, the size of the logical volume is extended and marked on the "Logical Volume Information" category.

⑦ Error message appears in case there is not sufficient space in the logical disk to accommodate the desired extension.

✦**NOTE:** Considerable time might be needed for the extension of logical volume when extensive I/O occurs.

3.2.3 AnyShot

AnyShot function is an image on time point of the currently existing logical volume. This image is not permanent. The period of image storage is determined in accordance with the level of data change in AnyShot volume size and the original logical volume. However, permanent storage can be possible when volume size is set with the original volume size at the time of creating AnyShot volume.

AnyShot can be useful when administering backup of large-sized logical volume. Shared logical volume has continuous I/O, therefore it can be difficult to administer backup. When creating image by using AnyShot and administering backup with this logical volume, backup at a certain time point can be possible. Also, in case data loss occurs due to user's mistake or problem in program, the recently created AnyShot volume can be restored or file can be copied to solve the case by continuously creating AnyShot volume.

AnyShot function can create, increase, delete or mount AnyShot volume. It can also register schedule for creation. In addition, creation of logical volume provides the function to restore AnyShot volume. By administering restoration at the required time (when there is almost no I/O), the impact exerted on service can be minimized. (Refer to Figure 3-2-11.)

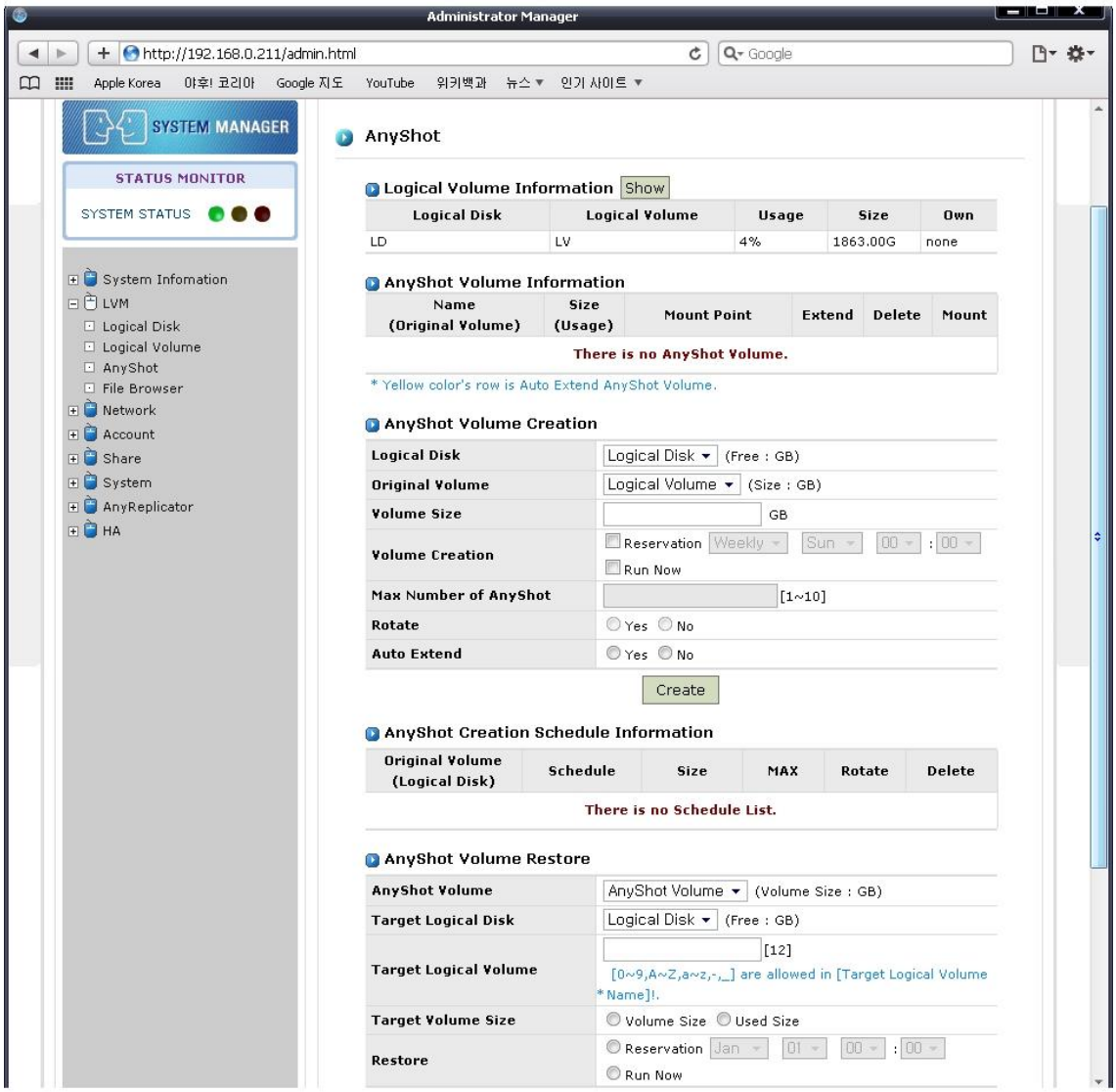


Figure 3-2-11 AnyShot

■ **Logical Volume Information**

AnyShot Web Manager provides logical volume information. At first, the information is hidden. When it is required to make reference to the information, click Show button in web manager screen to display volume information as shown in [Figure 3-2-12]. To hide the information again, click Hidden button.

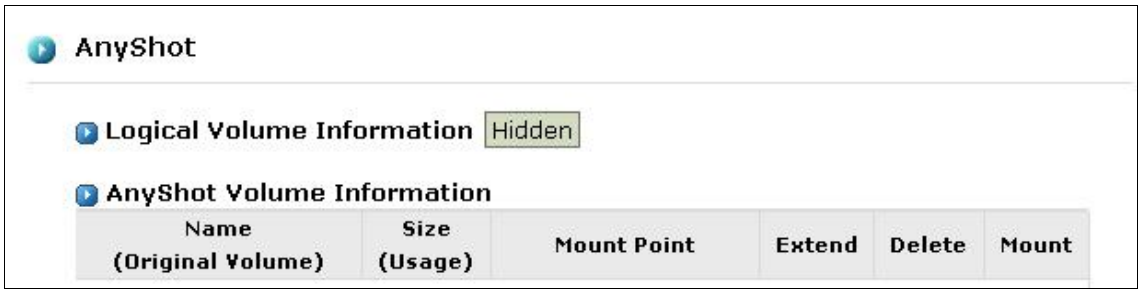


Figure 3-2-12 Viewing Logical Volume Information

■ **AnyShot Volume List**

AnyShot Web Manager provides AnyShot volume list. It provides the function to provide information on the mount size of original volume usage as well as to increase, delete and mount AnyShot volume. (Refer to Figure 3-2-13.) The usage displayed in screen is not of data usage, but of physical usage.

In case AnyShot volume usage becomes 100% by the original volume I/O, AnyShot volume becomes inactive and can no longer be used. Administrator must take this into consideration in controlling the function.

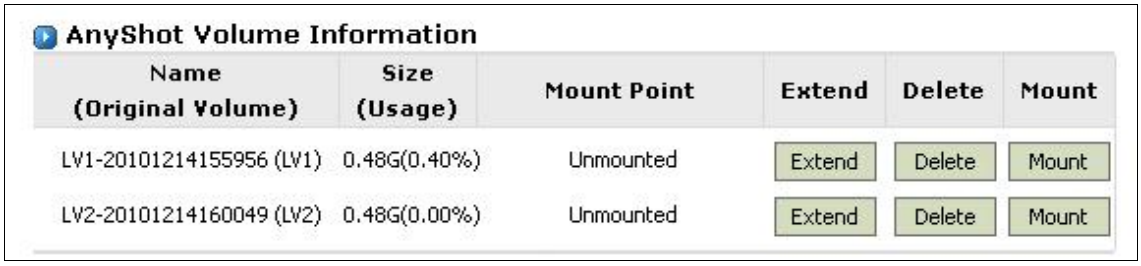


Figure 3-2-13 AnyShot Volume List

■ **AnyShot Volume Creation**

To create AnyShot volume, it is required to designate original volume and the size of volume. Volume can be created in the following method.

① Select logical disk. (Refer to Figure 3-2-14.)

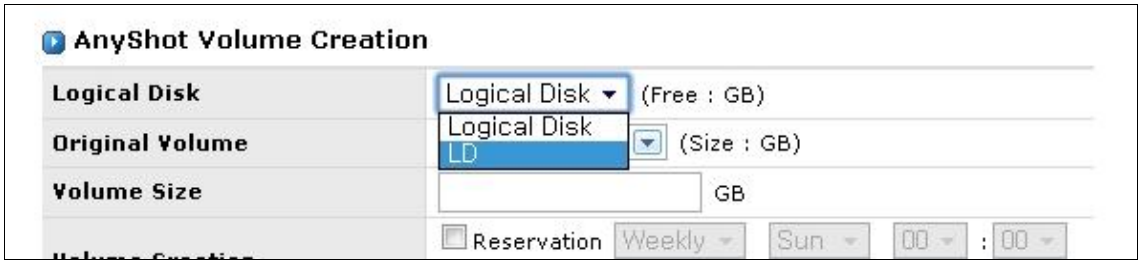


Figure 3-2-14 Selecting Logical Disk

② Select logical volume. (Refer to Figure 3-2-15.)

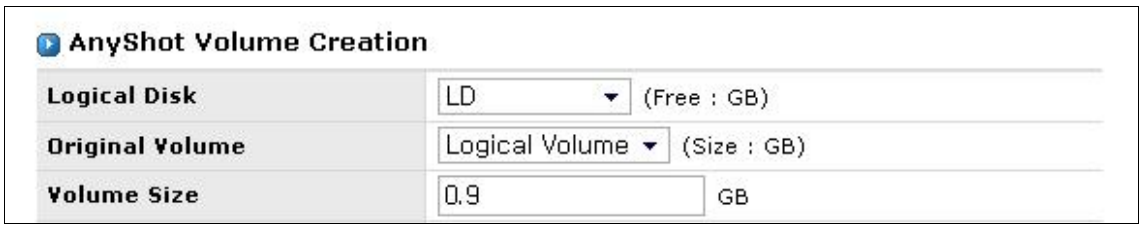


Figure 3-2-15 Selecting Logical Disk

③ Enter size of AnyShot volume. Volume size must be of 15% or higher or of 100% or lower than the original volume size. Also, the applicability must be smaller than that of the created logical disk. When selecting logical disk and logical volume, the possible input size is displayed next to input field. (Refer to Figure 3-2-16.)

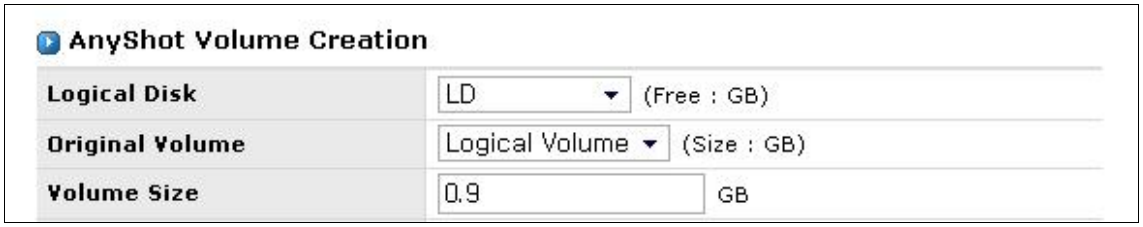


Figure 3-2-16 Selecting Logical Disk

④ Select whether to create AnyShot volume 'now' or to make 'reservation' for creating it later on. To create volume now, select  item as in [Figure 3-2-17].

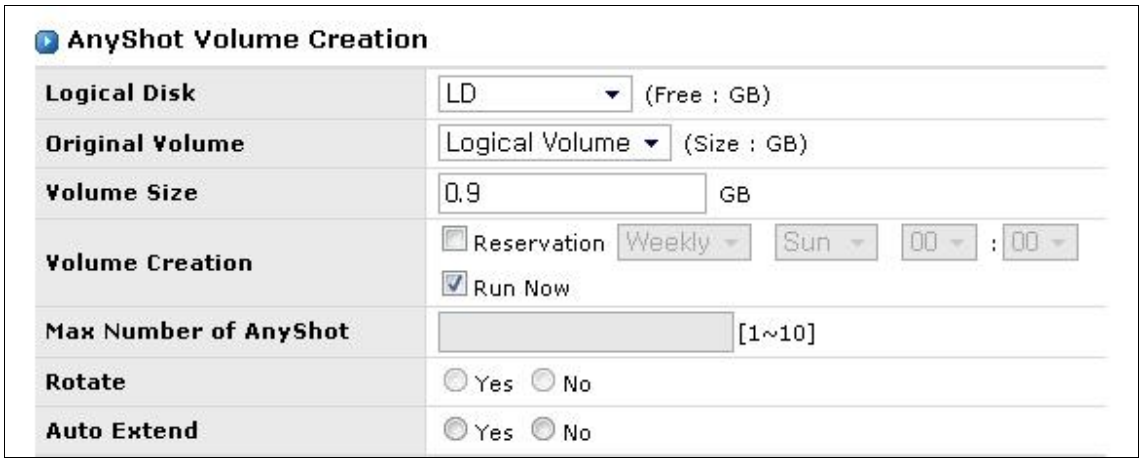


Figure 3-2-17 Selecting Logical Disk

⑤ When all inputs are made, click Create button to create AnyShot volume.

Name of AnyShot volume is automatically created in the form of [Name of Original Volume] - [Date] [Time of Creation] as shown in [Figure 3-2-13].

■ **AnyShot Volume Creation Schedule**

To make reservation for creating AnyShot volume according to the fixed schedule, administer the following procedures.

① Administer stage 1 ~ 3 of AnyShot creation.

② As shown in [Figure 3-2-18] , select Reservation item and select schedule. To create AnyShot volume at the same time as making reservation, select Run now item as well.

③ Select the maximum number of AnyShot creation and status of rotation administration for original volume.

Figure 3-2-18 AnyShot Volume Creation Schedule

⑥ When all inputs are made, click Create to register AnyShot volume creation schedule. After registration, reservation list is added as shown in [Figure 3-2-19].

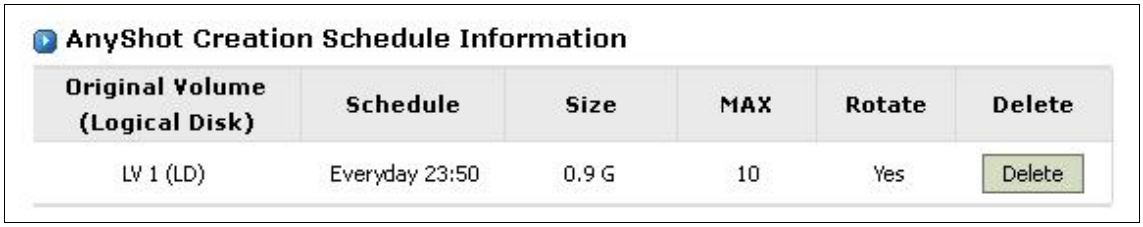


Figure 3-2-19 Reservation List for AnyShot Volume Creation

■ **AnyShot Volume Creation Schedule Delete**

To delete AnyShot volume creation schedule, click Delete button of the corresponding item in reservation list for AnyShot volume creation.

■ **AnyShot Volume Delete**

To delete AnyShot volume, Click Delete button of the corresponding item AnyShot volume list. (Refer to Figure 3-2-13).When clicking delete button, a dialog window is displayed to select the status of delete as shown in [Figure 3-2-20] To procced with delete, click 'Yes' button.

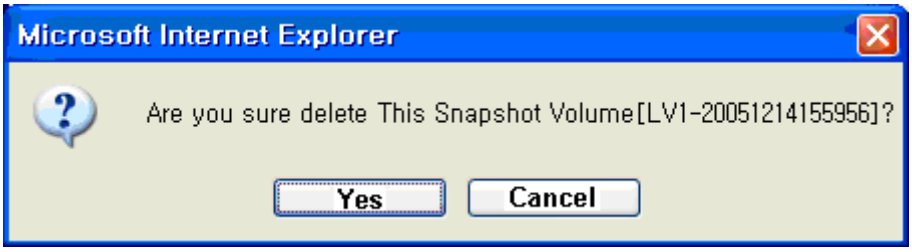


Figure 3-2-20 Deleting AnyShot Volume

■ **AnyShot Volume Extend**

Original volume size (at the time of creation) can be extended in order to prevent using of AnyShot volume becoming impossible as it is used by 100%. AnyShot volume extend can be done in the following methods.

① Click AnyShot Extend button of the corresponding item in AnyShot volume list. (Refer to Figure 3-2-21.)

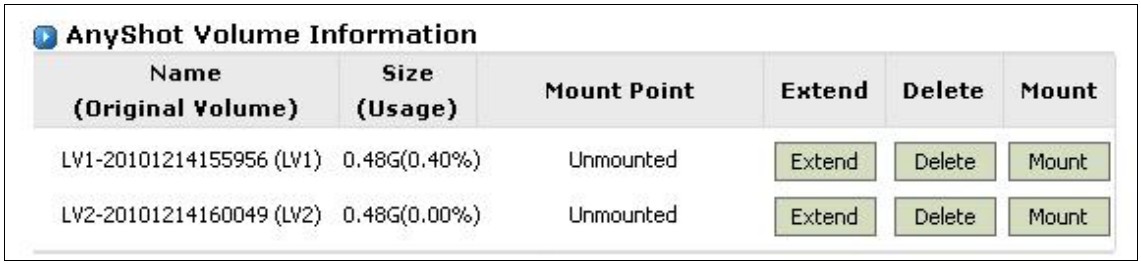


Figure 3-2-10 Before Extending AnyShot Volume

② Dialog window to enter the size of extension is displayed as shown in [Figure 3-2-22]. Enter the size of extension and click 'OK' button.

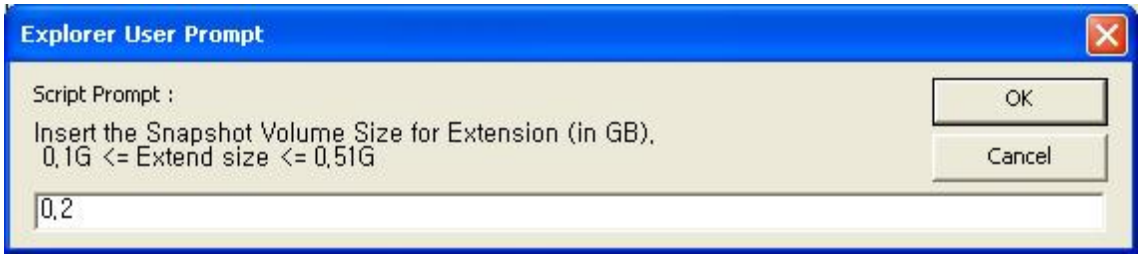


Figure 3-2-11 Entering Size of AnyShot Volume Extension

③ Now, volume size has been extended as shown in [Figure 3-2-23].

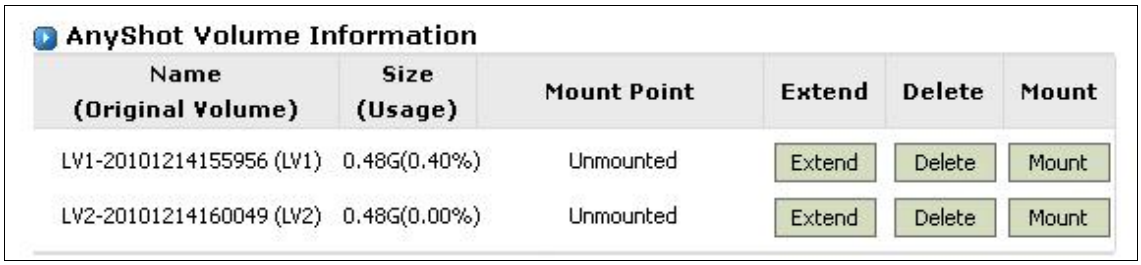


Figure 3-2-12 After AnyShot Volume Extending

■ **AnyShot Volume Mount**

Volume mount must be carried out before sharing AnyShot volume. AnyShot volume mount can be done in the following methods.

① Click AnyShot 

button of the corresponding item in AnyShot volume list. (Refer to Figure 3-2-13.)

② Dialog window to enter directory is displayed as shown in [Figure 3-2-24]. Enter name of the required mount directory and click 'OK' button

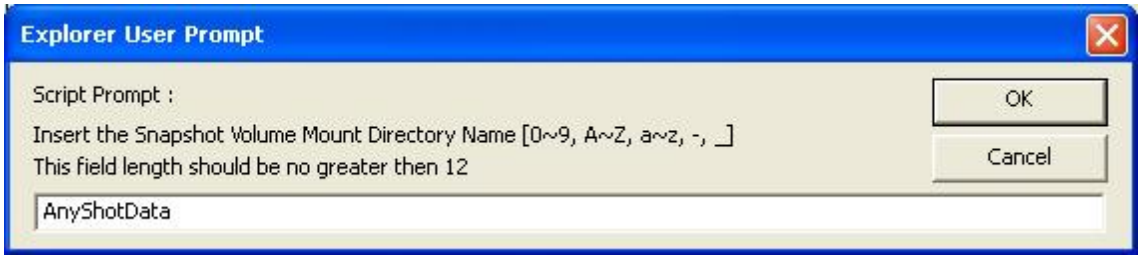


Figure 3-2-13 Entering AnyShot Volume Mount Name

③ Now, mount has been completed as shown in [Figure 3-2-25].

Figure 3-2-14 After AnyShot Volume Mount

■ **AnyShot Volume ReStore**

AnyShot provides function to recover AnyShot volume data. AnyShot volume itself can be shared in order to simply read AnyShot volume data. However, AnyShot volume must be copied to logical volume in order to read/ write data after recovery. AnyShot recovery function creates new logical volume and recovers AnyShot volume data. AnyShot provide management screen as of [Figure 3-2-26] in order for recovery. Procedures of recovery are as of the following.

Figure 3-2-15 AnyShot Volume Recoverye

① Select AnyShot volume. (Refer to Figure 3-2-27.)

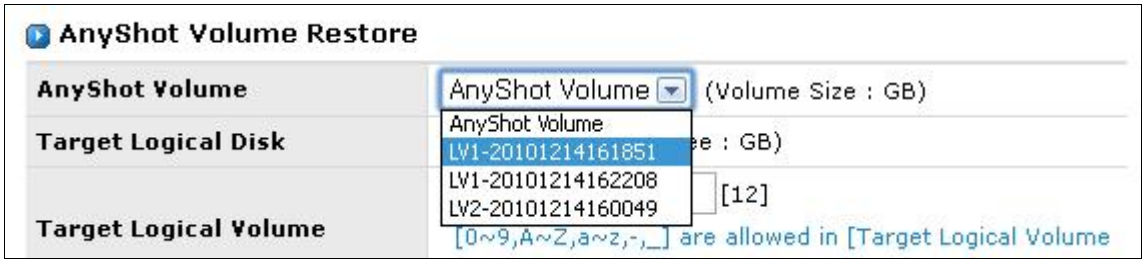


Figure 3-2-27 Selecting Logical Disk

② Select logical disk to create logical volume to be recovered. (Refer to Figure 3-2-28.)

Figure 3-2-16 Selecting Logical Disk

③ Enter name of the logical volume to be recovered. (Refer to Figure 3-2-29.)

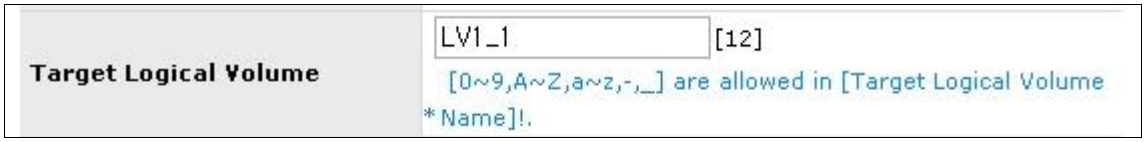


Figure 3-2-17 Entering Logical Volume Name

④ Select size of the logical volume to be recovered. Selection can be made whether to create size as much as the original volume (at the time of creation) or usage of the volume as shown in [Figure 3-2-30]. It can be created to suit the use after recovery. Size extension is possible in logical volume administrator after creation.

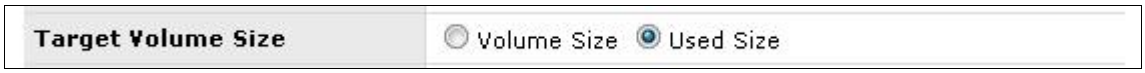
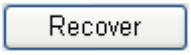


Figure 3-2-18 Selecting Logical Disk Size

⑤ Select whether to administer recovery 'now' or to make 'reservation' for the time of recovery. To administer recovery now, select 

as shown in [Figure 3-2-31].

Figure 3-2-31 Selecting Logical Disk

⑥ When all inputs have been made as of [Figure 3-2-31], click 

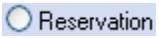
button to administer recovery.

■ **AnyShot Volume Recover Schedule**

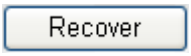
AnyShot can administer recovery by selecting the time of recovery. AnyShot volume recovery can be administered in the following methods.

① Administer stages 1 ~ 4 of AnyShot recovery.

Figure 3-2-19 Selecting Logical Disk

② Select 

item as shown in [Figure 3-2-32].

③ When all inputs have been made as of [Figure 3-2-33], click 

button to register schedule.

Figure 3-2-20 Example of AnyShot Volume Recovery Input

④ When schedule registration is completed, it is added to AnyShot volume recovery list as shown in [Figure 3-2-34].

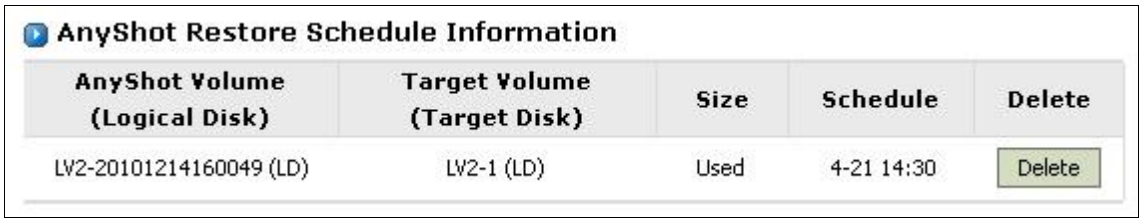


Figure 3-2-21 Reservation List for AnyShot Volume Recovery

■ **AnyShot Volume Recover Schedule Delete**

To delete AnyShot volume recovery schedule, click Delete button of the corresponding item in reservation list for AnyShot volume recovery. (Refer to Figure 3-2-34.)

3.3 Status Management

■ AnyStor Series

3.2.1 System Status

System status function displays CPU, memory, network and volume status information so that administrator can easily understand current status of the system.

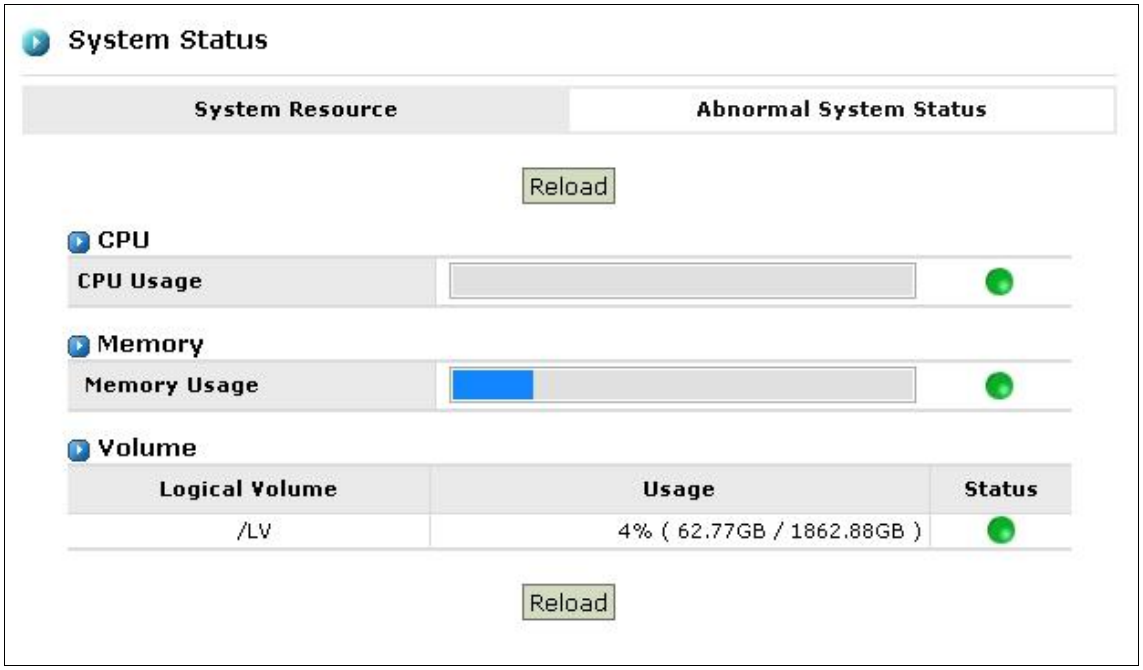


Figure 3-3-1 Initial Menus of Status

■ System

It provides information on the level of CPU and memory use. When there are multiple CPUs in existence, it provides this information for the multiple CPUs in a bar shape. When each CPU or memory bar is accessed, the level of use is displayed in numbers. [Figure 3-3-2] illustrates GUI to display the level of CPU and memory use. To find the accurate level of use, place mouse over the corresponding bar to display the accurate level of use as shown below. The following figure shows the screen display when mouse is placed over CPU BAR.

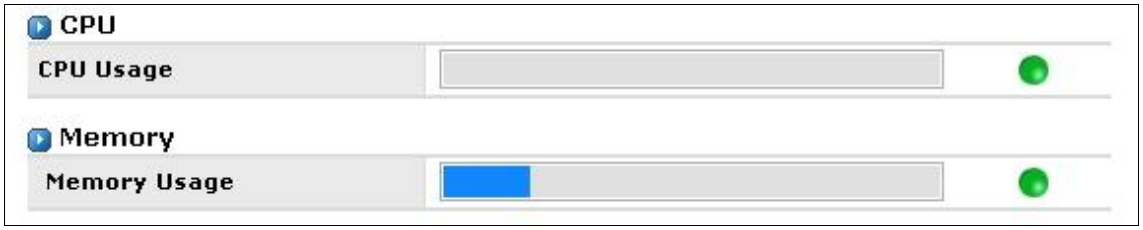


Figure 3-2-22 Information on the Level of CPU and Memory Use

- **Volume**

  Level of use per each volume is provided in bar shape. When bar of each volume is accessed, the level of use is displayed in numbers. [Figure 3-3-4] is an example of volume display.

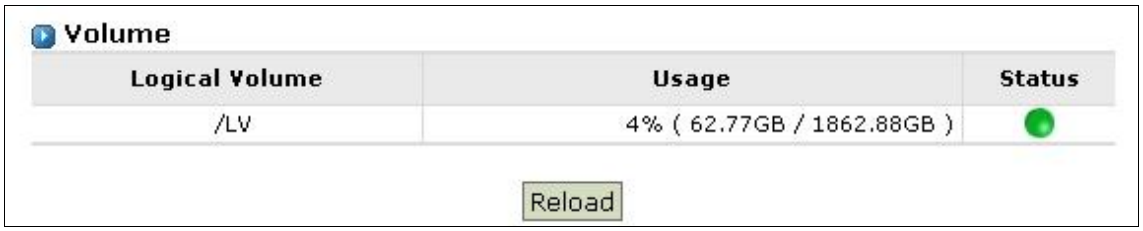


Figure 3-3- 423 Volume

3.3.2 CIFS Status

CIFS status can be checked in [System Status]-[CIFS Status] menu. [Figure 3-3-5] is an example to display CIFS service status. The following information is displayed.

- Global Parameter: Environment setup for connection with client to use Windows Networking is displayed. It consists of adjustable part and the part fixed due to the policy of AnyStor.
  - WorkGroup: It indicates in which WorkGroup of Windows Networking environment it is to participate. It can be set in [Network][Network Property][CIFS Network Configuration] WorkGroup/Domain.
  - ServerString: It displays descriptions of AnyStor in Windows Networking environment. It can be set in [Network][Network Property][CIFS Network Configuration] Description.
  - NetBios Name: It displays name of computer to be used in Windows Networking environment. It can be set in [Network][Network Property][CIFS Network Configuration] NetBios Name.
  - Security: It displays setup information of Authentication set in [Network][Network Property][CIFS Network Configuration]. When using Domain Controller authentication, “ads” (Active Directory Service) is displayed.
  - Dir Mask: When Windows user creates directory, it displays the automatically created permission, which is fixed value.
  - File Mask: When Windows user creates files, it displayed the automatically created file, which is fixed value.
  - DOS Charset: It displays Windows character set and shows language setup and

character type, etc. per country.

- NAS Charset: It displays AnyStor character set and shows language setup and character type, etc. per country.

- CIFS Share Information
  - Share name: Share name registered in CIFS protocol
  - Allocated Volume: Name of logical volume in which share is allocated
  - Available: Status of availability
  - User ACL: Information of permission and user, which can access the corresponding share
  - Group AC: Information of permission and group, which can access the corresponding share
- CIFS Connection Status: Information of client, which connected CIFS to AnyStor
  - User/Group: Name of the connected user and group
  - Machine (IP): Name of the connected computer and its IP address
  - Share Date: Name of the connected share and date of connection

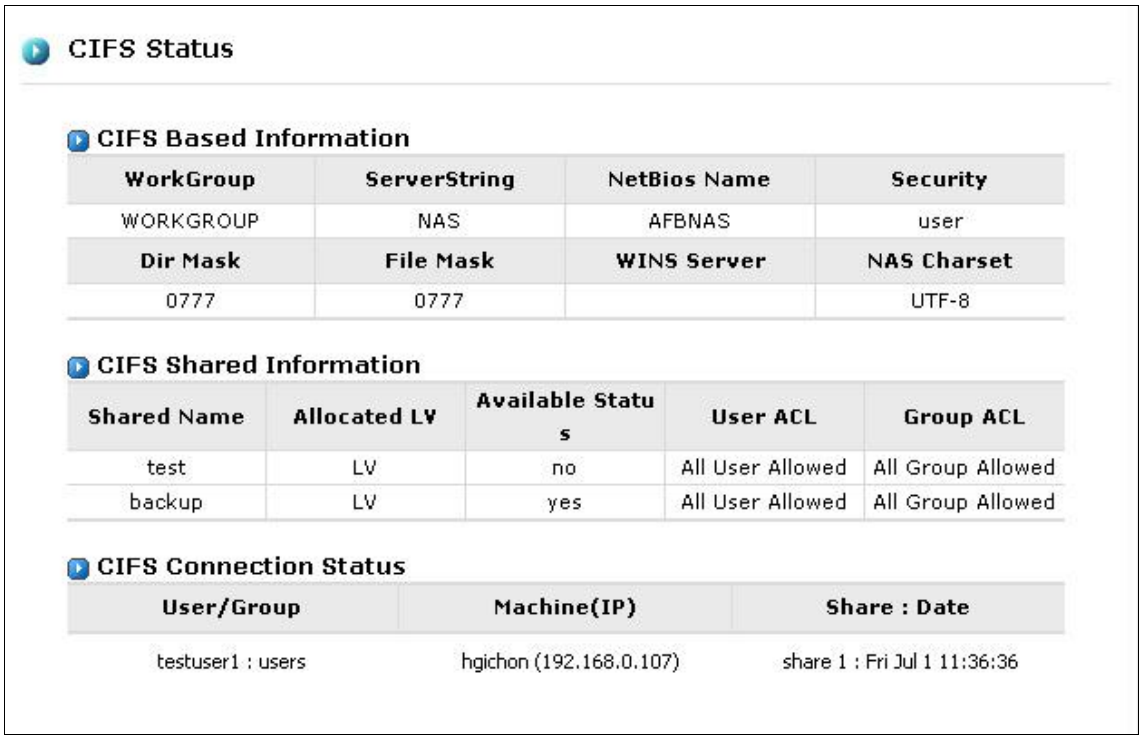
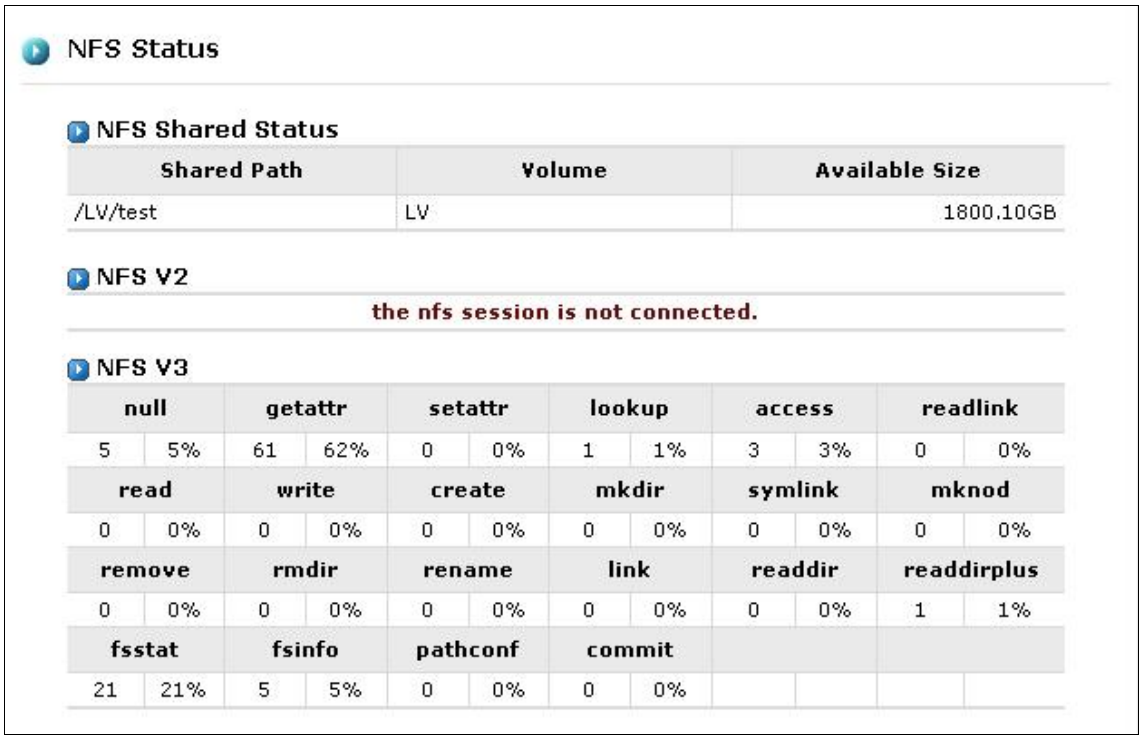


Figure 3-3- 5 CIFS Service Status

3.3.3 NFS Status

NFS status can be checked in [System Status]-[NFS Status]. [Figure 3-3-6] is an example to display status information of NFS service. The information displayed is about level of each share directory use and about NFS V2 and V3.



NFS Status

NFS Shared Status

Shared Path	Volume	Available Size
/LV/test	LV	1800.10GB

NFS V2

the nfs session is not connected.

NFS V3

null		getattr		setattr		lookup		access		readlink	
5	5%	61	62%	0	0%	1	1%	3	3%	0	0%
read		**write**		**create**		**mkdir**		**symlink**		**mknod**	
0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
remove		**rmdir**		**rename**		**link**		**readdir**		**readdirplus**	
0	0%	0	0%	0	0%	0	0%	0	0%	1	1%
fsstat		**fsinfo**		**pathconf**		**commit**					
21	21%	5	5%	0	0%	0	0%				

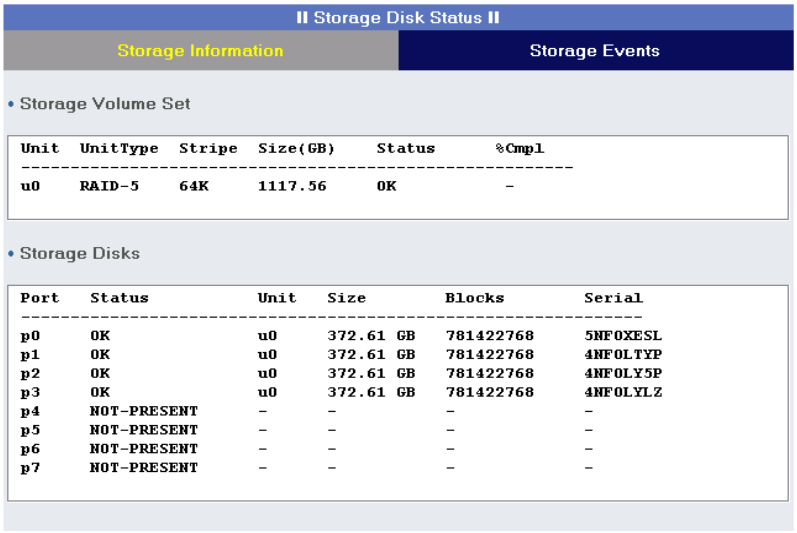
Figure 3-3-6 NFS Service Status

3.3.4 Disk Status

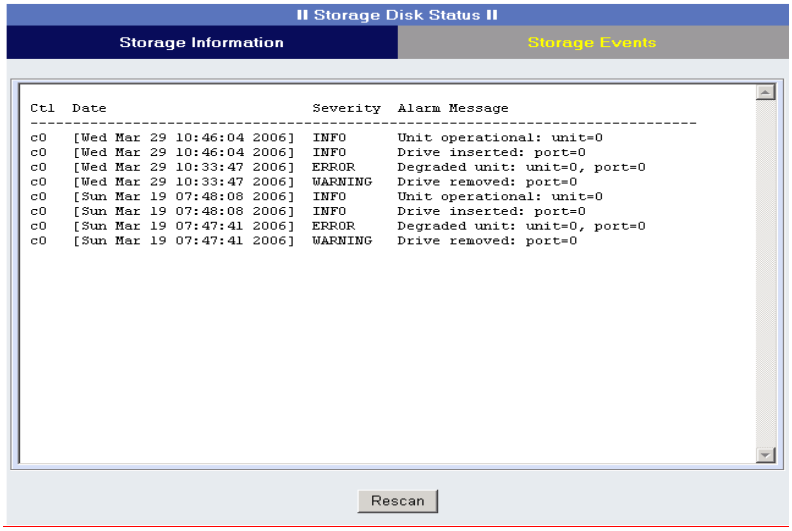
3.3.4.1 Storage Disk Status

■ Only applicable in AnyStor 100/500

Overall status of storage is displayed in AnyStor 100/500 Series. By displaying information including status of the set storage volume and disk as well as events to occur during operation, it enables prompt countermeasure in case problems occur in the system. When abnormalities occur in storage, notice is displayed at the bottom left-hand corner.



(a) Storage Information



(b) Storage Events

Figure 3-3-7 Storage Disk Status

3.3.4.2 OS Disk Status

■ Only applicable in AnyStor NAS 1000/5000/GW

AnyStor NAS 1000/5000/GW Series provides OS disk mirroring function through LSI Logic SCSI controller as a means to remove single-point-of-failure caused by single OS image and to increase reliability of system OS. By utilizing the mirrored OS, system can provide non-suspension service. When abnormalities are detected in disk by checking status of the mirrored OS disk in [Disk Status] menu, notice is immediately made and the function is provided that to recover OS disk effectively. Also, even after error in the 1st disk, it enables operation with the

single 2nd disk.

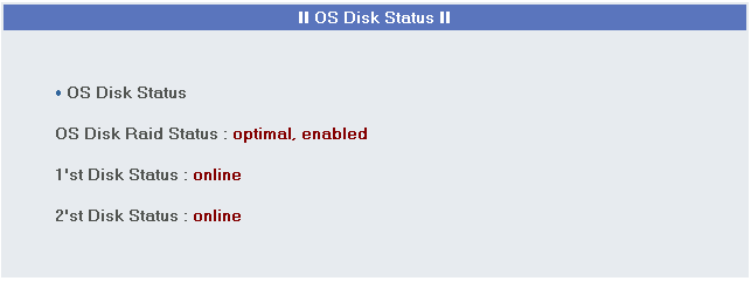


Figure 3-3-8 OS Disk Status

① To recover OS disk, it is firstly required to understand OS disk status. OS disk status, as shown in [Figure 3-3-8], is well displayed in [Disk Status] menu. When OS disk status is not normal, administer the following procedures.

② Remove OS disk with error.

③ Insert new OS disk.

④ When a new OS disk is inserted, recovery automatically begins.

⑤ During recovery, status of OS disk in the course of recovery is displayed as either “online out of sync” or “replaced”. Also, status of OS disk raid is displayed as either “resync in progress” or “reconstruct”.

⑥ When recovery is completed, all of the two disks status will displayed as either “online” or “optimal”.

When recovery fails, repeat the above procedures after checking disk or system hardware.

3.4 Network Management

- **Applicable NAS: AnyStor Series**

AnyStor NAS is network storage. Therefore, it is required to set network including IP addresses so that external client can connect to AnyStor NAS through the network. AnyStor NAS is capable of all network settings by utilizing AnyStor web management tools. Network setups through AnyStor web management tools are as of the following.

- Network property
- Security
- NIS configuration
- Link aggregation configuration

3.4.1 Network Property

[Figure 3-4-1] shows GUI for basic network property setting. Particulars to be administered for network property settings are as of the following.

- IP Setup : To set IP address, net mask and gateway for each network interface
- DNS Setup : To set basic DNS and Secondary DNS
- Other Network Setup: To set work group/ domain and Wins server, etc.

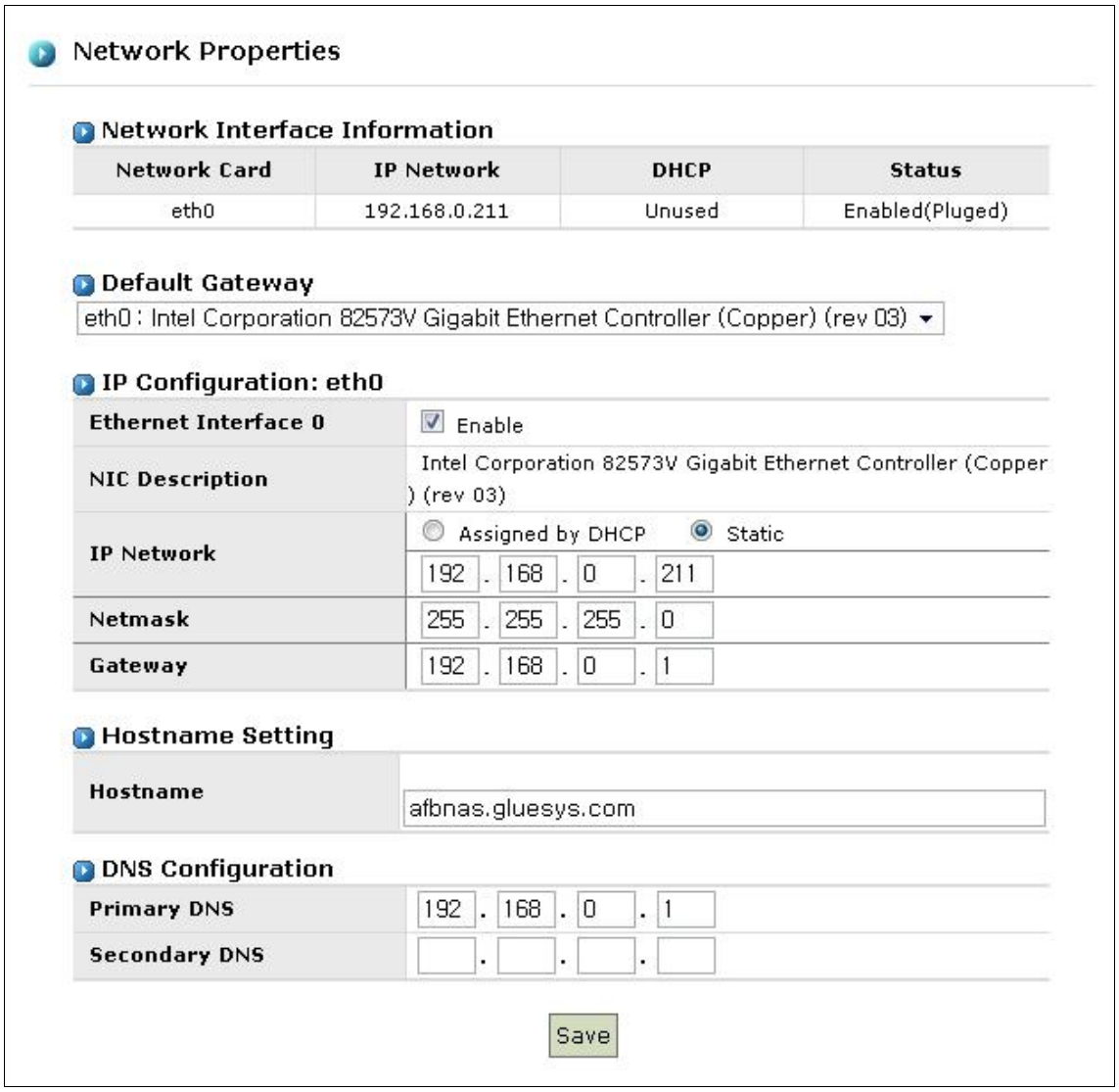


Figure 3-4- 1 GUI for Network Property Setting

■ **Network Information**

It displays information of each network interface. [Figure 3-4-2] shows GUI, which displays information of each network interface.

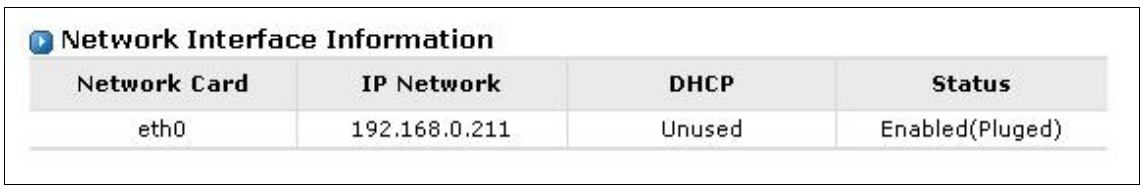


Figure 3-4- 2 GUI to Display Information of Each Network Interface

■ **Default Gateway**

Network interface to set Default Gateway is selected. [Figure 3-4-3] shows GUI to set Default Gateway. Network interface information is not stored unless Default Gateway is set.

Figure 3-4- 3 GUI to Set Default Gateway

■ **IP**

IP can be configured for each network interface. When there is multiple IPs in existence, set interfaces are created as many as the number of network interfaces to exist in the system. Therefore, administrator can enter set values for each network adapter into the set interfaces created. [Figure 3-4-4] shows GUI for IP setting. IP configuration is administered in the following orders.

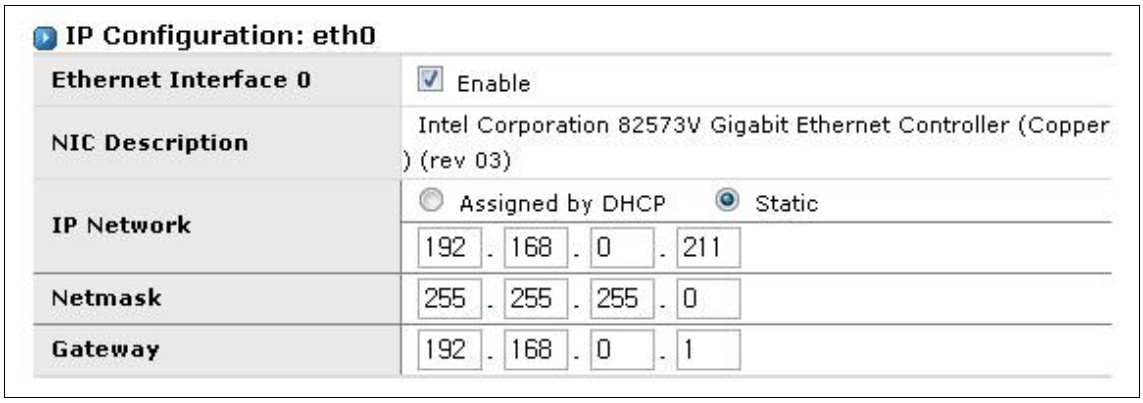


Figure 3-4- 4 GUI for IP Configuration

① Set status of using “Ethernet Interface 0” Enabled

② Set host name

③ Set for IP assignment by DHCP when using DHCP Assigned by DHCP

④ Set IP address when IP address is not assigned by DHCP (Ex.: 163.152.39.135)

⑤ Set net mask (Ex.: 255.255.255.0)

⑥ Set gateway (Ex.: 163.152.1.1)

⑦ Repeat the above procedures for IP configuration when there are two or more or Ethernet interfaces in existence.

■ DNS

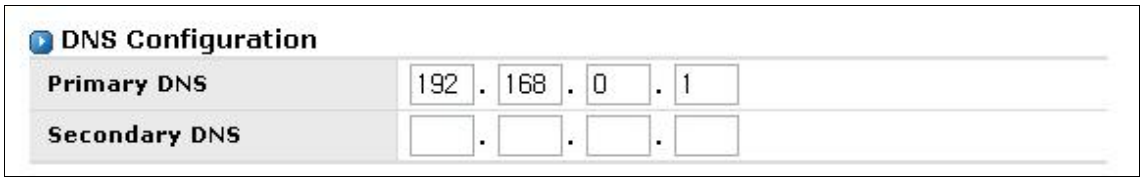


Figure 3-4- 5 GUI for DNS Configuration

① Set the basic DNS.

② Set the secondary DNS. This value is optional.

■ Share Network Configuration

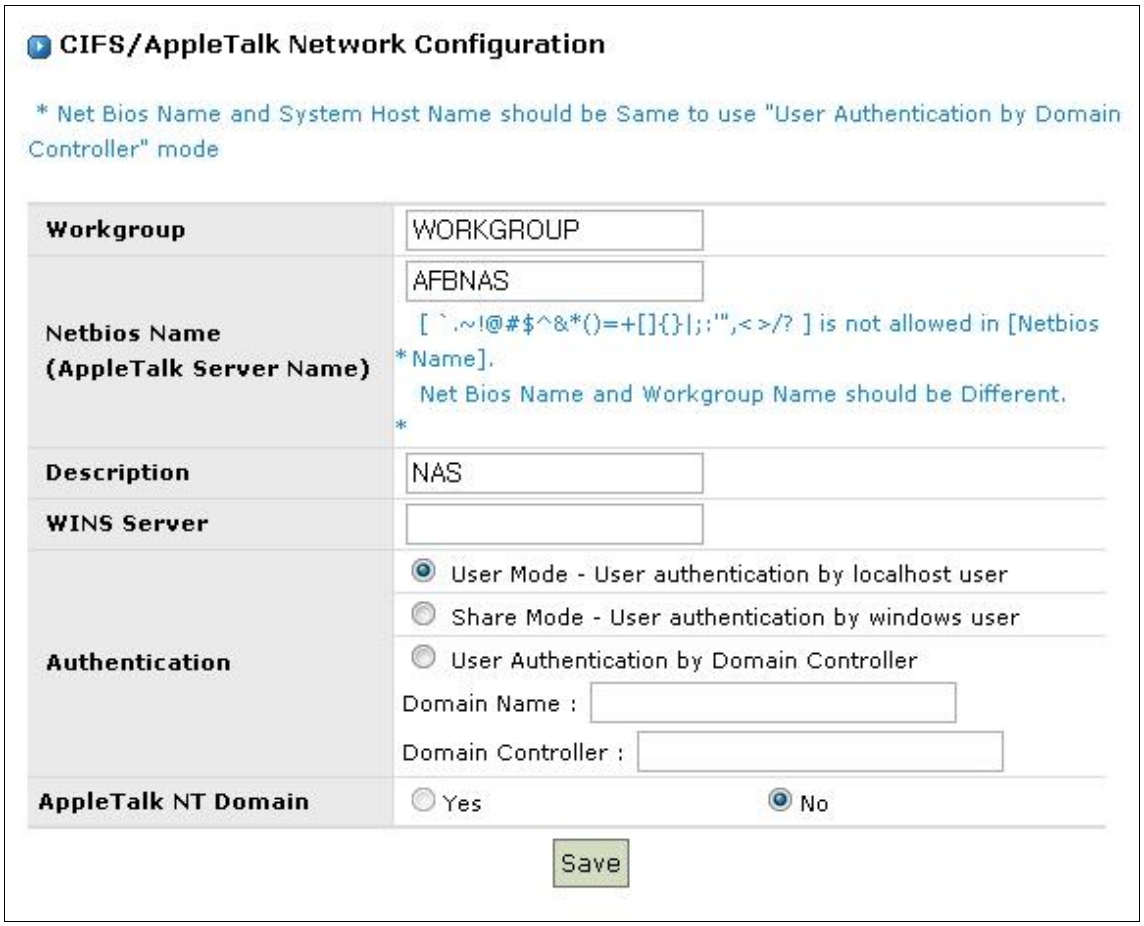


Figure 3-4- 6 GUI for Other Network Configuration

① Workgroup/Domain: This value is required when authentication is made by using User Authentication by Domain Controller(s) (PDC). Enter domain name of PDC.

② Netbios Name: Enter name of AnyStor NAS.

③ Description: Simple descriptions can be entered. This is optional function.

④ WINS Server: WINs server is entered when using WINs server.

⑤ Determining Authentication Method: This is where the account to use AnyStor NAS is set. In other words, account can be directly made in AnyStor through Account menu or authentication can be given with the previously used account in the existing PDC or remote NT server. However, authentication through NIS must be set in [Network]-[NIS Configuration].

- User Authentication by Local Host : This is a method of authentication that uses accounts for local user and group registered through account menu in AnyStor. AnyStor access is possible only by users registered here through password authentication.
- Shared Mode: This method allows all users to access shared directory. Authentication is administered when shared directory is visible, but is to be accessed.
- User Authentication by Domain Controllers: As a method of share by using PDC, authentication is administered through user account registered in the corresponding domain controller of PDS. In other words, only the users registered in domain controller of PDS can access AnyStor NAS.

⑥ When IP, DNS and other network configurations are completed, click Save button ().

3.4.2 Security (Secure Zone) Setting

'Secure Zone' must be set in order to access AnyStor NAS through network. With basic setup of AnyStor, 'All IP Deny' is selected. In other words, reliable host or network to be accessed must be registered in Secure Zone in order for share access.

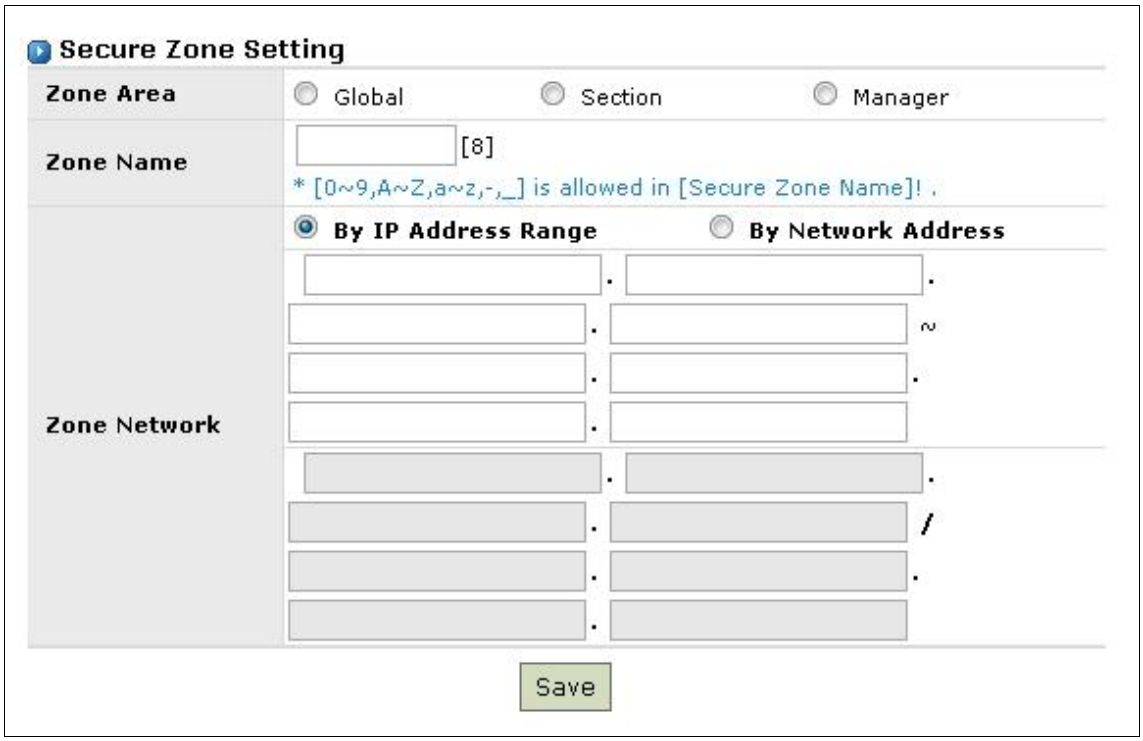


Figure 3-4-7 Security Items

'Secure Zone' can be divided into zone areas consisted with 3 types according to the areas of application.

- Zone Area
  1. Global Zone: Host or network capable of accessing NFS or CIFS protocol can be registered. In general, it can be configured with network addresses allocated within company or client network addresses to participate in configuration of specific system.
  2. Section Zone: Host or network capable of accessing share that corresponds to NFS or CIFS protocol can be registered. Section zone belongs to a specific global zone and cannot exceed the zone address or allow service of global zone.
  3. Manager Zone: Host or network capable of accessing web manager can be registered.

  - Global Zone
    ① In zone area item, click Global radio button.

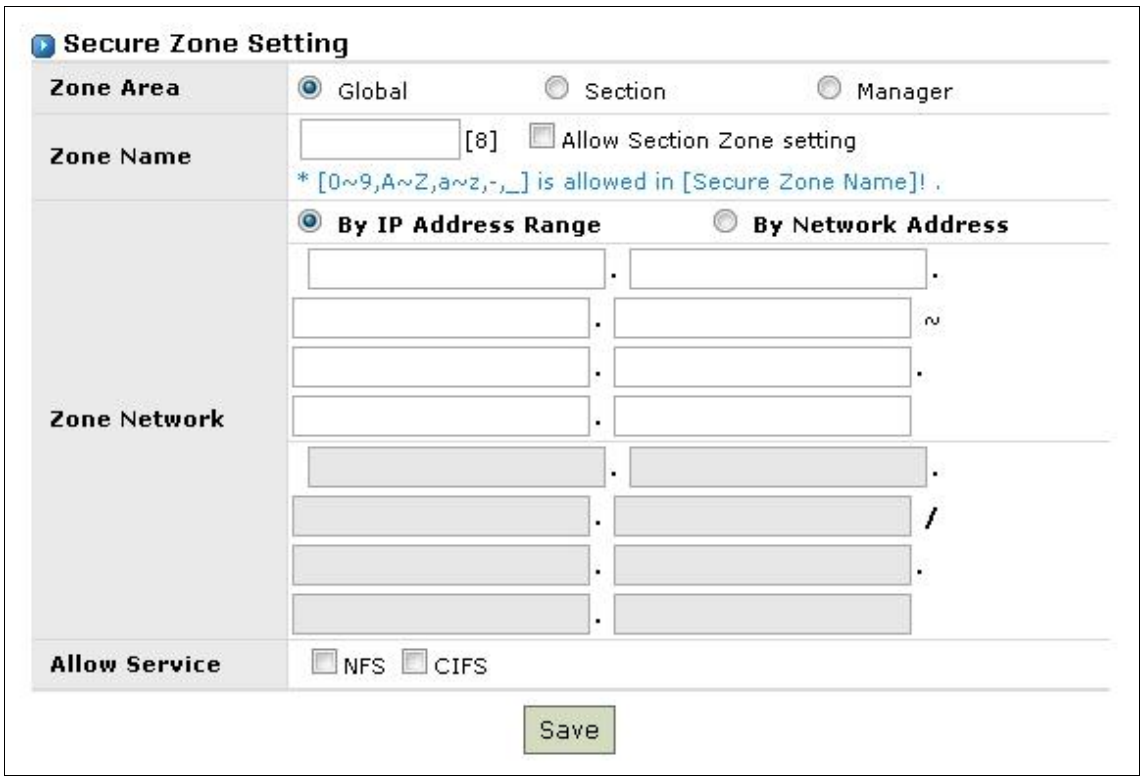


Figure 3-4-8 Global Zone Setting

② Zone Name

A. Enter name. Name is for convenience of management. The entered name must be easily distinguished as much as possible. Korean or special characters cannot be entered. Also, the same zone name is not allowed.

B. Click Allow section zone setting box in order to create a section zone that has the same authorities as the corresponding global zone. The section zone added with (+) at the end is created at the same time.

③ Zone Address

A. By IP Address Range: Enter range of the IP address to be allowed. Only the range within the current C class can be entered.

B. By Network Address: Enter network address to be allowed.

i. IP: Address that does not correspond to network address is saved by being changed to appropriate address.

ii. Netmask: Save is not completed in case input is not allowed by Netmask rules.

④ Allow Service

A. Select service to be allowed.

⑤ Save

■ Section Zone

① In zone area item, click Section radio button.

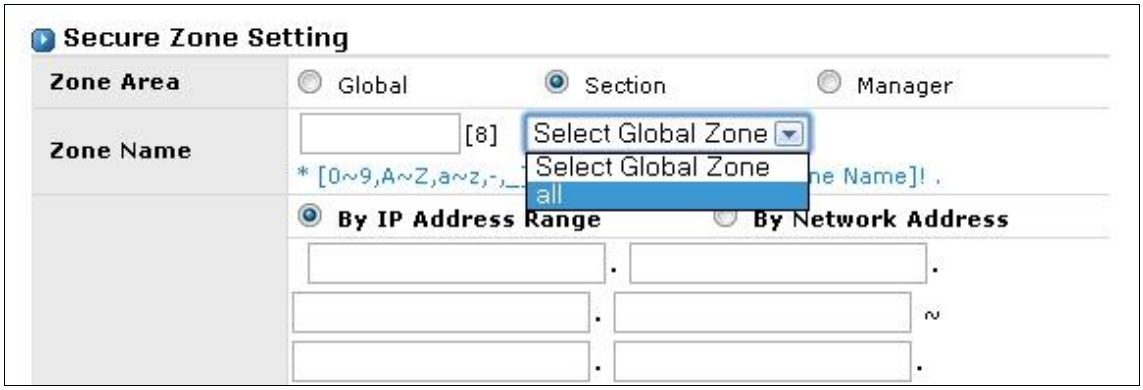


Figure 3-4-9 Section Zone Setting

② Zone Name

A. Enter name. Name is for convenience of management. The entered name must be easily distinguished as much as possible. Korean or special characters cannot be entered. Also, the same zone name is not allowed.

B. Select 'global zone' to which zone name is to be allocated.

③ Zone Address

A. By IP Address Range: Address range must be set so that it does not exceed the address range of global zone.

B. By Network Address: Address range must be set so that it does not exceed the address range of global zone.

④ Allow Service

A. Select service to be allowed.

⑤ Save

■ Manager Zone

① In zone area item, click Manager Radio button.

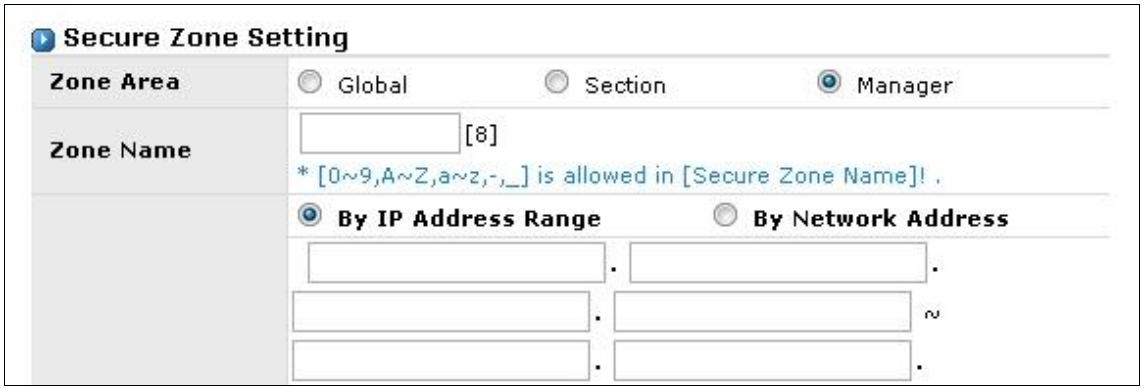


Figure 3-4-10 Manager Zone Setting

② Zone Name

A. Enter name. Name is for convenience of management. The entered name must be easily distinguished as much as possible. Korean or special characters cannot be entered. Also, the same zone name is not allowed.

③ Zone Address

A. Enter Administer's IP Address Zone.

④ Save

■ Global Zone List

Figure 3-4-11 Global Zone List

① Zone Name: Zone name is displayed.

② Allowed Address: Allowed IP address range is displayed.

③ Allocated Service: Allowed services are displayed.

④ Allocated Section: Allocated section zones are displayed.

⑤ Delete: Delete button is activated in case there is no allocated section.

■ Section Zone List

Section Zone Information

Global Zone	Section Zone	Allowed Network	Allowed Service				Delete
			NFS	CIFS	FTP	Rep.	
all	all+	0.0.0.0 ~255.255.255.255	test	backup			Delete

Figure 3-4-12 Section Zone List

① Global Zone: Allocated global zone name is displayed.

② Zone Name: Zone name is displayed.

③ Allowed Address: Allowed IP address range is displayed.

④ NFS: Share name, of which the corresponding section is used in NFS protocol, is displayed.

⑤ CIFS: Share name, of which the corresponding section is used in CIFS protocol is displayed.

⑥ Delete: Delete button is activated in case there is no share used.

■ Web Manager Secure Zone List

Web Manager Zone Information

Zone Name	Allowed IP Network	Delete
init	0.0.0.0~255.255.255.255	Delete

Figure 3-4-13 Web Manager Secure Zone List

① Zone Name: Zone name is displayed.

② Allowed IP Address: Allowed IP address range is displayed.

③ Delete: Delete button is clicked to clear.

3.4.3 NIS Setup

NIS(Network Information Service) supports the sharing of information between the Unix systems. AnyStor supports NIS to enable diverse systems to share information such as user information, password information, group information etc. By using NIS, the System Administrator does not need to enter the same information of various systems into all the systems again. Through the hoist designated as NIS server, all the hosts, designated as NIS Client, can use all the information related to the NIS server. Operation is based on NIS Client requesting the necessary information to the NIS, and the NIS server responding to the request made by the NIS Client. All the NIS servers and NIS Client need to beling to the NIS domain. NIS domain refers to a single group that includes hosts that wish to use NIS.

■ **NIS Setup Process**

This manual explains the setup of NIS on the Linux. Setup of other Unix systems should refer to other reference data.

① Check whether NIS is installed on the system, and if it is not installed, then download the package to install. ftp://ftp.kernel.org/pub/linux/utils/net/NIS/

② Host that wish to use NIS needs to set up the NIS domain name first.

#domain name NIS Domain

Figure 3-4-15 NIS Domain Setup

③ Operate the NIS server after setting up the domain name.

#/etc/rc.d/init.d/ypserv start

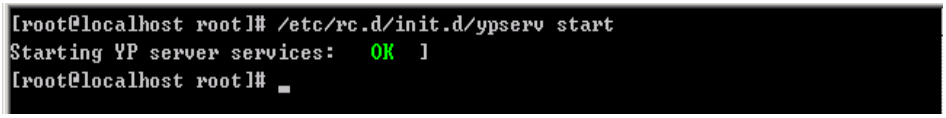


Figure 3-4-16 NIS Operation of NIS Server

④ Then, create the type of information that the NIS uses on the server. This is called the 'Map'.

#/usr/lib/yp/ypinit -m

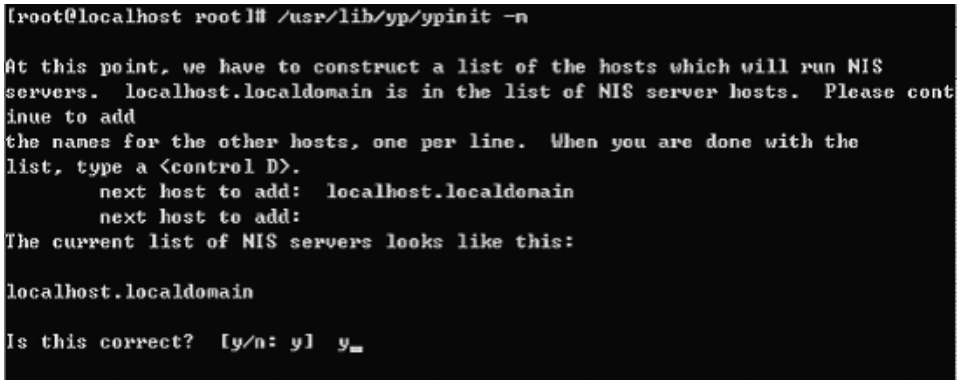


Figure 3-4-17 Creation of NIS Map

When the above mentioned command is executed, the part where the host subject to registration as the NIS master server appears, press on the Ctrl-D, and add on the server to complete the setup. Then, the 'Map' creation takes place along with the message that indicates that the map is undergoing update, as shown on the following Figure.

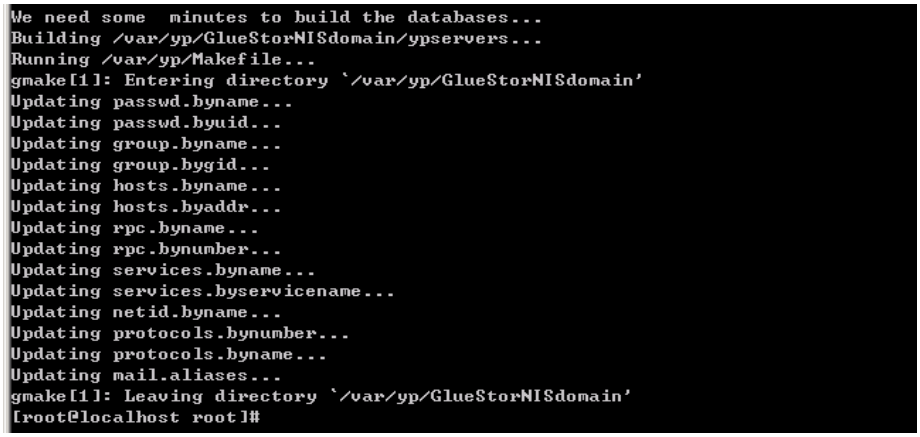


Figure 3-4-18 Creation of NIS Map

⑤ Operate the NIS Client on the NIS server to confirm.

#/etc/rc.d/init.d/ypbind start

```
[root@localhost root]# /etc/rc.d/init.d/ypbind start
Binding to the NIS domain:   OK  ]
Listening for an NIS domain server.
You have new mail in /var/spool/mail/root
[root@localhost root]#
```

Figure 3-4-19 Operation of NIS Client

⑥ Setup is now complete. You can check whether the NIS server setup is completed property, by using the following commands.

#ypcat passwd

```
[root@localhost root]# ypcat passwd
nfsnobody:!!:65534:65534:Anonymous NFS User:/var/lib/nfs:/sbin/nologin
yptest:$1$j40FjeAF$5.6yA03sMHruKk3L1PXIM/:504:504::/home/yptest:/bin/bash
nas:$1$LVjMwxqM$EOtRy34XAnvwhCp1JF2X00:501:501::/home/nas:/bin/bash
bikim:$1$JWcfrdgG$UZt/kRgAcnf4KT5lwFQ9z0:500:500::/home/bikim:/bin/bash
woojhs:$1$9aYvGgMa$OWWpBTCCuz69Np3ic13kI/:503:503::/home/woojhs:/bin/bash
clang:$1$Bcdx3Fjs$C6niu9kcLRAw.erATSZ0v0:502:502::/home/clang:/bin/bash
[root@localhost root]#
```

Figure 3-4-20 Confirmation of NIS Setup

When the information and password on the hosts appeared after performing the above mentioned commands instead of an error message, then the server is properly set up and it is operating normally.

■ **NIS Client (AnyStor) Setup**

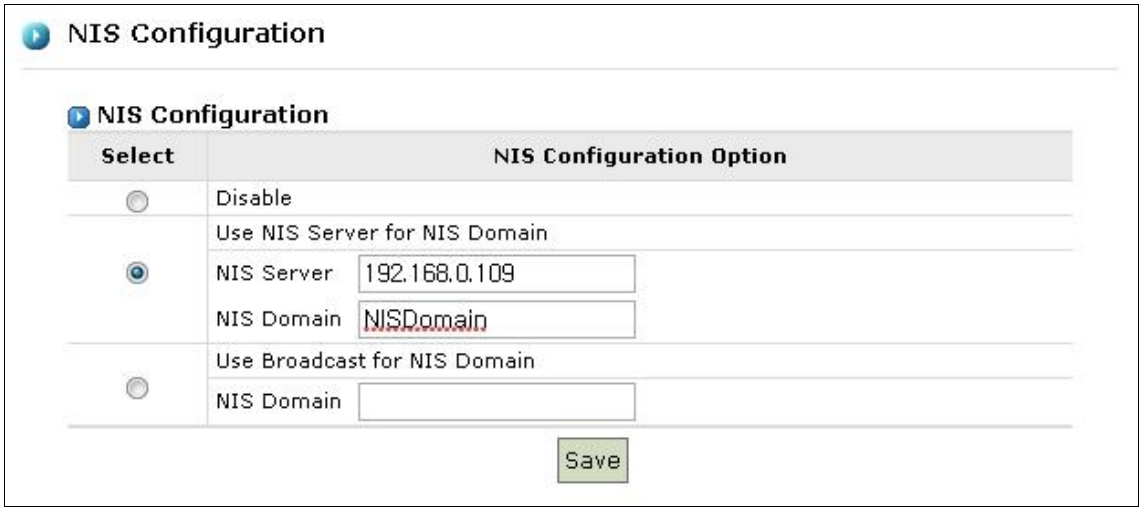


Figure 3-4-21 NIS Client Setup

① When the setting of NIS server is complete, select the NIS Configuration on the AnyStor's Network menu. Then, the screen as shown on [Figure 3-4-21] appears.

② As seen on the screen, you can choose one of the three. The first option should be selected when the NIS is not used. Select the second option when you wish to use a specific form of NIS. Select the third option when you use NIS by searching the broadcast.

③ Input the necessary setup if you selected the form of NIS that you wish to use. When you save, the AnyStor will be registered as the Client of the NIS domain

■ **Results of Operation after the NIS Setup**

You can select the [Account]-[NIS Account] menu of the AnyStor to check the normal operation if the NIS server and Client setup is completed properly. You will see the information on the user and group, registered on the NIS server in case of normal operation. You will see a message that says "NIS is not available" in case of abnormal operation.

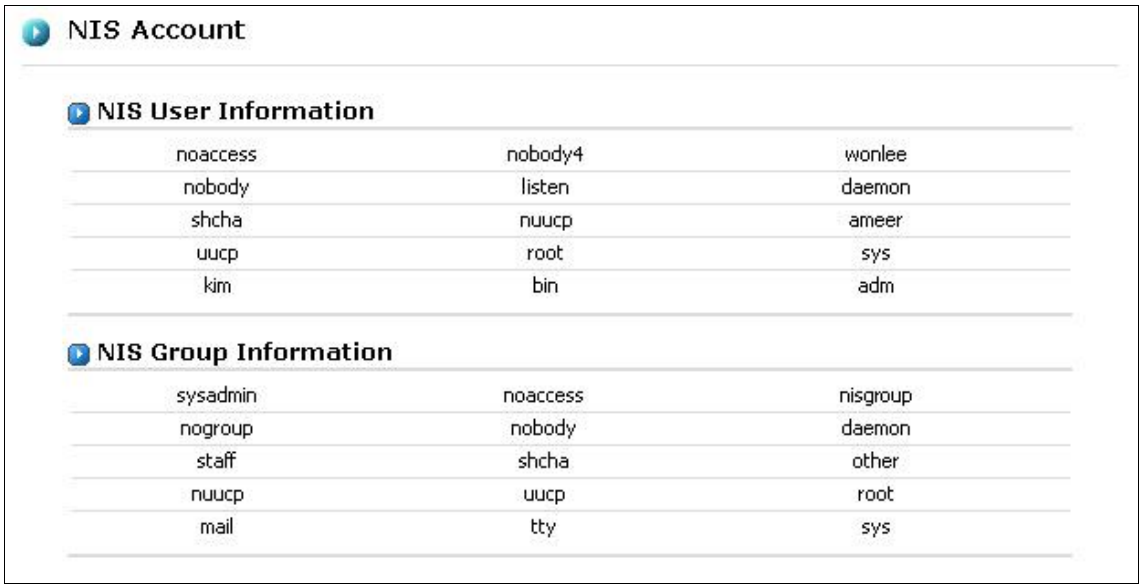


Figure 3-4-22 Confirmation of Operation after the Setup of NIS Client

3.4.4 Link Aggregation

AnyStor supports the system failover and load balancing. It organizes a network adapter over two of one team which consists of accomplishes the transmission at the same time with the receiving of data. In one network adapter or cable's case, occurs the communication problem to use different link. It is possible to offer continuous service by link aggregation. The facilities of Link Aggregation are as follows

- Fail over Teaming: It offers the inner composition with a Fail over teaming adapter when the problem is occurred or the cable is damaged. The team composes adapters. The problem happens at a primary adapter and the activation becomes a secondary adapter when it is downed. Though the adapter creates the problem but the user can maintain the session without any difficulty.
- Load balance: The load is measured again the scatters the different alive adapters when the load is concentrated on any one side among the adapter that is organized the team. The subordinate consist the balance and can enhance the performance.

■ **Link Aggregation Setup**

For Link aggregation setting user can choose a team structure of the available adapter's IP address, Netmask and Gateway. [Figure 3-4-23] is indicating the Web GUI for the setting up of Link Aggregation.

✦**Note** : Configuration of Link Aggregation cannot be changed with HA Mode

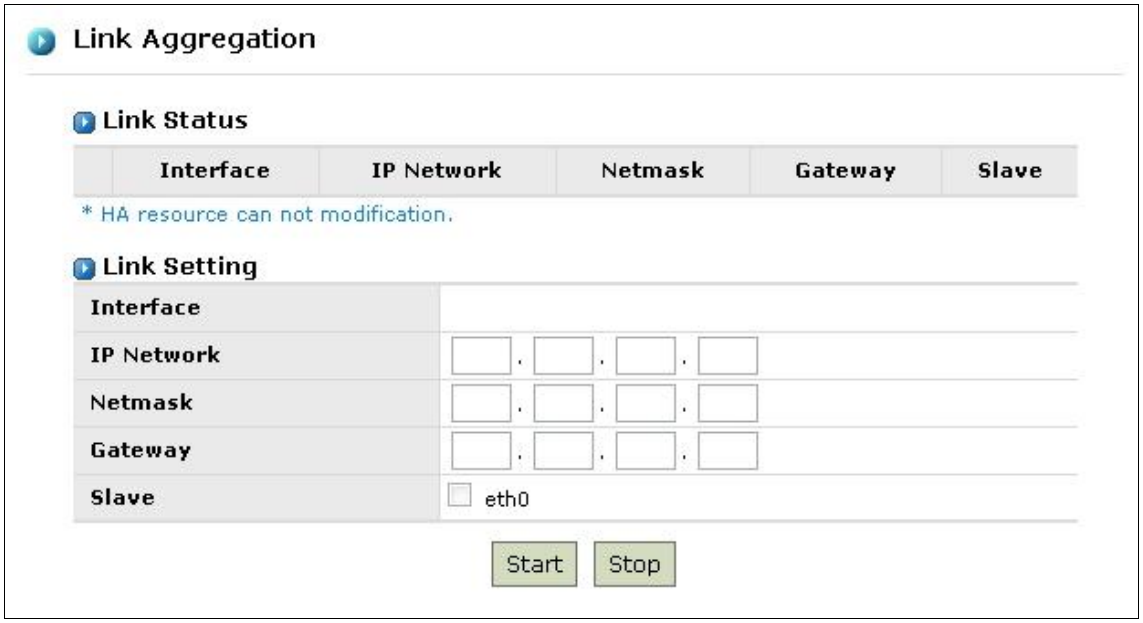


Figure 3-4- 23 Link Aggregation Configuration

① Set the address to represent a priority team

② Choose a member network adapter that participates in a team.

③ Click "Start" for operating the link aggregation facility.

Click the button, which wants to release the Link Aggregation by clicking a release button. In the case the available adapter disappears and returns to former time IP Address

3.5 Account Management

Account should be registered on the AnyStor to use the AnyStor. AnyStor provides authentication for the remote user through the PDC and NIS services in addition to the authentication of local user. This section explains the functions needed for the management of accounts to ensure effective use of the AnyStor such as management of user account, Administrator management, and setting up user quota, and so forth. Figure 3-6-1 is the GUI for the account management. Account management functions of the AnyStor that are enabled by the use of web management tools are as follows.

- User account management
- Group account management
- Administrator setup management
- Disk quota
- Default Template
- Remote location account management

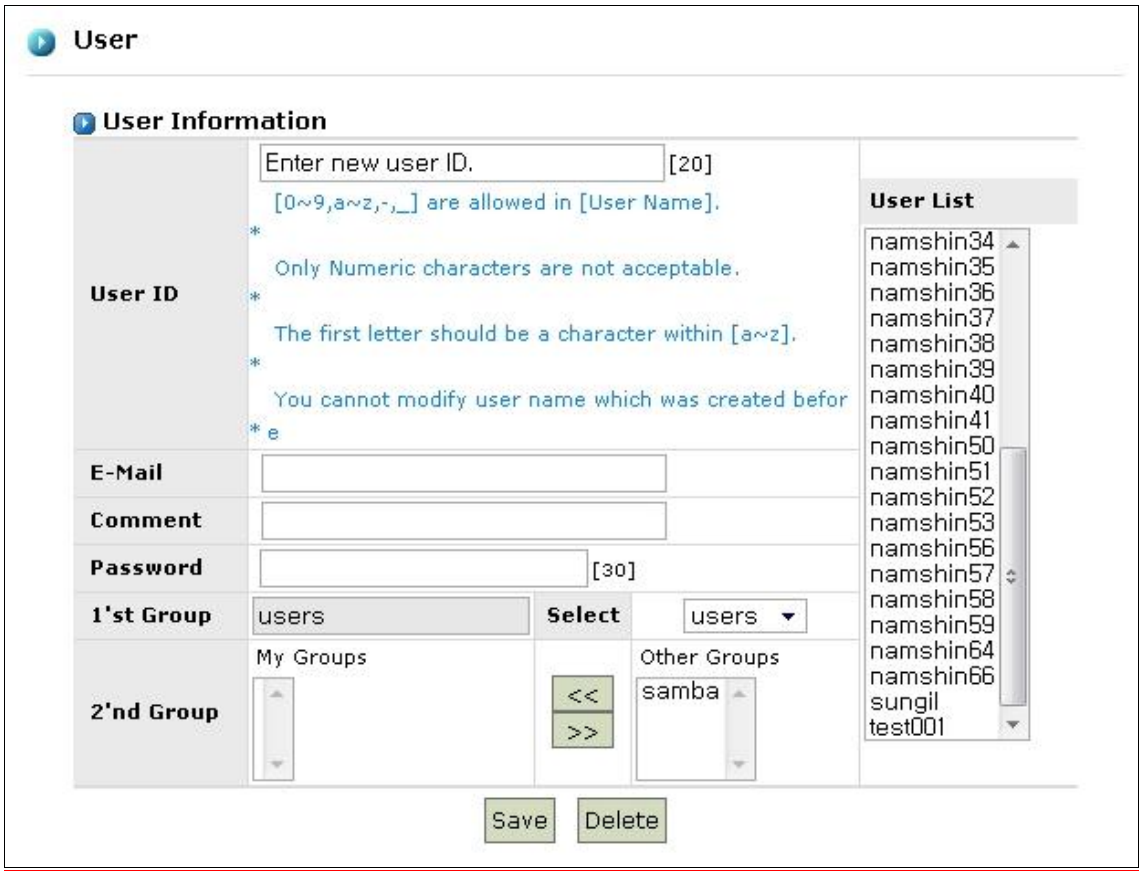


Figure 3-5- 1 GUI for Account Management

3.5.1 User Account Management

User account management menu enables insertion, deletion and modification of user account, and group setup for the user. Management of user account is executed on [Account]-[User] menu, and the setup follows the following order. [Figure 3-5-2] is an example of setting up user account.

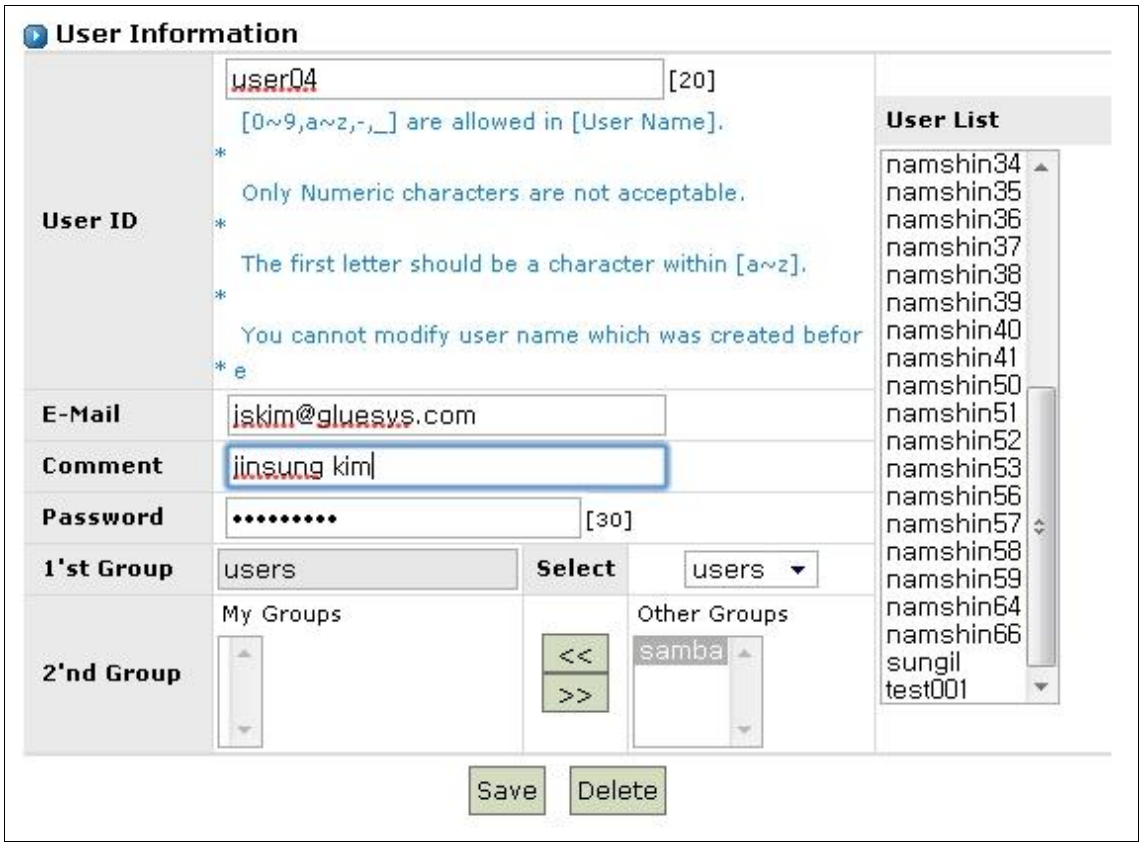


Figure 3-5- 2 GUI for Account Management

■ **User Account Input**

① Input user name, e-mail URL, comment, and password

② Select 1st group, and when the 1st group is selected, then the user becomes a member of the 1st group

③ Selected 2nd group, and the selection of the 2nd group can be based on the selection of many groups instead of one group. When the multiple 2nd groups are selected, then the user can be registered as a member of all the selected groups. Group is used during the setting up of access authority for the sharing directory.

④ Click on “Save” when all the above mentioned matters are input.

⑤ When the “Save” function is complete, you can see that the name of the user account, input on the user list, is registered on the “User List.”

⑥ Error message appears when abnormal input value is entered.

■ **Modification of User Account**

① Select user subject to modification from the “User List.”

② Input information of the user subject to modification.

③ Click on “Save” button after the modification is complete.

■ **Deletion of User Account**

① Select user subject to delete from the “User List”.

② Click on the “Delete” button to delete.

3.5.2 Group Account Management

Setup for the insertion and deletion of group is possible on the Group Management menu. Group management is executed on [Account]-[Group] menu, and the setup follows the following order. [Figure 3-5-3] is an example of group setup.

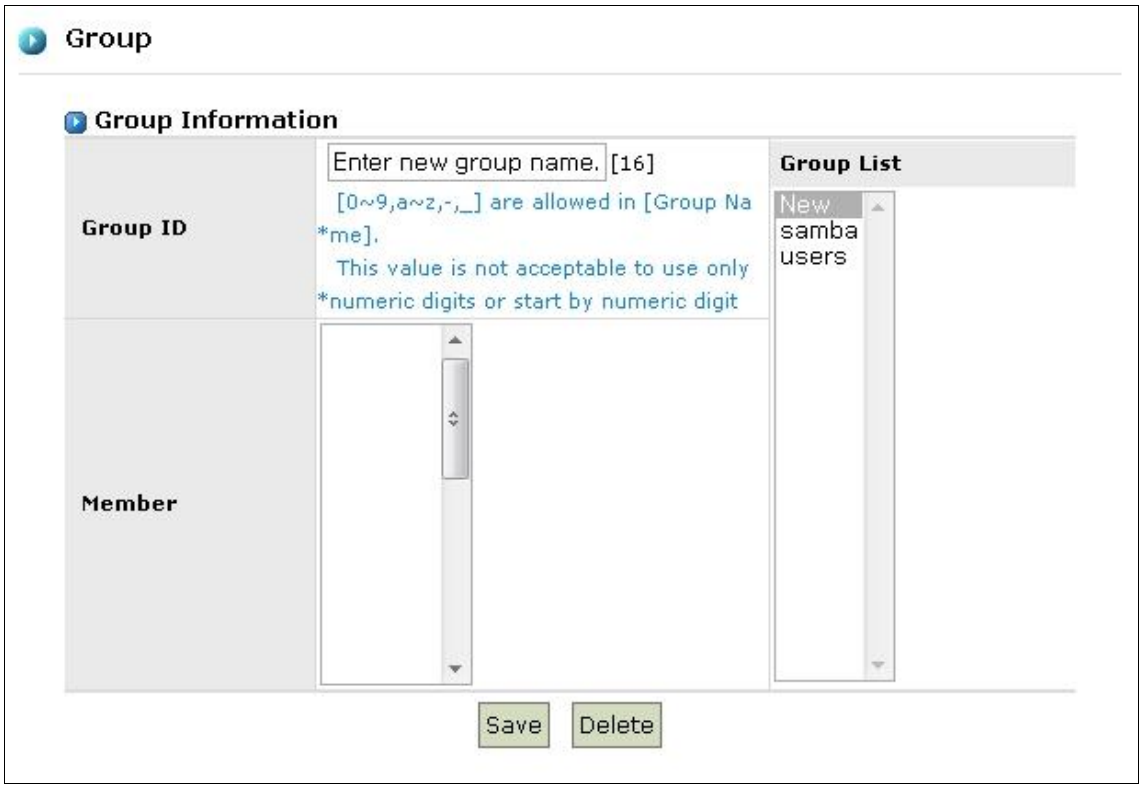


Figure 3-5-3 GUI for Group Management

■ **Group Insertion**

① Select “New” from the “Group List”

② Input group name on the “Group Name” field

③ Click “Save” button to save group

④ Add user to the group created by undergoing user registration process on the [Account]-[User] menu. (Refer to [User] menu for details)

■ **Group Deletion**

① Select the group for use from the “Group List.”

② Click on “Delete” button to delete.

3.5.3 Administrator Setup Management

Administrator password setup is possible on the Administrator Management menu. Administrator Management is executed on the [Account]-[Administrator] menu. Figure 3-6-4 is an example of setting up a group.

Figure 3-5-4 GUI for Administration Management

3.5.4 Quota Management

AnyStor NAS provides Disk Quota function to enable management of usage capacity of disk by user or by group. Disk quota setup and management is enabled by using [Account]-[Disk

Quota] menu and [Account]-[Default Template] menu. [Figure 3-5-5] shows the GUI for the setup of basic template, which should be executed with utmost priority to ensure disk quota setup.

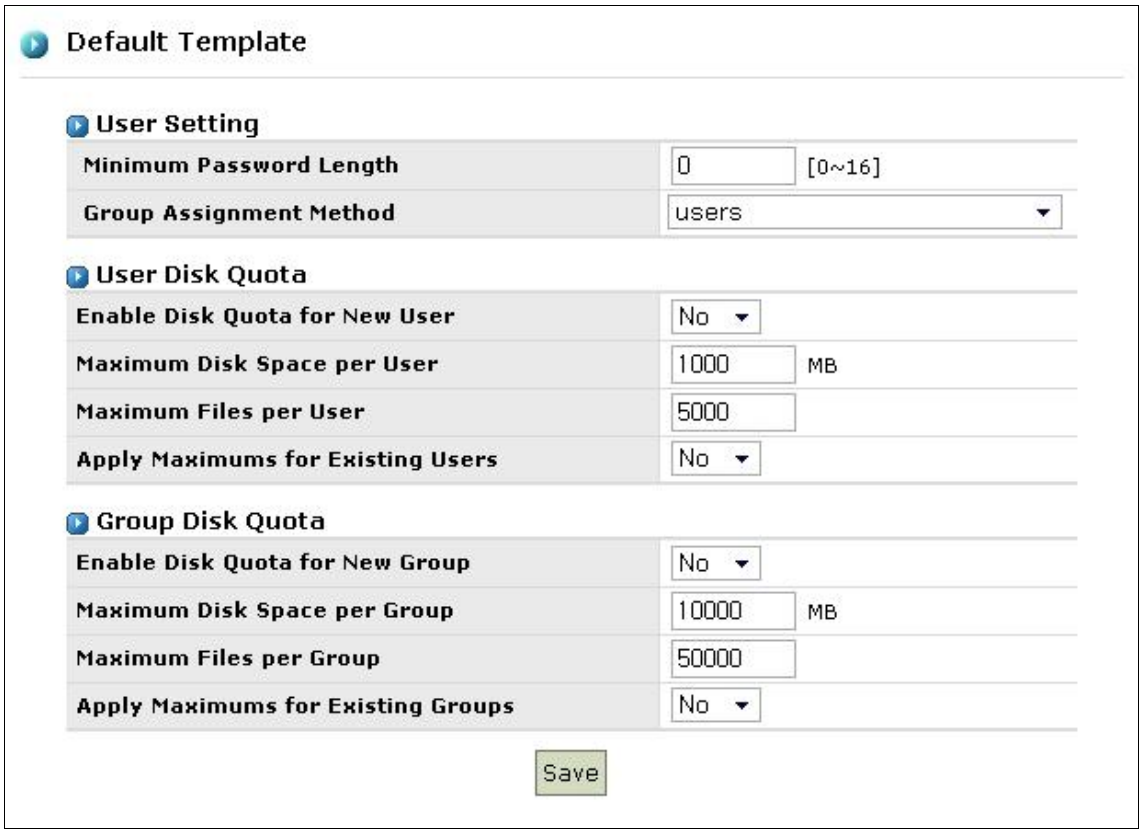


Figure 3-5-5 GUI for Quota Setup

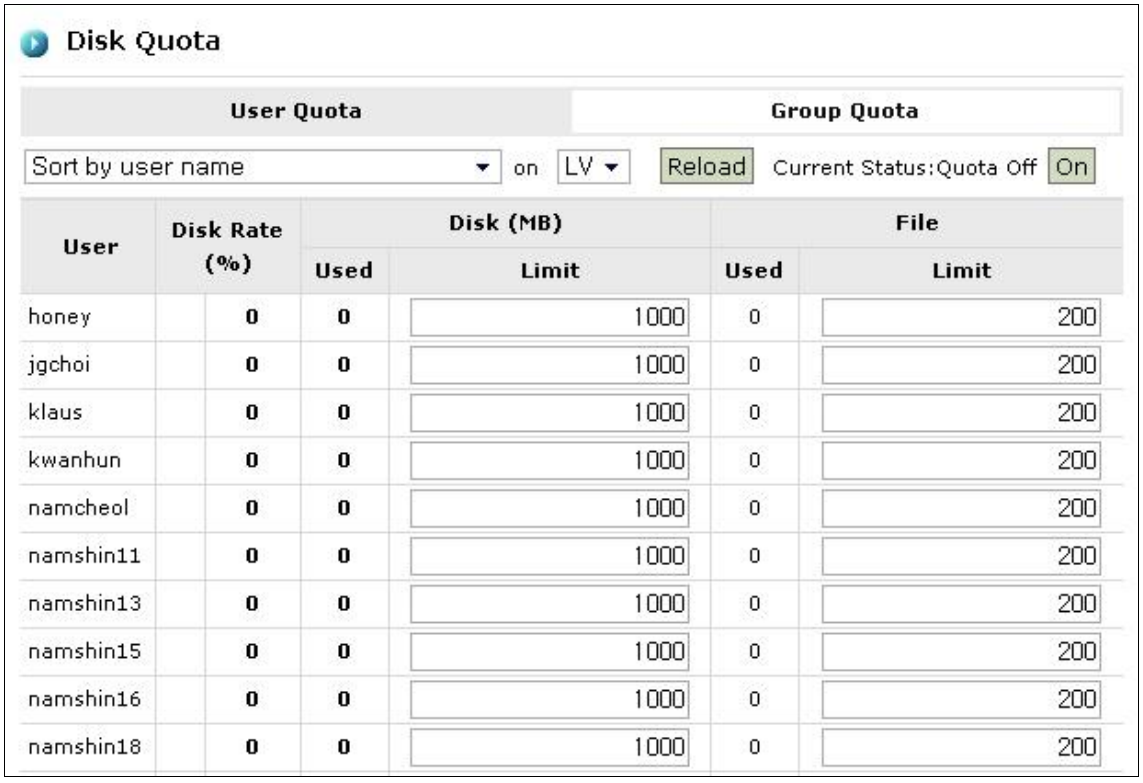
- **Basic Template Setup for the User Quota Setup**
  - ① Availability or non-availability of disk quote for new user: Yes or No
  - ② Setup of maximum disk use capacity per user
  - ③ Setup of maximum file unit quantity per user
  - ④ Application or non-application of disk quota for existing user: Yes or No

- **Basic Template Setup for Group Quota Setup**
  - ① Availability or non-availability of disk quote for new group: Yes or No
  - ② Setup of maximum disk use capacity per group (However, need to input greater value than the setup of maximum disk usage capacity by user)
  - ③ Setup of maximum file unit quantity per group (However, need to input greater value than the setup of maximum file unit quantity by user)

④ Application or non-application of disk quota for existing group: Yes or No

■ **"User Quota" Setup**

① User quota setup is based on the basic template setup. When the maximum usage capacity and maximum number of files that can be used are set up on the basic template, the basic value of basic user quota is set for the value set on the basic template setup.



User	Disk Rate (%)	Disk (MB)		File	
		Used	Limit	Used	Limit
honey	0	0	1000	0	200
jgchoi	0	0	1000	0	200
klaus	0	0	1000	0	200
kwanhun	0	0	1000	0	200
namcheol	0	0	1000	0	200
namshin11	0	0	1000	0	200
namshin13	0	0	1000	0	200
namshin15	0	0	1000	0	200
namshin16	0	0	1000	0	200
namshin18	0	0	1000	0	200

Figure 3-5-6 Screen for User Quota Setup

② Move to [Account]-[Disk Quota]-[User Quota] menu if wish to modify the setup value by each user.

③ Move to [Account]-[Disk Quota]-[User Quota], and select the [Quota On] by volume, which enables view of the current status on the disk use by each user as for the volume and the current status of quota setup. The following line-up is enabled to ensure the convenience of system Administrator by following the below mentioned standards.

- Priority line-up of the user who reached the disk quota limit the most
- Priority line-up of the user who reached the file quantity quota limit the most

- Priority line-up of the user who has the maximum disk usage capacity
- Priority line-up of the user who has the maximum number of files

④ Modification of disk quota and setup of maximum number of files is possible by each user. However, when the newly set up value is smaller than the current usage capacity of the user, then warning symbol appears to alert the setup of abnormal user quota as shown on [Figure 3-5-7].

User	Disk PCT	Used(MB)	Limit(MB)	Files Used	Files Limit
new	1400	14	1	1536	12

Figure 3-5- 7 Example of Abnormal Setup of User Quota

■ "Group Quota" Setup

① Group quota setup is based on the setup of basic template. When the maximum usage capacity and the maximum number of files that can be used are setup on the basic template, the basic value of the quota is setup at a value setup during the basic template setup.

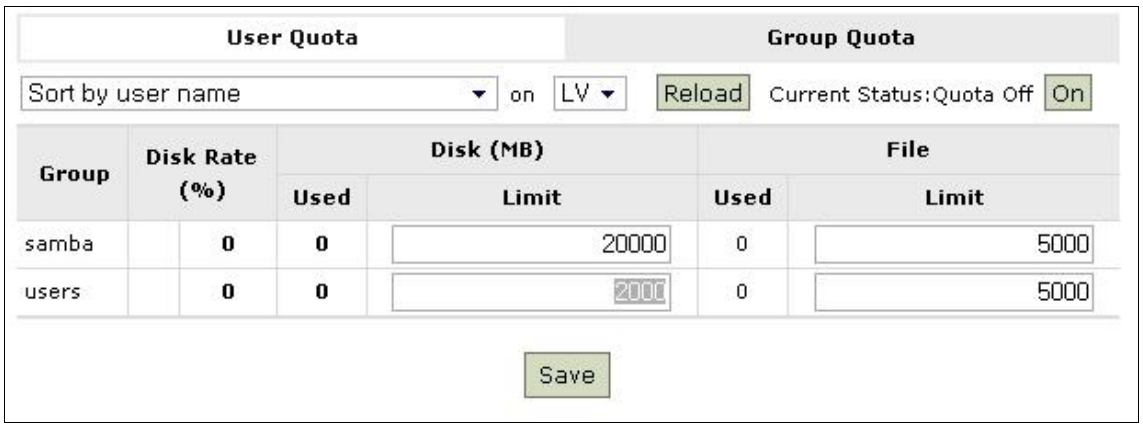


Figure 3-5- 8 Group Quota Setup Screen

② Move to [Account]-[Disk Quota]-[Group Quota] menu if you wish to modify the setup value for each group.

③ If you select [Quota On] by volume after moving to the [Account]-[Disk Quota]-[Group Quota], you can see the current status on the use of the disk for each group by volume as well as the current status of the setup of quota. Line-up is possible according to the following standard to ensure convenience to the System

Administrator.

- Priority line-up for the group that neared the disk quota limit the most
- Priority line-up for the group that neared the quota on the number of files the most
- Priority line-up for the group that has the maximum disk usage capacity
- Priority line-up of the group that has the maximum number of files

④ Modification of disk quota and maximum number of files setup for each user is possible. However, when the newly setup value is lower than the user's current usage volume, then alert symbol  appears on the abnormal group quota setup as shown on [Figure 3-5-7].

3.5.5 Default Template

Please refer to 3.5.4.

3.5.6 NIS Account

When NIS server and client setup is normally achieved, information on users and groups registered in NIS server will be displayed. When normal operation is not carried out, the message of 'NIS is not available' will be displayed.

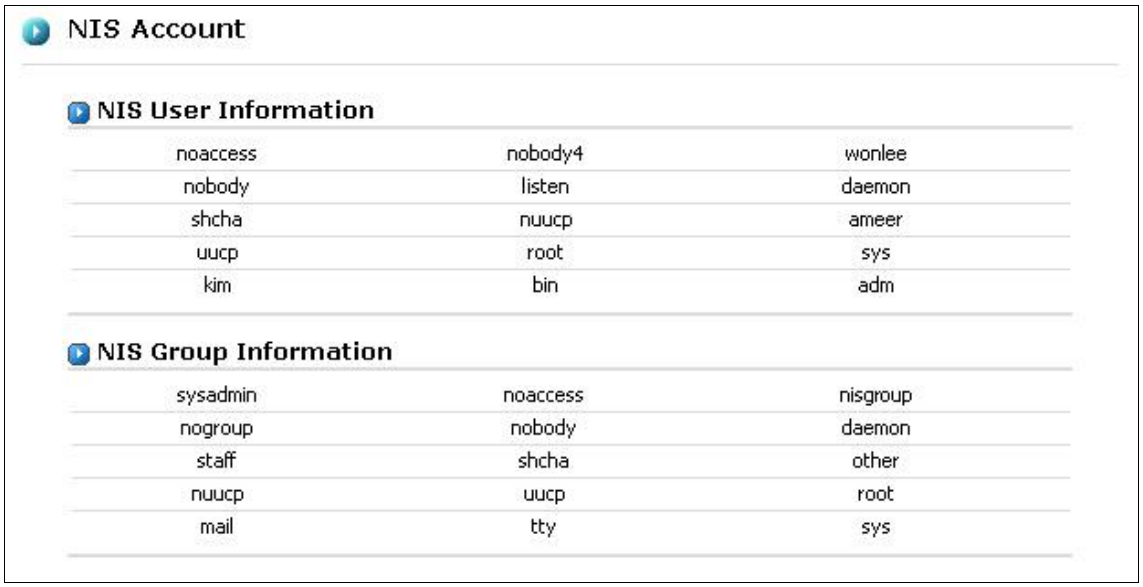


Figure 3-5- 9 Operation Check after NIS Client Setup

3.6 Share Management

- **Applicable NAS: AnyStor Series**

AnyStor NAS supports data share by using CIFS, NFS and AppleTalk. Therefore, Windows, Linux and Macintosh users can share volume or directory. AnyStor NAS provides volume and directory-based data share. From hereon, it will be collectively referred to as volume unless otherwise specific identification is made between volume and directory. [Figure 3-6-1] shows screen of data share setup.

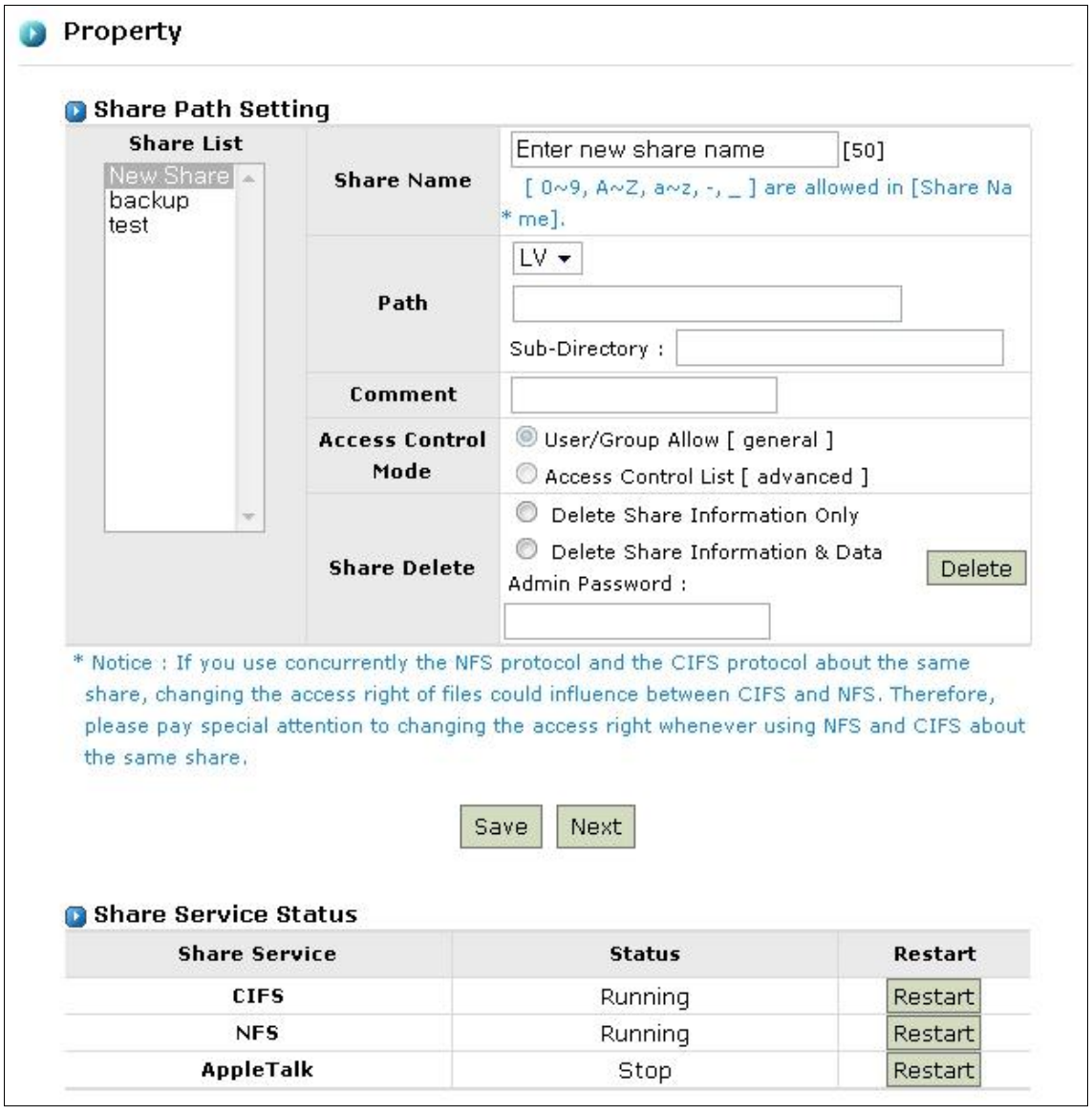


Figure 3-6- 1 Share Setup GUI of AnyStor NAS GW

3.6.1. Property

Share setup of AnyStor NAS GW begins in [Share]-[Property]. Based on share setup in this menu, setups for CIFS, NFS and AppleTalk are administered. For the same volume, it is possible for CIFS, NFS and AppleTalk to simultaneously provide service. In this case, authority for access is maintained for each.

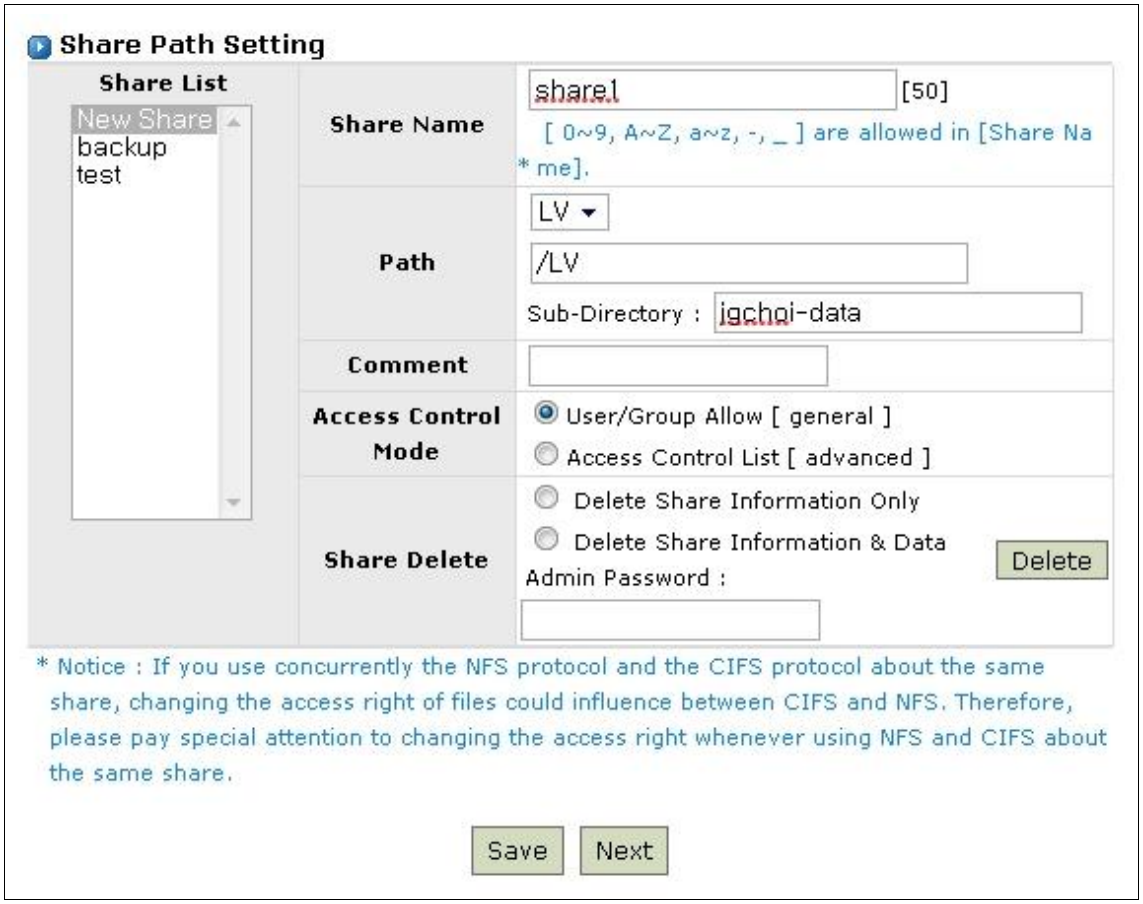


Figure 3-6- 2 Adding Share Directory List

■ **Adding Share Volume (Directory) List**

① Share volume (directory) is set in [Share]-[Property].

② Enter share name in share name input window. [Figure 3-6-2] shows an example of setting share name as 'share 1'.

③ Enter descriptions. It is not a mandatory input item.

④ Set share path. Based on the mounted volume, share path can be optionally set. There are two methods of share path setting. One is to administer setting per volume unit and the other is to administer setting per sub-directory unit. The basic method is to administer share per sub-directory unit and to use share name as the name of sub-directory. However, adjustment is possible by using the following buttons.

- Set as Volume: Select this button to administer share per volume unit. Share name is removed and only volume name can be selected.

⑤ To use the automatically set directory as share directory, press either of “Save” or “Next” button.

⑥ When “Save” button is clicked, share name is inserted into share list.

⑦ When “Next” button is clicked, user is led to CIFS and NFS setup menu.

⑧ [Figure 3-6-3] is an example of setting “/LV1” volume as share volume.

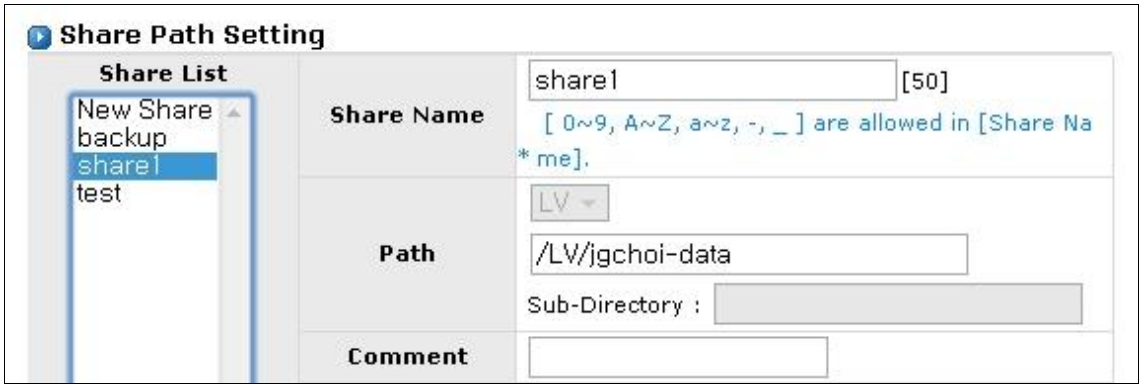


Figure 3-6- 3 Adding in Share Volume List

■ **Deleting Share Volume (Directory) List**

① Select share item to be removed from share list.

② Click “Delete” button to remove the corresponding share list.

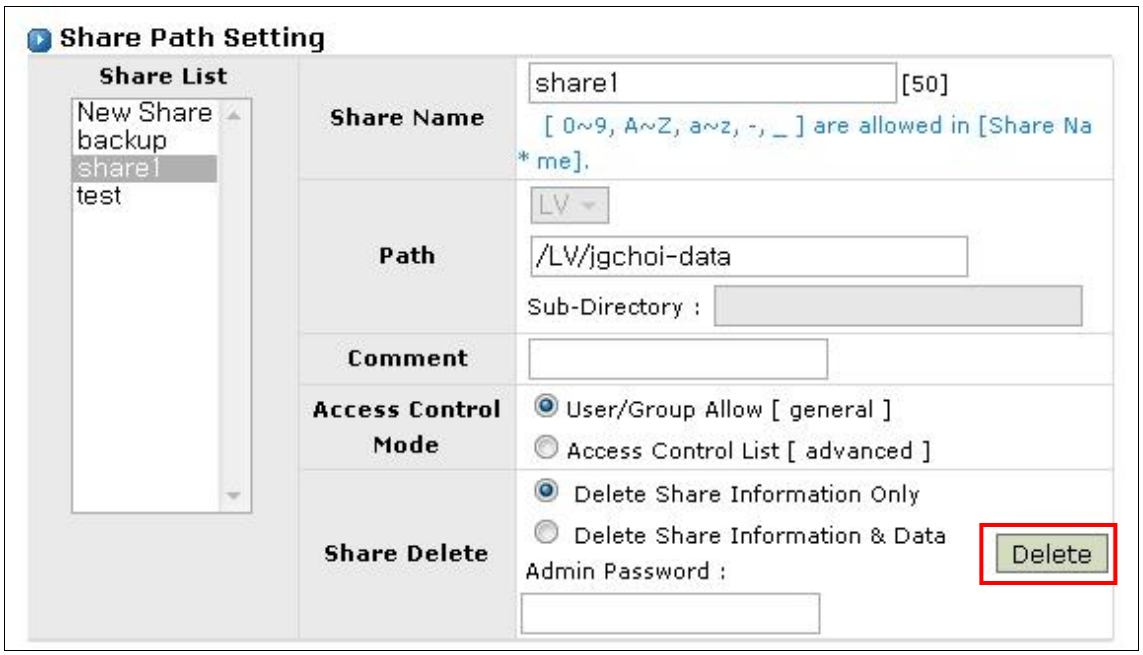


Figure 3-6- 4 Deleting Share Volume (Directory) List

3.6.2. CIFS

CIFS provides data sharing between Unix and Windows systems. AnyStor NAS provides CIFS protocol so that Windows platform system can utilize NAS storage. In CIFS share setting, authority for access to share list prepared in share volume (directory) setting is controlled. [Figure 3-6-5] shows web screen for CIFS share setup. It illustrates an example in which authority for access to "/vol2/" volume set with share list for data share is controlled.

Figure 3-6- 5 Web GUI for CIFS Setup Management

✦**Note:** Authority for access to CIFS, NFS and AppleTalk can be controlled after selecting share list in [Share]-[Property].

- **Items of Control on Authority for Access for CIFS Service**
  - Share Owner
  - Share Access
  - Secure Zone Access
  - Group Access
  - User Access

- **Share Owner (Super Administrator)**

  Section owner for the corresponding share can be set. Section owner is endowed with authorities to control all files and attributes within share.

  ① 'admin', which is the ID of web administrator, implicitly becomes share owner of all

shares. However, it is now visible in web.

② To add section owner

A. Register user after adding it in [Account].

B. ADS and PDC user ID can also be entered.

■ **Share Access**

① Disabled , Read, Read/Write

A. Overall authority for access to the corresponding share can be set.

② Allow Guest User Access

A. It is applicable when authentication mode is share in "CIFS Network Configuration" setup as described in [Figure 3.4.1].

B. Access to the corresponding share is possible without requiring special authentication.

③ Allow All User Access

A. Access is allowed to all users.

■ **Secure Zone Access**

Figure 3-6- 6 Secure Zone Registration

① Secure (section) zone to access the corresponding share is registered.

② Access to share is impossible when no section zone is registered.

■ **Group Access Control**

Figure 3-6- 7 CIFS Group Access Control

① This item is to control access to the corresponding share per each group. The corresponding group must be registered in order to enable control on group access.

② Group registration can be administered in [Account]-[Group].

③ In case group is registered for access control, access control can be administered by using group access control GUI shown in [Figure 3-6-7].

④ Select target group to set access control in “Group List”.

⑤ Move the selected group to Read/Write or Read Only.

⑥ When setup is completed, click “Save” or “Next” button. When Next button is clicked, user is moved to [NFS] menu screen.

■ User Access Control

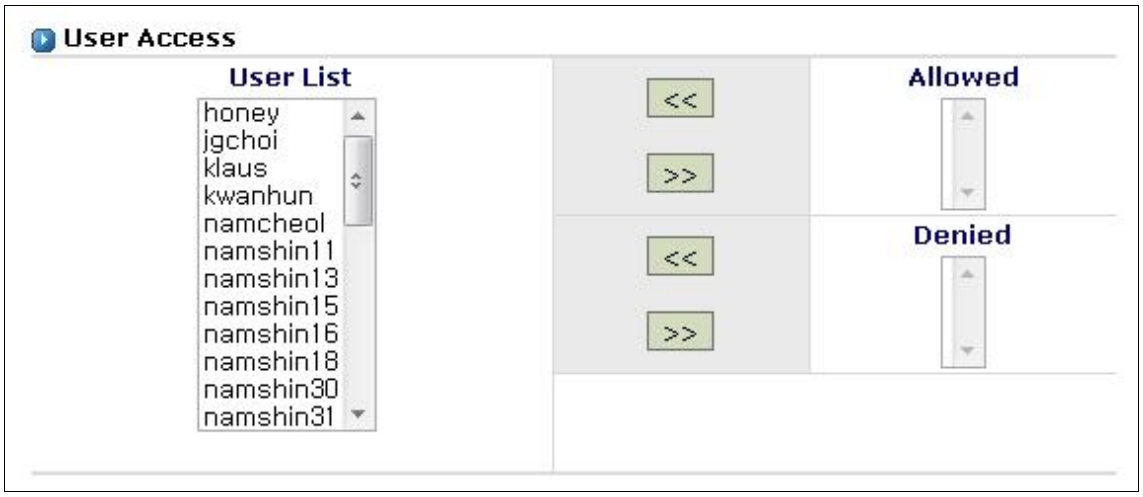


Figure 3-6- 8 CIFS User Access Control

⑦ This item is to control access to the corresponding share per each user. The corresponding user must be registered in order to enable control on user access.

⑧ User registration can be administered in [Account]-[User].

⑨ In case user is registered for access control, access control can be administered by using user access control GUI shown in [Figure 3-6-8].

⑩ Select target user to set access control in “User List”.

⑪ Move the selected user to Read/Write or Read Only.

① When setup is completed, click “Save” or “Next” button. When Next button is clicked, user is moved to [NFS] menu screen

3.6.3. NFS

NFS is protocol to provide data share between Unix systems. AnyStor NAS provides NFS protocol so that Unix platform system can utilize NAS storage. In NFS setting, authority for access to share list set in [Share]-[Property] menu is controlled. NFS does not provide access control function for groups and users. [Figure 3-6-9] is web GUI for NFS setup management. It illustrates an example in which authority for access to “/LV0/” volume set with share list for data share is controlled.

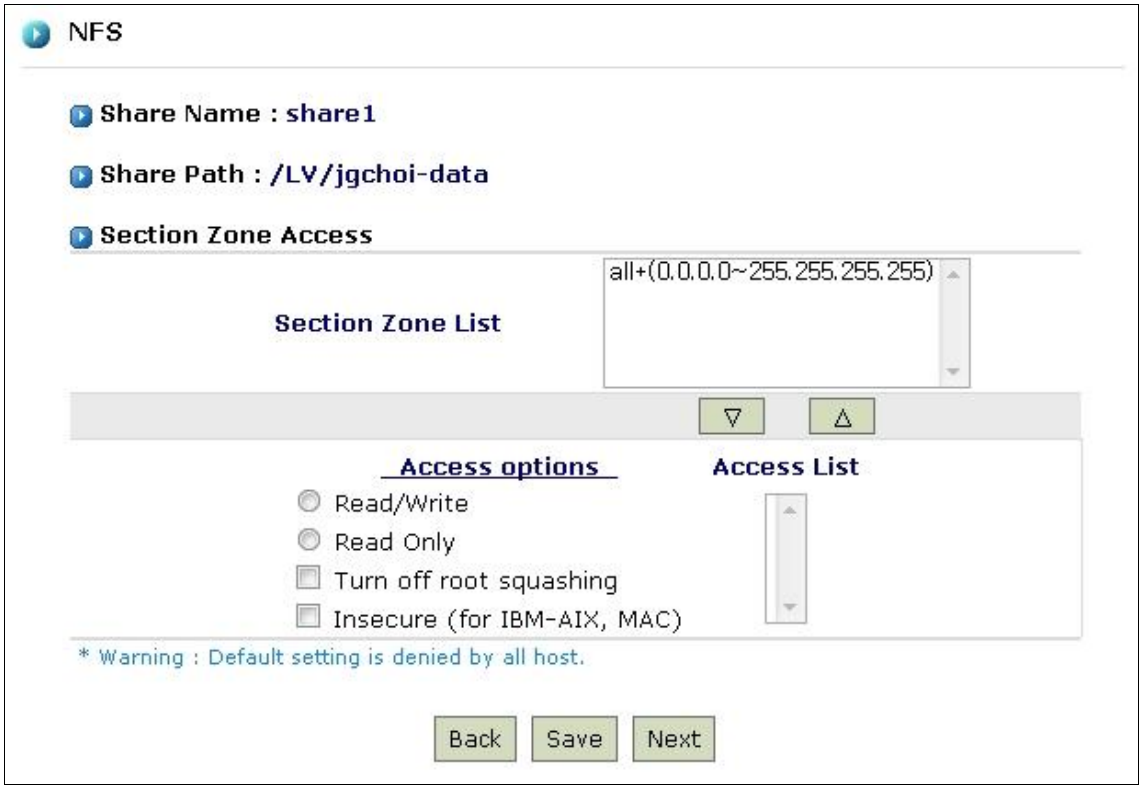


Figure 3-6- 9 Web GUI for NFS Setup Management

■ **Share Path**

① Mount point where NFS client is to be mounted

■ **Special Secure Zone Access**

① This item controls overall authority for access to the corresponding share.

② Section zone in “Secure Zone List” on the left can be registered for use.

③ Authority for access to the corresponding volume is selected. Authority for access is controlled as of the following.

- Read Only: Only reading of the corresponding directory is allowed.
- Read/ Write: Only reading/ writing of the corresponding directory is allowed.
- Turn Off Root Squashing: Authority is set so that the corresponding directory (volume) can be mounted with root file system of NFS client.
- Insecure: Mode for IBM AIX user

■ **Caution for NFS Client Connection**

1. The following problems may occur when client is using memory map.
   - ◆ Slowing down of file contents update
   - ◆ .nfsxxxx file creation (when close call is not used)
   - ◆ Default supported word code of CIFS is ‘UTF-8’. If NFS clients is not supported ‘UTF-8’, Korean(not English) may be viewed abnormally, when you use CIFS and NFS at once.

3.6.4. AppleTalk

AppleTalk is the network protocol of Macintosh system. AnyStor NAS provides AppleTalk protocol to save data of Macintosh system. In AppleTalk share setting, web administrator controls authority for access to share list prepared in share volume (directory) setting. [Figure 3-6-10] shows web screen for AppleTalk share setup. It illustrates an example, in which authority for access to volume set with share list for data share is controlled. Authority for group and user access can be set and the method of use is the same as in CIFS share.

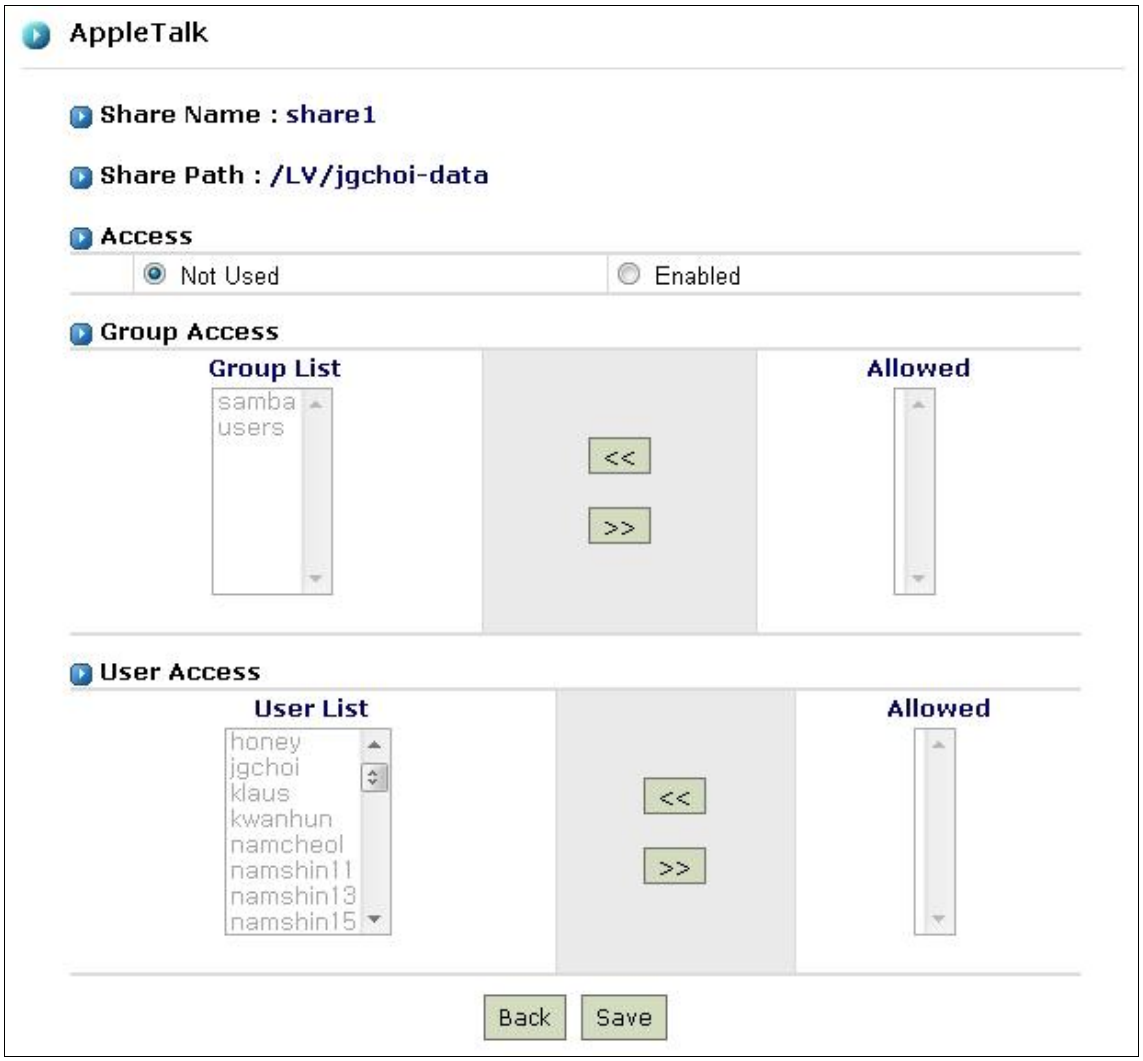


Figure 3-6-10 AppleTalk Share Setup

3.6.5. Use of CIFS and NFS Services

■ **Use of CIFS Service**

Service can be used by following the below mentioned procedure in order to share data or to use the storage by using the CIFS service.

① Setup the user, group and host that are the target of the service. (Refer to the [Account] menu)

② Execute the setup of CIFS service for each of the sharing list. (Refer to the [Share] menu)

③ Setup access authority by user, group and host for each list.

④ Access to the NAS' sharing directory is possible from the Windows Client. [Figure 3-6-11] is an example of inputting the access command into the Window's

execution window to access the NAS system where the URL is set up as "192.168.0.207."

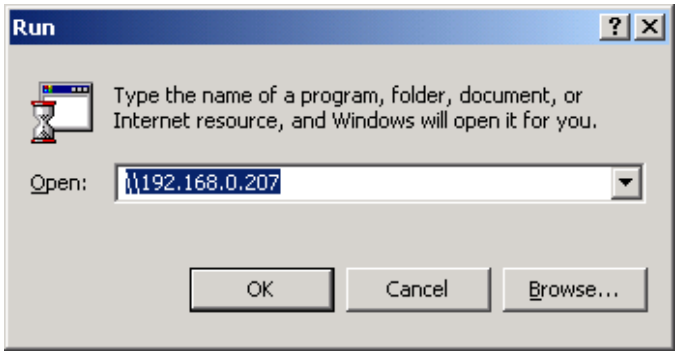


Figure 3-6-11 NAS Access by Using CIFS Service

⑤ When the setup of sharing list and CIFS is executed properly, it is possible to view the shared directory as shown on [Figure 3-6-12]. However, access is not possible when the Windows Client that is trying to access is included in the "Access Disabled" list.

⑥ Windows Client can access each of the shared directories in accordance to the access authority. If access is allowed for all users, then it is possible to access pertinent directory without undergoing separate user authentication process. However, authentication process is generally necessary to assess directory. At the time of authentication, registered ID and password are needed. However, in case of user who is registered on the PDC server subject to authentication, access is possible by using the ID and password that are registered on the PDC server. Setup of each sharing directory is possible by using the network drive, if and when needed.

.

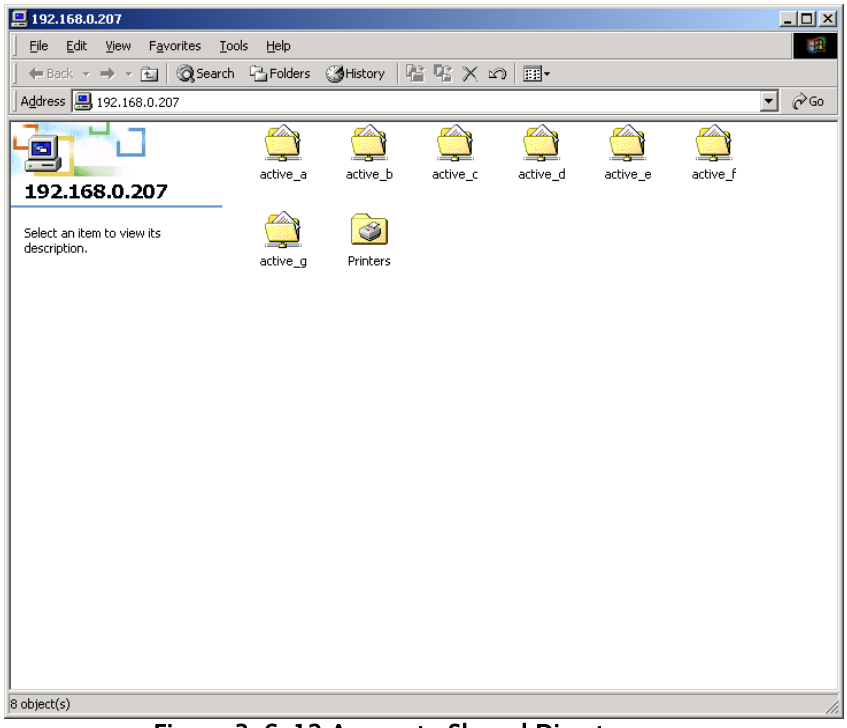


Figure 3-6-12 Access to Shared Directory

■ **Use of NFS Service**

Service can be used following the below mentioned procedure to share data or to use the storage by using the NFS service.

① Setup the host that is target of the service. (Refer to [Network]-[Host] menu)

② Execute NFS service setup for each of the sharing list on the sharing list. (Refer to [Share] menu)

③ Setup access authority by host for each list.

④ Execute mounting for the sharing directory by using the NFS service on the Unix host that is given access authority. [Figure 3-6-13] shows an example whereby the "/testVol1/sHA (High Availability) re1" directory was mounted on the Client host by using the NFS service.

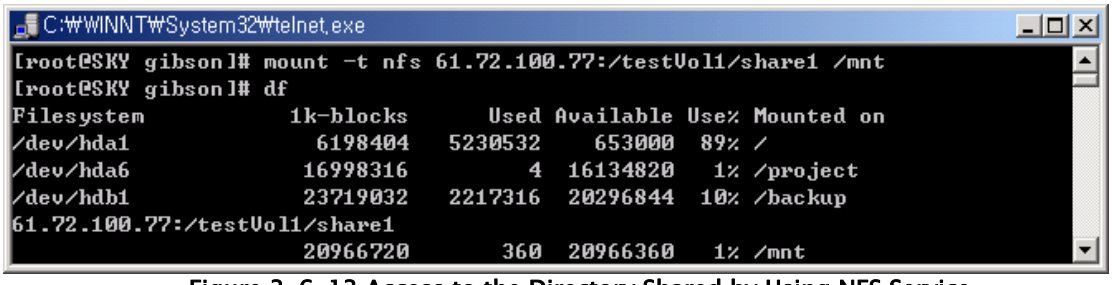
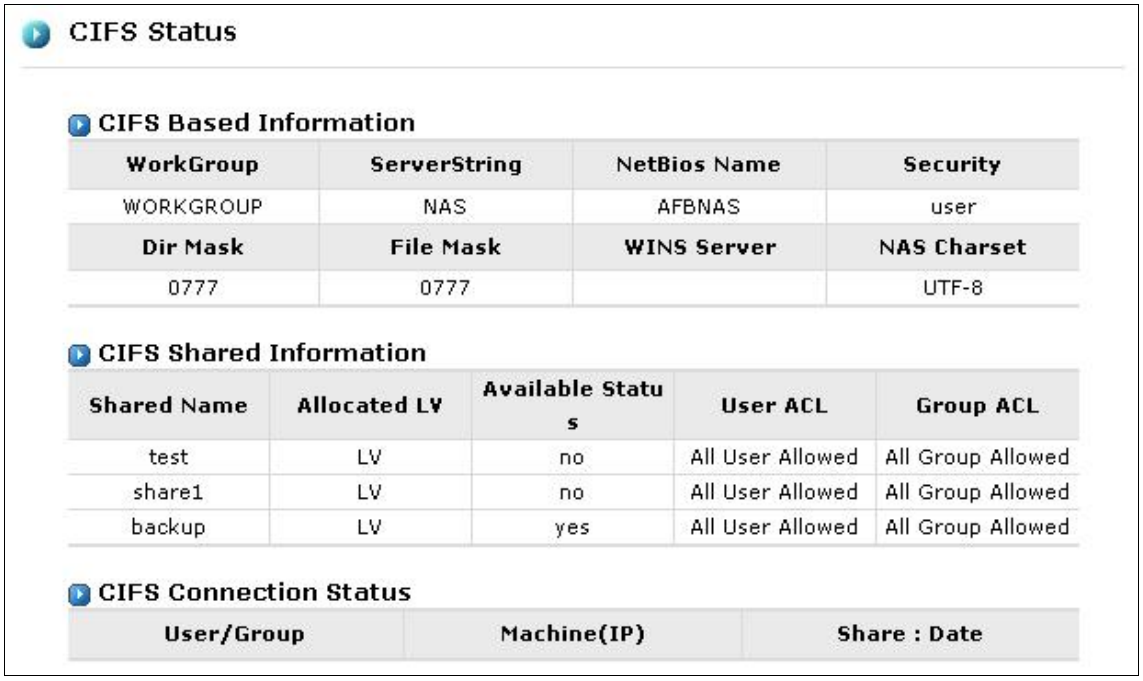


Figure 3-6-13 Access to the Directory Shared by Using NFS Service

3.6.6. Management of CIFS and NFS Service Status

■ **CIFS Service Status**

CIFS status can be checked on the [System Information]-[CIFS Status] menu. [Figure 3-6-14] is an example of how the information on the status of CIFS service is presented.



CIFS Status

CIFS Based Information

WorkGroup	ServerString	NetBios Name	Security
WORKGROUP	NAS	AFBNAS	user
Dir Mask	**File Mask**	**WINS Server**	**NAS Charset**
0777	0777		UTF-8

CIFS Shared Information

Shared Name	Allocated LV	Available Status	User ACL	Group ACL
test	LV	no	All User Allowed	All Group Allowed
share1	LV	no	All User Allowed	All Group Allowed
backup	LV	yes	All User Allowed	All Group Allowed

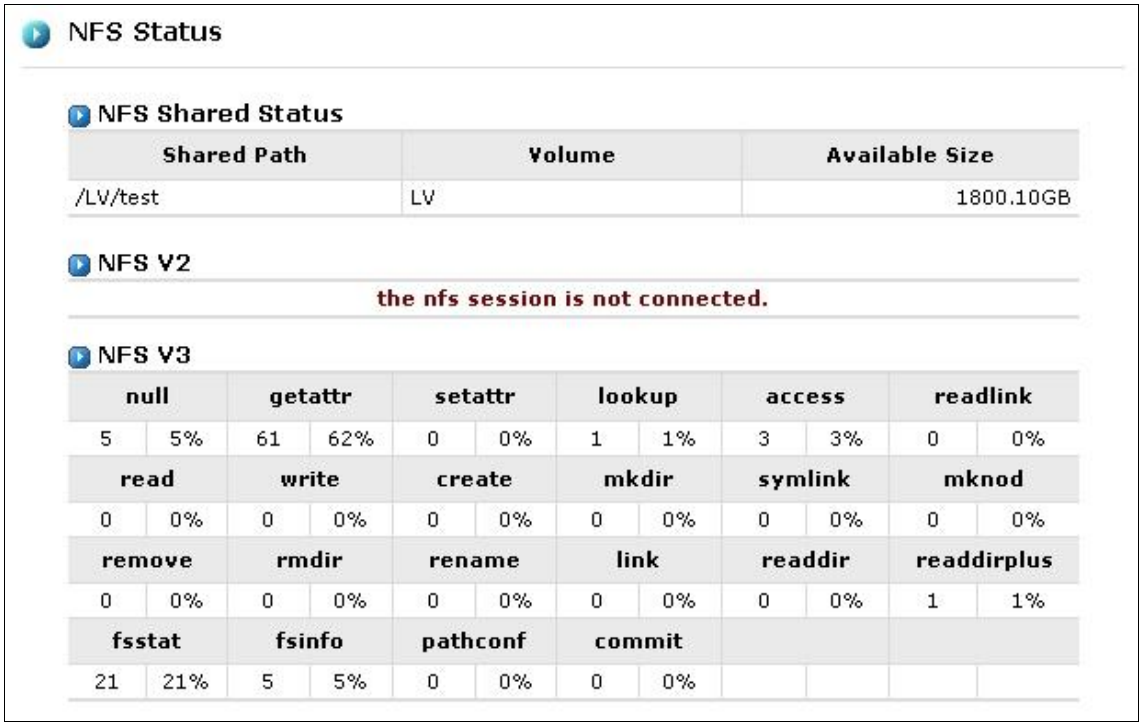
CIFS Connection Status

User/Group	Machine(IP)	Share : Date

Figure 3-6-114 Information on the Status of CIFS Service

■ **NFS Service Status**

NFS status can be checked on the [System Information]-[NFS Status] menu. [Figure 3-6-15] is an example of how the information on the status of NFS service is presented. Marked information is on the status of NFS V2, V3



NFS Status

NFS Shared Status

Shared Path	Volume	Available Size
/LV/test	LV	1800.10GB

NFS V2

the nfs session is not connected.

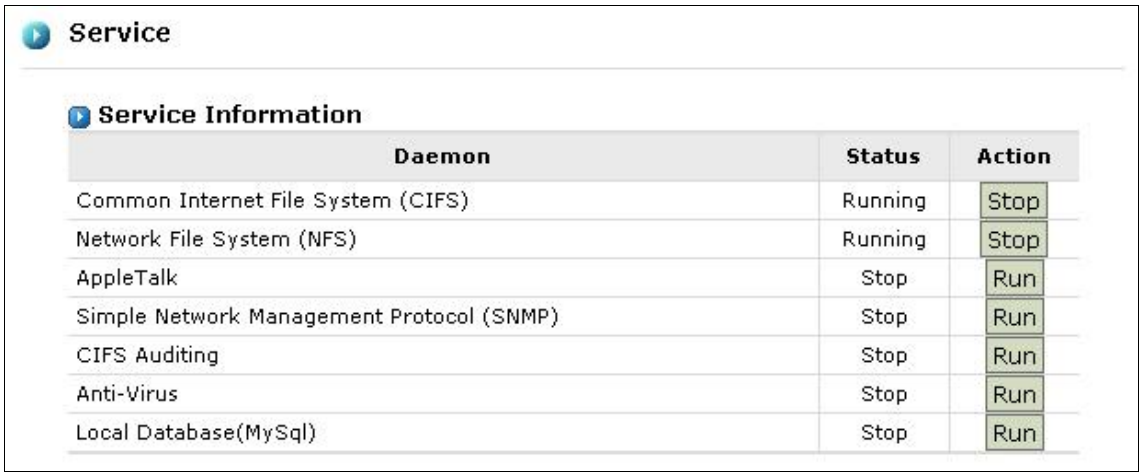
NFS V3

null		getattr		setattr		lookup		access		readlink	
5	5%	61	62%	0	0%	1	1%	3	3%	0	0%
read		**write**		**create**		**mkdir**		**symlink**		**mknod**	
0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
remove		**rmdir**		**rename**		**link**		**readdir**		**readdirplus**	
0	0%	0	0%	0	0%	0	0%	0	0%	1	1%
fsstat		**fsinfo**		**pathconf**		**commit**					
21	21%	5	5%	0	0%	0	0%				

Figure 3-6-125 Information on the Status of NFS Service

■ **CIFS and NFS Daemon Management**

Management of CIFS and NFS daemon can be executed on the [System]-[Service] menu. [Figure 3-6-16] is the interface for the management of daemon service's operation. User can use the interface to view information on the daemons current status, and can manage the operation of the daemon. (Refer to [System] menu for details)



Service

Service Information

Daemon	Status	Action
Common Internet File System (CIFS)	Running	Stop
Network File System (NFS)	Running	Stop
AppleTalk	Stop	Run
Simple Network Management Protocol (SNMP)	Stop	Run
CIFS Auditing	Stop	Run
Anti-Virus	Stop	Run
Local Database(MySql)	Stop	Run

Figure 3-6-136 Information on the CIFS Service Status

3.7 System Management

■ AnyStor Series

[System] menu offers diverse management functions related to the system operation and servicing. The following is a brief explanation of functions offered on the system menu.

- Alert: Administrator E-Mail setup for alert notification in case of system malfunction
- Log Management: diverse log management and log view on the system
- Clock: system time setup
- Service: drive and completion of service Daemon
- Maintenance: system maintenance

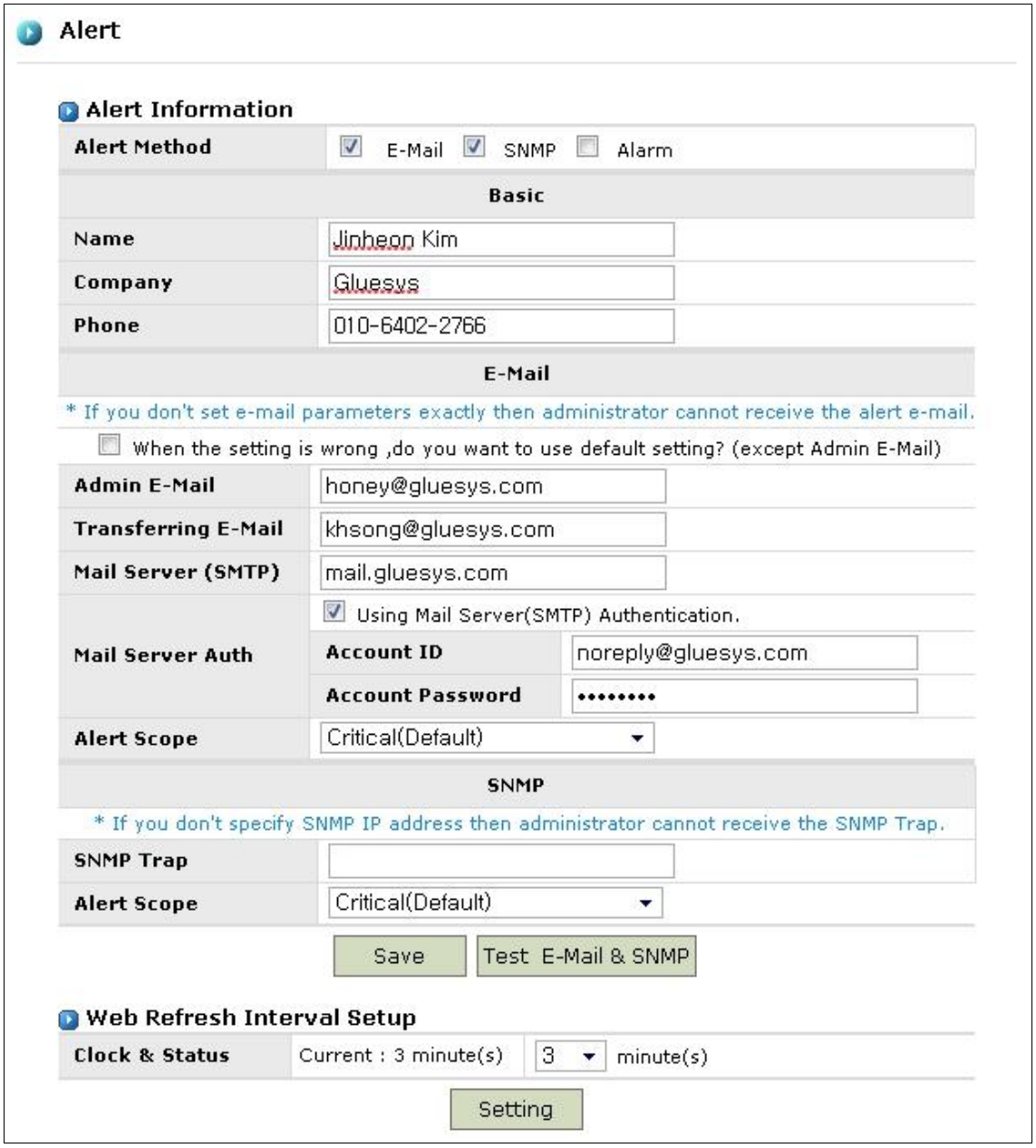


Figure 3-7- 1 Initial Menus of System

3.7.1 Alert Setting

Interface to enter system administrator information (including e-mail) is provided so that system administrator can be alerted through e-mail of system malfunction. Also, it enables administrator to set screen refresh time during web operation so that to facilitate operation in web environment.

- Alert Information Setup

1. Basic: Name of administrator, name of company, phone number
2. E-Mail:
   - ◆ When the mail setting is wrong, do you want to use default mail setting?
     : Default mail setting is used in system in case of mail setting is wrong
   - ◆ Admin E-Mail: E-mail address for e-mail reception
   - ◆ Transferring E-Mail: E-mail account used for sending out e-mail
   - ◆ Mail Server (SMTP): SMTP server used for sending out e-mail
   - ◆ Mail Server Auth: Status of using SMTP authentication
     - ■ Account ID: ID of account used in SMTP authentication
     - ■ Account Passwd: Password of account used in SMTP
3. SNMP: IP address for reception of SNMP trap message
4. When Test E-Mail button is pressed, test e-mail and SNMP trap message are transmitted. E-mail is not sent out in case Test E-Mail button is pressed without pressing Save button after entering a value or in case DNS is not set.
5. When Save button is pressed, the entered information is saved. It can be used for adjustment.
6. The original information can be restored by pressing Reset button while entering adjustment.

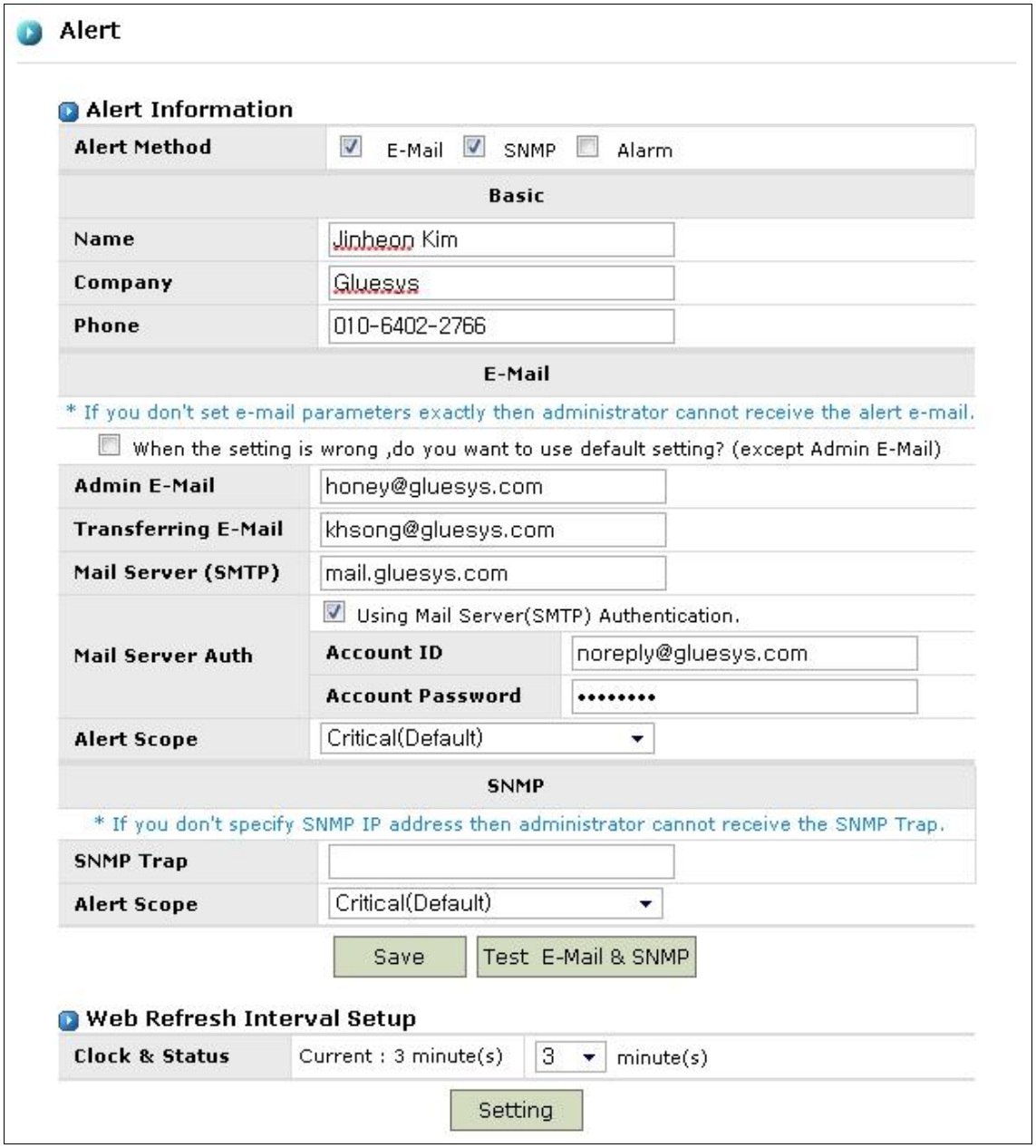


Figure 3-7- 2 Alert Setting for Warning

- Web Refresh Interval Setup
  1. All web GUI refresh interval items with the exception of Clock and Status can be set as desired in General.
  2. Clock and Status can be set in Clock & Status.
  3. Separate web GUI refresh interval is used in items where completion of management operations, such as backup and mirroring, etc. takes a long time. Therefore, it may not be applicable to setting of this item.

Figure 3-7- 3 Web GUI Refresh Interval Setup

3.7.2 Log Management

This function manages the log that occurs in the system. The types of log that is managed in the system are; history log, message log, samba log, Apache log, boot log, cron log, security log and mail log. When necessary, you can see each log through the log view. The following Figure shows the GUI that offers log management and view functions.

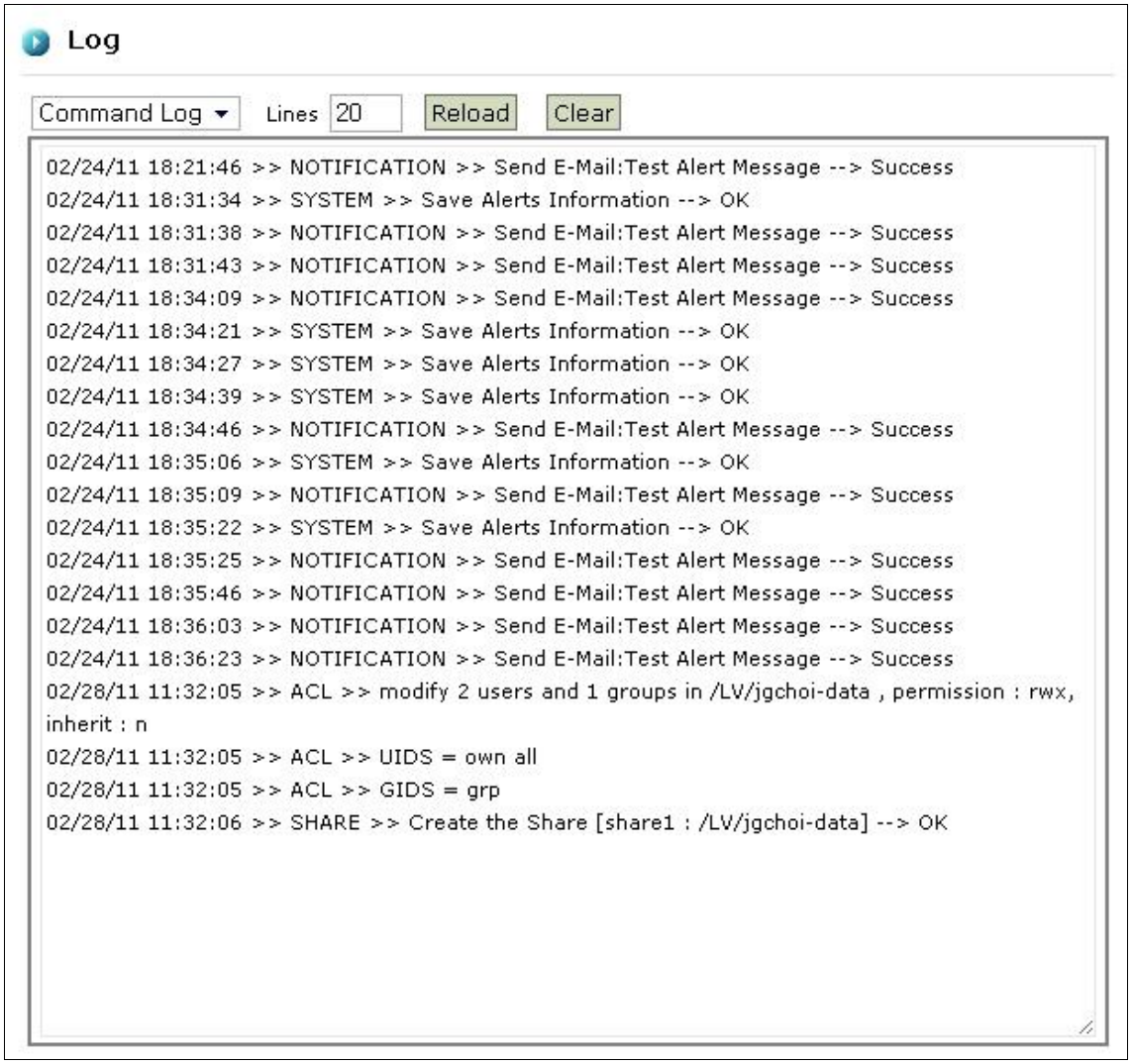


Figure 3-7-4 Log Management View

Log Management and view is executed on [System]-[Log] menu. Select the pertinent log to see the system log.

① When you click the "View" button, the view screen is printed out.

② Click on the "Clear" button if you wish to delete the log.

✦**NOTE:** Log is deleted automatically when it reaches certain size in order to prevent the abnormal operation of the system. Thus, when the System Administrator wishes to maintain the log, periodical backup of log is necessary. Log backup is performed on [Maintenance] menu. (Refer to [Maintenance] menu for details)

3.7.3 Clock Setting

This interface is for setting up time. Move to the [System]-[Clock] menu to see current time, and to modify the system's time. It works based on UTC Time.

Figure 3-7- 5 Time Setup

3.7.4 Service Setup

This is the interface for the management of service Daemon. It is possible to see the current status of the Daemon, and it manages the operation and shutdown of the Daemon. The types of services that are subject to management are the following.

- Operation and shutdown of Daemon for CIFS service
- Operation and shutdown of Daemon for NFS service
- Operation and shutdown of Daemon for SNMP service
- Operation and shutdown of Daemon for NIS service
- Operation and shutdown of Daemon(including the set up of the port) for NDMP service

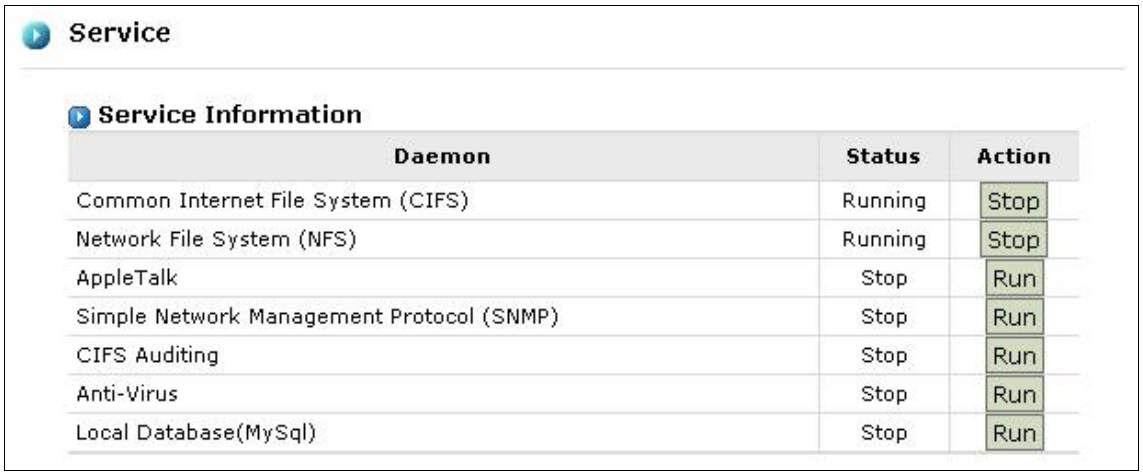


Figure 3-7- 6 Service Daemon Management

3.7.5 Maintenance

This is the menu for the maintenance of the system. System maintenance includes; back-up and resilience of system setup file, back-up of system log, and system online upgrade function.

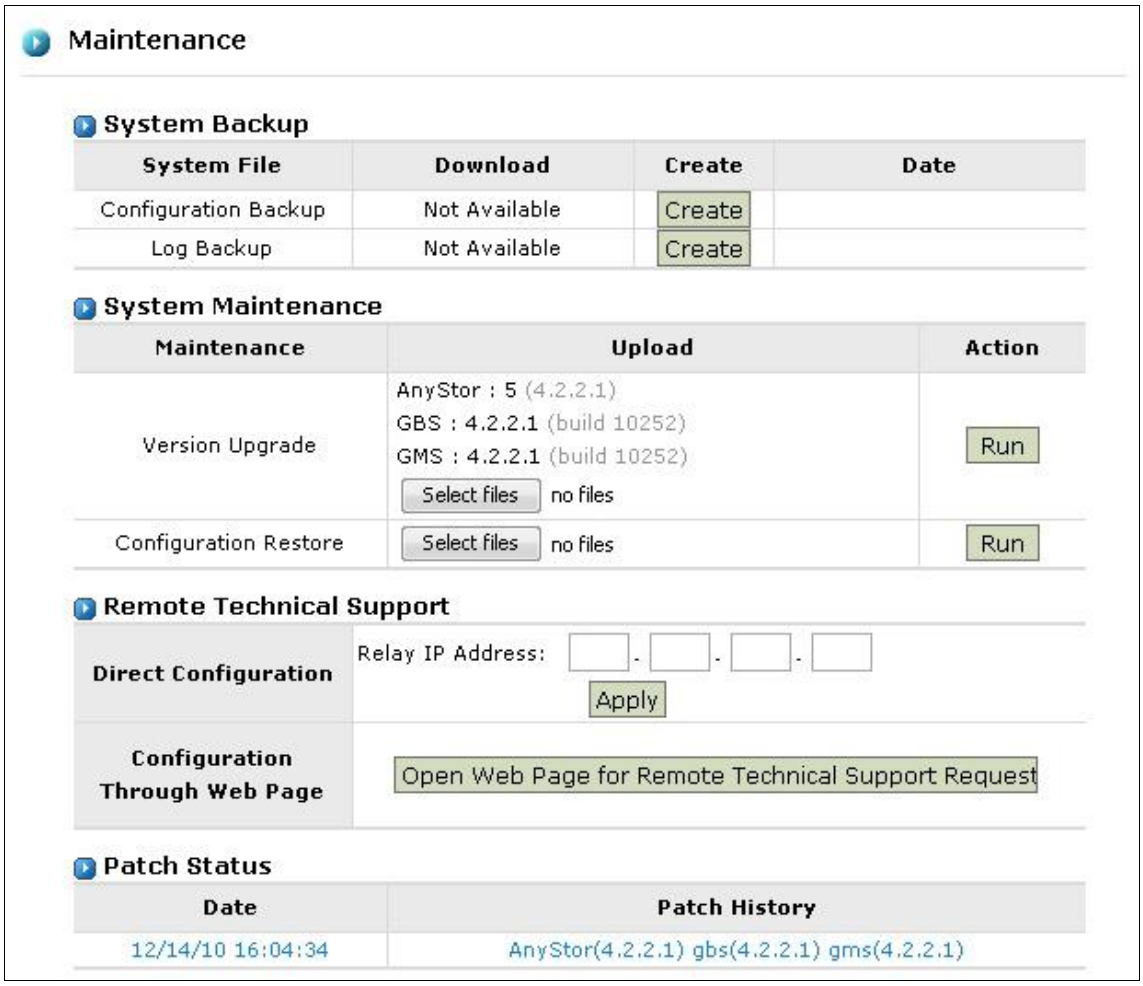


Figure 3-7- 7 GUI for System Maintenance

■ **Back-Up of System Setup File**

Existing system setup file is needed to recover the system into its original state in case of system malfunction. AnyStor offers system setup file back-up function, and does not perform the system setup from the beginning even during the system malfunction. Instead, it provides the function needed to return to the original setup state.

Back-up of system setup file is performed in the following order.

Figure 3-7-8 Back-Up of System Setup File (File Creation)

① When you click on the “Create” button, you can see ‘the date of created’ and “download” button.

② When you click on the “download” button, you can see the message of ‘file open’ or ‘file store’. File name is configurated with ‘SysConfig_month_date_year.cfg’

■ **Resilience of System Setup File**

In case of system malfunction, it is possible to resilience the system into its original state by using the back-up system setup file. Perform the following to resilience the system into its original state.

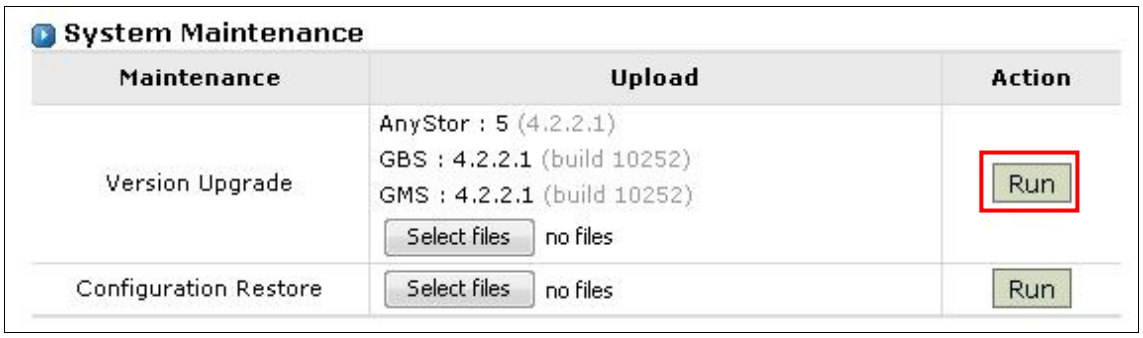


Figure 3-7- 9 Back-Up of System Setup File (File Creation)

① Move to [System]-[Maintenance] menu.

② Click on the “Browse” button of “ReConfiguration”, which pertains to “System Reconfiguration” from the “System Maintenance” category. Select the latest version of the system setup file from the file search window that is backed-up already, and click on the “Confirm” button.

③ Perform resilience of system setup file by clicking on the “Run” button of “Reconfiguration.”

■ **Back-Up of System Log File**

Figure 3-7- 10 GUI for the Log File Back-Up

① When you click on the "Create" button, you can see 'the date of created' and "download" button.

② When you click on the "download" button, you can see the message of 'file open' or 'file store'. File name is configurated with 'SysLog_month_date_year.AnyStorlog'

■ **System Upgrade**

AnyStor NAS provides online upgrade function. Upgrade can be executed by using new upgrade file. Upgrade is performed in the following order.

① Obtain upgrade file. (Download it in web or CD Rom)

② Click on the "Browse" button of "Version Upgrade" from the system upgrade category, and select the pertinent upgrade file.

③ Perform system upgrade by clicking on the "Run" button of "Version Upgrade."

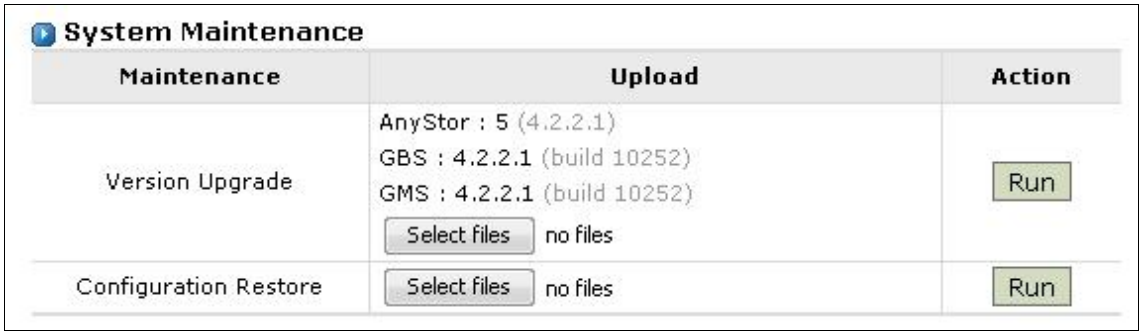


Figure 3-7- 11 System Upgrade

✦ **NOTE:** System rebooting might be needed depending on the type of upgrade function. In case of system rebooting is needed, perform rebooting only after checking the services that are in operation.

3.7.6 Shutdown

This is the interface for the management of system shutdown and booting. The options for the system shutdown and booting are as follows.

- Quick Reboot: Rebooting without checking the file system
- Reboot with File System Check: File system check at the time of rebooting
- Quick Shutdown: Shutdown without the file system check
- Shutdown with File System Check: File system check at the time of shutdown

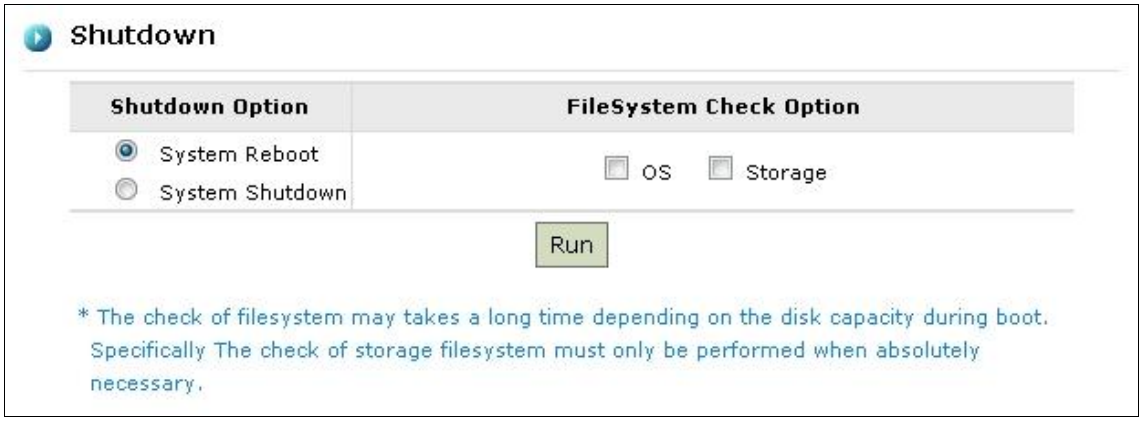


Figure 3-7- 12 System Shutdown Options

4. Problem Solving

[Question 1]

Service is not working.

[Solution]

When the log of equipment is full, it stops in the middle of booting, and the following message appears.

ERROR:

84FF: System Event Log Full\

Resume <F1)

Press on the <F1> key to perform booting.

If the problem persists, then contact the HQ.

[Question 2]

Web is not working properly.

[Solution]

Please use web browser that is over IE 5.0.

[Question 3]

Reservation of Snapshot Volume does not seem to coincide with actual time.

[Solution]

Reservation of Snapshot Volume is conducted along the time of the AnyStor equipment. Thus, make reservation after matching the current time and the time of AnyStor equipment. Setup of time for AnyStor can be performed on the System – Clock menu.

[Question 4]

Sharing is not possible on the Snapshot Volume.

[Solution]

Snapshot Volume is a Read Only volume that includes the information on the original volume of the Snapshot at a time when creation takes place. Thus, sharing can be executed when the sharing directory is designated with a directory name that is same as that of original volume that executed Snapshot or sharing of entire volume for the Snapshot Volume.

[Others] Call the "Support Center of Gluesys"