

LIMITED WARRANTY

D-Link provides this limited warranty for its product only to the person or entity who originally purchased the product from D-Link or its authorized reseller or distributor.

Limited Hardware Warranty: D-Link warrants that the hardware portion of the D-Link products described below (“Hardware”) will be free from material defects in workmanship and materials from the date of original retail purchase of the Hardware, for the period set forth below applicable to the product type (“Warranty Period”) if the Hardware is used and serviced in accordance with applicable documentation; provided that a completed Registration Card is returned to an Authorized D-Link Service Office within ninety (90) days after the date of original retail purchase of the Hardware. If a completed Registration Card is not received by an authorized D-Link Service Office within such ninety (90) period, then the Warranty Period shall be ninety (90) days from the date of purchase.

<i>Product Type</i>	<i>Warranty Period</i>
Product (excluding power supplies and fans)	One (1) Year
Power Supplies and Fans	One (1) Year
Spare parts and spare kits	Ninety (90) days

D-Link’s sole obligation shall be to repair or replace the defective Hardware at no charge to the original owner. Such repair or replacement will be rendered by D-Link at an Authorized D-Link Service Office. The replacement Hardware need not be new or of an identical make, model or part; D-Link may in its discretion may replace the defective Hardware (or any part thereof) with any reconditioned product that D-Link reasonably determines is substantially equivalent (or superior) in all material respects to the defective Hardware. The Warranty Period shall extend for an additional ninety (90) days after any repaired or replaced Hardware is delivered. If a material defect is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to repair or replace the defective Hardware, the price paid by the original purchaser for the defective Hardware will be refunded by D-Link upon return to D-Link of the defective Hardware. All Hardware (or part thereof) that is replaced by D-Link, or for which the purchase price is refunded, shall become the property of D-Link upon replacement or refund.

Limited Software Warranty: D-Link warrants that the software portion of the product (“Software”) will substantially conform to D-Link’s then current functional specifications for the Software, as set forth in the applicable documentation, from the date of original delivery of the Software for a period of ninety (90) days (“Warranty Period”), if the Software is properly installed on approved hardware and operated as contemplated in its documentation. D-Link further warrants that, during the Warranty Period, the magnetic media on which D-Link delivers the Software will be free of physical defects. D-Link’s sole obligation shall be to replace the

non-conforming Software (or defective media) with software that substantially conforms to D-Link's functional specifications for the Software. Except as otherwise agreed by D-Link in writing, the replacement Software is provided only to the original licensee, and is subject to the terms and conditions of the license granted by D-Link for the Software. The Warranty Period shall extend for an additional ninety (90) days after any replacement Software is delivered. If a material non-conformance is incapable of correction, or if D-Link determines in its sole discretion that it is not practical to replace the non-conforming Software, the price paid by the original licensee for the non-conforming Software will be refunded by D-Link; provided that the non-conforming Software (and all copies thereof) is first returned to D-Link. The license granted respecting any Software for which a refund is given automatically terminates.

What You Must Do For Warranty Service:

Registration Card. The Registration Card provided at the back of this manual must be completed and returned to an Authorized D-Link Service Office for each D-Link product within ninety (90) days after the product is purchased and/or licensed. The addresses/telephone/fax list of the nearest Authorized D-Link Service Office is provided in the back of this manual. FAILURE TO PROPERLY COMPLETE AND TIMELY RETURN THE REGISTRATION CARD MAY AFFECT THE WARRANTY FOR THIS PRODUCT.

Submitting A Claim. Any claim under this limited warranty must be submitted in writing before the end of the Warranty Period to an Authorized D-Link Service Office. The claim must include a written description of the Hardware defect or Software nonconformance in sufficient detail to allow D-Link to confirm the same. The original product owner must obtain a Return Material Authorization (RMA) number from the Authorized D-Link Service Office and, if requested, provide written proof of purchase of the product (such as a copy of the dated purchase invoice for the product) before the warranty service is provided. After an RMA number is issued, the defective product must be packaged securely in the original or other suitable shipping package to ensure that it will not be damaged in transit, and the RMA number must be prominently marked on the outside of the package. The packaged product shall be insured and shipped to D-Link, 53 Discovery Drive, Irvine CA 92618, with all shipping costs prepaid. D-Link may reject or return any product that is not packaged and shipped in strict compliance with the foregoing requirements, or for which an RMA number is not visible from the outside of the package. The product owner agrees to pay D-Link's reasonable handling and return shipping charges for any product that is not packaged and shipped in accordance with the foregoing requirements, or that is determined by D-Link not to be defective or non-conforming.

What Is Not Covered:

This limited warranty provided by D-Link does not cover:

Products that have been subjected to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed;

Initial installation, installation and removal of the product for repair, and shipping costs;

Operational adjustments covered in the operating manual for the product, and normal maintenance;

Damage that occurs in shipment, due to act of God, failures due to power surge, and cosmetic damage; and

Any hardware, software, firmware or other products or services provided by anyone other than D-Link.

Disclaimer of Other Warranties: EXCEPT FOR THE LIMITED WARRANTY SPECIFIED HEREIN, THE PRODUCT IS PROVIDED "AS-IS" WITHOUT ANY WARRANTY OF ANY

KIND INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IF ANY IMPLIED WARRANTY CANNOT BE DISCLAIMED IN ANY TERRITORY WHERE A PRODUCT IS SOLD, THE DURATION OF SUCH IMPLIED WARRANTY SHALL BE LIMITED TO NINETY (90) DAYS. EXCEPT AS EXPRESSLY COVERED UNDER THE LIMITED WARRANTY PROVIDED HEREIN, THE ENTIRE RISK AS TO THE QUALITY, SELECTION AND PERFORMANCE OF THE PRODUCT IS WITH THE PURCHASER OF THE PRODUCT.

Limitation of Liability: TO THE MAXIMUM EXTENT PERMITTED BY LAW, D-LINK IS NOT LIABLE UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE THEORY FOR ANY LOSS OF USE OF THE PRODUCT, INCONVENIENCE OR DAMAGES OF ANY CHARACTER, WHETHER DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF GOODWILL, WORK STOPPAGE, COMPUTER FAILURE OR MALFUNCTION, LOSS OF INFORMATION OR DATA CONTAINED IN, STORED ON, OR INTEGRATED WITH ANY PRODUCT RETURNED TO D-LINK FOR WARRANTY SERVICE) RESULTING FROM THE USE OF THE PRODUCT, RELATING TO WARRANTY SERVICE, OR ARISING OUT OF ANY BREACH OF THIS LIMITED WARRANTY, EVEN IF D-LINK HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE SOLE REMEDY FOR A BREACH OF THE FOREGOING LIMITED WARRANTY IS REPAIR, REPLACEMENT OR REFUND OF THE DEFECTIVE OR NON-CONFORMING PRODUCT.

GOVERNING LAW: This Limited Warranty shall be governed by the laws of the state of California.

Some states do not allow exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the foregoing limitations and exclusions may not apply. This limited warranty provides specific legal rights and the product owner may also have other rights which vary from state to state.

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den spätern Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Um eine Beschädigung des Gerätes zu vermeiden sollten Sie nur Zubehörteile verwenden, die vom Hersteller zugelassen sind.
5. Das Gerät is vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sichern Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen. Verwenden Sie nur sichere Standorte und beachten Sie die Aufstellhinweise des Herstellers.

7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Die Netzanschlußsteckdose muß aus Gründen der elektrischen Sicherheit einen Schutzleiterkontakt haben.
10. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
11. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
12. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
13. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. Elektrischen Schlag auslösen.
14. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
15. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a – Netzkabel oder Netzstecker sind beschädigt.
 - b – Flüssigkeit ist in das Gerät eingedrungen.
 - c – Das Gerät war Feuchtigkeit ausgesetzt.
 - d – Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e – Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f – Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

16. Bei Reparaturen dürfen nur Originalersatzteile bzw. den Originalteilen entsprechende Teile verwendet werden. Der Einsatz von ungeeigneten Ersatzteilen kann eine weitere Beschädigung hervorrufen.
17. Wenden Sie sich mit allen Fragen die Service und Reparatur betreffen an Ihren Servicepartner. Somit stellen Sie die Betriebssicherheit des Gerätes sicher.
18. Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden, Für einen Nennstrom bis 6A und einem Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm² einzusetzen.

Trademarks

Copyright ©2002 D-Link Corporation. Contents subject to change without prior notice. D-Link is a registered trademark of D-Link Corporation/D-Link Systems, Inc. All other trademarks belong to their respective proprietors.

Trademark Notice

Microsoft, Windows, Windows NT and Internet Explorer are trademarks of Microsoft Corporation.

Netscape is a trademark of Netscape Communications Corporation.

Novell and NetWare are trademarks of Novell Inc.

Apple and Macintosh are trademarks of Apple Computer Inc.

Other products and company names mentioned herein may be the trademarks of their respective owners.

Copyright Statement

No part of this publication may be reproduced in any form or by any means or used to make any derivative such as translation, transformation, or adaptation without permission from D-Link Corporation/D-Link Systems Inc., as stipulated by the United States Copyright Act of 1976.

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Warnung!

Dies ist ein Produkt der Klasse A. Im Wohnbereich kann dieses Produkt Funkstörungen verursachen. In diesem Fall kann vom Benutzer verlangt werden, angemessene Massnahmen zu ergreifen.

Advertencia de Marca de la CE

Este es un producto de Clase A. En un entorno doméstico, puede causar interferencias de radio, en cuyo caso, puede requerirse al usuario para que adopte las medidas adecuadas.

Attention!

Ceci est un produit de classe A. Dans un environnement domestique, ce produit pourrait causer des interférences radio, auquel cas l'utilisateur devrait prendre les mesures adéquates.

Attenzione!

Il presente prodotto appartiene alla classe A. Se utilizzato in ambiente domestico il prodotto può causare interferenze radio, nel cui caso è possibile che l'utente debba assumere provvedimenti adeguati.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada Warning

The Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la class A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

BSMI

警告 使用者
這是甲類的資訊產品,在居住的環境中使用時,可能會造成射頻干擾,在這種情況下使用者會被要求採取某些適當的對策。

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.



Electric shock hazard inside the redundant power supply. The exchange of modules shall be done by service personnel

Hard Disk Drive Choose Warning

TUV approved Hard Disk Drive is preferred for TUV compliance Hard Disk drive-Optional, (NWGQ2), generic, four provided, Input Voltage rated 5V dc/1.0A, 12V dc/1.8A maximum, minimum clearance from uninsulated live parts 4.0 mm

Table of Contents

Chapter 1 NAS Filer for Business	1
Specifications	1
D-Link NAS Filer for Business Resources	3
D-Link NAS Filer Assistant CD	3
D-Link NAS Filer for Business User's Guide	6
Chapter 2 Setting up the NAS	7
Before you start	7
Setup	8
Chapter 3 Quick Configuration	12
Enter the root password	13
Server Configuration	14
Basic Server Configuration	14
Enter the system date and time	16
Select a language	17
Enter a recipient for notification	18
Completing Quick Configuration	19
Chapter 4 Using Storage Manager	20
Server Information	20
Server Configuration	25
Basic Configuration	25
Date Setup	28
Language Setup	29
Event Notification Setup	30
Security Setup	30
Shared Folder Setup	31
Account Setup	41
Group Setup	49
User Quota Setup	54
Security Options	59
Network Setup	60
Windows Domain/Workgroup Setup	61
UNIX NIS Domain Setup	65
Apple Network	66
Novell Network	68
Volume Management	69
Volume Setting	70
Volume Layout	77
RAID 5 Cache	78
Disk Write Cache	79
Home Setup	80

Toolkit.....	81
LED Management	81
SNMP Configuration.....	82
UPS Management	85
Restore defaults	89
Shutdown/ Restart.....	90
System Update	91
File Browser.....	92
Logout.....	93
Chapter 5 NAS Filer Backup: Backing up and restoring data on the server ---	96
Backing up data.....	97
Restoring data back onto the server	100
Chapter 6 NAS Data Replicator - Automatic backup from Windows clients to the NAS server -----	105
Before you begin	105
Set up D-Link NAS Filer	105
Data Replicator Basic Requirements	109
Setup Data Replicator	109
Start Using Data Replicator	109
Backup Windows client data to NAS server First-Time Use - Run Complete Backup.....	109
Recover files from the server to Windows client	116
Tag Management	117
User Preferences	120
Chapter 7 Troubleshooting -----	123
NAS Server Installation Problems	123
System Problems.....	124
Problems about the Hard Disks on the NAS.....	125
Problems about Windows Clients' Access to the NAS Server.....	127
Problems about Novell Clients' Access to the NAS Server.....	130
Problems about Apple Clients' Access to the NAS Server.....	132
Problems about Setting the Storage Manager.....	135
Problems about Backing up/Restoring the Data on the Server.....	138
General Problems	139

Appendix 1 What is RAID? -----	141
RAID 0 (striping).....	142
RAID 1 (mirroring)	143
RAID 5	143
RAID 5 with hot spare.....	143
Appendix 2 Windows access to the NAS server -----	145
Appendix 3 UNIX access to the NAS server	146
Appendix 4 Apple access to the NAS server	150
Appendix 5 Novell access to the NAS server	152
Appendix 6 Email notification list-- -----	154
Appendix 7 System Default Configuration	170

Chapter 1

NAS Filer for Business

With the rapid expansion of the net and ever increasing numbers of Internet users, requirements for storage space are also exploding. **The DNS-6040 Series** offers a stable and efficient storage solution with an easy-to-use interface. Even non-technical staff will have no trouble installing and configuring the server.

Specifications

Compatibility: Network Types / Network File Systems / Protocols / Clients
Microsoft network / CIFS, SMB / TCP/IP / Windows 95, 98, ME, NT 4.0, 2000, XP
UNIX network / NFS v2.0 & v3.0 / TCP/IP / Red Hat Linux, Solaris, FreeBSD
Novell network / NCP / IPX / Novell intraNetWare clients for Windows
Apple Macintosh network / AFP / AppleTalk, TCP/IP / Apple Macintosh 7.x, 8.x, 9.x, OS X
Integratable domains
Microsoft NT 4.0 /2000 domain
NIS domain
Software- RAID
RAID 0
RAID 1
RAID 5
RAID 5 with hot spare

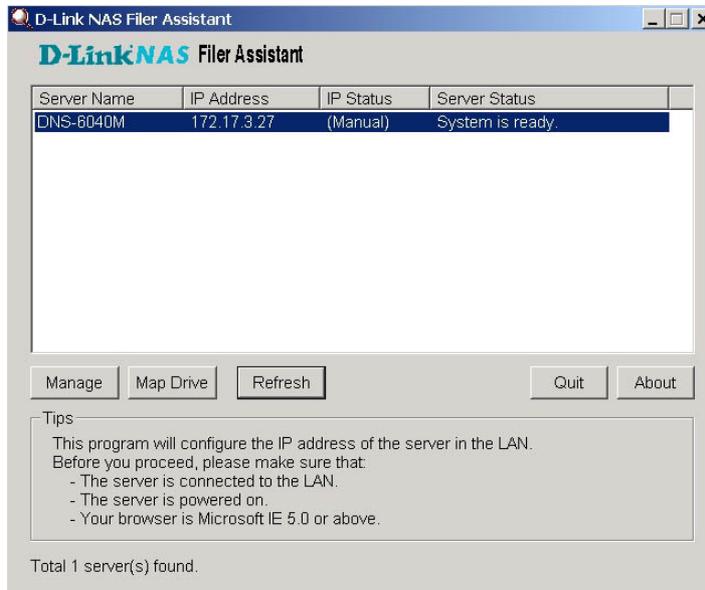
Availability/ Reliability
IDE Hard Disk Hot Swapping & On-line Rebuilding
Power Supply Fail-over Support (DNS-6040M only)
System Fan Fail-over Support
Hardware (thermal, ECC, HDD, Fan...) Monitoring, Auto-notifications, and Logging
UPS support (Through Serial Port & SNMP Trap)
Manageability
Volume Manager
Web-based Management
SNMP MIB II Support
D-Link NAS Filer Assistant
D-Link NAS Backup Utility
D-Link NAS Data Replicator
LED Management
Performance
RAID 5 Device Layer Cache Support
1 Gb Ethernet Support (Option)
10/100 Mb Ethernet Teaming/ Fail-over Support
Other Features
Restore Default Settings
Browser-based Software Update

D-Link NAS Filer for Business Resources

D-Link NAS Filer Assistant CD

This CD provides four utility programs: D-Link NAS Filer Assistant, D-Link NAS Backup Utility and D-Link NAS Data Replicator.

D-Link NAS Filer Assistant

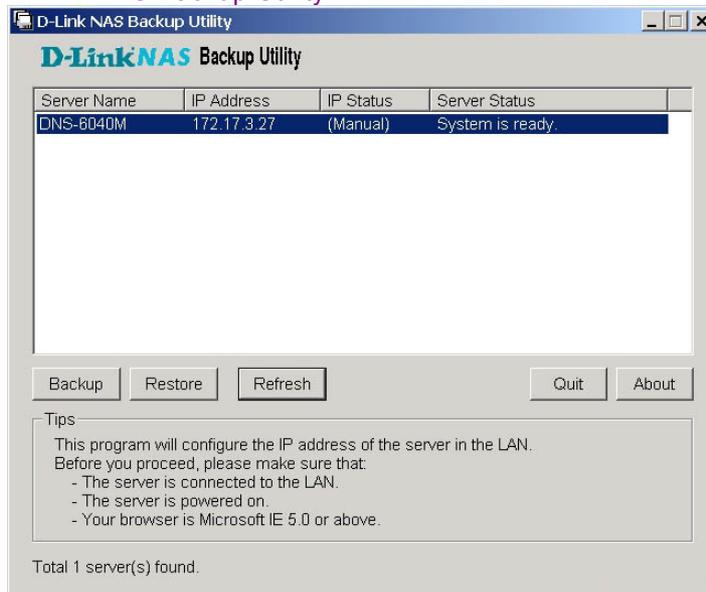


D-Link NAS Filer Assistant is designed for use by system administrator and all Windows clients on the LAN.

The system administrator uses **D-Link NAS Filer Assistant** to search and setup the IP addresses of all NAS (Network Attached Storage) servers running **D-Link NAS Filer**

on the LAN. Windows clients can also install this program on the desktop, so that they can easily login to **Storage Manager** to change personal information, and connect all privileged shared folders on the NAS server as network drives.

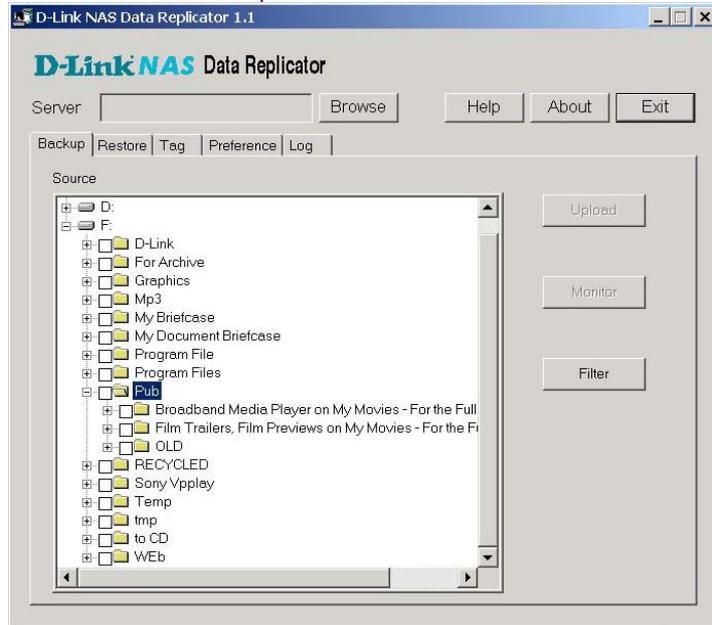
D-Link NAS Backup Utility



D-Link NAS Backup Utility is specifically designed for use by system administrator.

The system administrator can utilize this Windows-Based backup program to backup data from the NAS server to other storage devices on the LAN, or to restore data back onto the NAS server.

D-Link NAS Data Replicator



D-Link NAS Data Replicator provides use for all Windows clients on the LAN.

Windows clients can use **D-Link NAS Data Replicator** to monitor file folders on computer, make immediate backup of specified file folders to NAS server, making it easy for restoration of backup files from server to client computers, files backup, management and protection.

D-Link NAS Filer for Business User's Guide

The **DNS-6040 Series** User's Guide contains a description of the product and step-by-step instructions on how to use **Storage Manager** to configure the server. Please read this guide carefully before proceeding.

Chapter 2

Setting up the NAS Server

After connecting the NAS server to a power source and the LAN, power it up and use **D-Link NAS Filer Assistant** to search for the NAS server and configure its IP address.

TIP

Setup procedure for the NAS server:

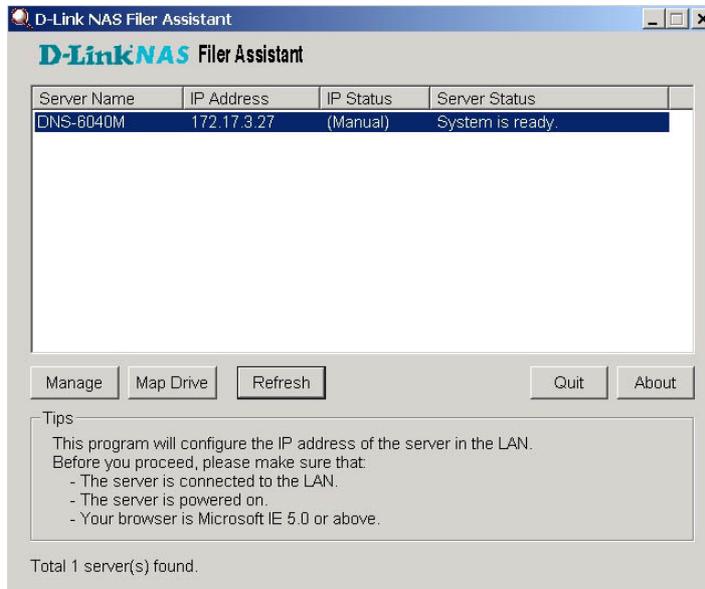
1. Connect the NAS server to the LAN, hard disks, and a power source, and then turn it on.
2. Run **D-Link NAS Filer Assistant Utility** from any Windows terminal in the LAN to locate and configure the NAS server's IP address. Once this is done, the utility will automatically open a browser window and connect to **Storage Manager** on the NAS Server (details below).
3. Use **Storage Manager's Quick Configuration** to configure the basic options of the server (see chapter 3).
4. Use **Storage Manager** to configure the details of the server, including system configuration, user privileges, network and hard disks (see chapter 4).

Before you start

- Please install hard disk to the NAS server.
When purchasing diskless model, please install at least one hard disk before turning on the server.
- Connect the NAS server to the LAN. Turn on the server.
- Make sure the client terminal used to configure the NAS server is installed with Microsoft Internet Explorer 5.0 or higher, and make sure this computer and the NAS server can be connected through physical network medium (e.g. hub, switch, etc.).
- Set the resolution of the client terminal screen to 800*600 or higher.

Setup

1. Choose a computer with a network connection running Microsoft Windows 98/ ME/ NT/ 2000/ XP and a browser version above IE5.0 installed.
2. Insert the **D-Link NAS Filer Assistant** CD in the CD-ROM drive. In most systems, **Assistant Utility** starts automatically.
3. **D-Link NAS Filer Assistant** will automatically search and list all NAS servers running **D-Link NAS** in the LAN. The "Server Status" column will show current status of the server. When the message "System is ready" is shown in this column, you can begin your setup.



Suppose you want to set up a server called "NAS001" for the first time. By default the system obtains the network configuration information through the DHCP server. If the DHCP server does exist on the LAN, its "IP Status" will show "DHCP". NAS server has correctly received IP from DHCP server. Please use your mouse to double click server "NAS001" or click the "Manage" button. **D-Link NAS Filer Assistant** will automatically invoke the browser, connect to the server's IP address, and then start the "Quick Configuration" option of **Storage Manager** for the system administrator to setup basic information such as server group, system access, and network group, etc. (for details please refer to Chapter 3).

If there is no DHCP server on the LAN, or the client that executes **D-Link NAS Filer Assistant Utility** and NAS server do not belong to the same subnet, the "IP Status" column will show "Unknown" instead.

TIP

If NAS server supports more than one network card, **D-Link NAS Filer Assistant** will show only one of the network cards for system administrator to setup. If you wish to setup other network card (s), system administrator must perform further setup in Storage Manager.

D-Link NAS Filer Assistant Utility display rules as follows:

- 1、The first time you setup the NAS server, **D-Link NAS Filer Assistant Utility** will display the first network card of the server. If there is a DHCP server the “IP Status” will show “DHCP”. If there is no DHCP server, then the “IP Status” is “Unknown”.
- 2、If system administrator has already used **Storage Manager** to assign IP addresses to (multiple) network cards on the server and made them belong to different subnets, then **D-Link NAS Assistant Utility** will show the network card that belongs to the same subnet with the client computer that runs **D-Link NAS Assistant Utility**.
- 3、If not one network card in NAS server belongs to the same subnet as client computer that runs **D-Link NAS Filer Assistant Utility**, then **Assistant Utility** will show the first network card of the server and the “IP Status” will show “Unknown”.

- Double-click on the server name “NAS001” to open the network configuration screen.
- If your LAN includes a DHCP server, select “Get Network Configuration through DHCP” to automatically configure the network through the DHCP server. If no DHCP server is present, or if you prefer manual configuration, choose “Use Manual Configuration” and enter an IP address, domain name, subnet mask, gateway, and DNS server. The setup program will grab the network configuration of the client for administrator’s reference. If this information is not enough, choose “Suggestion”; the setup program will check available IPs on the LAN and provide a suggested IP address.

- Input “System administrator password”. The first time a password is requested, enter the default password; if none exists leave this field blank.
- Click “Apply” to confirm. The program will automatically invoke the browser and connect to the server’s IP address, then start the “Quick Configuration” option of **Storage Manager** (see chapter 3).

TIP

DHCP (Dynamic Host Configuration Protocol) is a network protocol for automatic IP assignment. If your network does not include a DHCP server, you must enter the network configuration manually.

If the search or configuration fails, please verify the following details before trying again:

1. Make sure you have selected the correct server.
2. Make sure the server is connected to the LAN. Please make sure that the network status displayed by the LAN LED on the panel of the server is normal.
3. Make sure the server is connected to a power source and is turned on.
4. Make sure the LAN still has free IP addresses.
5. Make sure the manually entered network settings are correct.
6. Make sure the client terminal you are using has successfully installed/set the TCP/IP protocol, and is running Microsoft Internet Explorer 5.0 or higher.
7. Make sure the NAS server and the client computer that runs **D-Link NAS Filer Assistant Utility** can be connected through physical network medium (e.g. hub, switch, etc.).

Chapter 3

Quick Configuration

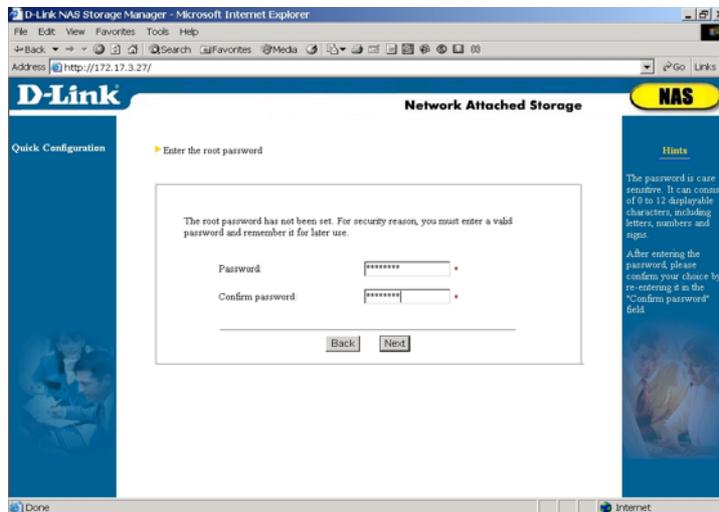
D-Link NAS offers a simple and easy-to-use approach to NAS administration called **Storage Manager**. Use this program to configure the server, system and network parameters, including Windows, UNIX, Novell and Apple Macintosh network settings, as well as the hard disk configuration.

When you first install the NAS server, **D-Link NAS Filer Assistant** will complete the IP configuration of the server and then automatically open a browser window to connect to the server. The *Quick Configuration* page with basic configuration options will appear.

TIP

- During setup, watch the tips on the right hand side of the browser window or refer to this user's guide for more information.
- This system only supports Microsoft IE 5.0 browsers or above. Netscape browsers are not supported.

Enter the root password

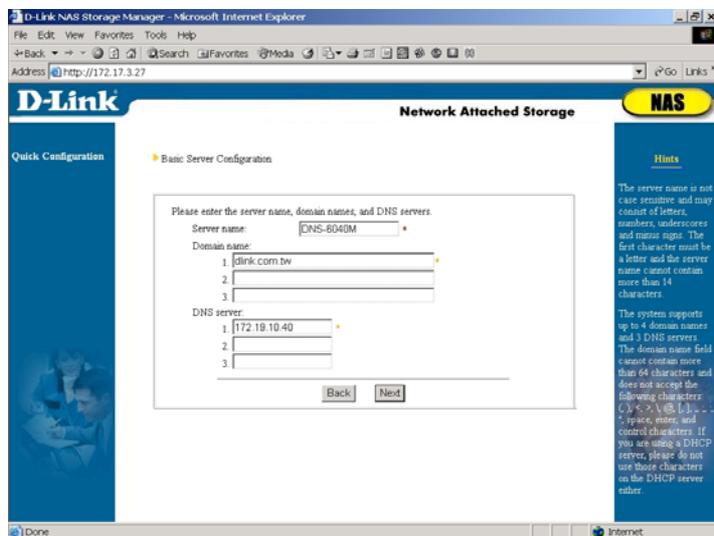


Since this is the first time using this system, the system will prompt for changing the default (system administrator) password. Make a note of this password for future access to the NAS server.

The password is case-sensitive and can consist of 0 to 12 displayable characters, including letters, numbers and signs. After entering the password, please confirm your choice by re-entering it in the *Confirm password* field.

Server Configuration

Basic Server Configuration



System administrator can change the default server name here and further configure the network settings.

First you have a chance to change the preset server name. Please note that the server name must be unique, meaning that no other server in the network should have the same name. The name is not case-sensitive and cannot exceed 15 characters. The first character must be a letter; the other characters can be letters, numbers, the underscore or minus sign.

This system supports up to four domain names and three DNS servers. The length of the domain name cannot exceed sixty-four characters. When getting network configuration through DHCP server, if DHCP server has already created

multiple domain names and DNS server setup, this page will capture the first item from the DHCP server. The system administrator must specify other items manually.

TIP

The domain name field does not accept the following characters. If you are using a DHCP server, do not use these characters on the DHCP server either: (), < , > , @ , \ , [] , , ; : ; “ , space, enter (/n) and control characters.

LAN Port 1



Next, please setup the IP address of the first network card. This page will show the setup information previously defined in **D-Link NAS File Assistant Utility**, and system administrator can make additional change here.

If your LAN includes a DHCP server, click *Get network configuration through DHCP*. Otherwise, choose *Use manual*

configuration. Filling out the column with a red star sign on the right is mandatory, while filling out the column with the orange star is recommended by the system.

If NAS server supports more than one network card, please go to *Server Configuration* → *Basic Configuration* after completion of *Quick Configuration* to continue setup of other network cards.

Enter the system date and time



Use a 24-hour format to enter the system date and time, as well as the correct time zone.

Select a language



Please choose a display language for **Storage Manager**, event notification emails, and the code page for Windows client terminals. In *Display Language* column, when selecting *Browser Default Language*, **Storage Manager** will automatically display the same language as the IE browser of the client when system administrator or general user is connected to **Storage Manager**.

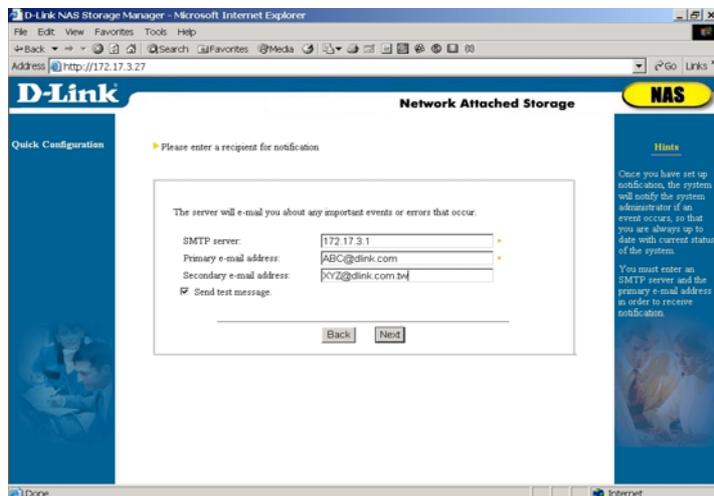
Once *Quick Configuration* is complete, **Storage Manager** will use that language. If you do not know the correct code page of your Windows client, enter the command “*chcp*” in the DOS Windows and press *Enter* to retrieve the correct code page information.

Note: A wrong code page setting may result in problems when accessing data. All terminals must use the same code page.

TIP

If the administrator set a single-byte language (code page), such as English or Multilingual, for Windows clients, an error will occur when the client attempts to save double-byte files or folder names (e.g. Traditional Chinese) on the NAS server, and some files cannot be deleted once saved. In this case, the system administrator must use the *Server Configuration* → *Language Setup* to change the code page to double-byte encoding; only then can the file be properly accessed and deleted.

Enter a recipient for notification



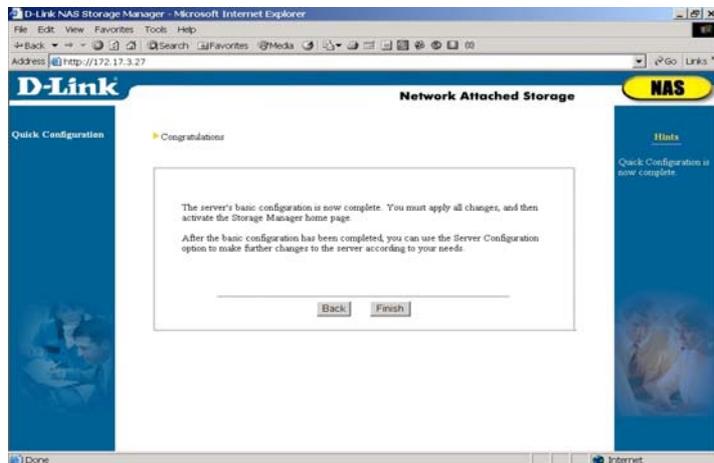
The DNS-6040 Series can notify the system administrator of important events per e-mail. Enter a *SMTP server* and the *primary e-mail address*. When an important event occurs, the system administrators will be informed via e-mail and can respond immediately, thus ensuring system safety. You have the option to *send a test message after setup* to make sure you have

entered a valid configuration.

Due to the excessive amount of junk mail pervading the Internet, many providers do not allow their SMTP servers to be used by outside users. We therefore strongly recommend using the SMTP server of your e-mail domain (the primary and secondary e-mail address). E.g., if you use root@abc.com, select the SMTP server belonging to this provider, for example mail.abc.com.

Note: if you enter the host name (e.g. mail.abc.com) of the *SMTP server*, instead of the IP address (e.g. 192.168.1.1), please also enter the DNS address.

Completing Quick Configuration



Once you have completed the *Quick Configuration*, the server should operate properly in the LAN. Click *Finish* to apply all settings and open **Storage Manager**. If you need to make further modifications after you have completed *Quick Configuration*, use the *Server Configuration* option described in Chapter 4.

Chapter 4

Using Storage Manager

After the *Quick Configuration* is complete, **D-Link NAS** will open the web-based **Storage Manager** program, where the system administrator can further edit the settings of the NAS server.

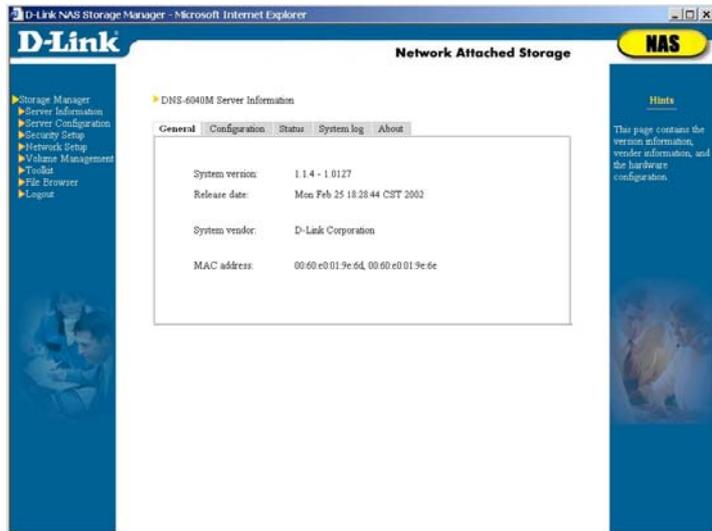
TIP

1. **Storage Manager** does not include a *Back* option, but lists all of the configurable items on the left-hand side of the browser window. When you are done with one screen, simply select the next item you wish to configure from the list on the left.
2. If no entries occur in **Storage Manager** for 15 minutes, you will automatically be logged out, and will have to log in again to continue.

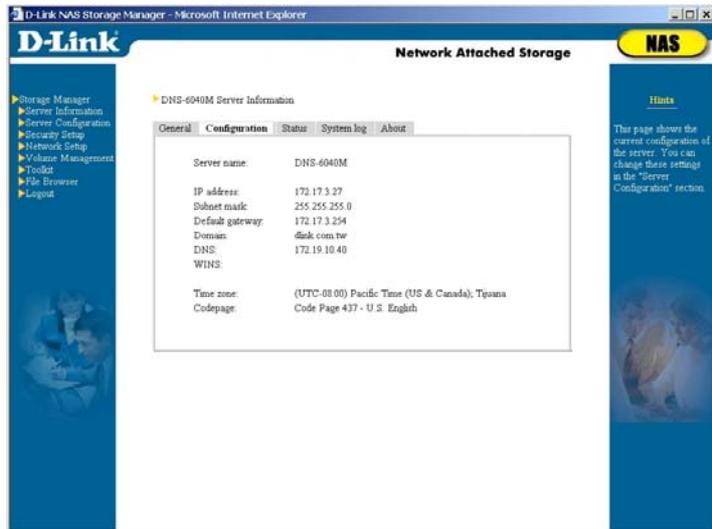
Server Information

Here you find information about your server:

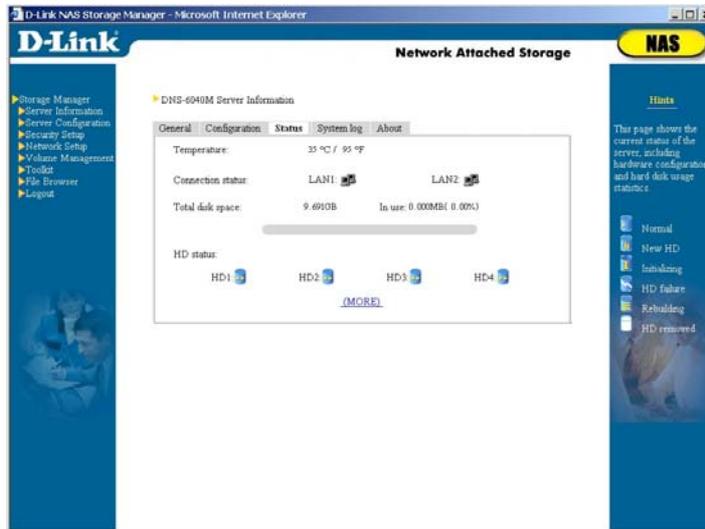
- *General*: Shows system version and manufacturer information.



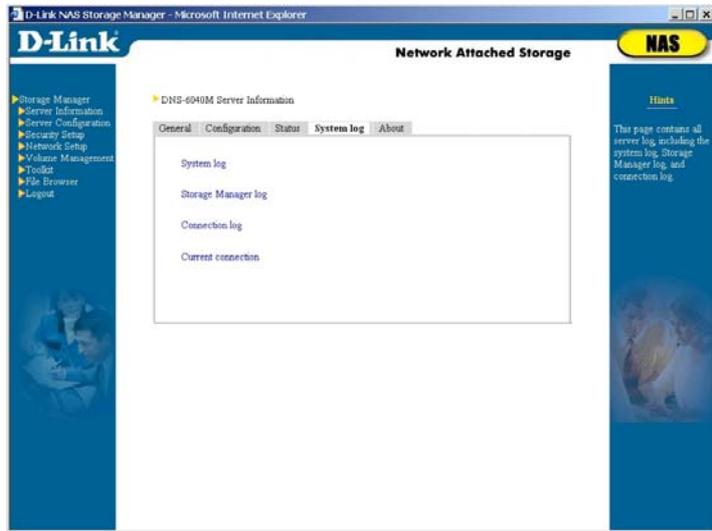
- *Configuration*: This page shows the current configuration of the server. You can change these settings under *Server Configuration*.



- **Status:** This page shows the current operation status of the server, including ECC memory, temperature, network port (s), fans, power supplies, and hard disk usage. If an error occurs on the server, such as a memory error, high temperature, network card malfunction, fan malfunction, power supply malfunction or hard disk failure, the information on this page will be immediately updated, and a notification message will be sent via e-mail to the system administrator.



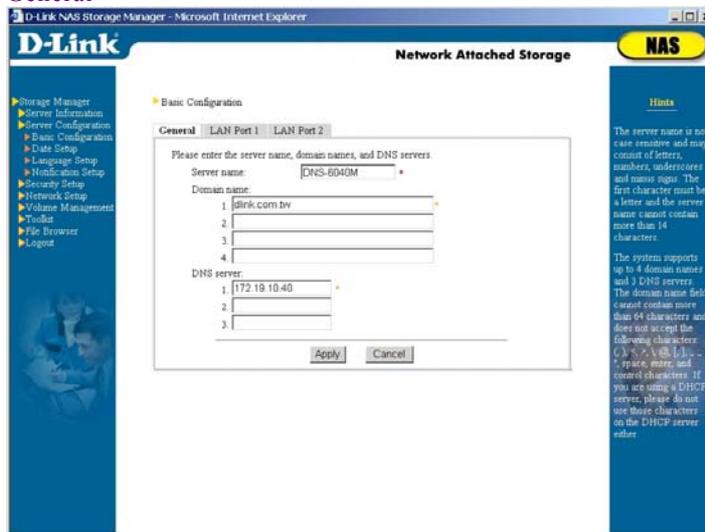
- **System log:** This page shows the system log, **Storage Manager** log, and the connection status of Windows and NFS clients.



Server Configuration

Basic Configuration

General



System administrator can change general server information such as server name and network settings. Please refer to the *Server Configuration* → *Basic Server Configuration* unit of Chapter 3 for setup methods.

LAN Port 1



System administrator can change the setup of the LAN port 1. For ways of setting up, please refer to *Server Configuration* → *Basic Server Configuration* → *LAN Port 1* of Chapter 3.

LAN Port 2



If system detects more than one network card in NAS server, this page will automatically display *LAN Port N* tab to enable setup. "N" represents the id number of the LAN port in the NAS server.

System administrator can "trunk" this LAN port with other LAN port(s), i.e. "trunking" or "Link Aggregation", to simulate multiple ports into a large-scale network port thus multiplying the overall network bandwidth. For example, if a NAS server shares two 100 Mbps Fast Ethernet LAN cards, through trunking the two cards into one, the bandwidth will expand to 200 Mbps and both cards will share the same IP.

Or, if a network has more than two subnets, system administrator can setup each network card separately into different subnet IP address to achieve the "Load Balancing" effect.

Please note:

1. In this system, each network card IP address must be in different subnet, thus when choosing network type through DHCP please make sure if the subnet has any DHCP server available for use.
- Please use a switch with “Trunking/Fail-over” support to make sure the “Trunking/Fail-over” feature can be fully supported by **D-Link DNS-6040 Series**.

Date Setup



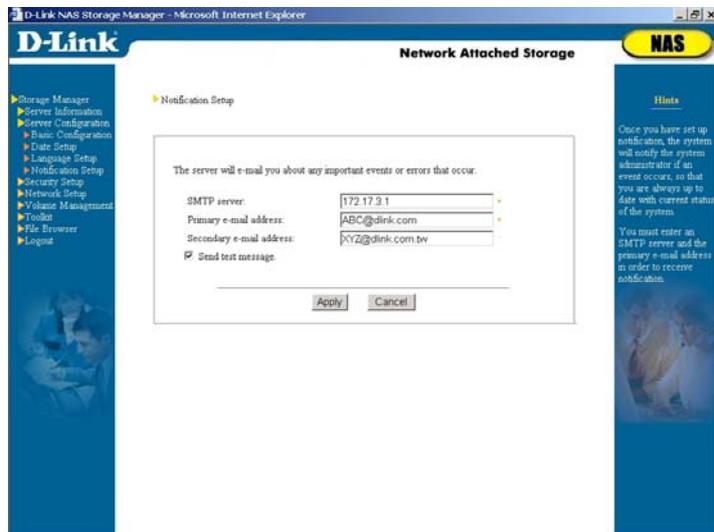
System administrator can change the time, date and time zone of the NAS server. Please refer to *Server Configuration* → *Basic Server Configuration* → *Enter the system date and time* unit of Chapter 3 for ways of setup.

Language Setup



System administrator can change language of **Storage Manager**, email notification, and codepage used by the client. For ways of language setup, please refer to *Server Configuration* → *Basic Server Configuration* → *Select a language* of Chapter 3.

Event Notification Setup



System administrator can change setup of event notification. For ways of setting up, please refer to *Server Configuration* → *Basic Server Configuration* → *Enter a recipient for notification* of Chapter 3.

Security Setup

In this section the administrator can define users and user groups to access certain files and folders on the NAS server.

Shared Folder Setup

Shared Folder



Use this option to add, modify or delete shared folders. The administrator can select whether folders can be exported via NFS to allow UNIX access only.

The name of the shared folder cannot exceed 15 characters. The name can be formed by double-byte character languages, the same as the language of the **Storage Manager** interface, such as Traditional Chinese or Simplified Chinese, etc., single-byte languages such as English, German, Spanish, etc., numbers, decimal point, underline and minus sign. The first character however cannot be minus sign. The name is not case sensitive.

Please note:

When naming a shared folder using language other than English, please input the same language as the **Storage**

Manager interface to ensure correct language encoding. Thus, when **Storage Manager** language is Japanese, the shared folder name can only be both Japanese and English. Similarly, if the interface language is German, then the shared folder name can only be German and English. The same principle will be applied to other languages.

The DNS-6040 Series allows up to 64 shared folders, not including the home folders of *users* group accounts.

Default shared folders

On each individual volume, **The DNS-6040 Series** installs a shared folder called "*public n*", whereas *n* represents the disk volume. On a non-RAID configuration with 4 hard disks, for example, the folders will be named *public1*, *public2*, *public3*, and *public4* respectively. A four-disk RAID5 configuration on the other hand will be treated as a single volume, and only one *public1* folder will be created. However, if system administrator segments the NAS storage space into multiple volumes through *Volume Management* → *Volume Setting* of **Storage Manager**, then the system will automatically create a "*public n*" shared folder for each volume.

The name, description and path of this folder (*/volumen/publicn*) cannot be changed by the administrator. By default, any user logged into the NAS server has full read/write access privileges to this public folder. System administrator can change the user access rights of this shared folder through *Windows/Apple/Novell privileges* or *NFS privileges* tabs.

Modifying a shared folder

On the left side you find the existing shared folders. Click on a folder name to display the information pertaining to this folder in the right windowpane. To rename the folder or modify its description, make the necessary changes on the right and then click *Apply*.

Adding a shared folder



To add a folder, click on *Create*. The *New Shared Folder Setup* page will appear. Enter a name and description for the folder. If the system includes more than one volume, select a volume under *Folder Location*. If the folder is to be shared between normal users (Windows, Apple, Novell) and NFS users, select *Normal folder*. If the folder is to be used only by NFS users, select *Export the folder by NFS only*. Click *OK* to finish or *Next* to add another folder.

TIP

When using this system, Win 95/98 clients can only display folder names with a maximum of 13 characters and Win NT clients can only display folder names with a maximum of 12 characters. Therefore, when sharing folders with Win95/98/NT clients, please pay attention to the length of the folder names, otherwise clients may not be able to access these folders through network neighborhood.

Deleting a shared folder

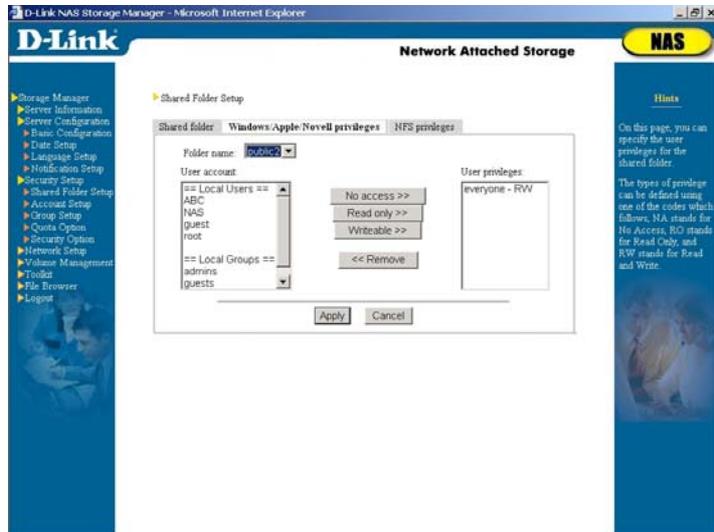
To delete a shared folder, select the desired folder (use Ctrl for multiple and Shift for continuous selection) in the list on the left pane, then click *Remove*. The default shared folders “*public n*” cannot be deleted.

Shared folder paths

The option *Path* is only available for NFS and cannot be edited manually. The system will automatically enter the path “*/volumen/Shared_Folder_Name*” for each shared folder on the NAS server. For example, if you create a shared folder called *test* on the first volume of the NAS server, the system will automatically assign the path */volume1/test*. This default value cannot be changed by the administrator.

Once the shared folder is created, the system administrator must use the *Windows/Apple/Novell Privileges* or *NFS Privileges* tabs to choose users and their access privileges. All files stored in the shared folder will have the same privileges.

Windows/ Apple/ Novell User Privileges



The system administrator can use this setting to assign access privileges for local users/groups (i.e. Windows/Apple/Novell clients with accounts on the NAS server) and Windows domain users/groups. Use the mouse to choose a folder in the *Folder name* list, the *User privileges* column will show all the users or groups entitled to access the selected folder.

TIP

Apple and Windows clients can share the same folder. However, since Apple and Windows systems handle file associates in different ways, the access to the files supported by both Apple and Windows systems such as “pdf” and “html” may be restricted.

For example, when a Windows client saves an html file to the NAS server, an Apple client cannot double-click this file on the server to open the file by automatically launching the web browser. Because the way Windows system saves “Associated file type” differs from that of Apple, Apple system does not know with what program it can open the html file created in Windows. There are two solutions:

1. Re-establish the associate of this file on the Apple client.
2. Launch the program used for executing the file on the Apple client first. In this case launch IE or Netscape and then open the file with the browser. Alternatively, use “save as” to save the file on the Apple client so that the new file will be saved in the Apple format. To open the file, simply double-click it.

The same solution can be applied to the problem happening when the Windows client cannot directly execute files saved by the Apple client to the NAS server.

Modifying User Privileges

To change existing user privileges, e.g. from *Writeable* to *Read only*, select the user whose privileges you wish to change in the *User privileges* column, then select *Read only* in the center column, and click *Apply* to confirm your selection.

Adding user privileges

To add user or group privileges, use the mouse to select a user in the *User account* column (use Ctrl for multiple and Shift for continuous selection), then click on *No access*, *Read Only* or *Writeable*.

Please note, if this NAS server is added to the Windows NT/2000 domain, and (1) system administrator has previously

added certain Windows PDC user account to *Local account* or (2) there is an account in both NAS server and Windows PDC with the same name, then the *User account* list on the left will not show the account number in *NT Domain Users* but only in *Local Users* to prevent system administrator from confusion caused repeated setup of access rights for the same user.

Deleting User Privileges

To delete user or group privileges, use the mouse to select a user in the *User privileges* column (use Ctrl for multiple and Shift for continuous selection), then click *Remove*.

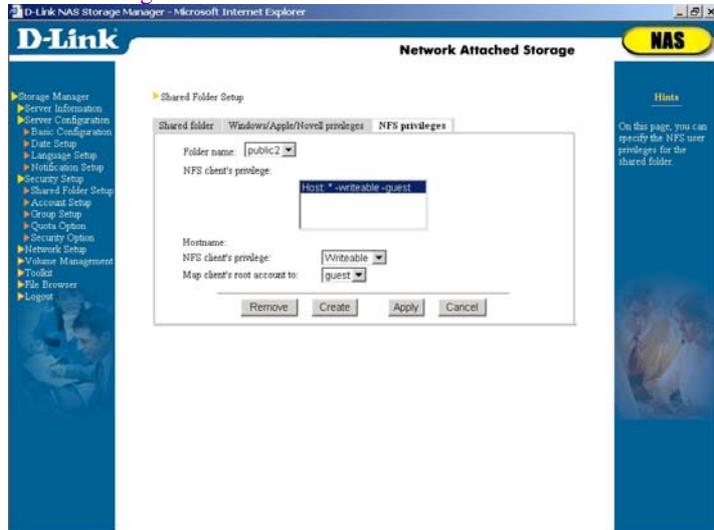
TIP

When setting Windows/Novell/Apple user privileges for the shared folders, make sure to avoid possible conflicts. *Root*, for example, is a member of the *admins* group. To avoid conflicts, you must not set the privileges for *root* to *read only*, while *admins* is set to *writable*.

In the event of conflicts in access privileges, the system will authorize users/groups in the following order: no access (*N/A*), readable and writeable (*RW*) and read-only (*RO*). For example, if the access privilege of the *root* account (belonging to the *admins* group) is set as "*N/A*" and that of the *admins* groups is "*RW*," the access privilege of *root* for this folder will be "*N/A*." If the privilege for *everyone* is set to *writable* and the user *root* to *read only*, the system will assign *writable* privileges to *everyone* as soon as you click *Apply*.

The DNS-6040 Series does not support the Windows NT/2000 ACL (Access Control List), i.e. users cannot click the right mouse button on a file and set the access privilege. The system administrator can use **Storage Manager's** *Security Setup* → *Shared Folder Setup* page to set the access privileges for every shared folder.

NFS Privileges



Use this option to set NFS (Solaris, FreeBSD or Linux and other UNIX family clients) access privileges for shared folders.

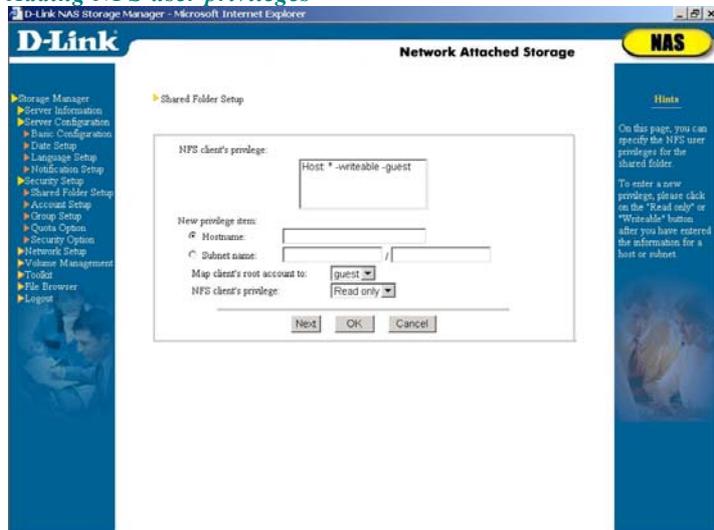
Enter the *Shared Folder Setup* → *NFS Privileges* page, and select the desired shared folder in the *Folder name* column. The *NFS client's privilege* column below will show the hosts and subnets or net groups with access privileges and the type of permission granted.

NFS client's privilege consists of three components:

- The first component is the subject sharing a folder, either a host, subnet, or a net group. The entry *Host: ** means the folder is shared between all hosts.
- The second component is the share mode, such as *read only* or *writeable*.
- The third element is a local user name. The administrator root of a NFS client can only access the folder with this ID.

The root of some clients and the NAS *root* can be owned by different users. Unless you wish to manage a shared folder from a client terminal as *root*, you should for security reasons always assign the terminal root to a non-*root* ID.

Adding NFS user privileges



To add NFS user privilege settings, click on *Create*. A new page will appear. Enter the *hostname*, *subnet* (format: subnet/subnet mask, e.g. 192.168.1.0 / 255.255.255.0), or *net group* (only available if the NAS server joins the NIS domain). Under *Map client's root account to* column, choose a local user, and then set the *NFS client's privilege* to *read only* or *writeable*. Click *OK* to confirm your selection and return to the previous page, or click *Next* to add another client.

TIP

When setting user privileges for the NFS hosts, subnets or net groups, try to avoid possible conflicts. E.g, if host *A* belongs to net group *AAA*, do not set the access privilege of host *A* to read only while setting *AAA* to writeable.

Conflicts will be dealt with in the following manner:

If a single host setting conflicts with *Host**, the single host setting is used.

If a single host setting conflicts with the subnet setting, the single host setting is used.

When a single host setting conflicts with a net group, the entity which first received its user privileges has priority. If the net group *AAA* has already been set to writeable, you cannot later set the single host *A* to *read only*.

Deleting NFS User Privileges

To delete the user privileges of a NFS client, select the desired item on *NFS client's privilege* column (use Ctrl for multiple and Shift for continuous selection), and click *Remove*.

Modifying NFS User Privileges

To modify existing privileges, select the desired item on *NFS client's privilege* column, remove it and add a new privilege.

TIP

This system software does not support “Telnet”. The system administrator of the NFS client must use the *mount* command to point to the NAS server:

```
mount IP:/Shared_Folder_Path Mount_Point
```

Whereby *IP* is the IP address of the NAS server; *Shared_Folder_Path* is the folder to be shared with the NFS client, set to */volumen/Shared_Folder_Name* by default, and *Mount_Point* is set by the UNIX administrator.

E.g., if the system administrator wants to link */user1* to the *public1* folder of the NAS server (i.e. */volume1/public1*), and the IP address of the NAS server is 192.168.1.8, the command would be:

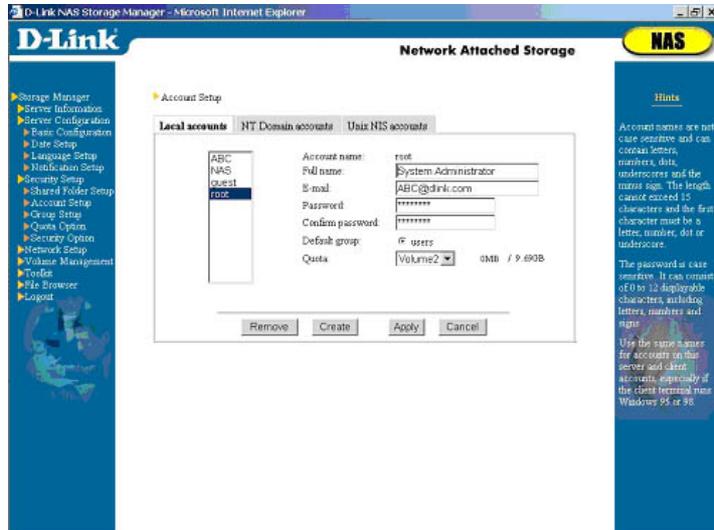
```
mount 192.168.1.8:/volume1/public1 /user1
```

Account Setup

The DNS-6040 Series supports up to 512 user accounts (Including accounts on the local machine, Windows PDC, and NIS server). Three types of users can access a NAS server:

1. Local users, with an account on the local machine.
2. Users with Windows NT/2000 PDC (Primary Domain Controller)accounts
3. Users with accounts on a UNIX NIS server

Local Accounts



The system administrator can setup accounts for Windows, Apple and Novell users on the NAS server (the local machine). When these clients attempt to access the NAS server, they only need to enter their account name and password to gain access.

The system administrator can add, modify and delete user accounts.

The name of an account cannot exceed 15 characters. The name can be formed by double-byte character languages, the same as the **Storage Manager** language, such as Traditional Chinese, Simplified Chinese, Japanese or Korean, etc., single-byte languages such as English, German, Spanish, etc., numbers, decimal point, underline and minus sign. The first character however cannot be minus sign. The name is not case sensitive.

Please note:

When naming an account using other than English, please

input the same language as the **Storage Manager** interface to ensure correct coding. Thus, when **Storage Manager** language is Japanese, account names can only be both Japanese and English. Similarly, if **Storage Manager** language is German, then account names can only be German and English. The same principle will be applied to other languages.

The password is case-sensitive and can consist of 0 to 12 displayable characters, including letters, numbers and signs.

TIP

1. The passwords for some clients, such as Win 95/98 clients and Novell clients, are not case-sensitive while the passwords for other clients, such as Win NT/2000, UNIX, and Apple Macintosh clients are. Therefore, please make sure the account passwords for the local machines are case-sensitive so that they will be suitable for all clients
2. Apple clients only allow passwords of up to 8 characters. Thus, when setting passwords for Apple clients on the NAS server, please limit the length of passwords to 8 characters or less.

Default local accounts

There are two preset accounts on the server: *root* and *guest*.

- *root*: This is the default account for the system administrator and belongs to both the *admins* and *users* group. As a first step in the server setup, please setup a password for this account.
- *guest*: This open account belongs to the *guests* group and has no password and quota restriction by default. Its purpose is to give access to all users on the LAN, so that they may access the NAS server's guest folders, such as *public1*. Unauthorized users in the LAN will automatically be granted access via the *guest* account. For reasons of safety, the system administrator might not want all unauthorized users to access (e.g. users without accounts on the NAS server, or with accounts on other account servers* in the same LAN). By adding a password to the *guest* account, unrestricted access is disabled.

Adding user accounts

D-Link Network Attached Storage **NAS**

New Account Setup

Account name:

Full name:

E-mail:

Password:

Confirm password:

Default group: users guests unrestricted

Quota: MB

User home volume:

Hints

Use this page to add user accounts.

Account names are not case sensitive and can contain letters, numbers, dots, underscores and the minus sign. The length cannot exceed 15 characters and the first character must be a letter, number, dot or underscore.

The password is case sensitive. It can consist of 8 to 12 displayable characters, including letters, numbers, and signs.

Use the same names for accounts on this server and client accounts, especially if the client terminal runs Windows 95 or 98.

To add a new local user, click *Create*. The *New Account Setup* dialog appears. Enter the *account name*, the *full name* of the user, an e-mail address and a password. Under *Default group*, select whether the user will receive his or her own home folder. If yes, select the *users* group; if no, select *guests*.

After a new account has been created under *users* group, the system will set up a *home* folder named “home” for this account. Only the user can access his home folder. If a Windows client accesses the NAS server through the Network Neighborhood, he will see a folder named “home.” The user has full *read and write* privileges to that folder. When the system has more than one volume, system administrator must specify in which volume to store the home folder of this account in the *User home volume*. The default location can be setup in the *Security Option* page. System administrator can also change it.

TIP

1. Be careful when moving an account from the *users* to the *guests* group, for the home folder of that account with all its contents will be erased.
2. Account *root* can only belong to the *users* group, but there is no home folder to be used. System administrator cannot change *root* into *guests* group. And *guest* account belongs only to the *guests* group. System administrator cannot change it to *users* group.

The system administrator can proceed to setup the disk quota for each account. The *default quota for newly created user* specified in the *Security Option* page will be displayed here. Please change according to your own need. Please note the disk quota will be applied to every volume. This means that if there are three volumes in the NAS server, and system administrator grants 100MB quota to a user, this user will have 100MB quota of storage space in each volume, and totally 300 MB quota on the NAS server.

The preset value for the *guest* and *root* accounts is *unrestricted*. If, for security reasons, the administrator wishes to restrict disk quota for guest users without proper accounts on the NAS server or any account server, simply setup a quota for the *guest* account in the *Security Setup* → *Quota Option* page. The system administrator can also use this page to change the quota of each account or specify quota in each volume of a user in a flexible way. .

When a Windows NT 4.0/2000, Novell or Apple Macintosh user accesses the NAS server, the Windows operating system will ask for the NAS server or Windows PDC account and password to confirm his or her identity. In the case of Windows 95/98, Windows will automatically retrieve the identity of the client and only request a password. If the Windows user account is not the same as the account on the NAS server, the client cannot log in on the NAS server. The

system administrator must therefore keep NAS server accounts and Windows accounts synchronized.

Deleting local users

To delete a local user, simple select the account on the left side (use Ctrl for multiple and Shift for continuous selection), then click *Remove*.

Windows Domain Accounts

If a Windows NT or a Windows 2000 domain exists in the network, the system administrator only has to add the NAS server to the Windows domain to take advantage of the PDC privilege settings and grant all accounts on the PDC access to the NAS server's storage space. When these clients need to access the server, they can do so by entering their Windows NT/2000 PDC account name and password.

Once the NAS server is part of a Windows NT/2000 domain, a new tab called *NT domain accounts* will become available on this page, containing a copy of all user accounts. Only the account names will be copied here, without passwords and other information. When a client attempts to access the NAS server, the NAS server will forward the account and password information to the Windows PDC server for verification. If the result is positive, access will be granted. If the PDC server does not authorize the user, the account is verified against the list of local users. Access is granted, if the login data corresponds to a local user. If a user has an account *user1* on each the PDC and the NAS server, but with different passwords, access is granted if either one of the two passwords is provided. The system administrator should, however, avoid allowing accounts existing on the Windows PDC to be created on the NAS server. A situation where different users share the same account name should also be avoided.

The DNS-6040 Series will read the Windows PDC account list every 15 minutes; any changes on the PDC will also appear

on the NAS server.

By default Windows domain accounts do not have home folders. If you wish to assign a home folder to this type of account, simply select the desired account on the left (use Ctrl for multiple and Shift for continuous selection), then click on *Add to local*. The selected accounts will appear in the list of local users. By default, they are part of the *guests* group. First setup the passwords for the accounts, then transfer these accounts from the *guests* group to the *users* group, and select the *User home volume* location .

Additionally, Windows domain account will directly apply the default settings for all newly created users defined in *Security Option*. The system administrator can setup hard disk quota for each individual NT domain account in *Quota Option*.

TIP

1. Because the password formats between Windows system and **The DNS-6040 Series** are different, when the account information in the *NT domain accounts* tab are added to the *local accounts*, the system will not be able to duplicate the user passwords on Windows PDC directly to the local machine. The system administrator will have to add passwords for these accounts on the *Local accounts* tab manually. Therefore, please set the same passwords here as the ones on PDC.
2. This system allows account/group names with a maximum of 15 displayable characters. After having been added to a Windows domain, any accounts/group name on Windows PDC with more than 15 characters will not be duplicated by the system onto the NAS server. Only one warning message will be shown and inform the system administrator of all unduplicated accounts.
3. If the NAS server is part of the Windows domain, the system administrator has to avoid adding any account/group on the Windows PDC with a name exceeding 15 characters, otherwise the system will not be able to duplicate this account/group to the NAS server, nor will a warning message appear.

UNIX NIS Accounts

If the network already contains a UNIX NIS domain, the system administrator can simply add the NAS to the UNIX NIS domain to retrieve access settings from the NIS server.

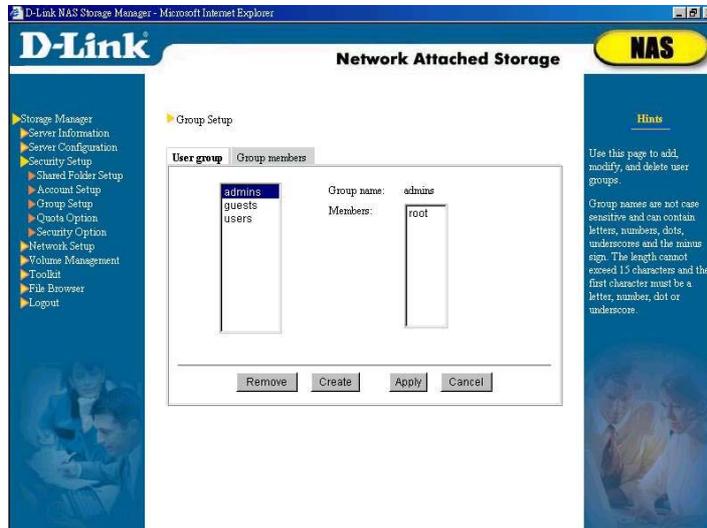
Once the system administrator adds the NAS server to a UNIX NIS domain (see *Network Setup* → *Unix NIS*), a new tab entitled *UNIX NIS Accounts* will appear on this page, containing all the users retrieved from the NIS server. These accounts will directly apply the default quota set up for a new user in the *Security Option* page. The system administrator can also set hard disk quota individually for each NIS domain account in the *Quota Option* page.

When adding new accounts on NFS clients, some NFS clients automatically generate a corresponding group for each

account. We recommend the system administrator to disable this function, since **The DNS-6040 Series** only supports a maximum of 128 user groups, and the NAS server would therefore not be able to be integrated into the NIS domain if there are more than 128 user groups.

Group Setup

User Group



Use this page to add, modify or delete user groups. **The DNS-6040 Series** allows up to 128 user groups (including user groups on the local machine, Windows PDC and NIS server).

The name of a group cannot exceed 15 characters. The name can be formed by double-byte character languages, the same as the language of the **Storage Manager** interface, such as Traditional Chinese, Simplified Chinese, etc., single-byte languages such as English, German, Spanish, etc., numbers,

decimal point, underline and minus sign. The first character however cannot be minus sign. The name is not case sensitive. Please note:

When naming a group other than English, please input the same language as the **Storage Manager** interface to ensure correct coding. Thus, when interface language is Simplified Chinese, group names can only be both Simplified Chinese and English. Similarly, if the interface language is German, then group names can only be German and English. The same principle will be applied to other languages.

Default user groups

The system includes three default groups, *admins* (the group of administrators with *root* as the default member), *users* (normal users with their own home folders, with *root* as the default member), and *guests* (normal users without their own home folders, with *guest* as the default members).

- admins* — this is the system administrator group. Only members of this group can change system settings. *Root* is a member of this group by default.
- users* — this is the user group to which all users belong. Each member of this group can access his own folder named after his account and other folders to which he has access privileges. *Root* is a member of this group by default.
- guests* — unlike the members of the *users* group, *guests* will not have their own home folders. They will however have access to the public folders on the NAS server. The account *guest* is a member of this group by default.

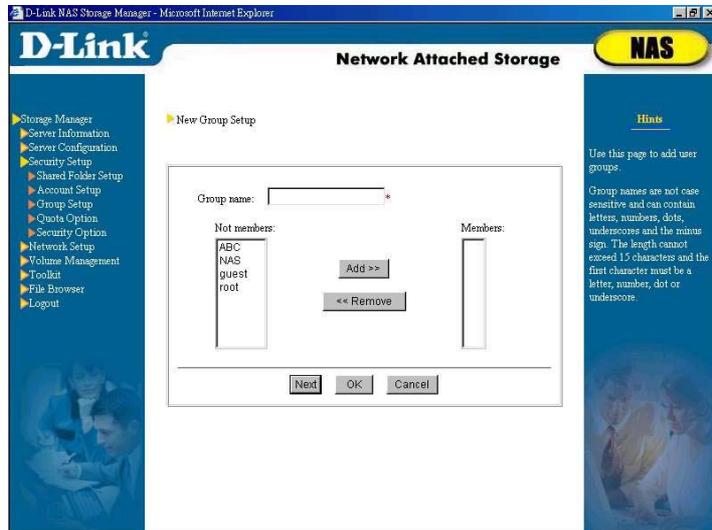
TIP

Users can only belong to either the *users* or the *guests* group, not to both. Suppose a company has two departments A and B. Department A has purchased a NAS server for their employees to store and share information. Part of the space should be made available to department B. In this case, the system administrator can setup accounts for each member of department A and B, then group the department A accounts under *users* and the members of department B under *guests*. That way the employees of department A will have their own home folders, while the members of department B will be able to access only those folders for which they have access privileges.

Modifying user groups

In the left pane, you will find a list of existing groups: use the mouse to select a group. The *group name* and *members* will appear on the right side. To rename a group, click directly on the *group name* column and change it; then click *Apply*. You can add or delete members on the *Group members* page.

Adding user groups

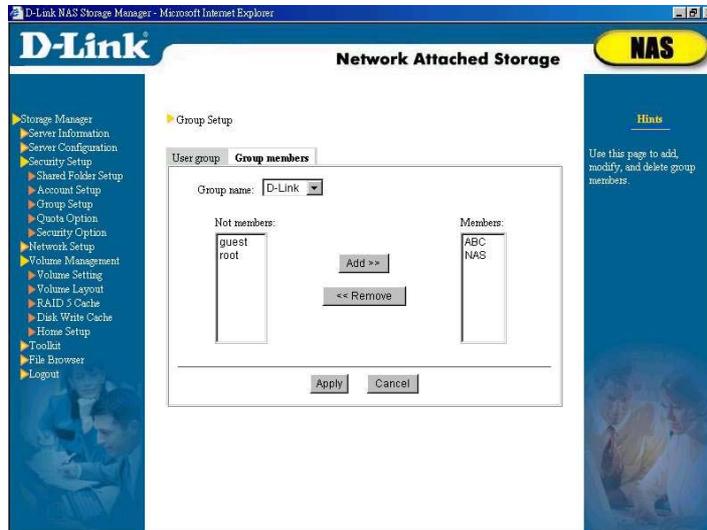


To add a new group, click *Create*. The *New Group Setup* page appears. Enter a name for the group, and select the members of the group in the *Not members* list (use Ctrl for multiple and Shift for continuous selection). Click on *Add* to add the selected members. Select *OK* to confirm the operation, or *Next* to add more groups.

Deleting User Groups

To delete a group, select the group in the list (use Ctrl for multiple and Shift for continuous selection), and then click *Remove*.

Group members



Use this page to add, modify, and delete group members.

The *Members* field contains existing members. Users not belonging to this group are listed on the left *Not members* field.

If this NAS server belongs to a Windows NT/2000 domain and (1) the system administrator has previously moved Windows PDC users in the *Account Setup* page to the local accounts or (2) both NAS server and Windows PDC have the account with the same name, those Windows domain users will NOT appear in the list of members. Instead, only local users will be shown to avoid multiple selection and assignment to a group of the same user.

Adding group members

To add a new group member, select the target group from the list, and then select the members you wish to add in the *Not members* list (use Ctrl for multiple and Shift for continuous selection). Then click *Add*.

Note that all users must belong either to the *users* or the *guests* group. If the system administrator uses this page to move a member from the *guests* group to the *users* group, the account will automatically be removed from the *guests* group, and vice versa. However, accounts belonging to *guests* or *users* group can be assigned to other groups, including the predefined *admins* group, or any other group set up by the administrator.

Deleting group members

To remove a member from a group, select the name from the list of members (use Ctrl for multiple and Shift for continuous selection), then click *Remove*.

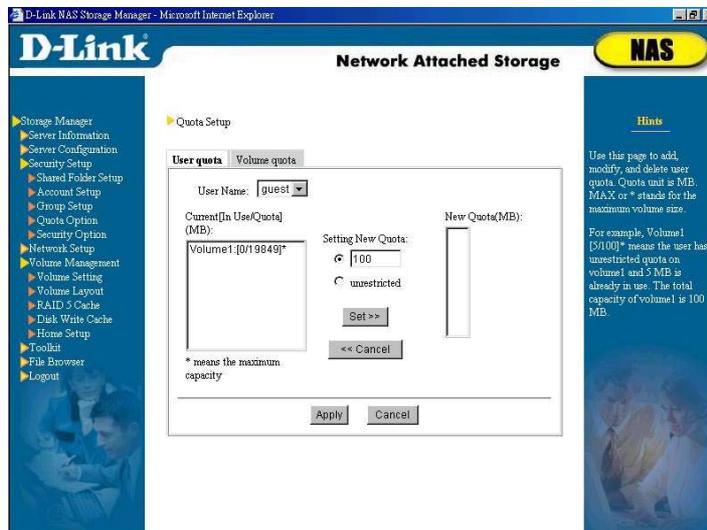
TIP

If a user is connected to the server while the administrator is modifying the user's security settings, these changes will not be activated immediately, but only after the user logs out and back in again.

User Quota Setup

There are two ways a system administrator can view and modify quota setup in the NAS server, by user or by volume.

User Quota



The system administrator can add, modify or delete user quota through this screen.

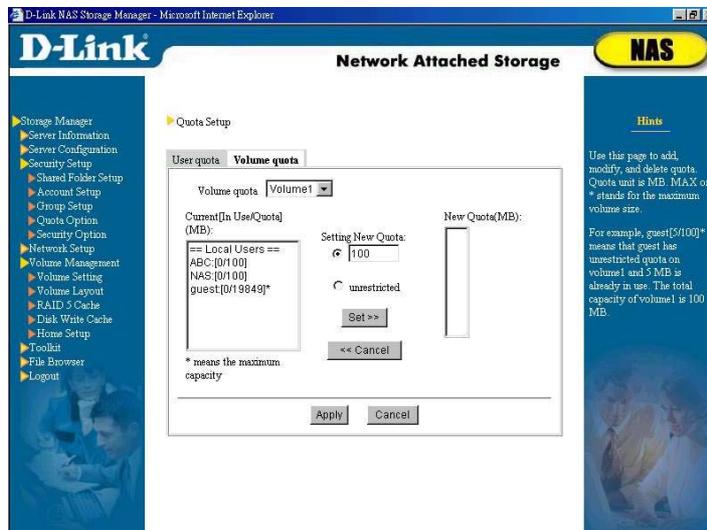
Current [In Use/Quota] (MB) column indicates the quota and amounts of space used in each volume by the current account. The symbol "*" in this column means the account is assigned the maximum quota. For example, *Volume1: [200/500]* means that volume1 has 500MB quota available and of which 200MB has already been used. Additionally, *Volume2: [200/1000]* means the current account has the maximum space available in volume2, i.e. 1000MB, of which 200MB has already been used.

To change user quota, please select either Local, Windows domain or NIS domain account in *User Name*. Then select the item to be changed in the *Current [In Use/Quota] (MB)* column, setup new quota in *Setting New Quota* and click *Set >>* button. Repeat these steps if quotas for more than one volume require

modification. The new quota amount will be displayed in the *New Quota* column to be applied. Make sure the new quotas are correct. Click the *Apply* button to update the values in the *Current [In-Use/Quota](MB)* column. To cancel setup for a specific volume, please select an individual item and then click the <<*Cancel* button. To cancel all the modification, click the *Cancel* button.

Please note if the **DNS-6040 Series** server is added to the Windows NT/2000 domain and (1) system administrator has previously added certain Windows PDC user account to *Local account* in the *Account Setup* page or (2) there is an account in both NAS server and Windows PDC with the same name, then this account will not be displayed in columns *NT Domain Users* or *NIS Domain Users* in the *User Name List* at the top of this page and will only be listed in *Local Users* to prevent system administrator from being confused because of repeated quota setup for the same user account.

Volume Quota



The system administrator can add, modify or delete user quota in every volume through this page.

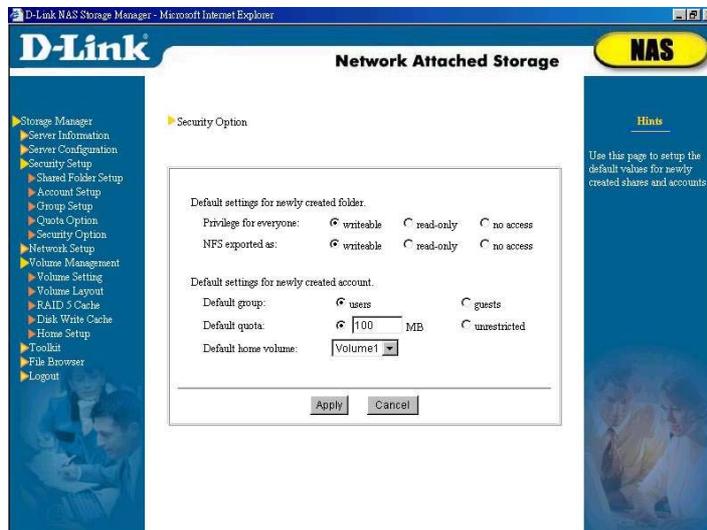
Current [In Use/Quota] (MB) column indicates the quota and amounts of space used of all the users in the current volume. The symbol "*" in this column means the account is assigned the maximum quota. For example, *User1: [200/500]* means that User1 has 500MB quota available and of which 200MB has already been used. Additionally, *User2: [200/1000]** means User2 has the maximum space available in the current volume, i.e. 1000MB, of which 200MB has already been used.

To change volume quota, please select a volume in *Volume quota*. Then select the account to be changed in the *Current [In Use/Quota] (MB)* column, setup new quota in *Setting New Quota* and click *Set >>* button. Repeat these steps if quotas for more than one account require modification. The new quota amount will be displayed in the *New Quota (MB)* column to be

applied. Make sure the new quotas are correct. Click the *Apply* button to update the values in the *Current [In-Use/Quota](MB)* column. To cancel setup for a specific account, please select an individual setup column and then click the <<*Cancel* button. To cancel all the modification, click the *Cancel* button.

Please note if the **DNS-6040 Series** server is added to the Windows NT/2000 domain and (1) system administrator has previously added certain Windows PDC user account to *Local account* in the *Account Setup* page or (2) there is an account in both NAS server and Windows PDC with the same name, then this account will not be displayed in columns *NT Domain Users* or *NIS Domain Users* in the *Current [In-Use/Quota](MB)* List at the left side of this page and will only be listed in *Local Users* to prevent system administrator from being confused because of repeated quota setup for the same user account.

Security Options



The system administrator can use this page to modify the preferences of newly created shared folders and user accounts.

Default settings for newly created folders

1. NFS exported as: writeable read-only
New folders can be exported either with full read and write permissions, i.e. *writeable*, or with write protection, i.e. *read-only*.
2. Privileges for everyone: writeable read-only
This setting determines whether Windows, Apple and Novell users have by default full read and write permissions, i.e. *writeable*, or can only read newly created folders, i.e. *read-only*.

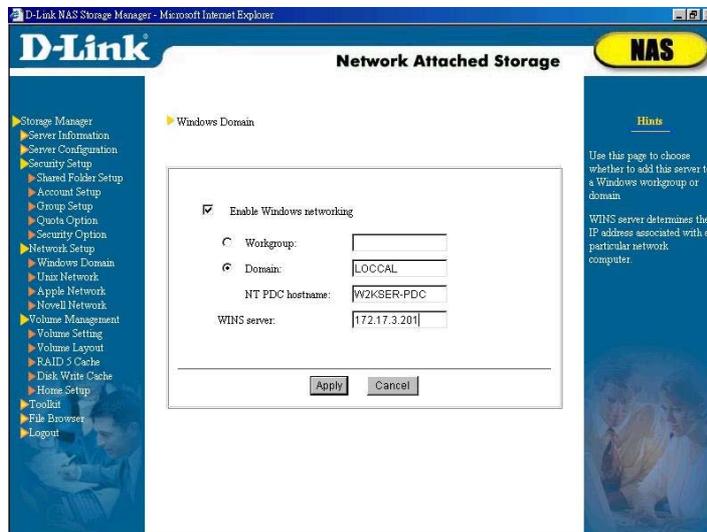
Default settings for newly created accounts

- Default group: *users* *guests*
Here you can choose to which group newly created users belong by default. If you want new accounts to automatically have a home folder, choose *users*, otherwise, choose *guests*.
- Default quota: _____ MB unrestricted
With this setting you can limit the amount of storage space allotted to new users, or choose not to attach any restrictions, i.e. *unrestricted*.
- Default home volume: Volume__
If the newly created account belongs to *Users* group, please select the volume in which its home folder will be saved.

Network Setup

Use *Network Setup* to set the network types supported by the NAS server. The default setting allows for simultaneous use of Windows, UNIX, and Apple networks. You may change the defaults according to your needs.

Windows Domain/Workgroup Setup



It is up to the system administrator, whether to open the NAS for access by Windows clients. Select *Enable Windows networking* if you want to allow Windows clients, and then select a *Workgroup* or *Domain* for the server.

If you choose a workgroup, you only have to select the workgroup in the **Storage Manager**.

If you choose to add the NAS server to a Windows domain, you need to add the NAS server account to the PDC, i.e. a Windows NT/2000 Server, and then enter the Windows domain information in the *Network Setup* → *Windows Domain* page of **Storage Manager**.

Settings on Windows NT PDC

- From the Start menu, select Programs → Administrative Tools, then Server Manager.
- Open the Server Manager and select Computer → Add to Domain.

- In the column Computer Type, select Windows NT Workstation or Server, under Computer Name, enter the NAS server name (that is the name you see in the Server Configuration→Basic Configuration). Press Add to complete the operation.

Settings on Windows 2000 PDC

- From the Start menu, select Programs→Administrative Tools, then Active Directory Users and Computers.
- If you choose to join a Windows 2000 PDC domain, make sure the domain mode is set to mixed mode. Mixed mode is a special Windows 2000 mode for downward compatibility, sacrificing certain Windows 2000 features while preserving full operability.
- Return to the Active Directory Users and Computers screen. Select Computer, click the right mouse button, and select New Object→Computer.
- Under Computer Name, enter the NAS server's name. Because the operating system of the **DNS-6040 Series** is not Windows 2000, to be compatible with pre-Windows 2000 operating systems, select Allow pre-Windows 2000 computers to use this account, and then click OK.

Settings on the NAS server

You must enter the Windows *Domain* and *PDC hostname* in the **Storage Manager's** *Network Setup*→*Windows domain* screen. If there is also one or more than one separate BDC (Backup Domain Controller), the **DNS-6040 Series** will make a record of this BDC to be the backup support for the Windows PDC.

Applying Windows PDC Privilege Settings

After the server has successfully joined a Windows domain, a new tab will appear on the *Security Setup*→*Account Setup* screen, called *NT Domain Accounts*, containing a copy of all user accounts. (For setup instructions, see *Security Setup*→*Account Setup*→*NT Domain Accounts*). When a client attempts to access the NAS server, the NAS server will forward

the account and password information to the Windows PDC server for verification. If the result is positive, access will be granted. If the PDC server does not authorize the user, the account is verified against the list of local users. Access is granted if the login data corresponds to a local user.

Note that accounts with the same name on both PDC and the NAS server will be merged automatically. For example, if an account *user1* exists on both the PDC and the NAS server, but with different passwords, access is granted if either one of the two passwords is provided. The system administrator should, however, avoid allowing accounts existing on the Windows PDC to be created on the NAS server. A situation where different users share the same account name should also be avoided.

TIP

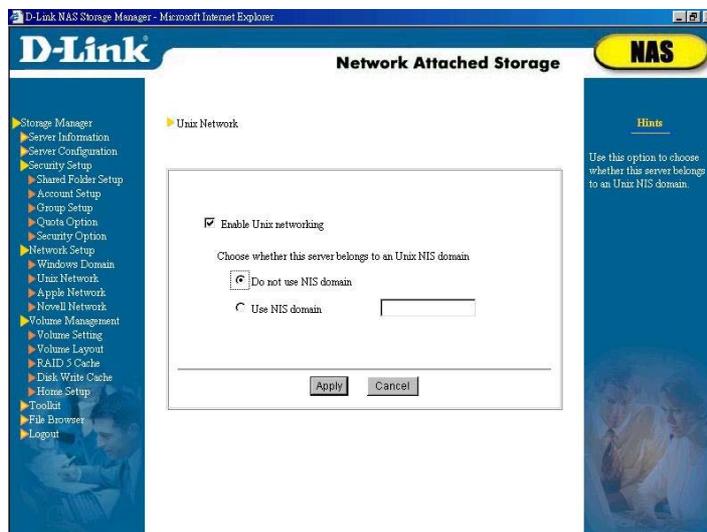
Notes on working with a Windows domain:

1. If an NAS server *NAS001* owns an account *NAS001* on the PDC, logs in to a Windows domain and out again, it is possible that the server cannot log back in. In this case, delete the *NAS001* account on the PDC, create a new account, and enter the domain name and PDC hostname in **Storage Manager**.
2. After moving a NAS server from a Windows domain or workgroup to another domain or workgroup, the NAS server may still appear in the original domain or group in the Windows clients' Network Neighborhood. This is a restriction of the Network Neighborhood module itself and does not involve a breach of security: the server does in fact not exist any longer in the original domain or workgroup.
3. If the PDC fails in a Windows domain, Windows clients will no longer be able to access the NAS server. This is an intrinsic limitation of the Windows networking environment. The **DNS-6040 Series** also supports BDC, thus offering a useful remedy for this kind of situation.
4. For security reasons, an existing *root* account on the PDC will not be merged with the *root* account of the NAS. In other words, if a client attempts to log into the NAS server with the *root* account, he must enter the NAS *root* password to gain access as system administrator.
5. Once a NAS server is part of a domain, only users in the same Windows domain can access the NAS server. Members of other domains or workgroup cannot access the server. E.g., if your NAS is part of a Windows domain *A*, and the PDC in this domain knows an account *user1* with the password *123*. If the client to which this account belongs to another domain *B*, the client will still not be able to access to NAS server, even when providing the correct login information on the PDC account.

WINS Server

If there is a WINS server in the Windows network, please fill in the IP address of the WINS server.

UNIX NIS Domain Setup



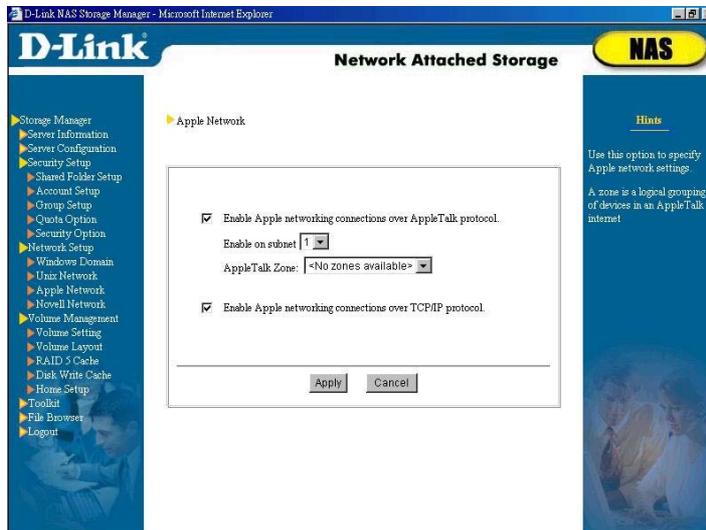
The system administrator can decide whether to make NAS server available for NFS client. If yes, please select *Enable Unix Networking*.

If there is a NIS server in the Unix network, use this option to select whether the server should be part of a NIS domain. If yes, you must enter a domain name.

After joining a NIS domain, a new tab called *UNIX NIS Accounts* will appear under *Security Setup* → *Account Setup*, showing all available user accounts on the NIS server. System administrator can setup hard disk quota for these users in the *Security Setup* → *Quota Option* page.

Note: if the system administrator has ever added the NAS server into a NIS domain before, the NAS server will not be able to reboot if the NIS server is not available. Please make sure the NIS server is available before you restart/power on the NAS server.

Apple Network



Use this option to select whether the server should use AppleTalk or TCP/IP, thus allowing or preventing Apple clients from accessing the NAS server.

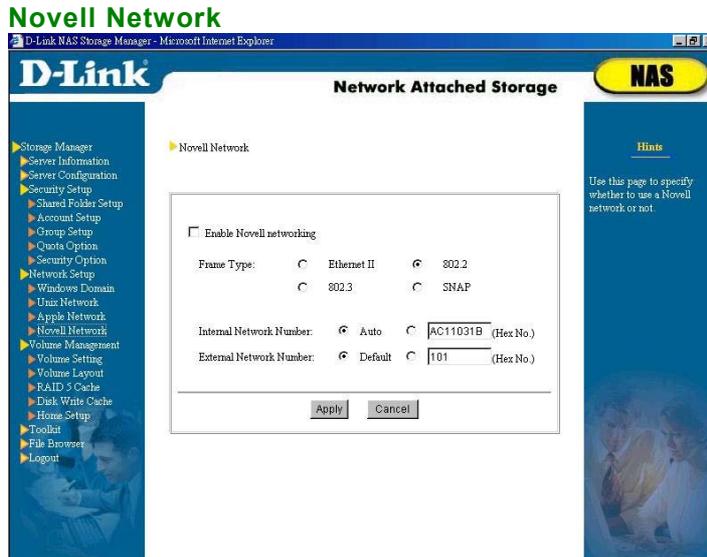
This system also supports "Zone", a logical group of devices in an AppleTalk network. When the system detects the first subnet that has an AppleTalk Zone, it will display these zones on this page. A system administrator can add the NAS server to the Zone.

Please Note:

When there is more than one network card in the NAS server and the server is set up as having multiple subnets, this system only supports Apple client in a single subnet to read/write from the server through AppleTalk or TCP/IP protocol. Apple clients in other subnet(s) can only read/write through TCP/IP protocol. Due to this limitation, this system can only support the Zone in a single subnet.

TIP

1. When an Apple client, for example a Mac OS 9.0.2 client, is trying to browse an English web site and sees many "cross"marks appear, please close *Smartview* from the *Control Panel*.
2. Apple clients cannot access the NAS server with the *root* account. For system administrator *root* to access the server from an Apple client, please create another admins group account on the server.
3. Apple clients will not be able to save any single file larger than 4GB onto the NAS server.
4. When an Apple client deletes a file on the NAS server, the file is not actually deleted so the available HDD space shown on the "*Server Information/Status*" page is not enlarged. To release the space, use "*Empty Trash*" on the Apple client.



Use this page to specify whether to support a Novell network or not. When there is more than one network card in the NAS server and the server is set up as having multiple subnets, this page will display multiple tabs such as *Subnet 1*, *Subnet 2*, etc. allowing system administrator to setup Novell environment within each subnet.

If you want to allow access by Novell clients, enter the correct values for *Frame Type* and *Network Number*. The *Internal network number* must be unique and should be set automatically to avoid conflicts.

Note:

- When selecting automatic configuration of the *Internal Network Number*, make sure the server's IP address is not in conflict with other servers.
- When adding the filer to the network where a Novell server is already set up, you have to make sure the Novell server has the same *External*

Network Number and *Frame Type* settings with the filer. *Auto-detect* settings on the Novell server is not recommended.

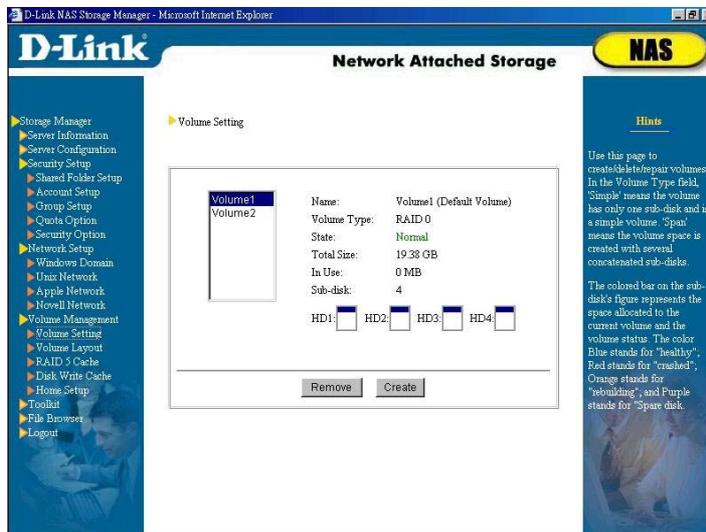
TIP

1. In the Netware Services network, the system will automatically add *_NW* to the original server name.
2. Novell clients cannot use the *root* account to access the NAS server. For the system administrator *root* to access the server from Novell clients, please use the "*supervisor*" account and the root password of the NAS server to log in (there's no need to create this account on the NAS), or create another admins group account on the server.
3. Novell clients will not be able to save any single file larger than 4GB onto the NAS server.
4. The Windows Client service for Netware will automatically change small letters into capitals in the background, which can cause errors with some double byte characters, but this problem will not happen with Novell client 4.8 for Windows NT/2000, or 3.3 for Windows 95/98.

Volume Management

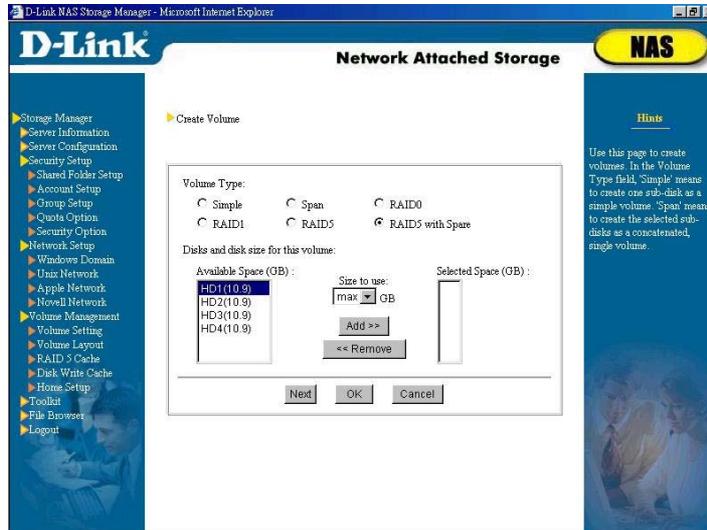
The **DNS-6040 Series** preset a default of 3GB space in each hard disk as a RAID 5 volume. System administrator can add or delete volumes in the system according to his/her own needs.

Volume Setting



System administrator can create/remove/repair volume through this page. The maximum number of volumes this system can support is 1.5 times of the total number of hard disks. Thus in a model with four hard disks, the system can create at the most six volumes, i.e. (4*1.5), etc. There is no need to restart the server for volume creation, removal or repair to take effect.

Create New Volume



To create a new volume, click *Create* button to enter into the *Create Volume* page.

First, click *Volume Type*. This system supports six volume types: Simple, Span, RAID 0, RAID 1, RAID 5, and RAID 5 with hot spare.

Next, determine which hard disk storage space will make up the volume. The *Available Space* column indicates space in each hard disk that has not yet been allocated. After hard disk is selected, setup *Size to use*, click *Add* to add to the volume. This step is similar to the utility that allows for segmentation of a large hard disk into smaller segments to achieve more flexible hard disk space utilization. The *Selected Space* column will display all disk space to be added to the volume. After confirmation, click *OK* to start creating the new volume. System administrator can display *Creating Process Status* to check the progress of volume creation.

After a volume is created, system will return to main page of the *Volume Setting*. At this time, the newly created volume should be in normal working condition. The default “public *n*” shared folder will also be created. System administrator can also add other shared folders in this volume and make available for clients to use.

TIP

Size to use is measured in the unit of GB or gigabyte. The smallest unit depends on the size of the hard disk. The current system will divide the hard disk space by 20 and take the nearest whole number as the smallest unit. For example, when the disk total volume is less than 40 GB, the smallest unit is 1GB. Or when hard disk total volume is greater than or equal to 40GB and less than 60GB, the smallest unit will be 2 GB, etc.

Please Note:

While creating non-RAID 1 or non-RAID 5 volume, when system returns to *Volume Setting* page, you will see “*Normal*” in the *State* column for the volume. But when creating RAID 1, RAID 5 or RAID 5 with hot spare volume, the *State* column will display *Built (Building percentage: xx%)*. This is because when creating RAID 1 or RAID 5 volume, though the volume is created and client is able to perform save or retrieve function, but because the system is still performing necessary processes in the background (e.g. building RAID 1 consistency or RAID 5 parity) to ensure proper working of the system, thus please make sure not to hot-swap the hard disk until the *State* column shows the message: *Normal*.

Simple

A simple volume must be created in contiguous space of the same hard disk, and the selected space will be created as independent and with non-RAID mechanism hard disk. In creating a simple volume, you can select only one hard disk at a

time.

Span

A span volume can be created by combining space from two or more hard disks. The selected disks will be created as one large, contiguous volume. The selected space in each hard disk does not need to be equal in size.

RAID 0

RAID 0 will consider all the selected space as one large hard disk. Since it will however perform parallel and multiple read/write, thus it has better performance efficiency than *Simple* or *Span* volume.

RAID 1

RAID 1 will use half of the volume as one-to-one data mirroring, i.e. duplicate the same set of data from A to B to ensure data security and integrity. Thus, the actual available space is only half of the total space. This level of RAID can ensure high level of data security, but because it only has 50% utilization rate, the cost is relatively higher than other volume types. The use of RAID 1 indicates high priority of data security over cost consideration. There must be the selection of two hard disks with the same size in creating a RAID 1 volume.

RAID 5

In addition to consolidating multiple (at least 3) hard disk space of the same size to a large virtual hard disk to enhance store/retrieval speed, RAID 5 utilizes one of the multiple storage space to store redundancy (parity) to enable data reconstruction in the future. Thus if there is n hard disk space, the actual storage space for a RAID 5 is only $n-1$ disk space. This volume type can ensure high level of data integrity and is more cost effective than RAID 1 because of higher actual disk space availability. It is suggested to select RAID 5 in situation where there is a need for high level of data integrity. Creating a

RAID 5 volume requires selection of at least three hard disks of the same disk space.

RAID 5 with hot spare

In RAID 5 with hot spare volume type, a spare hard disk is added to a RAID 5 volume. This volume type will use one hard disk space to store redundancy and keep a disk as a spare. Thus if n hard disk space is selected, the actual space available is $n-2$ hard disk space. When any hard disk is malfunctioned, the spare hard disk space will be on-line and replace the malfunctioned disk automatically. This volume type can provide timely data reconstruction better than RAID 5.

Remove volume

To remove a volume, please select the volume and click *Remove*.

Re-create volume

The screenshot shows the 'Volume Setting' page in the D-Link NAS Storage Manager. The interface includes a navigation menu on the left, a central configuration area, and a 'Hints' section on the right.

Volume Setting

Volume1	Name:	Volume1
Volume2	Volume Type:	RAID 0
	State:	Crashed
	Total Size:	19.38 GB
	In Use:	0 MB
	Sub-disk:	4
	HD1:	<input type="checkbox"/>
	HD2:	<input type="checkbox"/>
	HD3:	<input type="checkbox"/>
	HD4:	<input type="checkbox"/>

Buttons:

Hints

Use this page to create/delete/repair volumes. In the Volume Type field, 'Simple' means the volume has only one sub-disk and is a simple volume. 'Spare' means the volume space is created with several concatenated sub-disks.

The colored bar on the sub-disk's figure represents the space allocated to the current volume and the volume status. The color Blue stands for "healthy", Red stands for "crashed", Orange stands for "rebuilding", and Purple stands for "Spare disk".

The re-creating function can only re-create the original structure. It cannot restore any lost data in this volume.

If a volume is crashed due to any failed disk, the volume structure could be recovered by clicking the *Re-create* button.

The re-creating function can only re-create the original structure of the crashed volume: share folders and users' home folders, and set it as the default volume if it originally was setup as such. It cannot restore any lost data in these shared folders.

Before you start recreating, please make sure the failed disk is replaced with a new one.

Repair volume

The screenshot shows the 'Volume Setting' page in the D-Link NAS Storage Manager. The page title is 'Network Attached Storage' and 'NAS'. The left sidebar contains a navigation menu with options like 'Storage Manager', 'Server Information', 'Server Configuration', 'Security Setup', 'Network Setup', 'Volume Management', 'Volume Setting', 'Volume Layout', 'RAID 5 Cache', 'Disk Write Cache', 'Home Setup', 'Toolkit', 'File Browser', and 'Logout'. The main content area shows the 'Volume Setting' for 'Volume2'. The details are as follows:

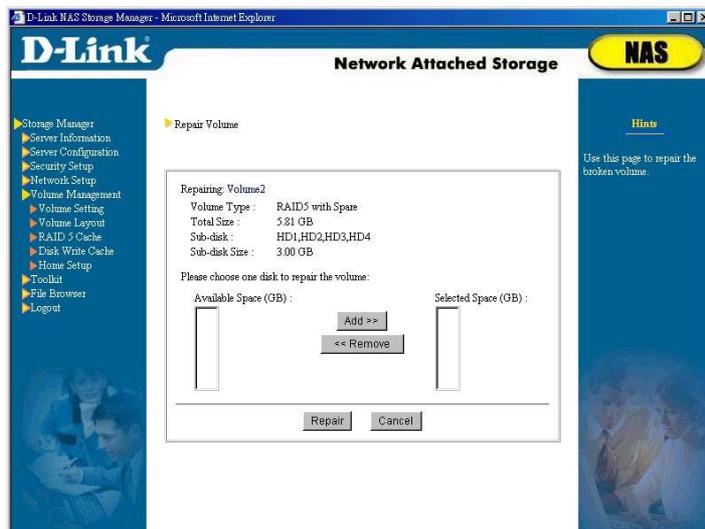
Name:	Volume2 (Default Volume)
Volume Type:	RAID 5 with Spares
State:	Degraded
Total Size:	5.81 GB
In Use:	272 MB
Sub-disk:	4

Below the details is a disk status bar showing four disks: HD1, HD2, HD3, and HD4. HD1 and HD2 have blue bars, HD3 has a red bar, and HD4 has a purple bar. At the bottom of the main content area are three buttons: 'Remove', 'Create', and 'Repair'. On the right side of the page, there is a 'Help' icon and a text box explaining the volume types and disk status colors.

Use this page to create/delete/repair volumes. In the Volume Type field, 'Simple' means the volume has only one sub-disk and is a simple volume. 'Spas' means the volume space is created with several concatenated sub-disks.

The colored bar on the sub-disk's figure represents the space allocated to the current volume and the volume status. The color Blue stands for "healthy", Red stands for "crashed", Orange stands for "rebonding", and Purple stands for "Spare disk".

This function can help repair volume types with data protection mechanism such as RAID 1, RAID 5 or RAID 5 with hot spare. When any segment in a volume is damaged, system administrator can use the repair functions in this system to search for other available hard disk space in the server to fill up the damaged segment.

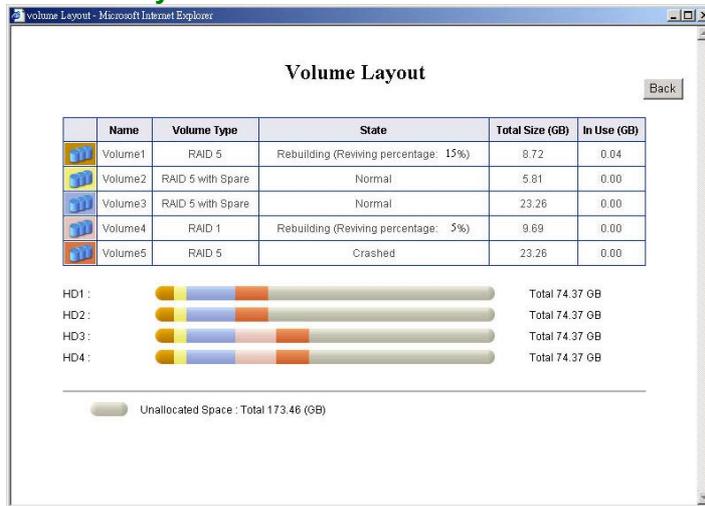


For example, assume volume2 is a volume of RAID 5, which is created from hard disks 1, 2 and 3, each with 10GB disk space. When disk 2 is damaged, the *State* column in *Volume Setting* page will display *degrade* indicating though this volume can still be accessed but it is supporting these tasks with less than normal working condition. Click the *Repair* button in the bottom to start the *Repair Volume* page. The *Available Space* column will display all the hard disk space currently available to repair the damaged disk. Please select the hard disk, for example, disk 4, and click *Add*. After confirmation, then click *Repair* for the system to start data reconstruction from data stored in the second disk to the fourth disk. When this is complete, volume2 is composed from disks 1, 3 and 4, each with 10GB space.

Please note, you cannot select the hard disk in which the volume is created while repairing volume space. In the previous example, because volume2 is created from hard disks 1,

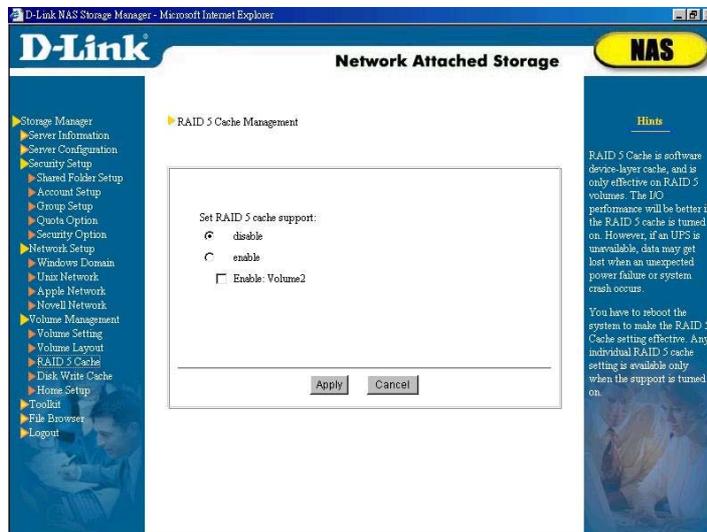
2 and 3, thus repair of this volume can only be performed with disk other than these 3 hard disks.

Volume Layout



This page shows the status of volume layout in the NAS server.

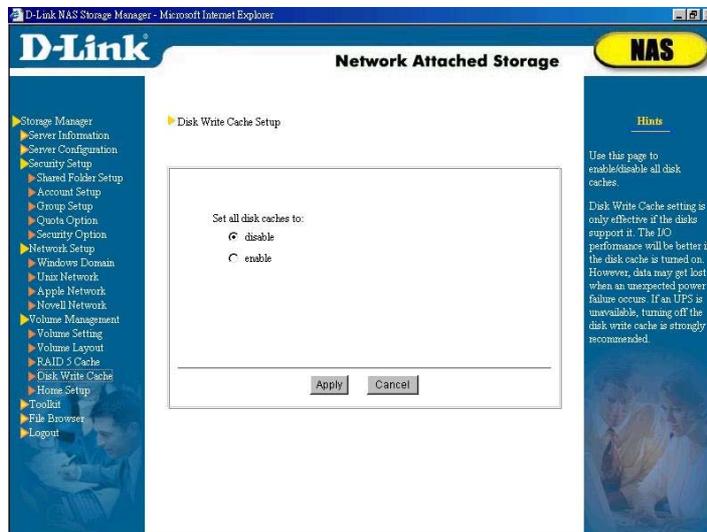
RAID 5 Cache



In supporting RAID 5, save/retrieval activity requires data in multiple hard disk read/write to compute parity to maintain data security. To improve read/write performance, the **DNS-6040 Series** supports RAID 5 device-layer cache and data can be stored in memory temporarily thus is much faster than hard disk read/write activity. However, this function requires battery-backup memory (SDRM or NVRAM) or UPS to be effective for any unanticipated power failure that may result in data loss.

The system administrator has to reboot the system to make the RAID 5 Cache setting effective, and it will be applied only to the selected volume(s).

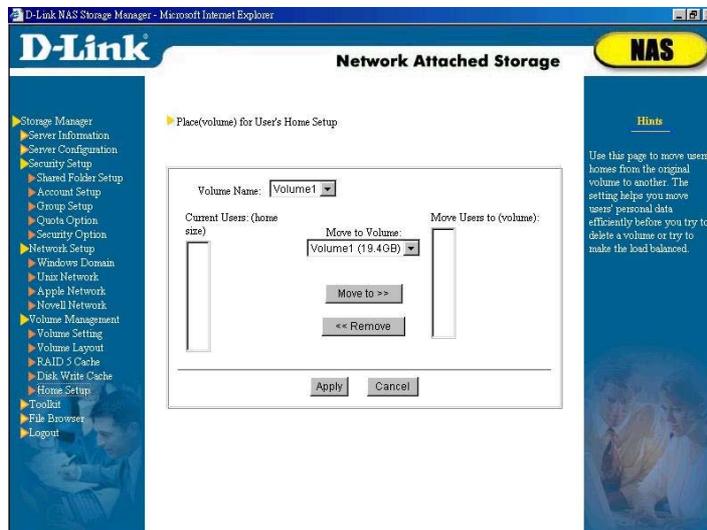
Disk Write Cache



System administrator can turn on or off all the hard disk write cache here.

This setup will take effect only if the server hard disk supports cache memory. If the hard disk write cache is turned on, the system read/write performance will improve, but it may result in data loss if any unanticipated power failure occurs. If the system utilizes UPS, then we suggest that you turn on this selection.

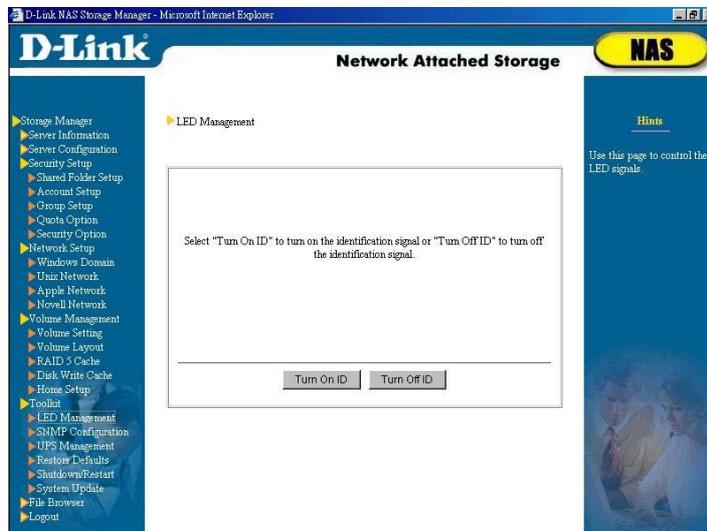
Home Setup



When adding a new account into the *Users* group, the system will automatically create a home folder for this account. System administrator must specify the volume to store the home folder. But it is possible to save many accounts into certain volume causing the volume to carry heavy load or have inadequate space. This *Home Setup* page enables system administrator to easily manage user home folders. After selecting a volume in *Volume Name*, the system will display accounts' home folders in the selected volume in the *Current User (home size)* column. Select accounts that require moving of home folders, select destination in *Move to Volume* and click *Move to*. After confirmation then click *Apply*. Please note, if the user account is accessing its home folder, the file access will be interrupted until home folder move is complete.

Toolkit

LED Management



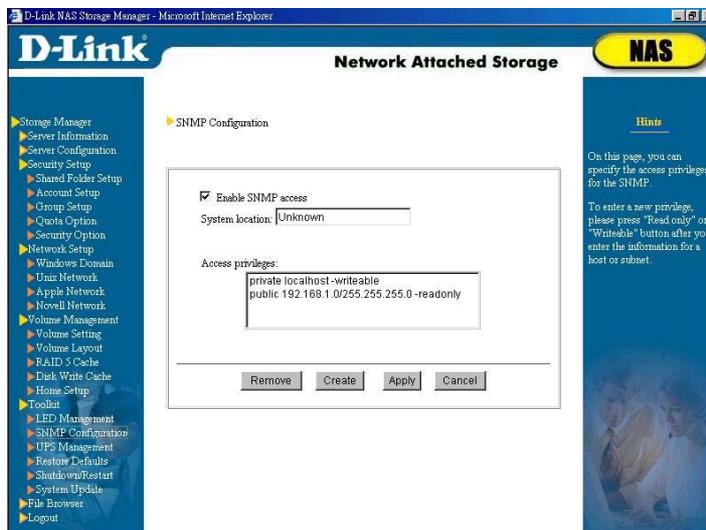
The system administrator can control the LED indicators from here.

The ID indicator is located on the front panel of the server. In the event of an emergency, the system administrator needs only to click the *Turn on ID* button on this page to turn on the ID indicator. Once the light is on, the system administrator can easily distinguish the problematic server in the group and quickly resolve the problem(s). Once the problem(s) has/have been resolved, make sure to click the *Turn off ID* button.

There is another emergency LED light on the front panel of the server. When an error occurs in the memory, system fan, HDD, or the system temperature, this light will be turned on. This emergency light will only be turned off once the problem

has been resolved and the server has been restarted. However, in the event that the system temperature rises too high and later returns to normal, the excessive temperature warning indicator will not automatically be turned off. The system administrator must manually click the *Event Reset* button on this page to clear the LED indicator when he/she receives an email notice stating, “temperature restored to normal”.

SNMP Configuration

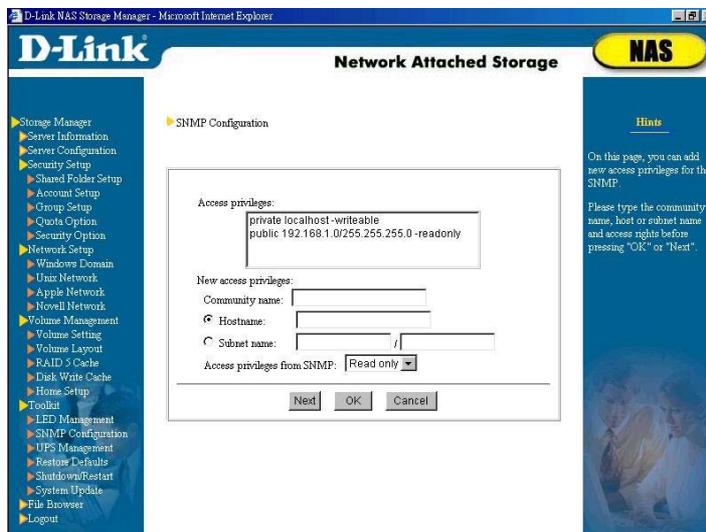


Use this option to enable SNMP access. To do this, select *Enable SNMP access* and in the column *System location*, enter the geographical location of the NAS server; then click *Apply*. Each entry in *Access privileges* consists of three elements:

- The first component is the community the NAS server belongs to, to be chosen by the system administrator.
- The second component is the host or subnet of this community

- The third element is the NAS server access privileges of the community's host or subnet through SNMP

Adding SNMP Access Privileges



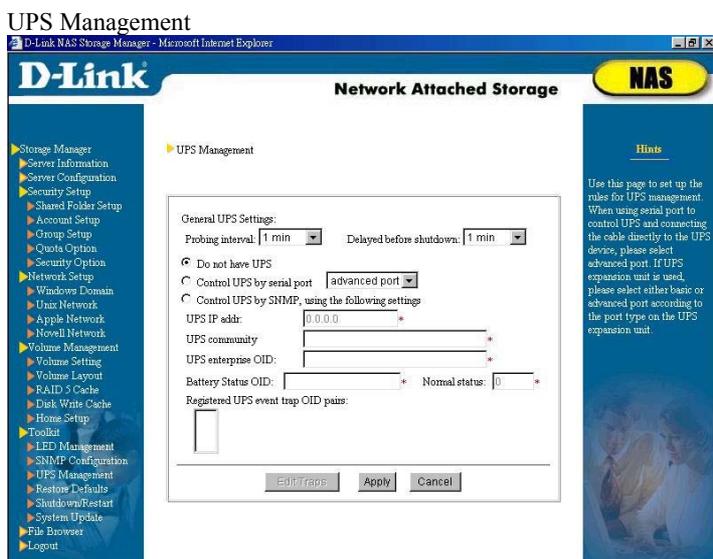
To add SNMP access privileges, click on *Create*. A new dialog will appear, where you can select a community name along with the host and subnet (in the format subnet/subnet mask, e.g. 192.168.1.0/255.255.255.0) belonging to this community. Then select the *Access privileges from SNMP*: either *read only*, or *writeable*. *Read only* means the community hosts can only read information through SNMP, *writeable* means the community's hosts can also modify some read and write fields. Click *OK* to confirm or *Next* to add more privileges.

Removing SNMP Access Privileges

To remove SNMP access, select an option under *Access privileges* (use Ctrl for multiple and Shift for continuous selection), and then click *Remove*.

Modifying SNMP Access Privileges

To modify existing privileges, select an option under *Access Privileges*, remove it and add a new privilege.



The DNS-6040 Series currently supports only APC Smart Series UPS, both via serial connection or SNMP.

Control UPS by serial port

Connect the NAS server's power cord to the UPS and the APC RS-232 cable (part number 940-0024C or 940-0020B) to the COM1 port of the NAS server. In **Storage Manager**, go to *Toolkit* → *UPS Management*, and select *Control UPS by serial port*, then select the time for *Probing interval* and *Delayed before shutdown*. The system will use the time interval set for *Probing interval* to check the status of the UPS. If an AC power failure or a low battery warning occurs, the system will wait for the time entered under *Delayed before shutdown* before shutting down, unless the problem is remedied during that time.

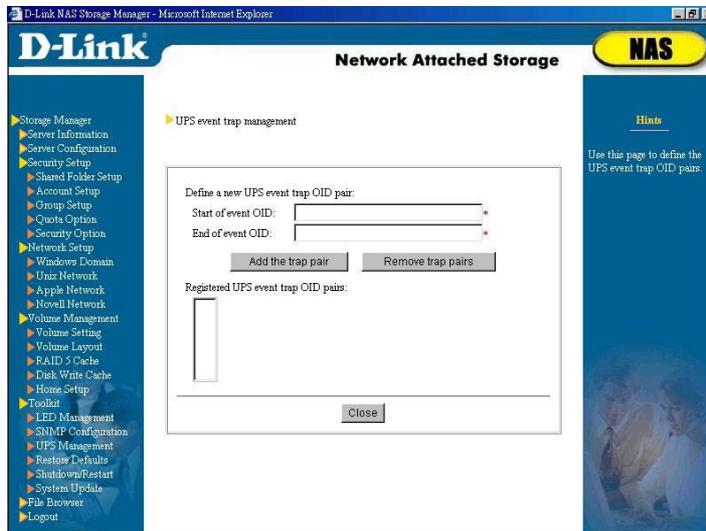
Control UPS by SNMP

Connect the NAS server's power cord to the UPS and the

UPS to the network. In **Storage Manager**, go to *Toolkit* → *UPS Management*, and select *Control UPS by SNMP*, using the following settings:

- Probing interval and Delayed before shutdown
The system will use the time interval set for *Probing interval* to check the status of the UPS. If an AC power failure or a low battery warning occurs, the system will wait for the time entered under *Delayed before shutdown* before shutting down, unless the problem is remedied during that time.
- UPS IP address and UPS community
UPS equipped with SNMP faculties will be assigned an IP address. Enter this IP address in the respective column. In the SNMP user interface of the UPS terminal certain communities will be registered, each community containing one or more host names and IP addresses. These hosts can be trusted and can read information from the UPS. If you want to control the UPS via SNMP, you must register **D-Link NAS Filer for Business** in one of the communities listed, then enter the name of the community in the *UPS community* field.
- UPS enterprise OID
This setting can be found in the MIB file of the UPS. If the UPS supports SNMP access, the manufacturer has added an MIB file to the documentation. Download the file from the manufacturer's web site if necessary. Look in the file for the *Private Enterprise Number*. APC's Private Enterprise Number is 318, so the value of this field should read *1.3.6.1.4.1.318*, whereby *1.3.6.1.4.1* is static and must not be changed. You can also use an SNMP program such as HP OpenView to browse through the MIB file and retrieve the *Private Enterprise Number*.

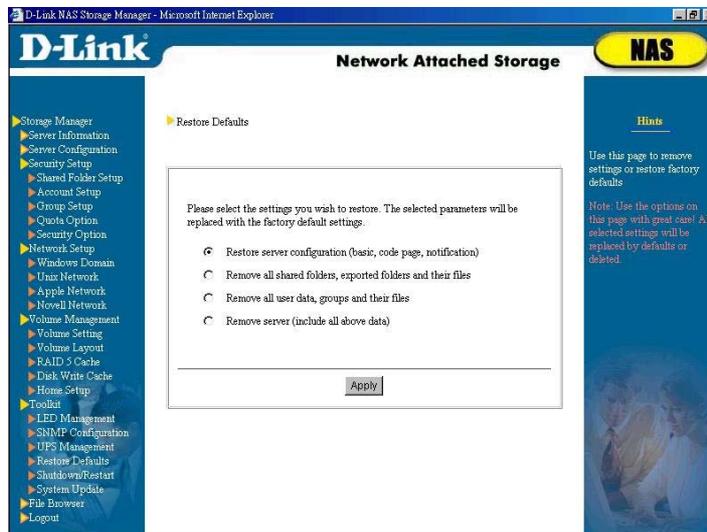
- Battery Status OID
This setting refers to the *battery status OID* in the MIB file. The value for the APC UPS is *1.3.6.1.4.1.318.1.1.1.2.1.1*. Enter this value, or the short form *1.1.1.2.1.1*, if you are using an APC product.
- Normal status
The *battery status OID* (see above) obtained from the MIB file represents a number of states, e.g., 2 for *battery normal*, 1 and 3 for *unknown* or *battery low* respectively.
If you have entered values for items 4 and 5, the system will probe the UPS in the interval chosen above and, if irregularities in the battery status are detected, shut down after the delay value entered.
- Registered UPS event trap OID pairs
A UPS with SNMP faculties usually has a trap function, used to detect anomalies in the UPS status without waiting for the scheduled probing signal. Click *Edit trap* to add or delete event trap OIDs for your UPS.



In *Start of event OID*, enter the critical event trap OID. Alternatively, use an SNMP program such as HP OpenView to browse through the MIB file and obtain the trap OID. The value 1.3.6.1.4.1.318.0.5 for example stands for A/C power failed, switching to battery.

In the field *End of event OID*, enter the informational trap OID, e.g. 1.3.6.1.4.1.318.0.9 for A/C power restored. This field is optional, since many critical events do not permit resuming and require a system shutdown. Retrieve both values for *Start of event OID* and *End of event OID* for the MIB documentation of your UPS manufacturer.

Restore defaults

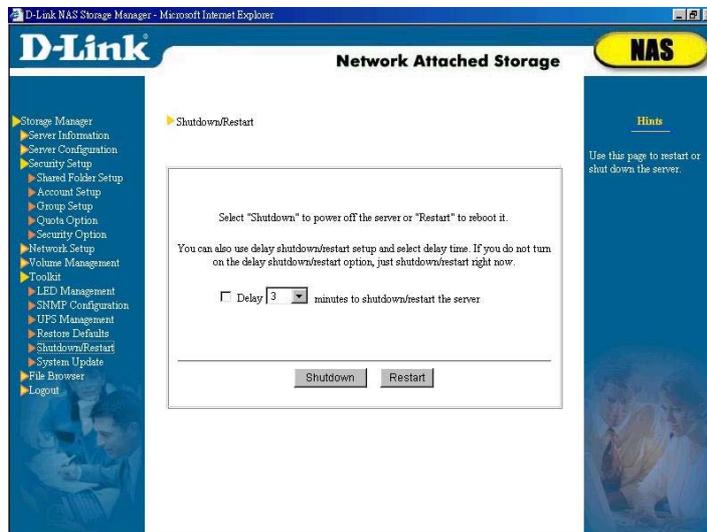


The system administrator has the option to restore factory defaults for all settings, or remove all user settings in the system. Four options are available:

- Restore Server Configuration (basic, code page, notification): The **Storage Manager's** Server Configuration will be reset to factory defaults.
- Remove all shared folders, exported folders, and their files.
- Remove all user data, groups, and their files.
- Remove server (include all above data).

Note: Use the options on this page with great care! All selected settings will be replaced by defaults or deleted.

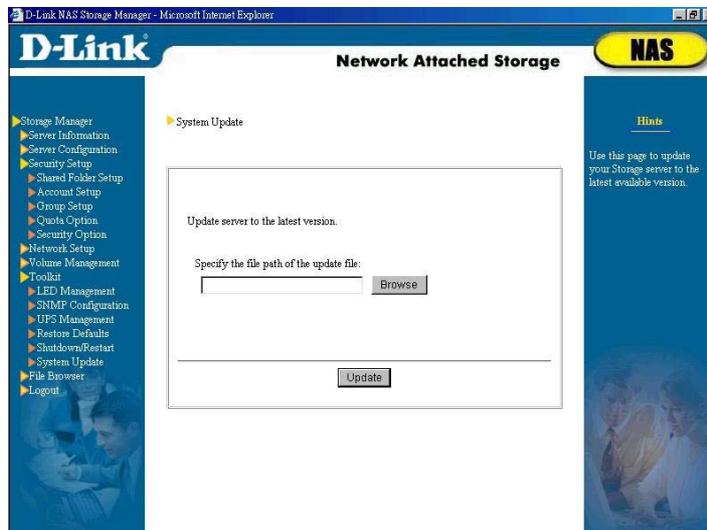
Shutdown/ Restart



Use this page to *Shutdown* or *Restart* the server. You can also use the power switch on the NAS server. To preserve data integrity, never unplug the server before it has been properly shut down. System administrator can select the option *Delay xxx minutes to shutdown/restart the server* and the setup will be executed after the time specified.

Wait for the power LED to go off and the server to halt operation completely before unplugging and moving the server.

System Update



Once you have obtained the OS upgrade, follow these steps to update your system:

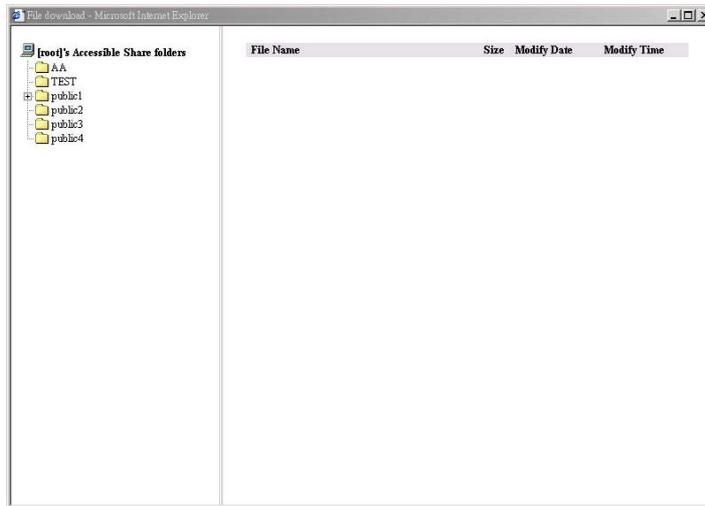
- Download the update file (assume its name as *update.pat*) from D-Link Website to any shared folder in the NAS server.
- Open **Storage Manager**, and go to *Toolkit* → *System Update* section.
- Click *Browse* to select name and path of system update file.
- Click on *Update*. The update process will start immediately and the system will restart automatically upon completion.

When upgrading the system, note the following:

- System update will not affect the files saved on the server. However, we strongly recommend that the administrator backup all the files on the server before updating the system.
- The server cannot be accessed while the upgrade is running.
- When the system is being updated, do not turn off the server or remove the AC power, or it will cause errors in the system operation.

- The upgrade patch file must be placed on the shared folder and cannot be run from the client terminal.
- During the upgrade, the browser on the client terminal will lose the connection to the system. Close the browser and wait for the upgrade to complete before re-connecting to **Storage Manager**. (The system will send an e-mail message informing the administrator that the server is back on line).

File Browser

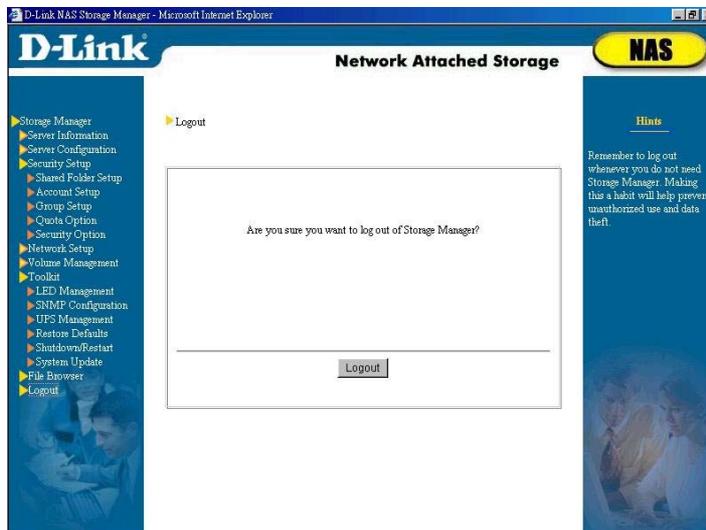


This function allows users to have remote access to files in the server through the Internet (http protocol). The user can login to **Storage Manager**, enter the *File Browser* section and browse all the folders and files in each shared folder the user has access rights.

Please note:

To make sure files/folders on the NAS server can be displayed correctly on this page, please upgrade the IE browser version to 5.5 or above.

Logout



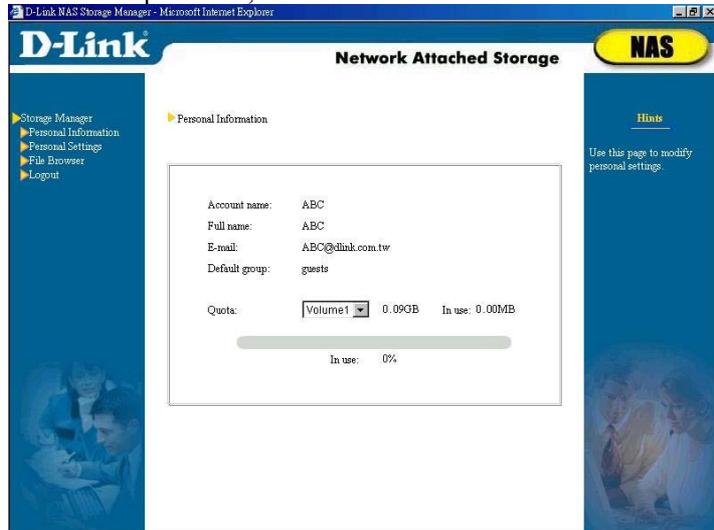
In the interest of safety, remember to log out whenever you do not need Storage Manager.

So much for the initial configuration. Administrators and other users have three options to configure the server in the future:

- Using a browser to connect to the server's IP address.
- Running **D-Link NAS Filer Assistant Utility** to locate servers, then double-clicking on a server's name to start **Storage Manager**.
- On Windows clients with NetBEUI support you can enter the server name directly into the address bar of the browser window.

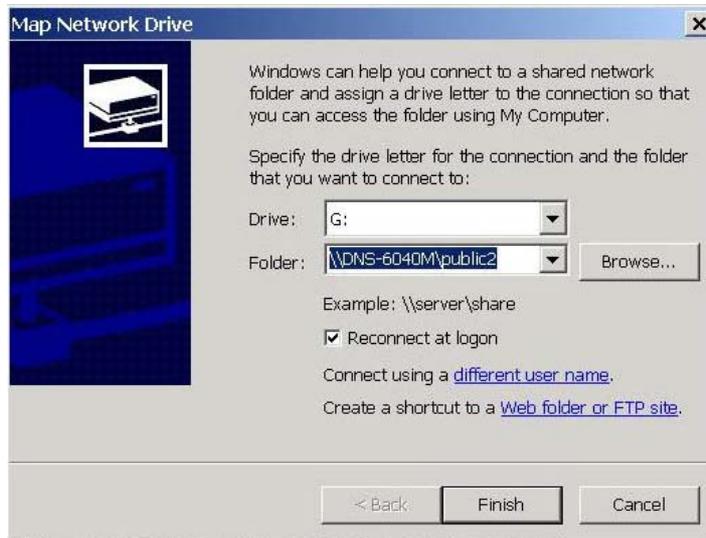
If the user is not the system administrator (*root*) but a normal user (local account), only that particular user's personal data can be modified. In **Storage Manager**, only *Personal Information* and *Personal Settings*, *File Browser*, along with the *Logout* option will appear. Users can set up their own e-mail

address and password, and access file.



When adding the NAS server into a Windows or UNIX NIS domain, Windows PDC or NIS server accounts are not able to modify their personal details through **Storage Manager**. If these users need to change some personal details, such as the passwords or e-mail, please contact the system administrator of the Windows PDC or NIS server.

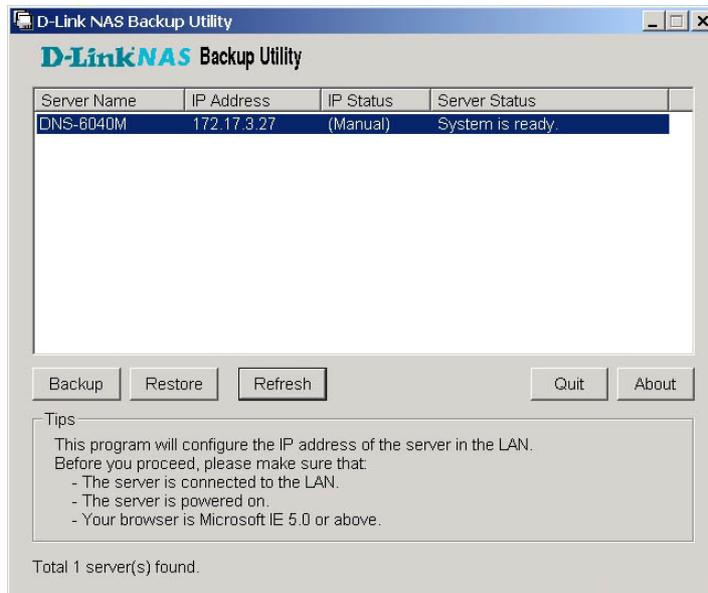
In addition, after setting up the network configuration, the system administrator or users can run **D-Link NAS Filer Assistant Utility** and click on the *Map Drive* button to connect all shared folders with access privileges as network drives. Please pull down the *path* column to find the accessible shared files on the NAS server.



Chapter 5

NAS Filer Backup: Backing up and restoring data on the server

The system administrator can use **D-Link NAS Filer Backup**, through the network, to backup data from the NAS server onto other storage devices on the LAN, or vice versa; that is to restore data from the storage media back onto the NAS server. There are three types of data available for the administrator to backup and restore:

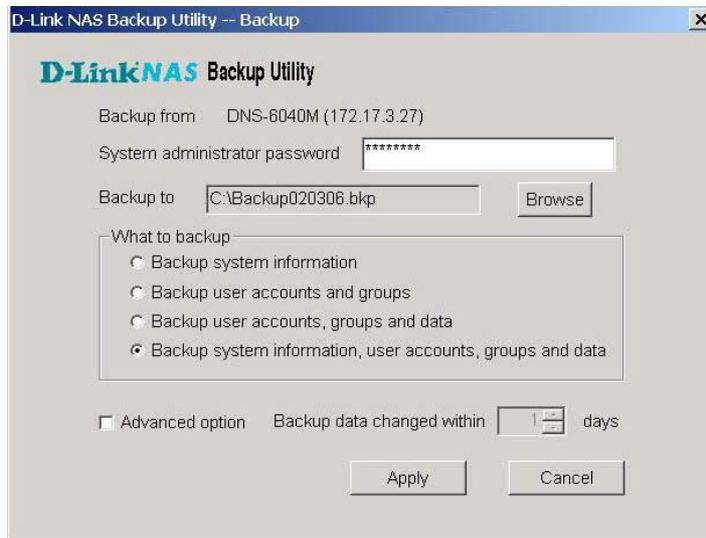


- *System information*: including server configuration, Security Option, Apple network setup, Novell network setup, SNMP setup, UPS setup, etc.
- *User accounts and groups*: including all user accounts, groups, quota setup, shared folders, Windows domain/workgroup setup, UNIX network setup. If the NAS server belongs to a Windows domain while backing up, the Windows domain information (the domain name, PDC name, and the accounts on the PDC) would also be backed up simultaneously. Therefore, when restoring back onto the NAS server, the domain information will also be restored and integrate the NAS server into this Windows domain.
- *User accounts, groups, and data*: including user accounts, groups, quota setup, shared folders, Windows domain/workgroup setup, UNIX network setup, and also the data stored on all shared folders and users' home folders. If the NAS server belongs to a Windows domain while backing up, the Windows domain information (the domain name, PDC name, and the accounts on the PDC), as well as the data Windows domain accounts stored on the NAS server will be backed up simultaneously. Therefore, when restoring back onto the NAS server, the domain information and all domain users' files will also be restored and integrate the NAS server into this Windows domain.
- *All*: the configuration and data in the entire server.

Backing up data

- Go to **D-Link NAS Backup Utility**, and click on the *Backup* button to

open the backup window.



- Enter the System administrator (root) password.
- Choose the path to store the backup file (*.bkp) by clicking on Browse.
- Choose what type of data to be backed up. When backing up “User accounts, groups, and data”, if the administrator has backed up the NAS server a few days ago, he/she can select the Advanced option for “incremental backup”. This allows backing up only the changed data of the past few days and could save time and the storage space. Below are 2 examples for the incremental backup:

Example 1:

The system administrator has backed up all the data from the server to a "Data 0101.bkp" file, at 12:00 noon on January 1. To make another backup at 11:00 (before 12:00 noon) on January 5, the administrator could only backup the changes of the past 4 days to another file called "Data 0101_0105.bkp".

Example 2:

The system administrator has backed up all the data from the server to a "Data 0101.bkp" file, at 12:00 noon on January 1. To make another backup at 17:00 (after 12:00 noon) on January 5, the administrator could only back up the changes of the past 5 days to another file called "Data0101_0105.bkp", in order to complete the backup of all changes.

- Click *Apply*. The system starts to back up. After the backup is complete, click on *Report* to review the back up report.

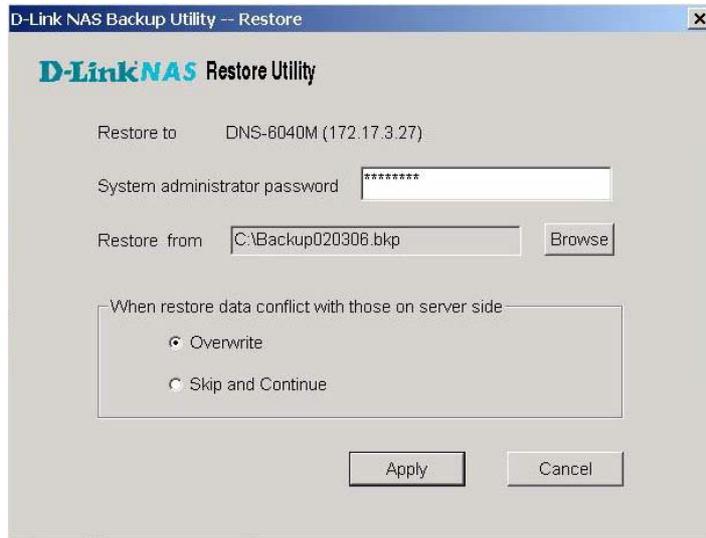
Note:

FAT/FAT32 does not support files larger than 4GB.
When running **D-Link NAS Filer Backup** on Win95/98 clients with FAT/FAT32, or backing up files from the NAS server to another devices running Win95/98 with FAT/FAT32, the system will

automatically divide the backup file into several 4GB-size files, and name the extension of each file in the order of “.bkp”, “.001”, “.002”, etc. Please store these files in the same directory. When restoring the data back onto the NAS server in the future, the administrator only needs to specify the “.bkp” file, and other related files will also be restored automatically without manually restoring every single file.

Restoring data back onto the server

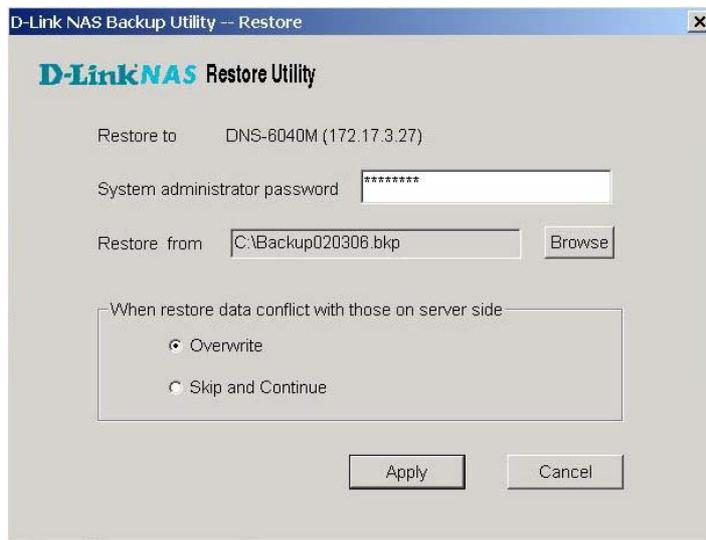
- Go to **D-Link NAS Filer Restore**, and click on the *Restore* button to open the backup window.



- Enter the System administrator (root) password.
- Browse for the correct path. If only the changed data was backed up in the past, restoring each “.bkp” file chronologically is necessary. As in the previous example, the system administrator needs to restore “Data 0101.bkp”, followed by restoring “Data 0101_0105.bkp”. This way complete data can be restored dating back to January 5.
- When restored data conflict with existing data on the server, overwrite or skip the existing data on the server. Under “Overwrite”, “shared folder” will be used by the system for reference; if the names of the shared folders appear to be the same, the system will overwrite all data in this folder automatically. Under “Skip and continue”, on the other hand, “file” will be used as a reference by the system; if the names of

the shared folders are the same on both NAS server and the intended to be restored file “.bkp”, the system will not skip this folder but instead combine the data of both folders. The only exception: if this folder is some user’s home folder, and the home folder on the NAS server and the home folder of the “.bkp” file do not belong to the same user, this home folder will be skipped as a whole for security reasons and will not be combined by the system

- Click *Apply* to enter into another page to select restored information.



- Select what item(s) you want to restore.
- Click *Apply*. The system starts the back up process. Click *Report* to review the backed up data after the back up process is finished.

Note:

- Make sure the hard disk configuration or volume status has not been changed when restoring data back onto the NAS server; i.e. the hard disks are configured as Non-RAID when backing up the data, but when data is being restored, the configuration has already been changed to RAID 0; this would lead to incorrect restoring; therefore we strongly advise the system administrator not to restore data between different hard disk configurations.
- When restoring data back onto the NAS server, please verify there is enough storage space on the NAS server for data restoring; otherwise the restoring process will fail.
- When backing up/restoring data, many temporary files will be generated in the first volume of the system, therefore the backing up/restoring cannot be performed if the free storage space in the first volume is less than 10MB.

When the system fails to backup/restore data on the NAS server, the system administrator will receive an e-mail with an error code notifying the data backup/restore failure. The administrator can also go to *system log* tab of **Storage Manager** and search for the error code in the log file. Below follows an explanation of the e-mail error codes:

- Error code 1: system error occurred.
- Error code 2: cannot integrate into the indicated Window domain while restoring data.
- Error code 3: the NAS server has already been added into another

Windows domain while restoring data, this will lead to failure of re-integrating into the original Windows domain.

- Error code 4: the storage space on the NAS server is not sufficient to restore data, restoring of files has been discontinued.
- Error Code 5: the network is suddenly disconnected or the user clicks on "Cancel" to stop the operation when backing up/restoring the data.

Chapter 6

NAS Data Replicator - Automatic backup from Windows clients to the NAS server

Backup is one method necessary to ensure data completeness. But people are often too busy to neglect the importance of regular data backup. In order to make users more efficient and back on a timely basis, **D-Link NAS Data Replicator** can fully automate the backup process. It can:

- monitor file folders of Windows clients and perform immediate backup of selected folders to D-Link NAS sever;
- password-protect files to make them more secured;
- compress backup files in order to save storage space on the server;
- provide version management function and save up to twenty file versions in the server;
- provide tag management function, tag the most representative version, save up to twenty tags;
- restore files from server to client computer when needed in the future, making file backup, management and protection easy.

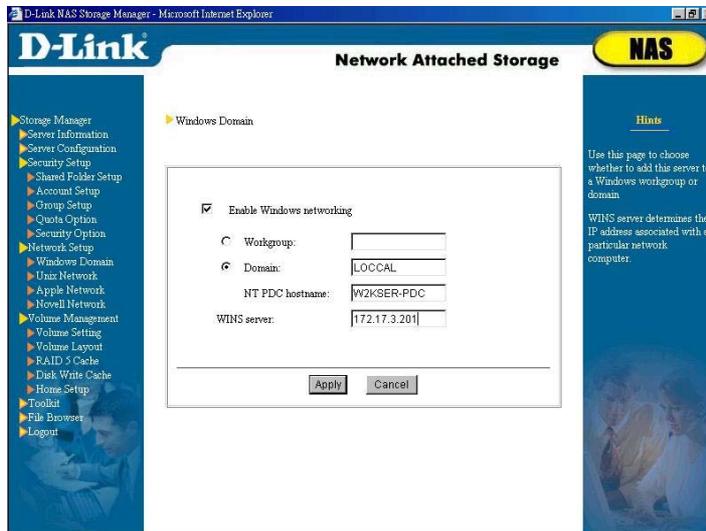
Before you begin

Set up D-Link DNS-6040 Series

Before you begin using **D-link NAS Data Replicator**, network administrator must set up D-Link NAS Filer in the

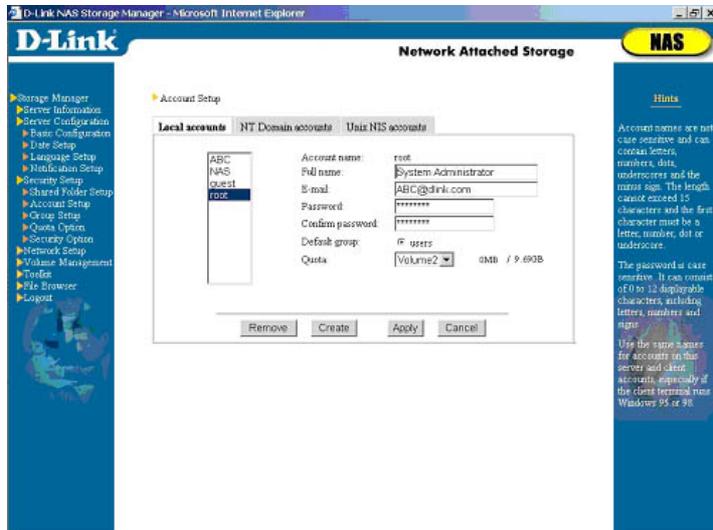
LAN, and create accounts for all users of **D-Link NAS Data Replicator** on the server. Please note when setting up:

➤ Network Setup



Please Enable Windows networking in Network Setup→Windows Domain of **Storage Manager**.

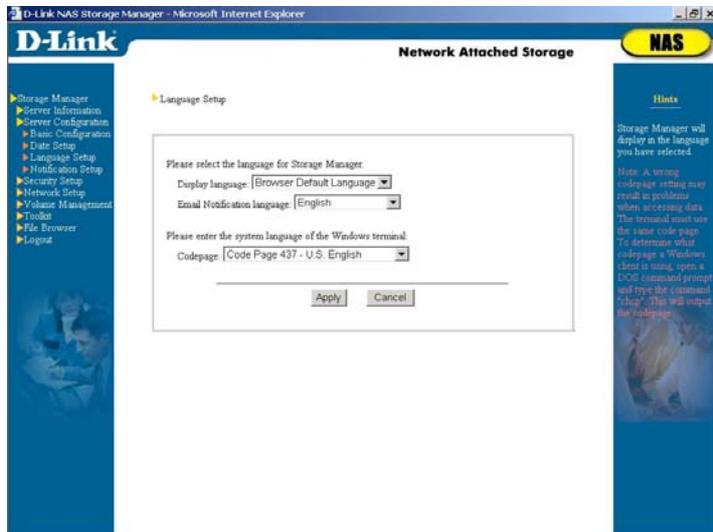
➤ Account Setup



D-Link NAS Data Replicator allows user to backup files to any shared folder with full access right in NAS server. But due to security consideration, we urge user to backup files to his/her own home folder in NAS server to prevent other users from unintentional deletion, modification, and use of these files. Thus, in addition to creating account for **D-Link NAS Data Replicator** users in NAS server, we suggest system administrator to assign these users to the *users* group so that each user can have his/her home folders only he/she can access. In addition, when a Windows NT/2000 user desires to save file to NAS server, Windows operating system (OS) will ask him/her to key in account number and password in NAS server

to authenticate his/her identity. But when a Windows 98/ME user accesses the NAS server, Windows OS will capture directly the account the user used to login to Windows and will only ask user to key in his/her password. If the account the user used to login to Windows client station does not match the account in NAS server, the user cannot use NAS because of mismatched identification. Therefore, in order to make management easy, system administrator must keep the account in NAS server and Windows client consistent.

➤ Codepage setup.



Please make sure the NAS server and the Windows client running **D-Link NAS Data Replicator** use the same codepage. A wrong code page setting may result in problems when

accessing data.

D-Link NAS Data Replicator Basic Requirements

- 5MB Hard Disk Space
- Operating System: Windows 98/ME/NT/2000/XP
- Optimal Screen Resolution: 800*600 or above
- The Windows client running **D-Link NAS Data Replicator** has to support Microsoft Networking over TCP/IP protocol, and can be connected to the NAS server through physical network medium (e.g. hub, switch, etc.).

Setup D-Link NAS Data Replicator

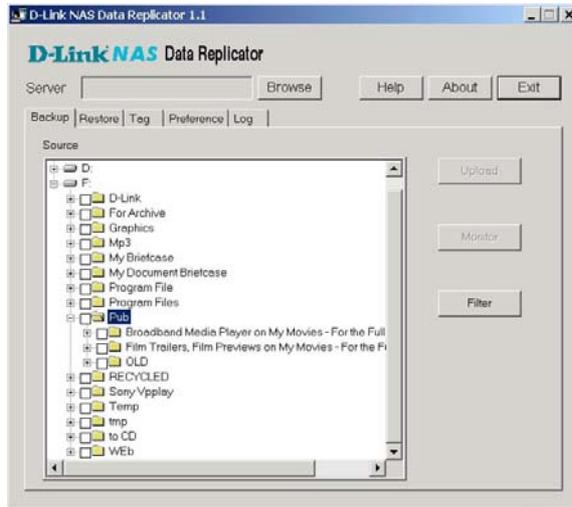
Please run "Data Replicator.exe" program and install **D-Link NAS Data Replicator** to your hard disk according to the instruction given on the screen.

Start Using D-Link NAS Data Replicator

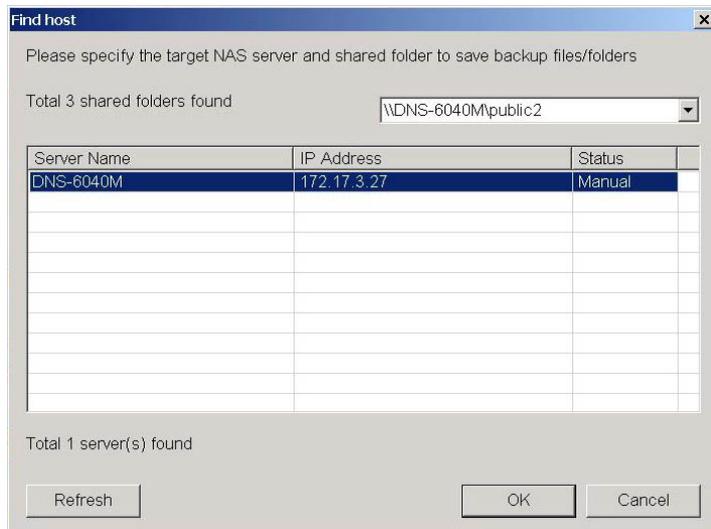
Backup Windows client data to NAS server First-Time Use - Run Complete Backup

When running **D-Link NAS Data Replicator** the first time, user must first backup all the files in this machine's file folders to NAS server before modified/new versions can be monitored.

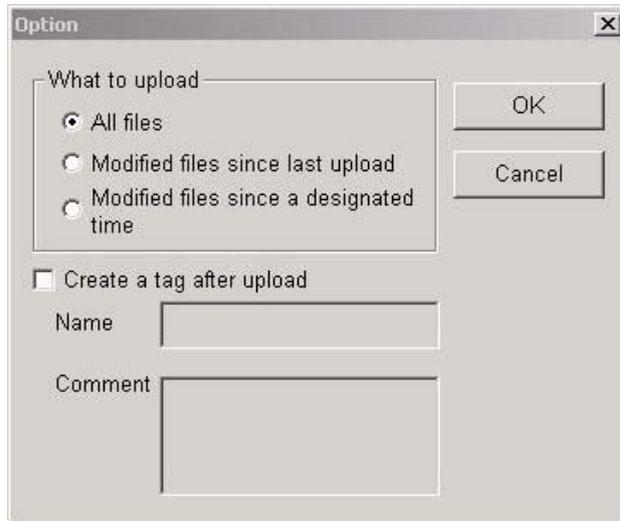
- Start the *Backup* tab.



- In the *Server* column, select the destination to store backup files. Click the *Browse* button to display the search page and select the server and shared folder where you wish to store your backup files. After the selection is complete, click *OK* to return to the previous page. The column at the top of the search page will list all shared folders a user have read/write access to. But due to security consideration, we urge user to backup files to his/her own home folder in NAS server to prevent other users from unintentional deletion, modification, and use of these files.



- Select those file folders of this computer you wish to backup/monitor in the tree structure below.
Please note: you can run other **D-Link NAS Data Replicator** functions only after you have setup NAS server and file folders of this machine.
- Click the *Upload* button on the right side to display the dialogue window below:



Because this is the first time you use **D-Link NAS Data Replicator** for backup, please select All Files from the What to upload column.

If this version has a special representative meaning, user may select the option Create a tag after upload so that after the upload is complete this version can be created with a tag to allow for easy recovery in future restoration. **D-Link NAS Data Replicator** allows the user to create up to 20 tags. The purpose of tag is to help user record version of specific point in time. For example, if a software engineer has already completed program version 1.0 and is prepared to start coding version 2.0, to this engineer version 1.0 is the version with special

representative meaning. While completing all version 1.0 program files, he/she can create a tag for these files at the specific point in time. In case any problem is encountered while modifying version 2.0, the engineer can easily recover all 1.0 program files to his machine for further modification.

- After you have completed the selection, click *OK* button. **D-Link NAS Data Replicator** will backup all the files in the selected file folders to the designated NAS server.

Please note:

- **D-Link NAS Data Replicator** only targets its monitoring on file folders and sub file folders in the local hard disk. The monitoring does not include network disk drives or other external storage devices.
- **D-Link NAS Data Replicator** does not support monitoring of files under the root directory in this machine.

Monitor File Folders in Your Own Computer

After first-time backup, **D-Link NAS Data Replicator** can help its user to continue monitoring file folders in his/her computer. Any changes made to files in the file folders will be saved to the NAS server.

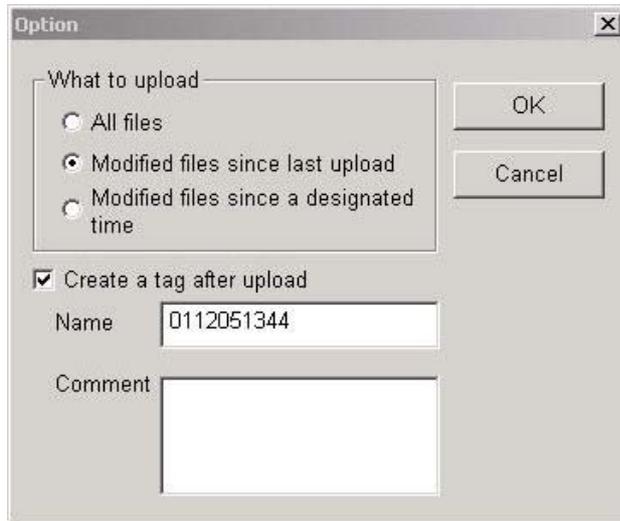
If you wish to monitor the file folders of your own computer, please select file folders on your machine and destination server and click the *Monitor* button. **D-Link NAS Data Replicator** will be minimized to the toolbar to perform monitoring.

Backup only changed data

When files at the client are large and change frequently, if every time any changes made to these files are updated automatically to the backup in the server, this may cause busy network traffic. Due to consideration of performance efficiency, after running the complete backup in the first instance user may choose not to run automatic monitoring, but prefer to manually upload the changed files to D-Link NAS Filer.

Or, after the user finished complete backup at the first instance, if due to certain reasons (e.g. network disconnect) the monitoring does not begin until files are changed, then you must first backup the changed files to the server before running the monitoring.

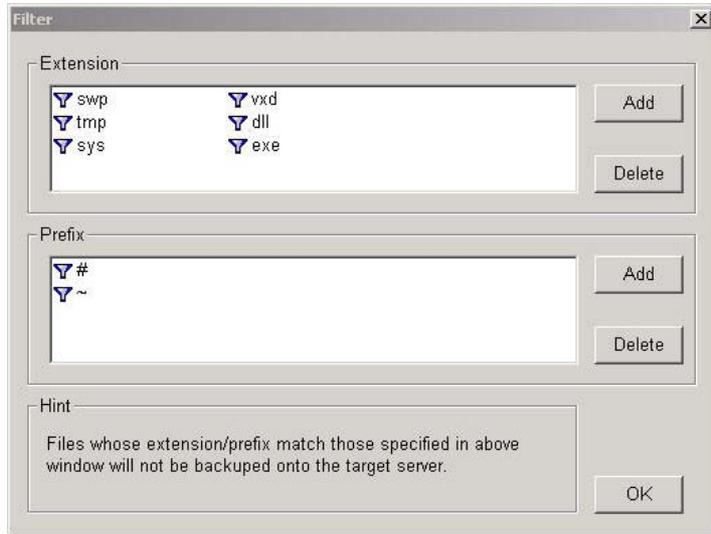
To backup any changed files, after you have selected the file folders on your machine and destination server, click *Upload* button on the right, select *Modified files since last upload* to backup any changes made since last update or *Modified files since a designated time* to backup any changes since a specific point in time.



Files Filtering

User may choose not to backup non-essential files (e.g. .tmp or temporary files created by Windows client)

To setup not to backup by file type, click *Filter* on the right and add specific file *extension* or *prefix* to avoid backing up of files with the extension/prefix.



Recover files from the server to Windows client

- Select the *Restore* tab. In the right column is the display of backup file directory in the NAS Server. **D-Link NAS Data Replicator** by default uploads Windows client files to the directory on the NAS server: `\Account_Name\DR BACKUP-client computer name\this computer`. The column on the right displays all subdirectories/files in each directory.
- Select at the bottom of the page the destination of the restored files. (Path of your own machine)
- Select files or file folders from the right-hand column, click the right mouse button, click *Restore* in the browse function or click the *Restore*

button at the bottom of the window.

When restoring individual files, you can choose to restore by specific version or tag. When restoring more than one file or file folder, because of different versions for each file, you can only choose to restore the *Current Version* or tag.

Tag Management

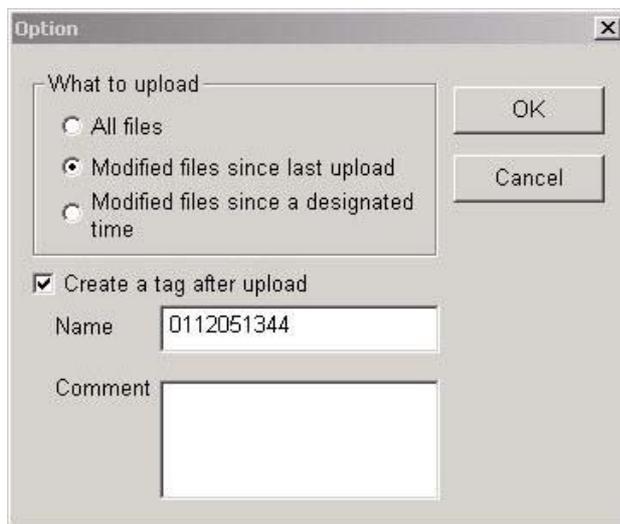
D-Link NAS Data Replicator allows the user to create up to 20 tags. The purpose of the tag is to help user record version of specific point in time. For example, if a software engineer has already completed program version 1.0 and is prepared to start coding version 2.0, to this engineer version 1.0 is the version with special representative meaning. While completing all version 1.0 program files, he/she can create a tag for these files at the specific point in time. In case any problem is encountered while modifying version 2.0, the engineer can easily recover all 1.0 program files to his machine for further modification.

Once a tag is created, unless deleted by the user, all the files associated with a tag will not be removed by the system, thus not constrained by the maximum limit of 20 versions.

The tag name is defaulted to the date and time the tag is created. For example, "0111072228" means the tag is created on November 7, 2001 at 10:28 pm. User may change the tag name according to his/her preference.

There are two ways a user can create a tag:

- Add new tag after files upload.



User can create new tag to uploaded files when uploading files in the *Backup* tab.

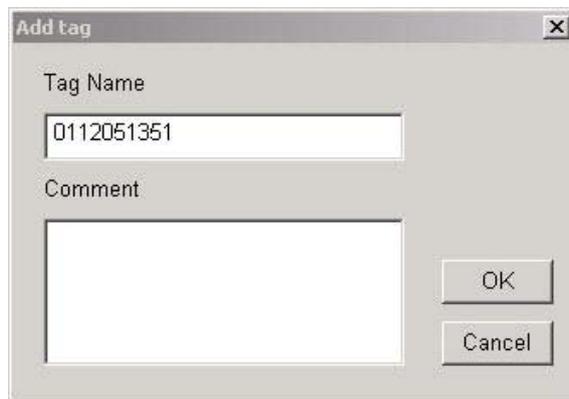
Please note, when creating tag the most updated versions of files in backup directories in NAS server will be saved.

The two examples will illustrate this point:

- During uploading of *All Files*, if you click *OK* after selecting *Create a tag after upload*, D-Link NAS Data Replicator will create a tag for all files uploaded to NAS server after upload.
- When uploading *Modified files since last upload* or *Modified files since a designated time*, you can select *Create a tag after upload* and click *OK*. Accordingly, **D-Link NAS Data Replicator** will create a tag for all files uploaded (the most updated version) and the latest version of files not uploaded (due to no change) but already existed in the NAS server.

- Create a new tag in the *Tag* tab.

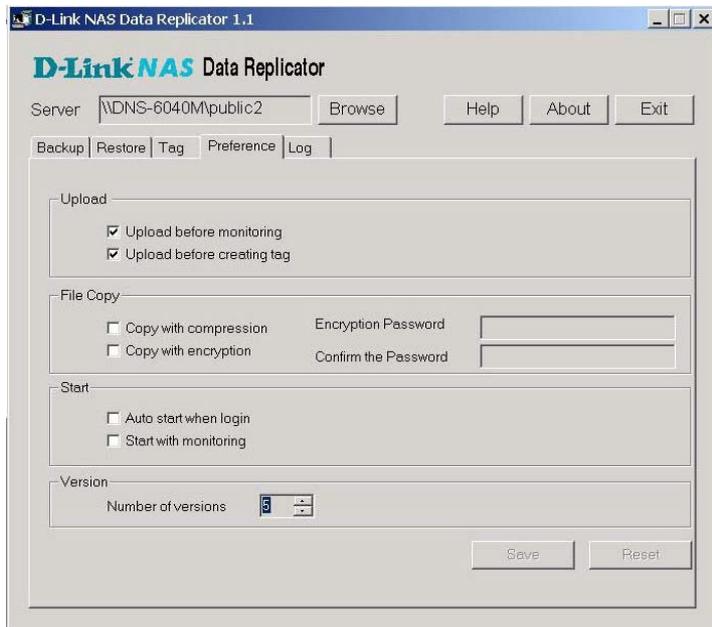
Select *Tag* tab, click *Create* button, and then click *OK* after key in *Tag Name* and *Comment*. **D-Link NAS Data Replicator** will create a tag for the latest version of every file in the NAS server backup directory. If user enables *Upload files before adding new tag* in the *Preference* tab, before new tag is created, **D-Link NAS Data Replicator** will upload changed files from client to the server and then create tag after the upload. This is to ensure that all tags created represent the latest version at the client station, especially before user starts to run the monitoring function.



The image shows a standard Windows-style dialog box titled "Add tag". It features a close button (X) in the top right corner. The dialog contains two input fields: "Tag Name" with the text "0112051351" entered, and "Comment" which is currently empty. At the bottom right of the dialog, there are two buttons: "OK" and "Cancel".

User Preferences

Upload



- Upload before monitor.
When this option is clicked, each time *Monitor* is executed, the system will check to see if there are files which have not been backed up. If yes, it will automatically upload these files. This is to prevent client computer to change certain files when there is network disconnect or if user did not run monitor immediately

after running the complete backup in the first instance.

- Upload before creating tag.
If user clicks this option, before new tag is created, **D-Link NAS Data Replicator** will upload changed files from client to the server and then create tag after the upload. This is to ensure that all tags created represent the latest version at the client station, especially before user starts to run the monitoring function.

File Copying

- Copy with compression
In order to save storage space, when this option is enabled, **D-Link NAS Data Replicator** will compress all backup files stored in the NAS server.
- Copy with encryption
In order to ensure data security and prevent others from data interception, user can choose this option to have password protection for files in the server.

Initialization Setup

- Auto start when login.
User can choose to run **D-Link NAS Data Replicator** in client station after it is powered on.
- Start with monitoring.
User can choose to run *Monitoring* after starting **D-Link NAS Data Replicator**. Of course, if you also enable

Upload before monitor, once a user is logged in, the system will first upload all the files that have not been uploaded before running the monitor function.

Version Setup

D-Link NAS Data Replicator can support up to 20 versions. User can choose to select the number of versions for files to be backed up.

Assume a user chooses to backup 20 versions, each backup file will be given an extension which indicates its version number, e.g. the first version of the backup file will have an file extension of "v00". This number will increase each time a new version of file is backed up. When all twenty versions are used up, you will see a file extension of "v20" and the file with the extension "00" will be deleted. Following this numbering scheme, the file extension will increment and accumulate until "99" and then reinitialized to 00 to begin a new cycle.

Chapter 7

Troubleshooting

NAS Server Installation Problems

First-time Network Setup with D-Link NAS Filer Assistant fails

- Make sure you have selected the correct server.
- Make sure the server is connected to the LAN. Check the LAN LED on the server panel to see if the connection is normal.
- Make sure the server is connected to a power source and is on.
- Make sure the LAN still has free IP addresses.
- Make sure the manually entered network settings are correct.
- Make sure the client terminal you are using has correctly installed/set up the TCP/IP protocols, and is running Microsoft Internet Explorer 5.5 or higher.
- Make sure the NAS server and the client computer that runs **D-Link NAS Filer Assistant Utility** can be connected through physical network medium (e.g. hub, switch, etc.).

Cannot use Internet Explorer to connect to Storage Manager

- Check if the network settings of the NAS server are correct and make sure that the IP of the NAS server does not conflict with those of other servers in the LAN.

- Make sure the Windows client has correctly installed/set up TCP/IP.
- Make sure the NAS server and the client computer that runs **Microsoft IE** can be connected through physical network medium (e.g. hub, switch, etc.) and in the same subnet.
- Make sure that the browser is IE 5.0 or above and it can connect to other servers in the network.
- Try typing the server name of the NAS server in the address field of IE.
- Try typing the IP address of the NAS server in the address field of IE.
- Try restoring the IE settings to defaults and try again.
- Try restarting the server.

Buttons missing on Date/Time page in Quick Configuration

Certain web trap modules of anti-virus software cause a situation where certain buttons on the *Date/Time* Page of the *Quick Configuration* module cannot be displayed. Disable the web trap and try again, or use a different terminal for the setup.

System Problems

Boot failure

There are two possibilities that could cause a system reboot failure.

- If the system administrator has ever added the NAS server into a NIS domain before, he/she will not be able to reboot the NAS server in case

the NIS server is not available. Please make sure the NIS server is available first and then restart the NAS server.

- When purchasing diskless model, please at least one hard disk has to be installed before booting up the server.

It takes a long time to start the server and it seems to be a boot failure.

If the NAS server is improperly shut down when it is operating, the system will automatically check the file system when the server is restarted, which causes a delay in booting. The more data are saved on the server, the longer the system check will take. It probably takes from several minutes to several hours, and sometimes users tend to regard it as a boot failure.

If **D-Link NAS Filer Assistant Utility** cannot find the server after booting or if clients cannot access the NAS server, check the LED on the server. If the lights under the hard disks keep blinking, it means that the system is still checking the file system and the booting has not completed yet. Wait until it finishes instead of improperly shutting down the server again. The booting is completed when the LED on the front panel of the server is back to normal.

Problems about the Hard Disks on the NAS Server

Hard disk failure

The DNS-6040 Series supporting hot-swappable disks, the

failure of any hard disk in the system will be reported on the **Storage Manager's Server Information** → *Status* page. A notification will be sent to the system administrator, who will only need to remove the broken disk (without having to power down the system), and replace it with a new one. The system will automatically configure the new hard disk.

A Simple, Span or RAID 0 volume that has no inherent safety measures, so that if any hard disk is damaged, all data in that volume will be lost.

In a RAID 1 or RAID 5 system, if any hard disk is damaged, after the new hard disk is added, the system will automatically rebuild the disk and all the data on the volume, while client access is not compromised during the rebuild phase. Please note the following:

- The replacement disk should be a new and empty disk. Do not insert a disk with an operating system on it. Furthermore, in the interest of smooth system operation and better performance, try to use the same disk model for all disks.
- Before inserting the new disk, make sure its jumpers are correctly set.

Hard disk rebuild failure

The following reasons can cause a hard disk rebuilding operation to fail:

- The hard disk used to rebuild is damaged. Try using a brand-new hard disk.
- The hard disk used to rebuild is too small to rebuild the original

volume on it.

- The jumpers of the hard disks are set incorrectly. Since jumper settings depend on the model, refer to the instructions that came with your hard disk.
- The hard disk used to rebuild is of a different type. E.g., if the original is an ATA 100 model, and you try to use an ATA 66, or a similar model
- from a different manufacturer, the data rebuild may fail. Always use models from the same maker with similar specifications.

Problems about Windows Clients' Access to the NAS Server

Cannot find the NAS server in "Network Neighborhood"

- Make sure that the NAS server has been turned on and connected in the LAN.
- Make sure the system administrator has enabled Windows Networking on the NAS server.
- Make sure the Windows client has correctly installed a TCP/IP server.
- Enter "My Computer" or "Windows Explorer" and input "\\Server_Name" in the field of http address.
- Start "Find→Computer" on the Start Menu, input the name of the NAS server and search for it.
- Click on "Tools→Map Network Drive" in "My Computer" or

“Windows Explorer”. Enter “\\ Server_Name\public1” in the field of “Path.” Press OK to open and connect with the public1 folder on the server.

Cannot access the file(s) in a certain shared folder on the NAS server via Windows clients

- Check if there is such a shared folder on the NAS server. In some cases, a shared folder on the NAS server deleted by the system administrator may still be shown in “Network Neighborhood” in the Windows client’s terminal. This is due to Windows limitation that it cannot real-time update “Network Neighborhood”.
- Make sure the system administrator has enabled Windows Networking on the NAS server.
- Make sure this account has authorized access to the shared folder.
- Check if the account used for logging into the Windows 95/98/ME client also has a same-name account on the NAS server or PDC, and check if the password is correct.
- Make sure that the system administrator does not set a password for the *guest* account when users log in as *guest*.
- If users have added the NAS server into a Windows domain, please check that the Windows PDC is operating normally and the NAS server account still exists in the PDC. The system administrator can try to recreate the NAS server account in PDC and add the server into Windows domain in **Storage Manager**. In addition, please check the client failed to access the NAS server has correctly logged onto the same Window domain.

- Check to see if there are any hosts on the network using the same IP or server name as the NAS server. If there are, correct the situation as soon as possible.
- **The DNS-6040 Series** will only allow a maximum of 512 clients to logon to the network at the same time. Users may have to wait a moment before trying to reconnect.
- When a Windows 2000 client can unexpectedly not access privileged files, it could be the client has been logged in as a guest because the wrong account name was entered when logging on to the NAS server. Please log out of the server and log in again.
- If all the above settings are correct, please reboot the NAS server.

Re-login in a Windows NT/2000 Domain not possible

- If an NAS server *NAS001* owns an account *NAS001* on the PDC, logs in to a Windows domain and out again, it is possible that the server cannot log back in. In this case, delete the *NAS001* account on the PDC, create a new account, and enter the domain name in **Storage Manager**.
- If you have returned a NAS server for repairs and try to reconnect it, the trust between the server and Windows PDC will have been lost. Even if you use the same server name, you will still have to delete the original account (e.g., *NAS001*), recreate it, and reconfigure the domain in **Storage Manager**.

Problems about Novell Clients' Access to the NAS Server

Novell clients cannot use the root account to access the NAS server.

For the system administrator *root* to access the server from Novell clients, please use the “*supervisor*” account and the root password of the NAS server to log in (there's no need to create this account on the NAS), or create another admins group account on the server.

Novell clients will not be able to save any single file larger than 4GB onto the NAS server. This is due to the limitation of the system.

Cannot access/create folders with small-letter English names on the NAS server via the Novell client's terminal.

The Windows Client service for Netware will automatically change small letters into capitals in the background, which can cause errors with some double byte characters, but this problem will not happen with Novell client 4.8 for Windows NT/2000, or client 3.3 for Windows 95/98.

Cannot access files in a certain shared folder on the NAS server via the Novell clients

- Check if there is such a shared folder on the NAS server.
- Make sure that the system administrator has enabled Windows Networking on the NAS server.

- Make sure that this account has authorized access to the shared folder.
- Check if the account used for logging into the Novell client also has a same-name account on the NAS server or PDC, and check if the password is correct.
- Make sure that the system administrator does not set a password for the *guest* account when users log in as *guest*.
- Check to see if there are any hosts on the network using the same IP or server name as the NAS server. If there are, correct the situation as soon as possible.
- **The DNS-6040 Series** will only allow a maximum of 512 clients to logon to the network at the same time. Users may have to wait a moment before trying to reconnect.
- If all the above settings are correct, please reboot the NAS server.

Compose a system login script on the NAS server to automatically map it as a network drive

Apart from setting individual network drives on the Novell clients' terminals on a one-by-one basis, the system administrator may compose a "system login script" on the NAS server to automatically map the NAS server as a network drive for all Novell clients. Please take the following steps:

- Log into the NAS server via a Novell client with the ID "SUPERVISOR."
- In the Novell client's terminal, use any word processor, e.g. Wordpad, to edit the login script containing the following content and save it as "net\$log.dat".

```
map p:=\\NAS001_nw\public1
write login_name
if login_name<>"SUPERVISOR" and
login_name<>"SUPERVIS" and login_name<>"GUEST"
then
map h:=\\NAS001_nw\home
end
```

As shown in the example, the login script will map the *public1* folder on *NAS001* as “p” drive and map users’ home folders on *NAS001* as “h” drive for all Novell clients in the LAN.

- Save the “net\$log.dat” file to the *\SYS\PUBLIC* folder on the NAS server.

Problems about Apple Clients’ Access to the NAS Server

Cannot find the NAS server via Chooser or Network Browser.

- Make sure the NAS server has been turned on and connected in the LAN.
- Check if the Apple client is able to connect with other AppleTalk servers. If not, the network settings of this Apple client are incorrect.
- Make sure the system administrator has enabled Apple networking connections over AppleTalk or TCP/IP protocol.

Apple clients cannot access the NAS server with the root account.

For system administrator *root* to access the server from an Apple client, please create another admins group account on the server.

Apple clients will not be able to save any single file larger than 4GB onto the NAS server. This is due to the limitation of the system.

Cannot access files in a certain shared folder on the NAS server via Apple clients.

- Check if there is such a shared folder on the NAS server.
- Make sure the system administrator has enabled Apple networking connections over AppleTalk or TCP/IP protocol.
- Make sure this account has authorized access to the shared folder.
- Check if the account used for logging into the Apple client also has a same-name account on the NAS server or PDC, and check if the password is correct.
- Make sure that the system administrator does not set a password for the *guest* account when users log in as *guest*.
- Check to see if there are any hosts on the network using the same IP or server name as the NAS server. If there are, correct the situation as soon as possible.
- **The DNS-6040 Series** will only allow a maximum of 512 clients to logon to the network at the same time. Users may have to wait a moment before trying to reconnect.

- If all the above settings are correct, please reboot the NAS server.

Cross marks appear when an Apple client is browsing an English web site

When an Apple client, for example a Mac OS 9.0.2 client, is trying to browse an English web site and sees many “cross”marks appear, please close *Smartview* from the *Control Panel*.

Apple clients cannot execute files saved by Windows clients to the NAS server directly

Apple and Windows clients can share the same folder. However, since Apple and Windows systems handle file associates in different ways, the access to the files supported by both Apple and Windows systems such as “pdf” and “html” may be restricted.

For example, when a Windows client saves an html file to the NAS server, an Apple client cannot double-click this file on the server to open the file by automatically launching the web browser. Because the way Windows system saves “Associated file type” differs from that of Apple, Apple system does not know with what program it can open the html file created in Windows. There are two solutions:

- Re-establish the associate of this file on the Apple client.
- Launch the program used for executing the file on the Apple client first. In this case launch IE or Netscape and then open the file with the browser. Alternatively, use “save as” to save the file on the Apple

client so that the new file will be saved in the Apple format. To open the file, simply double-click it.

The same solution can be applied to the problem happening when the Windows client cannot directly execute files saved by the Apple client to the NAS server.

HDD space is not released after an Apple client deletes a file on the NAS server

When an Apple client deletes a file on the NAS server, the file is not actually deleted so the available HDD space shown on the *Server Information/Status* page is not enlarged. To release the space, use “*Empty Trash*” on the Apple client’s terminal.

Windows clients cannot delete files saved by Apple clients to the NAS server

The Apple system allows the last digit of the file name to be a space while the Windows system does not accept such a format. Thus when the Apple client saves a file of this format to the NAS server, the Windows client cannot delete the file for it is unrecognizable. It is suggested that Apple users avoid creating files with a space at the end of the file name if they have to share files on the NAS server with Windows clients.

Problems about Setting the Storage Manager

Storage Manager lost connection to client terminal

If due to heavy network traffic **Storage Manager** fails to respond or freezes while running setup, try clicking on another

section, then on the original section again. If this doesn't work, close the browser window and re-open **Storage Manager**.

Cannot connect to NAS after modifying network configuration

After modifying the network configuration (including server addresses, domain, DNS entries, etc.), re-confirm the network settings and change them as necessary. Try closing the browser and reconnecting to **Storage Manager**.

If **D-Link NAS Filer Assistant Utility** cannot find the server due to incorrect network settings, press the IP reset button on the rear panel of the server to clear the incorrect configuration settings, and then use **Assistant Utility** to search again.

Local users cannot access Storage Manager

Possible reasons a user's account on the local machine cannot connect to the **Storage Manager** may include:

- The account was originally a Windows PDC account. The system administrator did not setup a password when adding it to the local accounts.
- If the client platform is using a language different from the one used on **Storage Manager**, then the client might be reading random codes when using the system. The system administrator has to re-set the languages on **Storage Manager** so that they are readable by the client.

E-mail notifications not received

If you don't receive e-mail notifications from the server, go to **Storage Manager**, *Server Information* → *System Log*, and

check the messages in the log. The following error messages refer to undelivered mail notifications:

- Cannot resolve the host address: xxxxxx, errcode: xxx.
This message indicates that the DNS server could not verify the SMTP server name you provided. This may be due to one of the following reasons:
 - DNS entry error
 - DNS server powered down
 - Incorrect domain name
 - Incorrect SMTP serverVerify these options and try again.
- Cannot connect to host: xxxxxx (xxx.xxx.xxx.xxx).
This message indicates that the system could not connect to the SMTP server. This may be due to one of the following reasons:
 - Network connection broken. Check the network connection and try again.
 - SMTP server unavailable. Confirm that the server is working properly.
 - SMTP server rejected the message. Verify that the SMTP server does not filter out junk messages. Contact the system administrator or try using a different SMTP server.
- Mail server connection failed.
This message indicates that the SMTP server has timed out and not responded within 30 seconds. Verify that the SMTP server is working properly.
- Send email error: xxx.
This message indicates an unknown mail error. Note the error code and contact the system manufacturer's

representative.

- Cannot create socket resource.
This message indicates that the system has insufficient resources to execute the mail send operation. Reboot the server to correct the problem.

Problems about Backing up/Restoring the Data on the Server

Cannot back up/restore the data on the NAS server

When the system fails to backup/restore data on the NAS server, the system administrator will receive an e-mail with an error code notifying the data backup/restore failure. The administrator can also go to *system log* tab of **Storage Manager** and search for the error code in the log file. Below follows an explanation of the e-mail error codes:

- Error code 1: system error occurred.
Try to restart the server, if this fails: please contact the customer service department.
- Error code 2: cannot integrate into the indicated Window domain while restoring data.
If the NAS server is integrated into the Windows domain while backing up, the Windows domain information will be backed up simultaneously. Restoring the Windows domain information can be done simultaneously with restoring data back on to NAS server at a later date. If the

Windows domain does not exist while restoring, probably due to the disconnection of the domain or the PDC being down, the Windows domain information cannot be restored properly.

- Error code 3: the NAS server has already been integrated into another Windows domain while restoring data, this will automatically lead to failure of re-integrating into the original Windows domain.
If the NAS server is integrated into the Windows domain while backing up, the Windows domain information will be backed up simultaneously. Restoring the Windows domain information can be done simultaneously with restoring data back on to NAS server at a later date. If the NAS server has already been integrated into another Windows domain while restoring, the system cannot be re-integrated into the original Windows domain.
- Error code 4: the storage space on the NAS server is not sufficient to restore data, restoring of files has been discontinued.
- Error Code 5: the network is suddenly disconnected or the user clicks on “Cancel” to stop the operation when backing up/restoring the data.

General Problems

How to deal with lost passwords

If a user has forgotten his/her password, he/she can turn to the system administrator to reset the personal settings. If the system

administrator forgets the password, the server must be returned to the dealer. All the data on the server will be lost.

Appendix 1

What is RAID?

The acronym RAID stands for Redundant Array of Independent Drives, a method to combine a number of small, inexpensive drives into an array which offers more functionality than a single large disk with comparable capacity, while simultaneously taking advantage of the individual disks to increase the efficiency of the system. In other words, during the writing process, data is split into segments and stored on multiple disks; likewise, during the reading process, data is retrieved simultaneously from multiple disks in order to increase the access speed of the array.

RAID can also be configured to use part of the disk capacity for mirroring or redundant data, thus preserving the integrity of the system in case one of the disks in the array fails.

The **DNS-6040 Series** supports the levels RAID 0, RAID 1, RAID 5 and RAID 5 with hot spare, described below:

RAID level	Functionality
RAID 0	Offers Striping, a process where multiple disks are combined to form one virtual large disk, but without safety measures.
RAID 1	Half of the disks are used for backup purposes; the content of disk A is mirrored to disk B to assure data integrity. The available storage space is only one half of total physical disk capacity.
RAID 5	This configuration includes a backup option. It treats multiple disks as one virtual disk to increase access speed. It uses parity mode to store redundant data on a space equal to the size of one disk for later data recovery. The actual available storage space in a system with n disks is thus n-1 hard disks.

RAID level	Functionality
RAID 5 with hot spare	RAID 5 with hot spare adds one spare disk to the RAID 5 array, allocating one for redundancy and the second one as a spare. The actual available storage space in a system with n disks is thus n-2 hard disks.

Each of the RAID configurations offers a different disk capacity and level of safety. When making your choice, consider the following:

- The bigger the available space, the fewer safeguards the system has.
- In any RAID array, the logical capacity of the array is determined by the disk with the smallest capacity. E.g., in a RAID 5 configuration with one 20 GB and three 30 GB hard disks, the total capacity available is equal to four 20 GB hard disks. Therefore you should always choose to combine hard disks of equal size in the same array.

RAID 0 (striping)

In a RAID 0 array, data is split and stored in different locations, but without fault tolerance. The server treats the array as one big disk, with a size of almost all individual disks combined. The parallel access to multiple disks allows for faster read and write, making the array faster than individual disks. Because of that, this configuration is ideal for applications where large amounts of streaming data have to be efficiently transferred while assuring good quality, e.g. in a recording.

RAID 0 offers no mirroring or redundancy options. If one disk

in the array fails, the entire array is inoperable. RAID 0 is not fault-tolerant.

RAID 1 (mirroring)

In a RAID 1 array, disks are arranged in pairs. Data is always written to both disks in a pair. This system is rather failsafe, but more expensive than other solutions, since the user actually has to provide twice the physical storage capacity. RAID 1 is often used in environments with multiple users where safety is of great importance.

RAID 5

RAID 5 is the same as RAID 0, i.e. using multiple disks to emulate one large virtual disk, but using parity data format to store redundant information. While the user is writing data, RAID 5 scans the data and stores redundancy information on a separate disk in the array. Parity information is split and stored on different disks together with the actual data. If one disk in the array fails, parity data on the safeguard disk can still be used to rebuild the entire information.

In other words, in a RAID 5 array, you use one disk for redundancy data, leaving you with $n-1$ disks available for actual data storage.

RAID 5 with hot spare

RAID 5 with hot spare is a RAID 5 configuration with one additional spare disk. Should any disk in the array break down,

the spare disk will automatically go online and rebuild damaged data. In other words, you are providing two disks for safety, leaving you with n-2 disks storage capacity in an array of n disks.

TIP

Even though RAID greatly increases the level of safety in your system, you should still make it a habit to back up data periodically. If you accidentally erase data, even a RAID array cannot restore it. RAID can only compensate for the failure of one disk, that is, if two disks fail simultaneously, data loss is inevitable.

Appendix 2

Windows access to the NAS server

After installing the NAS server (we shall assume the default server name *NAS001*), the server *NAS001* will appear in Windows Network Neighborhood. Users with access to *NAS001* who are members of the *users* group (see *Security Setup* section above) can access a folder named after their account and other folders to which they have access on *NAS001*.

To access storage space on the *NAS001* server from a Windows client, access the drive through Network Neighborhood, or create a permanent link (map network drive) to the drive on *NAS001* in the client's file manager.

Windows NT 4.0/2000 users accessing the NAS server will be prompted for their account and password when accessing the NAS server.

When Windows 95/98 clients try to access the server, the Windows operating system will read the login name of the client and prompt the user to enter only the correct password. If the account information on the NAS server does not match the client's login name, access will be denied. Therefore, if the client terminal runs Windows 95 or 98, please use the same names for accounts on this server and the clients.

Appendix 3

UNIX access to the NAS server

One of the purposes for the NFS protocol is to have similar management methods of the remote file system and local file system. Therefore, they can both use the “mount” command to mount.

```
mount /dev/dsk/c0t0d0s5 /home (local filesystem, Solaris)
mount /dev/hda5 /home (local file system, Linux)
```

The Unix administrator will usually set the above-mentioned scripts in /etc/vfstab (Solaris) or /etc/fstab (Linux, FreeBSD). These settings will automatically execute once the system starts. The following example shows the contents of a /etc/vfstab (dogfood is a NAS/NFS server name).

# Filesystem	Mountpoint	Type
/dev/dsk/c0t0d0s0	/	ufs
/proc	/proc	proc
dogfood:/volume1/programs	/usr/local	nfs
dogfood:/volume1/homes	/home	nfs

When there are a lot of Unix clients in the network, writing NFS file systems into client /etc/vfstab or /etc/fstab files becomes a complicated task. When the path of one NFS file system changes, or a new NFS file system is added, the administrator has to change the settings for each Unix client one by one.

Using NIS (Network Information Service) is one solution because NIS saves all mount information in the NIS server. Once NFS clients join the NIS domain, they will be able to use the shared directories on NFS servers through the function of “automount” instead of modifying /etc/vfstab or /etc/fstab individually. Most Unix systems (Solaris, Linux, FreeBSD etc.) can be configured as an NIS server.

The following description is based on the settings on a Solaris NIS server.

Master map is the database of the mount information on the NIS server. Before building this database, administrators must edit the pure text file /etc/auto_master as follows.

Master map: /etc/auto_master

#Directory	Map	Mount options
/net	-hosts	-rw
/home	auto_home	-nosuid
/-	auto_direct	

The first column in the file is the path to automount, which means that when users at clients try to access this directory, the link will be enabled automatically. In the second column, the parameters are the paths for databases, which record the mount information about the directory in the first column except for “-hosts”. The example above has a special line “ /-auto_direct.” “/-” is not a directory. The directories to be mounted are in the database “auto_direct.” Its format is:

/etc/auto_direct

#Mount point	Mount options	File system
/usr/local	-ro,nosuid	dogfood:/volume1/programs
/public	-rw	datakey:/volume1/public1

The first column is the mount point and the second column represents the mounting parameters. The third column shows the NFS file system in use. For example, if users of Unix clients want to access the files in /usr/local, /usr/local will automatically link to dogfood:/volume1/programs based on auto_direct.

The other database “auto_home” can have different links according to different user names. Its format is:

#User name	File system
sysadmin	dogfood:/volume1/homes/sysadmin
justind	dogfood:/volume1/homes/justind
anneli	datakey:/volume1/users/anneli
jiem	dadakey:/volume1/users/&

Assume that /etc/passwd (the file holding the user accounts) on the NIS server has the following content:

```
sysadmin:x:1000:500:System
Administrator:/home/sysadmin:/bin/tcsh
justind:x:1001:500:Justin Deng:/home/justind:/bin/tcsh
anneli:x:1002:500:Anne Li:/home/anneli:/bin/tcsh
jiem:x:1003:500:Jiem Deng:/home/jiem:/bin/csh
```

When the user *sysadmin* logs in to the Unix clients, he will enter

his default home directory `/home/sysadmin` according to “`/etc/passwd`”. Due to the `auto_home` database, `/home/sysadmin` will be automatically mounted to `dogfood:/volume1/homes/sysadmin`. With `auto_home`, the administrator can easily allocate hard disk space to users. When the NAS server `dogfood` is out of space, the newly added or some original users (such as `anneli` and `jiem`) could be moved to the NAS server *datakey*.

Appendix 4

Apple access to the NAS server

This system software supports the two access protocols AppleTalk and TCP/IP. The system administrator only has to configure the desired protocol in **Storage Manager**, *Network Setup* → *Apple network*.

Suppose you are running a NAS server called *NAS001*. To allow access from an Apple client via AppleTalk, select *AppleShare* and in the *Select File Server* option the server name *NAS001*.

When logging in, provide the name and password of the client account, or log in as *guest*. All the data for which access privileges exist will be visible. Users who are part of the *users* group (see chapter 4) will find their own home folders. Select the desired data: once its icon appears on the desktop, a proper connecting has been established.

If the Apple client supports TCP/IP, you may also choose TCP/IP as an access protocol. Under *Server IP Address*, enter the IP address of the *NAS001* server, then log in with your name and password, or as *guest*.

If a Zone exists on the LAN, the server will automatically login the zone of the client.

Note:

- Apple clients cannot access the NAS server with the *root* account. For system administrator *root* to access the server from an Apple client, please create another admins group account on the server .

- Apple clients are not able to save single files larger than 4GB onto the NAS server.
- When there is more than one network card in the NAS server and the server is set up as having multiple subnets, this system only supports Apple client in s single subnet to read/write from the server through AppleTalk or TCP/IP protocol. Apple clients in other subnet(s) can only read/write through TCP/IP protocol. Due to this limitation, this system can only support the Zone in a single subnet.

Appendix 5

Novell access to the NAS server

A Windows client terminal must have *Client Service for Netware* or *Novell Client for Windows* installed before access to the NAS server's Novell service (this server only offers Binding Service, and no NDS).

Suppose you wish to access the server *NAS001* from a client with *Client Service for Netware* installed. In the Windows Network Neighborhood, you will find an entry *Netware or compatible networks* with the entry *NAS001_NW* inside. Enter your name and password, or log in as *guest*. All the data for which access privileges exist will be visible. Users who are part of the *users* group (see chapter 4) will find their own home folders.

From a terminal running *Novell Client for Windows*, you can log in with the binding server. In Client 4.8 for Windows NT/2000, select *Network Neighborhood* → *Entire Network* → *Netware Services* → *Netware Servers*. Here you will find the entry *NAS001*. The remainder of the login procedure is the same as for *Client Service for Netware*.

To access storage space on the *NAS001* from a Windows client, access the drive through Network Neighborhood, or create a permanent link to the drive on *NAS001* in the client's file manager.

Note:

- Novell clients cannot access the NAS server with the root account. If the system administrator *root* wants to access the server from a Novell client, please use the “*supervisor*” account and the root password on the NAS server to log in (there’s no need to create this account on the NAS), or create another admins group account in the server host.
- Novell clients are not able to save single files larger than 4GB onto the NAS server.
- The Windows Client service for Netware will turn small letters into capitals, which will cause wrong interpretation of some double byte character: i.e. ”New Folder” would turn into ”New Folder”, but this is not the case with Novell client 4.8 for Windows NT/2000, and client 3.3 for Windows 95/98.

Appendix 6

Email notification list

Recipient	Subject	Email Content
System Administrator	Test Message from %HOSTNAME%	Dear user, This is a test message sent by %HOSTNAME%. Please use your browser to connect to http://%HTTP_URL% and continue to setup other configurations. Your account name is: 'root'
System Administrator	Server %HOSTNAME% temperature is a little high!	Dear user, The server %HOSTNAME% temperature is a little high. CPU fans might not be working properly. Please check the server immediately and power it down if necessary.
System Administrator	Server %HOSTNAME% overheating!	Dear user, The server %HOSTNAME% is excessively hot! CPU fans might not be working properly. Please check the server immediately and power it down if necessary!

Recipient	Subject	Email Content
System Administrator	%HOSTNAME% temperature has reached critical limit!	Dear user, The server %HOSTNAME%'s temperature is reaching critical limit and is going to be shut down automatically. After normal temperatures have been restored, restart the server and look for the cause of the problem.
System Administrator	%HOSTNAME% temperature restored to normal	Dear user, The temperature of the server %HOSTNAME% has been restored to normal. Use Toolkit→LED Management on the following site to reset the LED: http://%HTTP_URL%/
System Administrator	A memory error occurred on %HOSTNAME%	Dear user, A memory error occurred on %HOSTNAME% Memory chips might be faulty. Please tend to repairs immediately.
System Administrator	Memory errors occurred on %HOSTNAME%	Dear user, Memory errors occurred on %HOSTNAME% Memory chips might be faulty. Please tend to repairs immediately.
System Administrator	%HOSTNAME%: System fan has failed.	Dear user, The system fan on %HOSTNAME% has failed. Please replace the system fan as soon as possible.
System Administrator	%HOSTNAME%: %NUM% fan is in normal working	Dear user,

Recipient	Subject	Email Content
	order	The %NUM% fan on %HOSTNAME% is in normal working order now.
System Administrator	%NUM% power supply has failed.	Dear user, The %NUM% power supply on %HOSTNAME% has failed. Please replace the %NUM% power supply as soon as possible.
System Administrator	%NUM% battery has been removed	Dear user, The %NUM% battery on %HOSTNAME% has been removed. Please confirm and insert a new battery.
System Administrator	%HOSTNAME%: %NUM% battery has failed.	Dear user, The %NUM% battery on %HOSTNAME% has failed. Please replace the %NUM% battery as soon as possible.
System Administrator	The disk cage %NUM% on server %HOSTNAME% restored to normal temperature	Dear user, The disk cage %NUM% on server %HOSTNAME% has been restored to normal temperature.
System Administrator	Overheated Disk cage %NUM% on server %HOSTNAME%!	Dear user, Disk cage %NUM% on server %HOSTNAME% is excessively hot! Disk fans might not be working properly. Please check the server immediately and power it down if necessary!

Recipient	Subject	Email Content
System Administrator	%HOSTNAME%: %NUM% battery is in normal working order.	Dear user, The %NUM% battery on %HOSTNAME% is in normal working order now.
System Administrator	%HOSTNAME%: %NUM% system fan is in normal working order.	Dear user, The %NUM% system fan on %HOSTNAME% is in normal working order now.
System Administrator	%NUM% battery has been inserted.	Dear user, The %NUM% battery on %HOSTNAME% has been inserted.
System Administrator	%HOSTNAME%: %NUM% power supply has recovered.	Dear user, The %NUM% power supply on %HOSTNAME% has recovered.
System Administrator	%HOSTNAME%: %DRIVER% %NUM% net card off line.	Dear user, %DRIVER% %NUM% net card is off line.
System Administrator	%HOSTNAME%: %DRIVER% %NUM% net card is on line.	Dear user, %DRIVER% %NUM% net card is on line.
System Administrator	%HOSTNAME% IP Reset complete	Dear user, %HOSTNAME% has successfully reset its IP address. You can now configure the IP address of %HOSTNAME%.
System Administrator	Disk %DISK_ID% on %HOSTNAME% has been removed	Dear user, Disk %DISK_ID% on %HOSTNAME% has been removed

Recipient	Subject	Email Content
		<p>Please confirm and replace with a new disk.</p> <p>Use Server Information on the following site to check the system status: http://%HTTP_URL%.</p>
System Administrator	Disk %DISK_ID% on %HOSTNAME% is initializing.	<p>Dear user,</p> <p>Disk %DISK_ID% on %HOSTNAME% is initializing.</p> <p>Use Server Information on the following site to check the system status: http://%HTTP_URL%</p>
System Administrator	Disk %DISK_ID% on %HOSTNAME% is rebuilding	<p>Dear user,</p> <p>Disk %DISK_ID% on %HOSTNAME% is rebuilding.</p> <p>Use Server Information on the following site to check the system status: http://%HTTP_URL%</p>
System Administrator	Disk %DISK_ID% on %HOSTNAME% has been rebuilt.	<p>Dear user,</p> <p>Disk %DISK_ID% on %HOSTNAME% has been rebuilt.</p> <p>Use Server Information on the following site to check the system status: http://%HTTP_URL%</p>
System Administrator	Rebuilding of disk %DISK_ID% on %HOSTNAME% has failed	<p>Dear user,</p> <p>Rebuilding of disk %DISK_ID% on %HOSTNAME% has failed</p> <p>Use Server Information on the following site to check the system status: http://%HTTP_URL%</p>

Recipient	Subject	Email Content
System Administrator	Disk %DISK_ID% of %HOSTNAME% is damaged, the spare disk has been put online	<p>Dear user,</p> <p>Disk %DISK_ID% of %HOSTNAME% is damaged. The spare disk has been put online. Rebuilding is in progress. Please locate the source of the problem and replace the faulty disk.</p>
System Administrator	Disk %DISK_ID% on %HOSTNAME% is defective	<p>Dear user,</p> <p>Disk %DISK_ID% on %HOSTNAME% is defective. Please tend to the problem and replace the disk.</p>
System Administrator	Disk %DISK_ID% on %HOSTNAME% has an I/O error.	<p>Dear user,</p> <p>Disk %DISK_ID% on %HOSTNAME% has an I/O error. If this event remains existing, find out the cause as soon as possible or replace the hard disk.</p>
System Administrator	The space of Volume %V on %HOSTNAME% is reaching its limit	<p>Dear user,</p> <p>The space of Volume %V on %HOSTNAME% is reaching its limit. Please remove unnecessary files or add more disk capacity.</p> <p>Please reserve at least 10 MB space on Volume 1 for normal system operations, otherwise the system will not be able to run properly.</p> <p>Volume %V Total capacity: %G GB</p>

Recipient	Subject	Email Content
		Remaining capacity: %R GB (%U%%)
System Administrator	New disk %DISK_ID% on %HOSTNAME% is detected	Dear user, New disk %DISK_ID% on %HOSTNAME% has been detected and added to the system. Use Server Information on the following site to check the system status: %HTTP_URL%
System Administrator	Disk %DISK_ID% on %HOSTNAME% has been added.	Dear user, Disk %DISK_ID% on %HOSTNAME% has been added. Use Server Information on the following site to check the system status: %HTTP_URL%
System Administrator	Adding of disk %DISK_ID% on %HOSTNAME% has failed	Dear user, Adding of disk %DISK_ID% on %HOSTNAME% has failed Use Server Information on the following site to check the system status: %HTTP_URL%
System Administrator	Volume %VOL_ID% on %HOSTNAME% cannot complete RAID building.	Dear user, Volume %VOL_ID% on %HOSTNAME% cannot complete RAID building. Use [Server Information->System log->Storage manager log] and [Volume Management] on the following site to check the volume status: %HTTP_URL%

Recipient	Subject	Email Content
System Administrator	Volume %VOL_ID% on %HOSTNAME% is crashed.	Dear user, The volume %VOL_ID% on %HOSTNAME% is crashed. Use [Volume Management] on the following site to check the volume status: %HTTP_URL%
System Administrator	Volume %VOL_ID% on %HOSTNAME% is degraded.	Dear user, The volume %VOL_ID% on %HOSTNAME% is degraded. Use [Volume Management] on the following site to check the volume status: %HTTP_URL%
System Administrator	Volume %VOL_ID% on %HOSTNAME% is rebuilding.	Dear user, The volume %VOL_ID% on %HOSTNAME% is rebuilding. Use [Volume Management] on the following site to check the volume status: %HTTP_URL%
System Administrator	Volume %VOL_ID% on %HOSTNAME% is in normal working condition.	Dear user, The volume %VOL_ID% on %HOSTNAME% is in normal working condition Use [Volume Management] on the following site to check the volume status: %HTTP_URL%
System Administrator	Volume %VOL_ID% on %HOSTNAME% is set as "crashed".	Dear User, The volume %VOL_ID% on %HOSTNAME% failed to create RAID due to either disk failure or hot-swapping. The system has set the status of

Recipient	Subject	Email Content
		<p>this volume as "crashed." Please go to [Volume Management] on the following site to check the volume status: %HTTP_URL%</p>
System Administrator	The mail to %N is undelivered.	<p>Dear user,</p> <p>The mail to the user, %N, is undelivered. Please check the user e-mail address.</p>
System Administrator	%HOSTNAME% is updating the system. Access temporarily denied.	<p>Dear user,</p> <p>%HOSTNAME% is currently updating its system files. This procedure will be complete in approximately 10 minutes. During the update, access to the server is temporarily suspended. Thank you.</p>
System Administrator	%HOSTNAME% update complete	<p>Dear user,</p> <p>Dear user,</p> <p>%HOSTNAME% has successfully completed the system update at %TIME% on %DATE%. The server has been restored to normal operation. The latest version of the operating system is %MODEL% %VERSION%. Thank you and good-bye!</p>

Recipient	Subject	Email Content
System Administrator	%HOSTNAME% update failed	<p>Dear user,</p> <p>An attempt to update %HOSTNAME% has failed. This may have one of the following possible reasons:</p> <ol style="list-style-type: none"> 1. The specified update files are invalid or corrupted 2. The specified update files are older than the current ones 3. Some disks failed when updating <p>Please verify and try again.</p>
System Administrator	You have not completed the local/Remote UPS settings of %HOSTNAME%.	<p>Dear user,</p> <p>You have not completed settings on the "UPS Management" page. The UPS monitor daemon will not work until the settings have been completed.</p>
System Administrator	%HOSTNAME% cannot detect the local UPS.	<p>Dear user,</p> <p>UPS monitor daemon cannot detect your local UPS.</p> <p>Possible causes are:</p> <ol style="list-style-type: none"> 1. The serial cable is not attached. 2. The type of serial cable is incorrect. 3. The UPS monitor daemon cannot recognize the type of your UPS. <p>To make the UPS monitor daemon work, please restart it on the "UPS Management" page after the problem has been resolved.</p>

Recipient	Subject	Email Content
System Administrator	%HOSTNAME% detects abnormal status of the local/remote UPS power.	<p>Dear user,</p> <p>The UPS monitor daemon has detected an abnormal status of the local/remote UPS power.</p> <p>The local UPS has lost AC power and is probably running on battery power.</p> <p>To make the UPS monitor daemon work, please restart it on the "UPS Management" page after the problem has been resolved.</p>
System Administrator	%HOSTNAME% detects abnormal status of the local UPS.	<p>Dear user,</p> <p>The UPS monitor daemon has detected an unknown abnormal status of the local UPS. Please restart the UPS monitor daemon on the "UPS Management" page after the problem is resolved.</p>
System Administrator	%HOSTNAME% cannot detect the remote UPS.	<p>Dear user,</p> <p>The UPS monitor daemon cannot detect your remote UPS.</p> <p>Possible causes are:</p> <ol style="list-style-type: none"> 1. The IP address of the remote UPS is incorrect. 2. The Community you have set has no permission to access the remote UPS. 3. The Enterprise OID of the remote UPS is incorrect. 4. The remote UPS does not support SNMP. <p>To make the UPS monitor daemon work, please restart it on the "UPS Management" page after the</p>

Recipient	Subject	Email Content
		<p>problem is resolved.</p>
System Administrator	%HOSTNAME% detects abnormal status of the remote UPS power.	<p>Dear user,</p> <p>The UPS monitor daemon has detected an abnormal status of the remote UPS power.</p> <p>The remote UPS has lost AC power and is probably running on battery power.</p> <p>To make the UPS monitor daemon work, please restart it on the "UPS Management" page after the problem has been resolved.</p>
System Administrator	Incorrect setting on remote UPS of %HOSTNAME%.	<p>Dear user,</p> <p>The remote UPS cannot recognize "Status OID," which you have set on the "UPS Management" page.</p> <p>Possible causes are:</p> <ol style="list-style-type: none"> 1. "Status OID" setting is incorrect. 2. The remote UPS does not support SNMP. <p>To make the UPS monitor daemon work, please restart it on the "UPS Management" page after the problem has been resolved.</p>

Recipient	Subject	Email Content
System Administrator	%HOSTNAME% lost AC power and is running on UPS. The system is going to shut down.	Dear user, Due to an AC power failure or low battery of the local/remote UPS, server %HOSTNAME% was shut down right after sending this mail.
System Administrator	%HOSTNAME% lost AC power and is running on UPS. The system is going to shut down.	Dear user, Due to an AC power failure, power is temporarily provided by the UPS system. Server %HOSTNAME% will be shut down if the AC power is not restored within the time specified on [Toolkit/UPS Management].
System Administrator	The AC power on server %HOSTNAME% has been restored.	Dear user, The AC power on server %HOSTNAME% has been restored. The shutdown procedure was cancelled.
System Administrator	Server %HOSTNAME%: Low battery of the local UPS.	Dear user, The battery of the local UPS is going to be depleted. Server %HOSTNAME% will be shut down immediately.
System Administrator	The local/remote UPS of server %HOSTNAME% is overloaded.	Dear user, The local/remote UPS of server %HOSTNAME% is overloaded. If this situation goes on, server %HOSTNAME% will be shut down after the time specified on [Toolkit/UPS Management].

Recipient	Subject	Email Content
System Administrator	The capacity of the newly added hard disk is too small.	Dear user, The capacity of the newly added hard disk is less than those currently used on the system. It cannot be utilized for disk configurations with Raid0, Raid1, Raid5, or Raid5 with spare. Please exchange this hard disk for one with a larger capacity.
System Administrator	%HOSTNAME% Server backup successful.	Dear user, The backup action is completed successfully.
System Administrator	%HOSTNAME% Server restored successfully.	Dear user, The restore action is completed successfully.
System Administrator	%HOSTNAME% Server backup error, error code %E.	Dear user, An error occurred while backing up. Please delete the backup file immediately. The error code is %E.
System Administrator	%HOSTNAME% Server restoration error, error code %E.	Dear user, The restore action has failed. Please check the error code. The error code is %E.

Recipient	Subject	Email Content
General Users	Welcome %USER_NAME% on server %HOSTNAME%	Hi %USER_NAME%, Welcome to %HOSTNAME%! Use the Network Neighborhood to access \\%HOSTNAME%, or simply point your browser to %HTTP_URL% to modify your personal profile. Your account: '%USER_NAME%' Your full name: '%FULL_NAME%' Your password: '%PASSWD%' Disk quota on each volume: %QUOTA%
General Users	The profile of %OLD_USER_NAME% on %HOSTNAME% has been modified.	Hi %OLD_USER_NAME%, Your personal profile on %HOSTNAME% has been modified as follows: Your account: '%USER_NAME%' Your full name: '%FULL_NAME%' Your password: '%PASSWD%'
General Users	%OLD_HOSTNAME% has been renamed	Hi %USER_NAME%, The server originally called %OLD_HOSTNAME% has been renamed to %HOSTNAME%. Please use the Network Neighborhood to access \\%HOSTNAME% . To change your personal profile, point your browser to %HTTP_URL%
General Users	The IP address of %HOSTNAME% has been changed	Hi %USER_NAME%, The IP address of %HOSTNAME%

Recipient	Subject	Email Content
		has been changed to: %IP_ADDR% To change your personal profile, point your browser to %HTTP_URL%
General Users	%HOSTNAME% will be %ACTION% in %DELAYTIME% minutes	Hi %USER_NAME%, Server %HOSTNAME% will be %ACTION% in %DELAYTIME% minutes. Please save any current jobs you're working on as soon as possible.

Appendix 7

System Default Configuration

Server properties		
Server Name	Last six digits of the serial number	
Server Date and Time	Pacific time zone	
Server Failure Notification	Server sends test e-mail	
Storage Manager Language	Browser default language	
Event notification email language	The same as Storage Manager language	
Windows Terminals Codepage	English (code page 437)	
System administrator (root) password	-	
Network Settings		
TCP/IP	DHCP	On If your network does not include a DHCP server, you must manually configure the IP address.
Network card setup	First network card Network cards other than the first one	On Off
MS Networking	Enable MS Networking (TCP/IP) Enable Workgroup	On WORKGROUP
Apple Networking	Enable Connections Over TCP/IP Enable Connections Over AppleTalk	On On
UNIX NFS	Enable NFS networking	On

Novell Networking	Enable Novell Networking Ethernet Frame Type Internal Network Number External Network Number	Off 802.2 Auto Default
Advanced Novell	Server Name for Novell	"_NW" is appended to the name (for example, beta20009_NW)
Security Settings		
Users	root	Predefined administration user; member of the ADMINS and USERS group; no password assigned. The default quota for <i>root</i> is unrestricted. Cannot have a home folder
	guest	No password assigned; provides a default identity to all users who fail to authenticate. Cannot have a home folder (To disable this feature, assign it a password.) The default quota for <i>guest</i> is unrestricted.
Default Settings for Newly Created Account	Default Group	Users
	Default Quota	100 MB
	Default user home location	Volume1
Maximum Accounts	512	
Maximum Concurrent Connections	Windows clients (CIFS/SMB): 512 UNIX clients (NFS): 512 Novell clients (NCP): 512 Apple clients (AFP): 512	

User Groups	Admins	Predefined group with special privileges; only ADMINS members can configure the server. <i>Root</i> is a member of this group by default.
	Users	Each member of this group can see his own folder named after his account and other folders to which he has access privileges in the Network Neighborhood. <i>Root</i> is a member of this group by default.
	Guests	Unlike the members of the group <i>users</i> , <i>guests</i> will not see their folder in the Windows Network Neighborhood. They will however have access to the public folders on the NAS server. The account <i>guest</i> is a member of this group by default.
Maximum Groups	128	
SharedFolders	<i>publcn</i>	This shared folder resides in the directory <i>/volumen/publcn</i> . All users on the LAN can use this shared folder, they have full read and write access.
Default Settings for Newly Created Folder	NFS exported as	Read and write
	Privilege for everyone	Read and write
	Default newly created shared folder location	Volume1
Maximum Shared Folders	64 (Does not include users' home folders)	

External User Authentication	Enable Microsoft network users domain controller authentication Enable UNIX NIS network	Off Off
Volume Management		
One hard disk in the first-time installation	Non-RAID volume (volume1)	Each hard disk with 3 GB space
Two hard disks in the first-time installation	RAID 1 volume (volume1)	Each hard disk with 3 GB space
Three hard disks or above in the first-time installation	RAID 5 volume (volume1)	Each hard disk with 3 GB space
Naming Convention		
Server Name	Case insensitive ≤ 15 characters May consist of letters, numbers, underscores, and minus signs The first character must be a letter	
Account Name	Case insensitive ≤ 15 characters The name of an account cannot exceed 15 characters. The name can be formed by double-byte character languages, the same as the language of the Storage Manager interface, single-byte languages, numbers, decimal point, underline and minus sign. The first character however cannot be minus sign. The name is not case sensitive.	
Password	Case sensitive May consist of 0 to 12 displayable characters	

Shared Folder Name	<p>Case insensitive ≤ 15 characters</p> <p>The name of a shared folder cannot exceed 15 characters. The name can be formed by double-byte character languages, the same as the language of the Storage Manager interface, single-byte languages, numbers, decimal point, underline and minus sign. The first character however cannot be minus sign. The name is not case sensitive.</p>	
Group Name	<p>Case insensitive ≤ 15 characters</p> <p>The name of a group cannot exceed 15 characters. The name can be formed by double-byte character languages, the same as the language of the Storage Manager interface, single-byte languages, numbers, decimal point, underline and minus sign. The first character however cannot be minus sign. The name is not case sensitive.</p>	
Toolkit Settings		
SNMP Configuration	Enable SNMP access	On
	System location	Unknown
UPS Management	Do not have UPS	On
	Probing Interval	20 seconds
	Delayed before shutdown	3 minutes

