

Welcome to Data ONTAP™ Release 4.0.3

This *Read Me First* is for Data ONTAP Release 4.0.3.

Starting with Release 4.0, the Network Appliance filer provides multiprotocol support. Network users on computers supporting NFS (Network File System), CIFS (Common Internet File Service), and HTTP (Hypertext Transfer Protocol) can all access the same files. Release 4.0.3 runs on all Network Appliance filer models in the NetApp™ F200, F300, and F500 series. It also runs on older models, which are the FAServer 450 and 1400. When the term “filer” is used in this document, the information applies to these models.

This *Read Me First* provides information about these topics:

- product documentation roadmap
- installing a new filer
- software upgrade procedures using diskettes and using downloaded files
- directory conversion before enabling CIFS access to NFS directories
- new features in Release 4.0.3
- procedure to downgrade from Release 4.0.3 to earlier releases

Documentation roadmap

Use this *Read Me First* along with other documents that ship with your filer. The contents of each document are described in Table 1. Some documents have not been revised for Release 4.0.3, but the information they contain applies unless specified otherwise in this *Read Me First*.

Table 1. How to use the filer documentation

Document	Contents
<i>Quick Start Guide</i> for Release 4.0	Checklist that helps you set up the filer for the first time. The guide also contains quick reference material about filer commands and files.
<i>Hardware Guide for the FAServers, Hardware Guide for the NetApp F200 and F300 Series, or Hardware Guide for the NetApp F500 Series</i>	Detailed procedures for installing the filer and for adding or replacing SCSI devices. The guide also contains information about interpreting LEDs and LCD messages.
<i>Supplemental Hardware Information About the NetApp F210</i>	Hardware information about the NetApp F210 to be used in conjunction with the <i>Hardware Guide for the NetApp F200 and F300 Series</i> .
<i>System Administrator's Guide</i> for Release 4.0	Detailed information about features in Release 4.0. The guide also contains procedures for customizing the filer software for your environment once the filer has been installed.
<i>Command Reference Guide</i> for Release 4.0	Man pages that describe filer commands and files. (The information in the on-line man pages supersedes that in the <i>Command Reference Guide</i> if there are discrepancies between the two.)

Installing a new filer

If you purchased a new filer, follow these steps to install and configure it:

1. **Read the license and warranty information that comes with your filer.**
2. **Configure your filer, following the steps in the *Quick Start Guide*.**
3. **Store in a safe place the floppy disks that ship with your filer.**

Your filer will then be ready to deliver to network clients the file services that you have enabled. For more information about software features, refer to the *System Administrator's Guide*.

Upgrading a filer to Data ONTAP Release 4.0.3

To upgrade the filer's software, you need:

- A Data ONTAP 4.0.3 System Boot disk. (This disk can be used only in the filer's floppy drive.)
- A Data ONTAP 4.0.3 System Files disk. (This disk can be used only in the floppy drive of an NFS or CIFS client; the filer's floppy drive *cannot* use this disk.)

These disks are provided in your upgrade kit. The System Files disk is provided in two versions, one readable from a UNIX workstation and the other readable from a Windows PC.

Before you start the update

This section describes the steps that you might need to take before installing Release 4.0.3 on your filer:

1. **This step applies only if you are upgrading from Release 4.0.1c. If you have clients using NFS over TCP, have them unmount the filer.**

In Release 4.0.3, NFS over TCP is disabled by default. In Release 4.0.1c, NFS over TCP was enabled.

2. **Save core file from a preceding crash (if any).**

When you boot Release 4.0.3 and the filer executes `savecore`, it won't recognize a core file written by an earlier release. If your filer contains a core file that has not been saved, *before* you boot Release 4.0.3, take steps to save it. (There are several circumstances under which a core file might not have been saved. For example, you might have edited `/etc/rc` to remove the call to `savecore` at boot time. Or `savecore` might have been unable to write the core files, in which case it would have written a message to that effect.)

Upgrade quick summary

The following is an outline of the upgrade procedure. For a detailed step-by-step version, turn to “Upgrade step-by-step from a UNIX client” (page 6) or “Upgrade step-by-step from a Windows client” (page 11) as appropriate.

1. **Boot the filer from the 4.0.3 boot disk.**
2. **If you haven't yet done so, at the filer's console, enter the license code for each file protocol.**
3. **If you use a PC running CIFS for upgrade, and haven't yet run `cifs setup`:**
 - a. Reboot the filer.
 - b. Run `cifs setup`.
4. **Extract system files from the 4.0.3 System Files disk to the filer's root directory.**
5. **Use the filer's download command to make the new software bootable from the hard disk.**
6. **Reboot the filer from the hard disk.**
7. **If you have a license for CIFS and haven't yet done so, run `cifs setup`.**
8. **If you haven't yet done so, create `/etc/serialnum`.**
9. **If you haven't yet done so, install NetApp MIB Version 1.0.1.**

Upgrade with files downloaded from the web

If you have received Data ONTAP 4.0.3 from the Network Appliance web site, using the boot image file that you downloaded, create a Release 4.0.3 System Boot disk as follows:

1. **Insert a write-enabled disk in the UNIX host's floppy drive.**
2. **Copy the boot image to the floppy disk.**

Using the `dd` command, specify the input file, output file, and block size, thus:

```
adminhost# dd if=4.0.3.boot_image of=/dev/fd0 bs=512
```

For *4.0.3.boot_image*, substitute the name you gave the file when you received it.

3. **Remove, write-protect, and label the floppy disk.**

Write “System Boot for Release 4.0.3” and the filer model (for example, “NetApp F330”) on the disk label.



NOTE: It is important to record the filer model on the disk label, especially if you have different models on site. Filers in different NetApp filer series use different boot images.

Use the boot disk thus created in the same way as a boot disk supplied by Network Appliance. Use the downloaded system files in the same way as the files on the System Files disk supplied by Network Appliance. Their use is described in the sections that follow.

Upgrade step-by-step from a UNIX client

This section is relevant only if you use a UNIX workstation to extract the System Files. If you're using a Windows PC, go to “Upgrade step-by-step from a Windows client” (page 11).

To carry out the installation, you need both access to the filer's system console and to a client system. The client system is a workstation equipped with a floppy drive. It should have write permission to the filer's root directory. In this section, the client system is shown with the name *adminhost*, and is shown running SunOS 4.1.x. If you use a client running another operating system, the syntax of UNIX commands might differ.

Follow these steps to upgrade your filer using a UNIX client:

1. Boot the filer from the Release 4.0.3 System Boot Disk.

- a. Insert the Release 4.0.3 System Boot disk in the filer's floppy drive.



NOTE: The Release 4.0.3 disks are specific to the model of filer that you are updating. You should have received disks appropriate to the model you are updating. If you have different models, be sure to check the disk labels to make sure you're using the correct disk for the filer.

- b. At the system console, enter the reboot command.
- c. When the filer displays a list of options, select option 1, "Normal boot."

2. Enter licenses.

If you have already entered the licenses (for an earlier 4.x version), you do not need to do so again; skip to step 3.

At the system console, use the `license` command to enter your licenses as shown in the following example:

```
toaster> license nfs=XXXXXXX cifs=YYYYYY http=ZZZZZZZ
```

In the command you type, use the license keys included in your upgrade kit instead of the ones used in the example. An = sign is required between the type of license and the license code; don't insert a blank before or after the = sign. Also, enter license keys only for those protocols that you have purchased.

The filer responds with an acknowledgment for each license:

```
nfs site license enabled.  
      nfs enabled.  
cifs site license enabled.  
      Run cifs setup after rebooting to enable cifs.  
http site license enabled.  
      Use "options httpd.enable" to enable http.
```

3. Read and install the system files.

At the client system:

- a. Insert the disk labeled "Data ONTAP 4.0.3 System Files (UNIX format)."



NOTE: Network Appliance distributes the System Files disk in two versions, one formatted for UNIX systems and the other for PCs. Check the floppy disk label to be sure that you insert the appropriate disk.

- b. Mount the filer's root file system to the client's */mnt* directory:

```
adminhost# mount toaster:/ /mnt
```

- c. Change directory to */mnt*.

```
adminhost# cd /mnt
```

- d. Install the System Files. From the client system, enter the following commands:

```
adminhost# tar xvf /dev/fd0
```

The `tar` command reports the names of files it has copied from the disk; they are *tar_image.Z* and *install_netapp*.

- e. Run the script `install_netapp` with an argument that tells the script where to install the files: that is, to the mount point for the filer's root directory:

```
adminhost# ./install_netapp /mnt
```

The install script reports its steps as it goes:

```
install_netapp: uncompress tar_image.Z
install_netapp: cd "/mnt"; tar xvf "/mnt/tar_image"
```

The script invokes `tar`, which reports the files it extracts, like this:

```
x etc/boot/netapp-x86 symbolic link to netapp_4.0.3-x86
x etc/boot/0-x86, 1804 bytes, 4 tape blocks
```

The last few messages are similar to the following:

```
x etc/firmware/pca200em.bin, 41288 bytes, 81 tape blocks
x etc/syslog.conf.sample, 542 bytes, 2 tape blocks
```

```
x etc/httpd.mimetypes.sample, 3163 bytes, 7 tape blocks
install_netapp: cd "/"; rm -rf tar_image install_netapp
```

4. Eject disks and unmount the filer's root directory.

- a. At the client system, eject the System Files disk from the floppy drive.

```
adminhost# eject
```

- b. From the client system, unmount the filer's root file system (/) by entering the following commands:

```
adminhost# cd /
adminhost# umount /mnt
```

- c. At the filer, eject the boot disk (by pressing the eject button at the side if the floppy drive).



NOTE: It's essential to remove the boot floppy before you issue the reboot command, or the filer will once again boot from the floppy rather than from its hard drive.

5. Set the filer's boot blocks.

At the system console, enter `download` to copy the executables to the boot blocks of the filer's hard disks:

```
toaster> download
toaster>
```

The `download` command doesn't provide an acknowledgment; when copying has finished, the filer prompt appears again.

6. Reboot from the filer's hard disk.

At the system console, reboot the filer:

```
toaster> reboot
```

You'll see the copyright notice followed by "NetApp Release 4.0.3."

7. Set up CIFS.

This step is relevant only if you have a license for CIFS but have not previously enabled CIFS access to the filer.

From the filer console, run the setup program for CIFS by entering the following command:

```
toaster> cifs setup
```

The setup program prompts you for information necessary to enable CIFS access to the filer. For more information about the setup program, refer to the *System Administrator's Guide*.

8. Record the filer's serial number. This step is relevant only if the file */etc/serialnum* does not exist on your filer.

Create */etc/serialnum*, and put the filer's serial number in it. The file makes it easier for Network Appliance Technical Support to assist you after receiving an autosupport e-mail from your filer.

9. Install NetApp MIB Version 1.0.1 if you haven't done so.

Copy the MIB file from the diskette provided to a UNIX system as follows:

```
adminhost# tar xvf /dev/fd0  
adminhost# uncompress netapp.mib.Z
```

The MIB file is now saved in a file named *netapp.mib* on adminhost.

10. Store the disks.

In a safe place, store the System Boot disk and System Files (UNIX format) disk.

11. Enable HTTP according to the *System Administrator's Guide* if your filer is licensed to run HTTP.

Upgrade step-by-step from a Windows client

This section is relevant if you are using a Windows PC for administration of the filer. If you're using a UNIX workstation, go to "Upgrade step-by-step from a UNIX client" (page 6).

To carry out the installation, you must log in as Administrator. You need both access to the filer's system console and to a client system. The client system must be an IBM-compatible PC equipped with a floppy drive, running Windows 95, Windows NT 3.51, or Windows NT 4.0. (Windows for Workgroups cannot be used to do the installing because the installation uses long file names, not supported in Windows for Workgroups.) In this section, the examples show a client system running Windows NT 4.0.

Follow these steps to upgrade your filer using a Windows client:

1. Boot the filer from the Release 4.0.3 System Boot Disk.

- a. Insert the Release 4.0.3 System Boot disk in the filer's floppy drive.



NOTE: The Release 4.0.3 disks are specific to the model of filer that you are updating. You should have received disks appropriate to the model you are updating. If you have different models, be sure to check the disk labels to make sure you're using the correct disk for the filer.

- b. At the system console, enter the reboot command.
- c. When the filer displays a list of options, select option 1, "Normal boot," to boot the system from the Release 4.0.3 files on the disk.

2. Enter licenses.

If you have already entered the licenses (for Release 4.0), you do not need to do so again; skip to step 3.

At the system console, use the `license` command to enter your licenses as shown in the following example:

```
toaster> license nfs=XXXXXXX cifs=YYYYYYY http=ZZZZZZZ
```

In the command you type, use the license keys included in your upgrade kit instead of the ones used in the example. An = sign is required between the type of license and the license code; don't insert a blank before or after the = sign. Also, enter license keys only for those protocols that you have purchased.

The filer responds with an acknowledgment for each license:

```
nfs site license enabled.  
      nfs enabled.  
cifs site license enabled.  
      Run cifs setup after rebooting to enable cifs.  
http site license enabled.  
      Use "options httpd.enable" to enable http.
```

3. Reboot the filer so you can set up CIFS.

Steps 3 and 4 are relevant only if you have not previously enabled CIFS access to the filer. Otherwise, skip to step 5.

- a. At the system console, enter the reboot command.
- b. When the filer displays a list of options, select option 1, "Normal boot," to boot the system from the Release 4.0.3 files on the disk.

4. Set up CIFS.

This step is relevant only if you have not previously run `cifs setup`. Otherwise, skip to step 5.

From the system console, run the setup program for CIFS by entering the following command:

```
toaster> cifs setup
```

The setup program prompts you for information necessary to enable CIFS access to the filer. For more information about the setup program, refer to Chapter 2 of the *System Administrator's Guide*.

5. Install the system files.

- a. At the client system, map the filer's root directory to a drive on the client:

Right-click My Computer and select Map Network Drive.

In the dialog box, select a drive letter. For example:

N:

Write the name of the filer and the name assigned to the hidden share of its root directory, c\$. For example:

\\toaster\c\$

Leave unchanged the “Connect As” field.

- b.** Insert the disk labeled “Data ONTAP 4.0.3 System Files (PC format).” It contains the file *setup.exe*.



NOTE: Network Appliance distributes the System Files disk in two versions, one formatted for UNIX systems and the other for PCs. Check the floppy disk label to be sure that you insert the appropriate disk.

- c.** Run *setup.exe* (on the System Files disk) to extract files and write them to the filer as follows:

From the Start menu, select Run, and supply the disk and program name:

a:setup.exe

The *setup.exe* program displays the WinZip dialog box. Press OK.

- d.** In the WinZip dialog box, insert the drive letter. For example, if you chose drive N in step a, replace <DRIVE>:\ETC with the following:

N:\ETC

Leave the other options as they are: “Overwrite Files Without Prompting” and “When Done Unzipping Run” should both be checked.

- e.** Press the Unzip button.

In the dialog box's lower panel, you'll see confirming messages as files are uncompressed, culminating in a message such as the following:

633 file(s) unzipped successfully.

6. Eject disks.

- a. At the client system, eject the System Files disk from the floppy drive.
- b. At the filer, eject the boot disk.



NOTE: It's essential to remove the boot floppy before you issue the reboot command, or the filer will once again boot from the floppy rather than from its hard drive.

7. Set the filer's boot blocks.

At the system console, enter `download` to copy the executables to the boot blocks of the filer's hard disks:

```
toaster> download
toaster>
```

The `download` command doesn't provide an acknowledgment; when copying has finished, the filer prompt appears again.

8. Reboot from the filer's hard disk.

At the system console, reboot the filer:

```
toaster> reboot
```

You'll see the copyright notice followed by "NetApp Release 4.0.3."

9. Record the filer's serial number. This step is relevant only if the file */etc/serialnum* does not exist on your filer.

Create */etc/serialnum*, and put the filer's serial number in it. The file makes it easier for Network Appliance Technical Support to assist you after receiving an autosupport e-mail from your filer.

10. Install NetApp MIB Version 1.0.1 if you haven't done so.

Copy the MIB file from the diskette provided (the disk is in UNIX format) to a UNIX system as follows:

```
adminhost# tar xvf /dev/fd0  
adminhost# uncompress netapp.mib.Z
```

The MIB file is now saved in a file named *netapp.mib* on adminhost.

11. Store the disks

In a safe place, store the System Boot disk and System Files (PC format) disk.

12. Enable HTTP according to the *System Administrator's Guide* if your filer is licensed to run HTTP.

Before you first use the filer for CIFS

This section is applicable only if your filer is licensed for both the NFS and CIFS protocols.

Timing of directory conversion for CIFS access to NFS-created files

If you license both NFS and CIFS protocols, your filer supports access via either protocol to the *same* files. File-naming conventions differ between NFS and CIFS; although any CIFS-based file name is valid in NFS, some NFS names are not valid in CIFS. Also, CIFS maintains for each file certain attributes for which there are no NFS equivalents. A filer that runs CIFS maintains a directory in which NFS-style names are assigned equivalents in the 8.3 format.

If you add CIFS access to files that were created by NFS clients, the first time a directory is accessed via CIFS, the filer will automatically convert it to the format required to support CIFS clients. “Accessed” here includes listing the contents of a directory, for example, with the File Manager, Explorer, or DOS `dir` command, or accessing any files or directories contained in that directory.

Under some circumstances, the CIFS client may automatically look at the directory's subdirectories, thereby triggering conversion of the subdirectories as well. (For example, this would happen if the user has set the “Expand All” option under the File Manager “Tree” menu.)

Once a directory has been converted, it will not have to be converted again.

Although this process is automatic, the initial conversion of a directory can take considerable time, especially if the directory contains a large number of files. For example, conversion of a directory of 60,000 files takes the filer about 35 minutes on a NetApp F540, and about 2 hours on a NetApp F330. It is important to take these conversion times into consideration when deciding when to do them.

While a directory is being converted, the filer might not be able to perform any other file system operations until the conversion is complete.

If there are portions of the directory tree that will *never* have CIFS access, there is no need to convert them. However, any future CIFS access to an unconverted directory will immediately trigger its conversion.

If you have a directory that contains more than 50,000 files, before triggering a conversion, use an NFS client to distribute files among a greater number of subdirectories. This speeds up the conversion process and avoids a possible crash. (The matter is discussed in NetApp On the Web, discussion of bug 3564 in Bugs on Line).

Limits on CIFS open files, sessions, and shares

The filer is subject to limits on files access through CIFS as summarized in Table 2.

Table 2. CIFS maximums by filer memory configuration

	64 MB	128 MB	192 MB	256 MB
Maximum number of sessions/users	128	523	1,024	2,048
Maximum number of open files	2,560	10,240	20,480	40,960
Maximum number of locked files	2,048	4,096	6,144	8,192
Maximum number of shares	1,000	1,000	1,000	1,000

New features in Release 4.0.3

For information about bugs fixed in Release 4.0.3, visit the NetApp On the Web (NOW) web site at this URL:

<http://now.netapp.com>

In addition to bug fixes, there are software changes in Release 4.0.3 as described in this section.

NFS over TCP disabled by default

In Release 4.0.1c, the default value of the NFS over TCP option was enabled. This option is disabled by default in Release 4.0.3. Use the options `nfs.tcp.enable` command if you need to change the value of this option.

Because the default value of `nfs.tcp.enable` has changed in Release 4.0.3, before you upgrade, unmount the filer from clients that use NFS over TCP. After the upgrade, enable the option and remount the filer on these clients.

Changes to the space reserved for core files

Release 4.0.3 uses an improved algorithm for allocating space for core files saved when the filer crashes. In general, the change should be transparent. It affects you only when you boot the filer with Release 4.0.3 *immediately following the crash of an earlier release*, or conversely when you boot the filer with an earlier release immediately following a crash of Release 4.0.3. In those two situations, the `savecore` command (usually invoked from `/etc/rc`) won't find the core file left by the previous system.

To save a core file, execute `savecore` when the filer is running the same software release as the one in which the crash occurred, and then proceed with the software upgrade or downgrade procedure.

CIFS “read only” bit settable from UNIX

If a file's access permissions are set from a UNIX client to permit reading but not writing, a CIFS client that inquires about access rights now sees that the CIFS “read only” attribute has been set. This new feature, however, affects only the files that are created under Release 4.0.3.

File system size limits

Beginning with Release 4.0.3, the filer imposes a platform-specific limit on the size of the filer's file system as described in Table 3.

Table 3. Maximum size of file system, by filer model

Filer models	Maximum
FAServer 450 and 1400, NetApp F200 series	54 GB
NetApp F300 series	117 GB
NetApp F500 series	243 GB

In the table, “GB” stands for 2²⁰ bytes.

The limit is checked when you use the `raid add` command to add a new disk. If adding the disk would cause the file system to exceed the limit by more than 0.5GB, the system rejects the request and writes the following message to the log:

```
Raid add not allowed; system capacity exceeded.
```

The disk you are trying to add remains a spare.

Restriction on WinDD lifted

A WinDD server connected to the filer was formerly limited to a maximum of 32 clients. With Release 4.0.3 and a WinDD server that has installed Service Pack 5, the restriction to 32 clients no longer applies.

Home directories for CIFS users

A new option (`cifs.home_dir`) allows you to create a directory that contains home directories of CIFS users. In this home directory, you can create directories whose names are identical to the login names of the CIFS users. Each user sees his or her own directory but not the ones belonging to other users. For example, if there are users called *user1* and *user2*, the home directory contains subdirectories for *user1*, *user2*, and *guest*. (The *guest* directory is for the user who logs in using the name “guest.”) When the account “user1” connects to the filer and asks for its list of shares, the display shows an offer called *user1*, but not *user2* or *guest* (or any other individual user's home directory). This is illustrated in Figure 1, showing an example from DOS:

```

C:\users\default>net view \\filer
Shared resources at \\filer
NetApp
Share name      Type           Used as      Comment
-----
USER1           Disk           Home Directory
AGILE           Disk           Agile Software
DVLP           Disk           Engineering Development
RLSE           Disk           R:           Engineering Releases
WEB            Disk           (UNC)        Internal Web
The command completed successfully.

```

Figure 1. The net view command showing user1's home directory

The user's home directory also appears in Network Neighborhood.

A user accesses his or her home directory in the same way as any other share. That is, the user can open the share with Network Neighborhood, by mapping a drive, or by using a UNC name. The UNC name is simply

`\\filer\username`



NOTE: Using the `cifs.home_dir` option to create home directories is useful only when users do not need to read or write other users' home directories. Since each user can only access his or her own directory, when users must access the directories of other users, create an additional share to the *homes* directory and assign each user the appropriate access permissions to other users' home directories.

User name longer than the maximum-length share name

Because share names are truncated to 12 characters, the share name may show a truncated version of the user's account name. For example, consider the 13-letter name "administrator". From the filer's point of view, the home directory for "administrator" has a name that exactly matches the account name "administrator". But use of that directory is offered under the truncated share name "administrato".

(If there were users "administrator" and "administrator1", each would see an offer for his or her own home directory, but both would see it as an offer to share the name "administrato". Thus each gets the correct directory, even though the share names appear the same.)

Procedure for setting up the home directories

The following is a step-by-step procedure for setting up home directories for CIFS users:

1. Enable the home directory option.

Enter the following command:

```
options cifs.home_dir homedirpath
```

For example, if the directory that contains the various home directories is */homes*, the command would be:

```
options cifs.home_dir /homes
```

2. Set up a directory for each user.

Within the directory specified by the `cifs.home_dir` option, create a directory for each user. Each directory name must exactly match the user's login name. Also, make each user the directory's owner.

When you display the filer's list of shares, the */homes* directory appears in the shares list, which is mapped to the share name CIFS.HOMEDIR, as shown in Figure 2.

toaster> cifs shares			
Name	Mount Point		Description
C\$	/		Remote Administration
		rwX hawleyr	
		rwX engineering{g}	
patterns	/patterns		patterns
		rwX engineering{g}	
CIFS.HOMEDIR	/homes		Home Directories
		rwX everyone	

Figure 2. Homes directory in CIFS SHARES report

If you create the user's home directory after the user was logged in, the user won't be able to see it until the next time he or she logs in.



NOTE: The filer does not lock directories. Do not move user directories while CIFS is active.

Features introduced in Releases 4.0, 4.0.1, and 4.0.1c

Changing UNIX-style permissions for files in a CIFS share

There have been some additions to the filer's `cifs` commands and `options` command. These new features are summarized in this section.

The `cifs chmod` command sets the UNIX-style permissions of a designated file or directory within a share. (Previously, these UNIX-style access controls were settable only from an NFS client running UNIX.) The syntax is:

```
cifs chmod share mode path
```

The arguments are shown in Table 4:

Table 4. Syntax of CIFS SHARE command

<i>share</i>	The name of a CIFS share.
<i>mode</i>	The access mode to be applied to the file or directory (as described in the tables below). You can specify the mode in either absolute format or symbolic format.
<i>path</i>	The path, relative to the root directory of the specified share, to the file or directory whose access is to be set.

Absolute mode

A mode specified in absolute format is an octal number. The full range of options is represented by a number having four octal digits, but for most purposes a 3-digit number suffices (with an implied leading 0). The significance of digits in the various positions is the same as in UNIX systems, shown in Table 5:

Table 5. Octal access permission codes

Value	Position			
	Execution	Owner	Group	Others
4	Set-user-ID-on-execution	Read	Read	Read
2	Set-group-ID-on-execution	Write	Write	Write
1	Sticky bit	Execute/Search	Execute/Search	Execute/Search

a. These bits may be significant when a UNIX system executes the file but do not affect access rights.

For example, the mode 644 gives the owner read and write permission and gives group members and others read permission.

The mode 755 gives the owner read, write, and execute permissions, and group members and others read and execute but not write permission.

Symbolic mode

A mode specified in symbolic format is a comma-separated list of expressions. Each expression is formed from up to three components, as shown in Table 6:

Table 6. Symbolic access permission codes

Who	Operation	Permission
u User	+ Add	r Read
g Group	– Remove	w Write
o Others	= Set	x Execute/search
a All (that is, ugo)		s Set-user-ID-on-execution and Set-group-ID-on-execution
		t Sticky

For example, the mode expression `go-w` denies write permission to group and others. The mode expression `u=rwx,go=rx` gives the user (that is, the file's owner) permission to read, write, and execute, and gives members of the user's group and others permission to read and execute (but not write). It is thus equivalent to `755`.

An expression that uses `=` but omits the permission clears all permissions. For example, the mode expression `go=` turns off all access for group and others, and is equivalent to `go-rwxst`.

An expression that does not indicate who applies to all. For example, the mode `+x` adds execute permission to all, and is thus equivalent to `a+x`.

Changing the ownership of files in a share

The `cifs chown` command changes the owner of a file or directory. The syntax is:

```
cifs chown share owner path
```

The significance of each argument is shown in Table 7:

Table 7. Arguments of CIFS CHOWN command

<i>share</i>	The name of a CIFS share.
<i>owner</i>	The user name of the new owner.
<i>path</i>	The path, relative to the root directory of the specified share, to the file or directory whose access is to be set

Changing the description of a share

The `-change` option to the `cifs shares` command changes the description of a share. The syntax is:

```
cifs shares -change share description
```

If *description* includes blanks, enclose the description string in double quotes. You can change the description of a share even if the share is in use.

Returning a report on a specific share

Used with no argument, the `cifs shares` command reports on all current shares. The command now accepts an optional argument. The syntax is:

```
cifs shares [share]
```

The argument *share* specifies a single share to be described.

Specifying the maximum size of the HTTPD log

The absolute maximum size of the log file `/etc/log/httpd.log` is 4 GB. However, some NFS clients don't support files larger than 2 GB. A new argument to the `options` command permits you to specify the maximum size for the log file. The syntax is:

```
options httpd.log.max_file_size max
```

The default is 2,147,483,647 (the largest file size that can be supported by all NFS clients). The maximum is 4,294,967,295.

Downgrading your filer to a release earlier than 4.0

The instructions in this section tell you how to make a filer that is now running Release 4.0.3 revert to Release 3.x or later.



CAUTION: If you downgrade to a previous release following a dirty shutdown (for example, if your filer crashed or you power-cycled a running filer), there is a risk of losing data.

Restrictions for software downgrading

The following are restrictions for downgrading:

- The release to which you downgrade must support the hardware configuration of your filer.
- You cannot run the downgrade on a filer that has snapshots that include CIFS files. You must first delete any snapshots made after the filer first ran CIFS. If you attempt to run the downgrade while CIFS snapshots still exist, the downgrade procedure will terminate and list the snapshots concerned.



NOTE: If your filer is now running any 4.x release, you *cannot* revert to a release earlier than 4.0 by simply rebooting from the prior release boot disk. The prior release will not be able to recognize the Release 4.0.3 directories, and will terminate after printing a warning message such as the following. You must follow the instructions in this section.

```
Filesystem is scrambled.  
Please contact Network Appliance.  
(You must boot from floppy to take any further action)  
Program terminated
```

Before you start the downgrade, save core files (if any)

With Release 4.0.3, the filer uses a changed procedure for capturing a core dump. When you boot from any release earlier than 4.0.3, the `savecore` command won't recognize a core file written by Release 4.0.3, and won't be able to save it. If your filer contains a core file that has not been saved, *before* you downgrade you should use the `savecore` command to save it.

Downgrade step-by-step

To revert to an earlier system, get out the boot disk and the system files disk for the earlier system to which you will revert. For this description, we'll refer to them as:

- Prior-level boot disk
- Prior-level system files disk

To carry out the installation, you need both access to the filer's system console and to a client system. The client system is a workstation equipped with a floppy drive. It should have write permission to the filer's root directory. In this section, the client system is shown with the name *adminhost*, and is shown running SunOS 4.1.x. If you use a client running another operating system, the syntax of UNIX commands might differ.

1. Turn off NFS and CIFS services.

At the system console, enter the following commands:

```
toaster> nfs off
toaster> cifs terminate
```

The `cifs terminate` command prompts you for the number of minutes it should delay before turning off CIFS service. (The default is 5 minutes.) During the delay period, you can type Ctrl-C to abort the command if necessary.

2. Convert directories from the format introduced in Release 4.0.

Allow time for this step. The time required is roughly proportional to the total number of i-nodes in the snapshots and the active file system. As a very rough rule-of-thumb, estimate about 1 hour per 10 GB.

At the system console, enter the following:

```
toaster> revert_to 3.x
```



NOTE: The argument of `revert_to` is always the characters "3.x", regardless of the version to which you're reverting.

The `revert_to 3.x` command cannot convert snapshot directories that were created while the filer was running CIFS. The `revert_to 3.x` command first scans for such directories. If it finds any, it displays a list of them and exits, leaving the filer unchanged. In that case, you can either abandon the downgrade process, or you can delete the CIFS snapshots and restart `revert_to 3.x`.

- a. If you decide to delete and proceed, use the following command:

```
toaster> snap delete dirname ...
```

In the actual command, substitute the names of the snapshots for *dirname* After deleting the snapshots listed, execute the `revert_to 3.x` command.

- b. If you decide to abandon the downgrade, eject the boot diskette from the filer, and issue a reboot command in the usual way.

```
toaster> reboot
```

Then re-enable file services as appropriate.

3. Unmount the filer from certain clients.

This step is relevant only if you are downgrading to Release 3.01 or earlier. Otherwise, skip to step 4.

If you have been using NFS over TCP, or NFS Version 3, and you are now downgrading to a release that does not support them—that is, to Release 3.0.1 or earlier—unmount the filer from clients that are using those features. (Otherwise, clients that use NFS over TCP will hang, and clients that use NFS Version 3 will receive many error messages.)

4. Reboot the filer from the prior-level boot disk.

- a. At the filer's floppy drive, insert the prior-level system boot disk.
- b. At the system console, enter the reboot command.
- c. When the filer displays a list of options, select option 1, "Normal boot," to boot the system from the prior-level disk.

5. **Install the system files according to the *Read Me First* for the release to which you are downgrading.**

6. **Eject disks and unmount the filer's root directory.**

a. At the client system, eject the prior-level system files disk.

```
adminhost# eject
```

b. From the client system, unmount the filer's root file system (/) by entering the following commands:

```
adminhost# cd /  
adminhost# umount /mnt
```

c. At the filer, eject the boot disk (by pressing the eject button at the side if the floppy drive).



NOTE: It's essential to remove the boot disk before issuing the reboot command, or the filer will once again boot from the floppy rather than from its hard drive.

7. **Set the filer's boot blocks.**

At the system console, enter `download` to copy the executables to the boot blocks of the filer's hard disks:

```
toaster> download  
toaster>
```

There's no acknowledgment; when copying has finished, the filer prompt appears again.

8. **Reboot the filer from its hard disk.**

At the system console, enter `reboot` to reboot the filer:

```
toaster> reboot
```

You'll see the copyright notice followed by the release number for the prior-level system that you have now restored.

9. Store the disks.

Store in a safe place the prior-level system boot disk and system files disk.