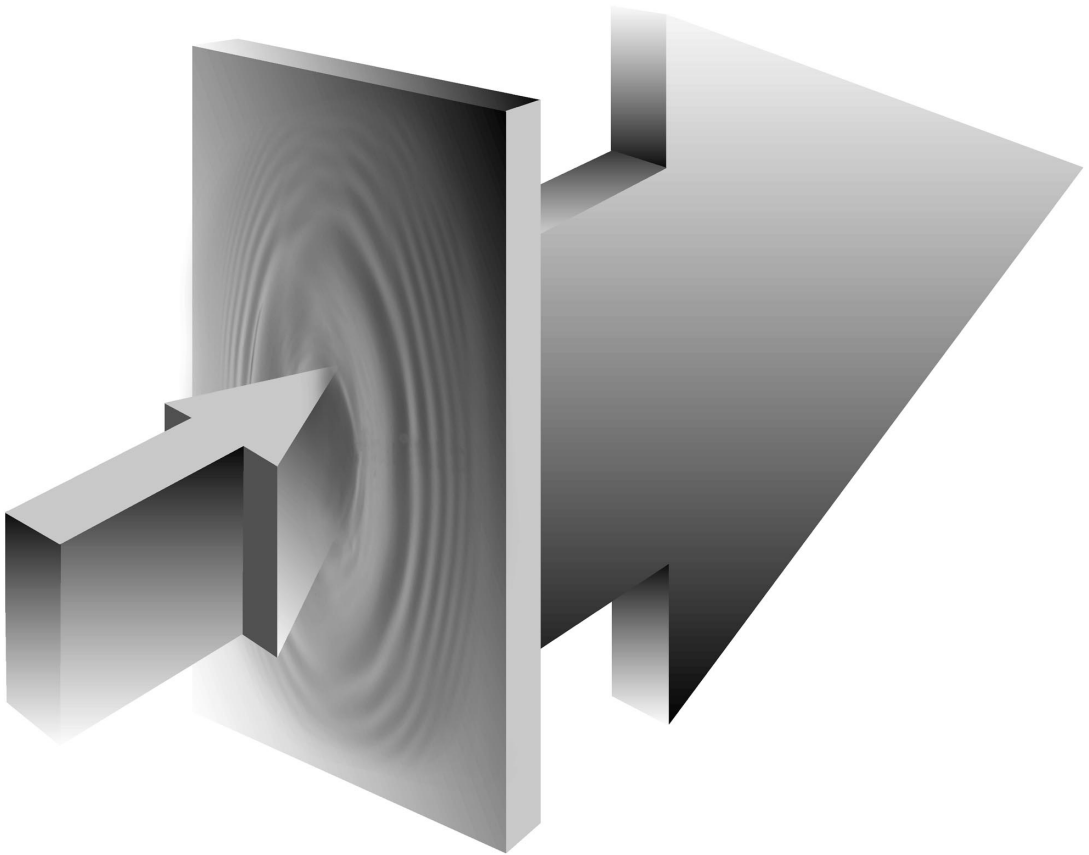


POWERQUEST®



User Guide for Use on NetWare® Servers

POWERQUEST

ServerMagic™

ServerMagic 3.0
User Guide for NetWare

ServerMagic by PowerQuest

Manual Version 1

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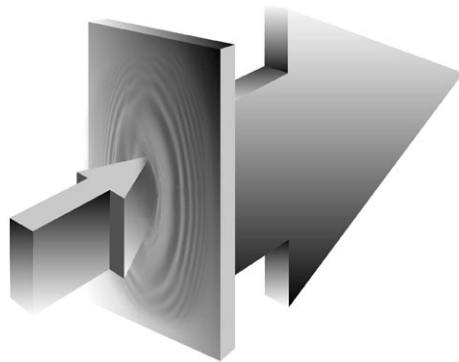
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Getting Started

This chapter contains the following information:

- System Requirements
- Installing ServerMagic on a NetWare 4.x - 5.x Server
- Installing ServerMagic on a NetWare 3.12 Server
- Things To Do Before Running ServerMagic
- Starting ServerMagic
- ServerMagic Controls
- Setting Preferences
- Selecting a Drive and Partition
- Selecting Options
- Overview of ServerMagic Scripting
- Exiting ServerMagic
- Uninstalling ServerMagic

System Requirements

The following table shows hardware and software requirements for installing and using ServerMagic 3.0.

Hardware/Software	Requirement
Processor	386SX (486 or later recommended)
RAM*	NetWare 3.x: 32 MB NetWare 4.x: 20 MB NetWare 5.x: 64 MB
CD-ROM drive	Any speed
Hard-disk free space	8 MB
Operating System	NetWare 3.12 (NetWare 4.x or later recommended)
Monitor	VGA

*The RAM required depends on a number of factors. Use the steps below to determine how much memory you need to perform any operation.

- 1 Calculate the following:

$$\frac{3 \times \text{volume size (in MB)}}{256 \times \text{block size (in KB)}}$$

- 2 If the resulting number is NOT entirely after the decimal point, multiply the result by 10.

If the resulting number is entirely after the decimal point, multiply the result by 100.

For example if the number is 1.18, multiply by 10 to get 11.8. If the resulting number is .75, multiply by 100 to get 75.

- 3 The resulting number is the amount of RAM you need, in MB.

The amount of RAM you need can vary by ± 5 MB for a given operation. For example, if the steps above show that you need 70 MB of RAM, the operation will require between 65 and 75 MB.

Installing ServerMagic on a NetWare 4.x - 5.x Server

- 1 At the server prompt on the console, type the appropriate command for your version of NetWare:

- For NetWare 4.x, type `LOAD INSTALL.NLM` and press <Enter>.
- For NetWare 5.x, type `NWCONFIG` and press <Enter>.

The **Installation Options** menu appears.

- 2 Select **Product Options**.

The **Other Installation Actions** menu appears.

- 3 Select **Install a product not listed**.

- 4 If you are installing from diskette, insert the diskette and press <Enter> to continue. Otherwise, press <F3> to specify the installation directory.

To install from CD-ROM, type “D: \NETWARE,” where D:\ is the drive letter of your CD-ROM drive.

- 5 Read the license agreement, pressing <Page Up> and <Page Dn> to scroll through the entire document. Press <Esc> to advance to the next stage of installation.

- 6 Select **Accept License Agreement** or **Reject License Agreement**, or select **Review License Agreement** to read the license agreement text again.

- 7 Press <Esc> to exit the PowerQuest install utility and return to Install or NWCONFIG.

- 8 Press <Esc> to return to the previous menu.

- 9 Select **Exit** to return to the server prompt.

Installing ServerMagic on a NetWare 3.12 Server

- 1 At the server prompt, type `LOAD INSTALL.NLM` and press <Enter>. The **Installation Options** menu appears.

- 2 Select **Product Options**.

A list of installed products appears.

- 3 Press <Insert>.

- 4 Type the path for the installation directory.
A:\ appears by default. Backspace to delete it if necessary.
- 5 Follow steps 5 - 9 outlined in “Installing ServerMagic on a NetWare 4.x - 5.x Server” above.

Benefits of Registering ServerMagic

When you register your software, you are entitled to 45 days of technical support at no additional cost.

Registered users can contact PowerQuest Customer Service at (801) 437-8900 for special upgrade pricing when the next version of ServerMagic is released.

Information for System Administrators

- ServerMagic 3.0 does not support NSS partitions. PowerQuest is working with Novell to provide this support for future versions of ServerMagic.
- Occasionally, a server ABENDS when IDE.DSK is loaded. PowerQuest recommends using either the ISADISK.DSK driver (dated 4/93 or later) or the NWPA and appropriate *.HAMs (dated 10/96 or later).

Things To Do Before Running ServerMagic

Before starting ServerMagic for any operations, you should do the following.

- **PowerQuest strongly suggests that you patch your NetWare servers as recommended by Novell.** You can review the Novell Minimum Patch list at *support.novell.com*.
- **Back up all partitions before modifying them.** Your data is the most valuable part of your server. Although it is unlikely that ServerMagic would do anything to damage your data, other system failures — hardware, software, or power — can put your data at risk if they occur during repartitioning. Server Image, which is included with the ServerMagic package, is useful for this task.

- **Connect to an uninterruptible power supply (UPS).** ServerMagic may not be able to recover if a power failure occurs during repartitioning. By having the server and all connected hard drives protected by UPSs, you can avoid the problems caused by power failures.
- **Make sure all clients are logged off.** ServerMagic dismounts all volumes as it starts up and reboots the system as it exits. Schedule ServerMagic sessions for off hours and notify clients that the system will be unavailable during that time.
- **Make sure no other NLMs are running.** No other NLMs should be loaded when you load SMAGIC.NLM. ServerMagic dismounts all volumes, so no other NLMs are able to read data from the disk. Many of the operations you perform with ServerMagic require the server to reboot and reinitialize NetWare.

Starting ServerMagic

After backing up your drives, notifying your clients, and connecting to a UPS, do the following to start ServerMagic.

- 1 At the server prompt on the console, type the appropriate command for your version of NetWare:
 - For NetWare 3.12, 3.2, and 4.x, type `LOAD SMAGIC.NLM` and press <Enter>.
 - For NetWare 5.x, type `SMAGIC` and press <Enter>.

ServerMagic loads and asks you whether you want to dismount all volumes.

- 2 Press <Enter> if you want to dismount all volumes; otherwise, select **NO** and press <Enter>. If you select **NO**, ServerMagic terminates and returns to the NetWare prompt.

After ServerMagic dismounts all volumes, the main menu appears.

ServerMagic may not recognize a specific drive when there is an NTFS striped volume partition on the same hard drive as a NetWare partition. NetWare's media manager API will not allow addressing the physical drive.

ServerMagic Controls

The following controls help you navigate through ServerMagic.

Key	Function
Up arrow/down arrow	Selects a menu item
<Enter>	Selects a menu item; enters a value
<Esc>	Moves to the previous menu; exits if on main menu; cancels operations
<F10>	Continues to the next step; often initiates an operation after all needed information is provided

Setting Preferences

Preferences determine how ServerMagic performs operations. The preferences remain in effect until changed. Except for bad sector checks, the preferences affect all drives and relevant partitions. For bad sector checks, set the preference independently for each drive.

- 1 From the main menu, select **Preferences** and press <Enter>.

The **Preferences** menu appears.

- 2 Select the option you want to change and press <Enter>.

The current status for the option appears, and the new choice is selected.

- 3 To leave without changing the preference, press <Esc>. To accept the new choice for the preference, press <Enter>.

The **Preferences** menu appears again.

The following table shows the preference options:

Preference	Type of partition	Default	Comments
OS/2 EA Errors on FAT	FAT	Disabled	<p>Enables or disables OS/2 Extended Attribute errors when checking a FAT partition.</p> <p>Caution: Always enable this preference if OS/2 is on your computer; otherwise undetected problems could lead to loss of data.</p>
NT 64K clusters	FAT, FAT32	Disabled	<p>Allows FAT partitions with 64 KB clusters, which enables Windows NT to support large hard disks. When enabled, the 64 KB cluster size is available in the Resize/Move Partition and Resize Clusters menus.</p> <p>This preference is disabled every time you exit ServerMagic.</p> <p>Caution: Other operating systems do not support cluster sizes larger than 32 KB, so you should enable 64K clusters only if Windows NT is your only operating system.</p>
FAT32 options	FAT32	Disabled	<p>If the operating system supports FAT32 partitions, you have an option to enable FAT32 options.</p>

Preference	Type of partition	Default	Comments
Bad Sector Checking	All partitions on a hard disk	Disabled	<p>ServerMagic tests for bad sectors on your hard disk before modifying partitions. This testing may not be necessary for newer disk types, such as Enhanced IDE and SCSI, that handle bad sectors internally.</p> <p>You set this preference individually for each of your hard disks. If your server has both older and newer hard disks, you can check the older disk drives (disable this preference) and skip checks on the newer disk drives (enable this preference).</p> <p>You should never skip bad sector checks unless the hard disk is handling bad sectors internally. If you skip bad sector checks and your hard disk fails to detect a bad sector, you can lose data.</p>

Selecting a Drive and Partition

ServerMagic operations apply to specific partitions, so before performing an operation, you must select the specific drive and partition you want to change.

- 1 On the main menu, select **Select Drive** and press <Enter>.

ServerMagic displays the hard disks currently connected to the server.

- 2 Select the drive you want and press <Enter>.

ServerMagic displays the partitions on the selected hard disk.

- 3 Select the partition you want and press <Enter>.

ServerMagic returns to the main menu.

You are ready to select an option for the partition.

Selecting Options

The options available for a partition depend on the following:

- Type of partition currently selected
- Configuration of the other hard disks connected to the server
- Amount and location of free space (disk space not currently claimed by any partition) on the selected drive

IMPORTANT! If your drive configuration does not have enough free space for ServerMagic to execute an operation, that operation does not appear on the **Options** menu.

For options for NetWare partitions, refer to Chapters 2 and 3. For options for all other partitions, refer to Chapter 4.

Overview of ServerMagic Scripting

You can create script files to automate standard ServerMagic tasks. Virtually any task you can perform from a ServerMagic console can also be performed by running a script file. Since a script file runs without user intervention, there are a number of script file statements that take the place of responses to screen prompts.

A script file is an ASCII file you can create with any text editor. ServerMagic also has a number of command line options that support the use of script files.

You can use ServerMagic scripting to configure remote systems. To do so, you must be able to:

- Load ServerMagic on a remote system
- Launch ServerMagic on a remote system
- Get feedback as necessary from a log file on the remote system

It is your responsibility to set up remote access.

For a complete list of ServerMagic script file commands and command line options, plus a number of sample script files, refer to \NETWARE\DOCS\NWSCRIPT.PDF or \NETWARE\DOCS\NWSCRIPT.TXT on the ServerMagic CD.

Exiting ServerMagic

- 1 Select **Exit** on the main menu and press <Enter>.
- 2 Press <Enter> again to exit ServerMagic, or press <Esc> to return to the main menu.
- 3 If you made changes that require rebooting, ServerMagic reboots the server upon exiting. Some servers, especially SMP servers, do not reboot when exiting ServerMagic. If this happens, use the hard reset button or cycle power on the server so the changes can take effect.

If you did not make changes that require rebooting, the server will resume at the server prompt or ServerMagic will down the server and leave you at the DOS prompt. To resume server operations, type `Mount All` and press <Enter>.

Some operations down the server without rebooting.

Uninstalling ServerMagic

- 1 At the server prompt on the console, type the appropriate command for your version of NetWare:
 - For NetWare 3.12, 3.2, or 4.x, type `LOAD INSTALL.NLM` and press <Enter>.
 - For NetWare 5.x, type `NWCONFIG` and press <Enter>.

This loads the standard NetWare installation module and displays the **Installation Options** menu.

- 2 Select **Product Options**.

The **Other Installation Actions** menu appears, along with a list of currently installed products.

- 3 Select **View/Configure/Remove installed products**.

The **Currently Installed Products** list displays.

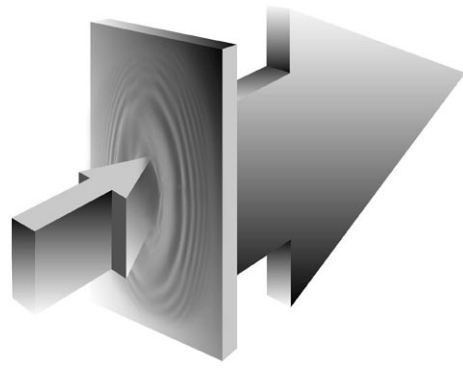
- 4 Select **ServerMagic** and press <Delete>.

The prompt, **Remove product SMAGIC?**, appears.

- 5 Select **Yes**.

ServerMagic is removed and the **Currently Installed Products** list is updated.

- 6 Press <Esc> <Esc>, then select **Exit** to return to the server prompt.



Performing NetWare Partition Operations

This chapter contains the following information:

- Creating NetWare Partitions
- Copying NetWare Partitions
- Mirroring NetWare Partitions
- Resizing NetWare Partitions
- Moving NetWare Partitions on the Same Disk
- Moving NetWare Partitions to Another Disk
- Hiding or Unhiding NetWare Partitions
- Getting Information about NetWare Partitions
- Deleting NetWare Partitions

Creating NetWare Partitions

1 Select the drive on which you want to create the partition.

2 Select an area of free space.

3 Select **Partition Options ► Create New Partition**.

The disk drive must have free space available to hold the partition. If there is no free space, the option to create a partition will not appear on the menu.

4 Select **NetWare** as the partition type.

5 Define the size of the partition, then press <Enter>.

ServerMagic enters the maximum value automatically.

6 Select whether you want the partition to be at the beginning or the end of free space.

- **Beginning** leaves free space after the partition. This is the default.
- **End** leaves free space before the partition. If you want this option, press <Enter>, select **End**, and press <Enter> again.

7 Press <F10> to continue.

8 Press <Enter> to confirm that you want to create the partition, or press <Esc> to cancel.

ServerMagic checks the hard disk for bad sectors and creates the partition. The new partition does not include a volume. To create a volume, use NetWare's INSTALL.NLM (NetWare 3.x and 4.x) or NWCONFIG.NLM (NetWare 5.x).

After creating the partition, ServerMagic selects the new partition and displays the **Partition Options** menu for it. For information about skipping bad sector checks on newer hard disks, refer to "Setting Preferences" on page 6.

Copying NetWare Partitions

1 Select the NetWare partition you want to copy.

2 Select **Partition Options ► Copy Selected Partition**.

3 Select the free space to which to copy the partition.

4 Press <Enter> to confirm that you want to copy the partition, or press <Esc> to cancel.

ServerMagic checks the destination hard disk for bad sectors and copies the partition to the beginning of the free space. After completing the copy, ServerMagic displays the **Partition Options** menu for the original partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

Duplicate Volume Names

Because NetWare should not have volumes with identical names, ServerMagic asks if you would like to hide the copied partition at the end of the copy. If you choose not to hide the partition after the copy, you are prompted to hide one of the partitions with duplicate volume names when you exit ServerMagic.

Mirroring NetWare Partitions

Copying a partition takes a snapshot of it. Mirroring a partition maintains an identical copy of the partition even as changes are made. Once created, the mirror is maintained by NetWare.

- 1** Select the NetWare partition you want to mirror.

- 2** Select **Partition Options ► Create Mirror**.

If your server does not have a disk drive with sufficient free space, the option to mirror a partition does *not* appear on the menu. Refer to your NetWare documentation for the limitation on the number of mirrors you can create.

- 3** Select the free space to which to mirror the partition.

- 4** Press <Enter> to confirm that you want to mirror the partition, or press <Esc> to cancel.

ServerMagic checks the receiving hard disk for bad sectors and copies the partition to the beginning of the free space. The copied partition is configured as a NetWare mirrored partition. After completing the copy, ServerMagic displays the **Partition Options** menu for the original partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

Resizing NetWare Partitions

- 1** Select the NetWare partition you want to resize.

You can resize a partition that is part of a multisegment volume.

A partition must have adjacent free space before it can be enlarged. If necessary, you can use ServerMagic to move adjacent partitions to create free space.

Although you cannot reduce the size of a NetWare volume segment after the volume (partition) is created, you can adjust the partition with ServerMagic, which will enable INSTALL.NLM or NWCONFIG.NLM to add new volume segments to the partition.

2 Select Partition Options ► Resize.

3 Select *Resize by Moving Right Boundary* or *Resize by Moving Left Boundary*.

ServerMagic displays the current size of the partition and the valid range for the partition. If the partition is mirrored, ServerMagic informs you that both the original and the mirror will be resized.

IMPORTANT! If you use ServerMagic to resize a partition, then try to resize the partition again without restarting NetWare, the range displayed may not be valid.

4 Enter the new size (in megabytes) for the partition.

You can reduce a partition by the size of the unused space at the end of the partition. However, you cannot reduce a partition below the size of valid, defined volume segments.

5 Press <Enter>.

6 Press <F10> to continue.

7 Press <Enter> to confirm that you want to resize the partition, or press <Esc> to cancel.

ServerMagic checks the disk for bad sectors, then resizes the partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

If you are resizing the partition smaller, ServerMagic returns the extra space to free space.

After completing the operation, ServerMagic displays the Partition Options menu for the partition.

Moving NetWare Partitions on the Same Disk

- 1 Select the NetWare partition you want to move.
- 2 Select **Partition Options ► Move**.

If the partition does not have adjacent free space, the option does not appear.
- 3 If asked, select whether you want to move the partition to the left or the right.

This selection appears only when there is free space both before and after the partition.
- 4 Type the number of megabytes you want to move the partition.
- 5 Press <Enter>.
- 6 Press <F10> to continue.
- 7 Press <Enter> to confirm that you want to move the partition, or press <Esc> to cancel.

ServerMagic checks the disk for bad sectors and then moves the partition. After completing the move, ServerMagic displays the **Partition Options** menu for the partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

If you move a partition that is mirrored, the move does not affect the mirror. If you want to move to mirror, you must move it in a separate operation.

Moving NetWare Partitions to Another Disk

- 1 Select the NetWare partition you want to move.
- 2 Select **Partition Options ► Move ► Partition to Another Drive**.

If the target disk does not have sufficient free space, or if it has an existing NetWare partition (for versions of NetWare earlier than 5.0), the command to move a partition to another disk does not appear on the menu.

The partition to be moved cannot contain part of a multisegment volume. In this case, the option to move appears on the menu, but the operation fails.
- 3 Select the destination disk and the free space to which to move the partition.

- 4 Select whether to move the partition to the beginning or end of free space.
- 5 Press <Enter> to confirm that you want to move the partition, or press <Esc> to cancel.

When you move a mirrored partition, only the original partition is moved. The mirror is unaffected.

ServerMagic checks the destination hard disk for bad sectors and copies the partition to the beginning of the selected free space. ServerMagic then deletes the original partition and returns its space to free space. After completing the copy, ServerMagic displays the **Partition Options** menu for the moved partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

Hiding or Unhiding NetWare Partitions

NetWare does not permit two volumes with the same name. Hiding a NetWare partition is an alternative to renaming all of the volumes. When a partition is hidden, it still exists but is no longer visible to NetWare.

- 1 Select the NetWare partition you want to hide.
- 2 Select **Partition Options** ► **Hide**.
- 3 Press <Enter> to confirm that you want to hide the partition, or press <Esc> to cancel.

ServerMagic hides the partition. To make the partition visible to NetWare again, select **Partition Options** ► **Unhide**.

Uses for Hidden Partitions

- You can copy a partition to another hard disk and keep the original partition until you’re sure the copy has no problems.
- You can have multiple versions of NetWare on a single disk.

Getting Information about NetWare Partitions

- 1 Select the NetWare partition you want information about.
- 2 Select **Partition Options** ► **Information** ► **Partition Information**.

ServerMagic displays information about the partition.

If the information does not display quickly, it could be because you have an IDE CD-ROM drive set up as either a primary or secondary master IDE drive. To resolve the problem, set your IDE CD-ROM drive to be either a primary or secondary slave.

- 3 Press <Esc> <Esc> to return to the **Partition Options** menu.

ServerMagic displays the following information about a NetWare partition:

Information	How presented
Partition type	Always 65H for NetWare partitions and 69H for NSS partitions
Serial number	Shows the serial number of the disk
First physical sector	Shows both the sequential sector number and the physical location (cylinder, head, sector) of the first sector in the partition
Last physical sector	Shows both the sequential sector number and the physical location (cylinder, head, sector) of the last sector in the partition
Total physical sectors	Shows both the number of sectors and the size in megabytes for the partition
Physical geometry	Shows the physical layout of the disk drive
Physical device	Shows the model number of the disk drive

Formatting NetWare Partitions

The **Format** operation formats a partition, destroying all its data in the process. Formatting enables you to put a different file system on a partition.

- 1 Select the partition.
- 2 Select **Partition Options ► Format**.
- 3 To confirm you want to format the partition, type NETWARE as the volume label, then press <Enter>.

Since NetWare partitions do not have labels, ServerMagic uses “NetWare” as the volume label.

- 4 Press <F10> to continue.

The **Select Format Type** dialog appears.

- 5 Select **NetWare**, then press <Enter>.
- 6 Press <Enter> to confirm that you want to format the partition, or press <Esc> to cancel.

ServerMagic formats the partition and returns to the **Partition Options** menu.

The formatted partition does not include a volume. To create a volume, use NetWare's INSTALL.NLM (NetWare 3.x or 4.x) or NWCONFIG.NLM (NetWare 5.x).

Deleting NetWare Partitions

- 1 Select the NetWare partition you want to delete.
- 2 Select **Partition Options ► Delete**.

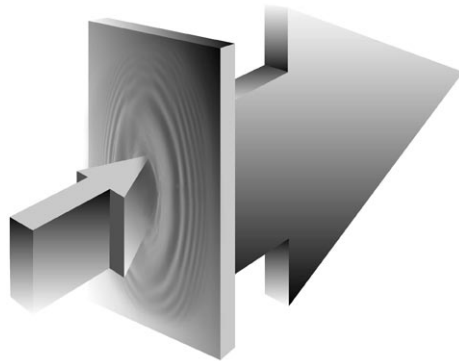
Because deleting a NetWare partition destroys all data on the partition, you should delete NetWare partitions only when the following are true.

- You no longer need the data on the partition.
- The NetWare partition has been copied or backed up on tape.
- The NetWare partition does not contain segments of multisegment volumes.
Deleting a single segment from a multisegment volume destroys the entire volume.

- 3 Type `NETWARE` for the volume label.
- 4 Press <Enter>.
- 5 Press <F10> to continue.
- 6 Press <Enter> to confirm that you want to delete the partition, or press <Esc> to cancel.

ServerMagic deletes the partition and returns the space it occupies to free space.

If you delete a NetWare partition that has multiple segments and one or more of those segments are on other drives or partitions, ServerMagic will delete all the volume segments associated with that volume segment. It is the same as choosing to delete the whole volume.



Performing NetWare Volume Segment Operations

This chapter contains the following information:

- Moving NetWare Volume Segments
- Merging NetWare Volume Segments
- Resizing Volume Segments
- Deleting NetWare Volume Segments
- Displaying Information about Volume Segments

Moving NetWare Volume Segments

You can move NetWare volume segments to free space within a NetWare partition on the same disk where the volume segment is located or to a NetWare partition with free space on another disk.

1 Select the volume segment you want to move.

2 Select **Volume Segment Options ► Move**.

If the Move Volume Segment option does not display, there is insufficient free space where you can move the volume segment.

3 The available options for moving the segment will display.

If there is only one place where you can move the volume segment, you will not be prompted to choose one of the options listed above.

Move Left	ServerMagic displays the limits for how far the segment can be moved. Type the number of megabytes to move the segment to the left, and press <Enter>.
Move Right	ServerMagic displays the limits for how far the segment can be moved. Type the number of megabytes to move the segment to the right, and press <Enter>.
Move to Other Free Space	ServerMagic displays a list of disks and partitions where the segment can be moved. The volume segments on either side of each block of free space are also identified. Select one of the free space areas in the list, then press <Enter>.

If there is only one place where you can move the volume segment, you will not be prompted to choose one of the options listed above.

4 Select whether to move the volume segment to the beginning or end of free space.

5 Press <Enter> to confirm the move or <Esc> to cancel.

Progress bars indicate that ServerMagic is moving the volume segment, and a message displays when the operation is complete.

Merging NetWare Volume Segments

You can combine two or more NetWare volume segments of the same volume that are in order and adjacent to each other within the same partition. This operation is especially useful when you have the maximum number of eight segments of a volume in a partition and you need to create additional volumes.

- 1 Select a volume segment that has another segment in order after it.

There can be free space between the two segments you want to merge, but the segments must be in order.

You can press <Esc> at any time to cancel your selection and go to the previous menu.

- 2 Select **Volume Segment Options ► Merge**.

The volume segments that are available to merge with the selected segment display.

For example, if you had SYS(0), SYS(1), SYS(4), SYS(2), you could merge SYS(0) and SYS(1), but you could not merge SYS(1) and SYS(4) or SYS(1) and SYS(2).

- 3 Select one of the volume segments in the list or select **Merge All Sequential Segments**, then press <Enter>.

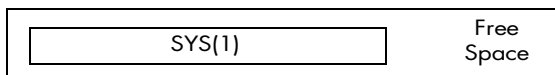
If you select Merge All Sequential Segments, segments before and after the segment you selected in step 1 will be merged if they are in order.

For example, if you had SYS(0), SYS(1), SYS(2), SYS(3), and you selected SYS(1) and chose Merge All Sequential Segments, all four segments would merge as SYS(0). If you had SYS(0), SYS(1), SYS(2), SYS(5), SYS(3), and you selected SYS(1) and chose Merge All Sequential Segments, SYS(0), SYS(1), and SYS(2) would merge as SYS(0) and SYS(5) and SYS(3) would be unaffected (except they would be renumbered).

Before



After



Any free space between the segments or at the end of the first segment is moved. The first segment is enlarged to include data from the second segment. The second segment is removed.

Resizing Volume Segments

You can resize a volume segment within a NetWare partition by eliminating unused space within the segment or including free space adjacent to the segment.

- 1 Select the volume segment you want to resize.

- 2 Select **Volume Segment Options ► Resize**.

Additional menu items display depending on the unused and free space in and around the selected volume segment.

You can press <Esc> to cancel your selection and move to the previous menu at any time during this operation.

- 3 Select **Resize by Moving Right Boundary** or **Resize by Moving Left Boundary**, then press <Enter>.

A dialog displays the current volume segment size, the free space before and after the segment, and the minimum and maximum sizes to which the segment can be resized.

- 4 Type a new size that is within the valid range displayed, then press <Enter>.

The volume segment is resized to the size you specified.

Deleting NetWare Volume Segments

- 1 Select a NetWare volume segment.

IMPORTANT! Be aware that deleting a single volume segment will delete all segments of the volume. To reduce the number of volume segments without deleting the entire volume, you can merge volume segments. Refer to “Merging NetWare Volume Segments” on page 21.

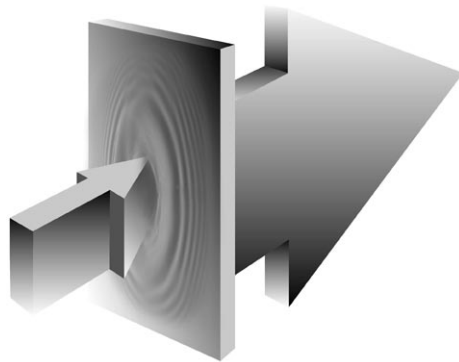
- 2 Select **Volume Segment Options ► Delete**, then press <Enter>.

The volume is deleted.

Displaying Information about Volume Segments

- 1 Select a NetWare volume segment.

- 2 Select **Volume Segment Options ► Information**.



Performing Non-NetWare Partition Operations

This chapter contains the following information:

- Types of Non-NetWare Partitions
- Creating Non-NetWare Partitions
- Copying Non-NetWare Partitions
- Moving Non-NetWare Partitions
- Resizing Non-NetWare Partitions
- Checking Non-NetWare Partitions
- Changing Volume Labels
- Formatting Non-NetWare Partitions
- Deleting Non-NetWare Partitions
- Getting Information about Non-NetWare Partitions
- Hiding Non-NetWare Partitions
- Making a Non-NetWare Partition Active
- Options for FAT and FAT32 Partitions

Types of Non-NetWare Partitions

ServerMagic supports the following non-NetWare partitions:

Type	Description
FAT	Uses file allocation table (FAT) and clusters. The FAT file system is used by DOS, Windows 3.x, and most Windows 95/98 installations. A FAT partition is also accessible by Windows NT and OS/2.
FAT32	<p>FAT32 is an enhancement of the FAT file system. It uses 32-bit file allocation table entries, rather than the 16-bit entries used by the FAT system, so FAT32 supports larger disk or partition sizes (up to 2 terabytes). The minimum size for a FAT32 partition is 256 MB.</p> <p>FAT32 options only appear if your operating system is enabled to recognize FAT32 partitions. A FAT32 partition is accessible by Windows 95 OSR2, Windows 98, and Windows 2000.</p>
NTFS	<p>The New Technology File System (NTFS) is accessible only by Windows NT. NTFS is not recommended for use on disks less than 400 MB because it uses a great deal of space for system structures.</p> <p>ServerMagic can manipulate NTFS partitions created by Windows NT 4.0 or earlier. Since it is possible that NTFS file structures in Windows 2000 Server might not be compatible with existing file structures, ServerMagic should not be used to manipulate NTFS partitions created by Windows 2000 Server. NTFS partitions created by ServerMagic, however, are accessible by Windows 2000 Server.</p>
HPFS	The High Performance File System (HPFS) is accessible only by OS/2, older versions of Windows NT (v. 3.51 and earlier), or versions of Windows NT that were upgraded from v. 3.51 or earlier.
Extended	You can use extended partitions to get around the four-partition limit for a disk. An extended partition is a container in which you can further divide your disk space by creating logical partitions. An extended partition does not directly hold data. You must create logical partitions within the extended partition to store data.

Type	Description
Unformatted	Reserves a portion of the disk but does not assign a file structure to the partition.
Free space	The portion of a hard disk that is not currently assigned to any partition.

Creating Non-NetWare Partitions

To create a non-NetWare partition, the disk drive must have free space available to hold the partition. If there is no free space, the option to create a partition will not appear on the menu.

1 Select the drive on which you want to create the partition.

2 Select an area of free space.

If you are using any version of NetWare and you create any HPFS, NTFS, or FAT partitions above the 1024-cylinder boundary on the disk, the NetWare INSTALL.NLM will incorrectly read partition table errors. NetWare will boot and run fine; it is just a limitation of the INSTALL.NLM. To correct the problem, move the partition within the 1024-cylinder boundary, or (for NetWare 4.x) set IGNORE DISK GEOMETRY=ON from the server console.

3 Select **Partition Options ► Create New Partition**.

4 Select the desired non-NetWare partition type.

5 Define the size of the partition.

6 Press <Enter>.

7 Select whether you want the partition to be at the beginning or the end of free space.

- **Beginning** leaves free space after the partition. This is the default.
- **End** leaves free space before the partition. If you want this option, press <Enter>, select **End**, and press <Enter> again.

8 Press <F10> to continue.

9 Press <Enter> to confirm that you want to create the partition, or press <Esc> to cancel.

ServerMagic checks the hard disk for bad sectors and creates the partition. After creating the partition, ServerMagic selects the new partition and displays the **Options** menu for it. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

Copying Non-NetWare Partitions

- 1 Select the partition you want to copy.
- 2 Select **Partition Options ► Copy Selected Partition**.

The option to copy a partition does not appear on the menu if the system does not have a disk drive with sufficient free space to hold the partition.

- 3 Select the free space to which to copy the partition.
- 4 Press <Enter> to confirm that you want to copy the partition, or press <Esc> to cancel.

ServerMagic checks the receiving disk space for bad sectors and copies the partition to the beginning of free space. After completing the copy, ServerMagic displays the Options menu for the original partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

Moving Non-NetWare Partitions

You can move any non-Netware partition with adjacent free space. If the partition does not have adjacent free space, the option does not appear.

- 1 Select the partition you want to move.
- 2 Select **Partition Options ► Move**.
- 3 Select whether you want to move the partition to the left or the right if asked.

This selection appears only when there is free space both before and after the partition.

If you are using NetWare 3.12, do not move the DOS partition away from the beginning of the disk. When partitions start at the beginning of the disk, they reserve one track of space. When that partition is moved to the right, the NetWare 3.12 INSTALL.NLM reports the partition as invalid. You can resolve the problem by moving the DOS partition back to the beginning of the disk.

If you are using any version of NetWare and you move any HPFS, NTFS, or FAT partitions above the 1024-cylinder boundary on the disk, the NetWare INSTALL.NLM will incorrectly read partition table errors. NetWare will boot and run fine; it is just a limitation of the INSTALL.NLM. To correct the problem, move the partition within the 1024-cylinder boundary, or (for NetWare 4.x) set IGNORE DISK GEOMETRY=ON from the server console.

- 4** Type the number of megabytes you want to move the partition.
- 5** Press <Enter>.
- 6** Press <F10> to continue.
- 7** Press <Enter> to confirm that you want to move the partition, or press <Esc> to cancel.

ServerMagic checks the disk for bad sectors and then moves the partition. After completing the move, ServerMagic displays the **Partition Options** menu for the partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

Resizing Non-NetWare Partitions

- 1** Select the partition you want to resize.
- 2** Select **Partition Options ► Resize**.

ServerMagic displays the current size of the partition and the valid range for the partition.

- 3** Enter the new size (in megabytes) for the partition.
 - Partitions with unused space can decrease in size.
 - Partitions with adjacent free space can increase in size.
- 4** Press <Enter>.
- 5** Press <F10> to continue.
- 6** Press <Enter> to confirm that you want to resize the partition, or press <Esc> to cancel.

ServerMagic checks the disk for bad sectors and then resizes the partition. After resizing the partition, ServerMagic displays the **Partition Options** menu for the partition. For information about skipping bad sector checks on newer hard disks, refer to “Setting Preferences” on page 6.

Checking Non-NetWare Partitions

The **Check** operation checks the integrity of a partition.

- 1 Select the partition you want to check.
- 2 Select **Partition Options** ► **Check**.

The Check operation displays a graphic representation showing you the progress of the check, then displays messages to indicate the results of the check.

- 3 When you are finished viewing the Check results, press <Enter>.
 - For each error found, Check displays an error number and a brief description of the error. Refer to Appendix A for more information about the error. You should fix any errors encountered. For more information, see “Resolving Check Errors” on page 50.
 - If Check does not discover any errors, a message appears that says the operation completed successfully.

ServerMagic checks for OS/2 Extended Attribute errors on FAT partitions. If you do not use OS/2 or previously used OS/2 but no longer do, consider enabling the **Ignore OS/2 EA Errors on FAT** preference, as these errors are not a concern.

IMPORTANT! OS/2 users should not enable **Ignore OS/2 Errors on FAT**, as undetected errors could cause data loss.

Changing Volume Labels

The **Set Volume Label** operation lets you change a partition’s volume label. Giving your partitions meaningful names makes managing them easier.

- 1 Select the partition.
- 2 Select **Partition Options** ► **Set Volume Label**.

A pop-up window appears displaying the current label for the volume.

- 3 Use the <Backspace> key to delete the existing volume label, then type the new volume label.

Labels can be up to 11 alphanumeric characters. Labels follow the same rules as DOS names.

Labels cannot contain the following characters: [*?:<>|+=;\/'",].

- 4 Press <Enter> to confirm that you want to change the volume label, or press <Esc> to cancel.

ServerMagic changes the volume label and returns to the **Partition Options** menu.

Formatting Non-NetWare Partitions

The **Format** operation formats a partition, destroying all its data in the process. Formatting enables you to put a different file system on a partition.

- 1 Select the partition.
- 2 Select **Partition Options ► Format**.

The **Format Verification** dialog appears displaying the current label for the volume.

- 3 To confirm you want to format the partition, type the name of the volume label and press <Enter>.

If you did not assign a volume label when you created the partition, type NO LABEL to confirm deletion.

- 4 Press <F10> to continue.

The **Select Format Type** dialog appears.

- 5 Select the type of format you want to use (FAT, HPFS, or NTFS) and press <Enter>.

The **Label Partition** dialog appears.

- 6 Type the new label for the partition and press <Enter>.
- 7 Press <Enter> to confirm that you want to format the partition, or press <Esc> to cancel.

ServerMagic formats the partition and returns to the **Options** menu.

Deleting Non-NetWare Partitions

- 1 Select the partition you want to delete.

To delete an extended partition, you must first delete all logical partitions within the extended partition.

- 2 Select **Partition Options** ► **Delete**.

- 3 Type in the name of the partition.

If you did not assign a volume label when you created the partition, you must type `NO LABEL` to confirm the deletion.

- 4 Press <Enter>.

- 5 Press <F10> to continue.

- 6 Press <Enter> to confirm that you want to delete the partition, or press <Esc> to cancel.

ServerMagic deletes the partition and returns the space to free space.

Deleting a partition destroys all the data on the partition.

Getting Information about Non-NetWare Partitions

The **Information** operation displays information about the status and structure of a selected partition.

- 1 Select the partition.

- 2 Select **Partition Options** ► **Information**.

A submenu appears showing the information you can get for that partition. The entries available in the **Information** submenu depend on the partition type.

- 3 Select the type of information you want, then press <Enter>.

ServerMagic displays the information.

If the information does not display quickly, it could be because you have an IDE CD-ROM drive set up as either a primary or secondary master IDE drive. To resolve the problem, set your IDE CD-ROM drive to be either a primary or secondary slave.

- 4 When you are finished viewing the information, press <Esc> to return to the **Information** submenu.
- 5 Select another entry or press <Esc> to return to the **Options** menu.

Disk Usage

Disk Usage is available for the FAT, FAT32, NTFS, and HPFS file systems. This page displays the following information in bytes, megabytes, and as a percentage:

- **Used** space on the partition, including space wasted by clusters
- **Free** space on the partition
- **Bad** space on the partition
- **Total** space on the partition (the sum of used, free, and bad space)

Cluster Waste

Cluster Waste is available only for partitions using the FAT or FAT32 file systems.

Selecting this option displays the following information:

- **Current Cluster Size** in bytes or kilobytes
- **Data** stored on the partition in bytes and megabytes
- **Wasted** space on the partition in bytes and megabytes
- **Total** used space in bytes and megabytes (the sum of data and wasted space)

Error Information

Error information is available for all formatted partitions. Selecting this option performs an integrity check on the partition. If no errors are found, ServerMagic returns immediately to the **Information** submenu.

Partition Information

Partition Information is available for all types of partitions, including free space and extended partitions. Information on this page includes the following:

- **Partition type** is shown in hexadecimal format followed by a text description of the partition or file system type (such as FAT, FAT32, NTFS, or HPFS). The hexadecimal designation is the conventional way to display partition types.
- **Serial Number** is shown if the partition's file system uses serial numbers.
- **First physical sector** shows the logical number and the location (cylinder, head, and sector) where the partition begins.

- **Last physical sector** shows the logical number and the location (cylinder, head, and sector) where the partition ends.
- **Total physical sectors** displays the number of sectors in the partition.
- **Physical Geometry** shows the total number of cylinders, heads, and sectors on the physical disk where the partition resides.
- **Physical Device** shows the serial number and model for the hard disk.

File System-Specific Information

Selecting the last option in the **Information** submenu displays information that is specific to the partition type. FAT, FAT32, NTFS, and HPFS file systems have these options.

FAT Information

This page applies to partitions using the FAT or FAT32 file systems. It includes the following information:

- **Sectors per FAT**—the number of sectors in each file allocation table and the number of file allocation tables on the selected partition.
- **Root directory capacity**—the number of possible entries and the number of sectors in the root directory. Because a FAT32 root directory can grow as needed, this line is blank for FAT32 partitions.
- **First FAT sector**—the logical sector number within the partition where the FAT begins.
- **First Data sector**—the logical sector number within the partition where the data portion of the partition begins.
- The number of bytes in files on the partition, the number of files, and the number of those files that are hidden.
- The number of bytes in directories on the partition, the number of directories, and the number of those directories that are hidden.

The second section of this page, **FAT Extensions**, provides the following information:

- The number of bytes used for OS/2 Extended Attributes and the number of files and directories affected by Extended Attributes.
- The number of bytes used for long filenames and the number of files and directories using long filenames.

NTFS Information

This page applies to partitions using the NTFS file system. It includes the following information:

- **NTFS Version** shows the version number. The most recent version is 1.2.
- **Bytes per NTFS sector** displays the number of bytes in each logical sector on the selected partition. (There are always 512 bytes in each physical sector.)
- **Cluster size** displays the size of each cluster and the number of sectors in each cluster on the selected partition.
- **First MFT Cluster** shows the logical number of the first cluster in the master file table (MFT).
- **File Record Size** gives the size of file records in the MFT.

The lower section displays information similar to that shown by the Windows NT CheckDisk utility:

- The number of files on the partition and the bytes and clusters allocated to them
- The number of wasted bytes in file clusters
- The number of indexes (directories) and the bytes and clusters allocated to them
- The number of bytes and clusters reserved for other system structures

HPFS Information

This page applies to partitions using the HPFS file system. It includes the following information:

- **Partition status** shows one or more of these values:

Active: OS/2 is running and data has been written to the partition.

Dirty: Windows NT or OS/2 was shut down improperly and is not running.

Corrupt: One or more sectors are bad, and the partition needs to be checked.

Hot Fixes: Problems have been hot fixed.

Not Active: The partition is not in use.

- **DirBlock sectors** shows the range of sectors in the DirBlock band. The DirBlock band is usually preallocated near the center of the disk to reduce head movement.
- **Free DirBlocks** displays the number of unused DirBlocks in the DirBlock band and the total number of DirBlocks. If the DirBlock band fills up, additional DirBlocks are allocated from the data area.

- **HotFixes used** displays the number of hotfix sectors used and the total number of hotfix sectors available. Hotfix sectors are used temporarily to handle write errors. CHKDSK /F transfers the data from a hotfix sector to a good sector and makes the hotfix sector available again.

The second section displays information similar to that shown by OS/2 CHKDSK, including:

- Number of bytes and files on the partition and the number of sectors used for files
- Number of unused bytes in file sectors, which is equivalent to wasted bytes in FAT clusters. (Because HPFS allocates space by sectors, less space is wasted than in FAT clusters.)
- Number of bytes in directories, the number of directories on the partition, and the number of sectors used for directories
- Number of bytes in file/dir Fnodes, also shown as a number of sectors

An Fnode is a key structural element of the HPFS file system. Each Fnode is 512 bytes (one sector). One Fnode exists for each file or directory in the partition.

- Number of bytes reserved by the system, also shown as a number of sectors
- Number of bytes used for Extended Attributes (EAs)

Hiding Non-NetWare Partitions

When a partition is hidden, it continues to exist but is no longer visible to the active operating system.

When a partition is hidden, the operating system does not assign a drive letter to the partition at boot time, and the drive letter that had been assigned to the partition is freed for use by another partition.

- 1 Select the partition you want to hide.

You can perform this operation on FAT, FAT32, NTFS, and HPFS partitions.

- 2 Select **Partition Options ► Hide**.

- 3 Press <Enter> to confirm that you want to hide the partition, or press <Esc> to cancel.

ServerMagic hides the partition.

Unhiding Non-NetWare Partitions

To make the partition visible again, select **Partition Options ► Unhide Partition**.

When you unhide a partition, the operating system assigns the lowest available drive letter to the partition at boot time.

Making a Non-NetWare Partition Active

The **Set to Active** operation designates a partition as the active partition, which is the partition the computer boots from. The hard disk can have only one active partition at a time, so setting a partition to active also sets the previously active partition on that disk to inactive.

ServerMagic hides inactive FAT, NTFS, and HPFS primary partitions to prevent incompatibility with other operating systems. Hiding inactive primary partitions makes it easy to install multiple operating systems and choose the one you want to use with **Set Active**.

- 1** Select a primary partition.
- 2** Select **Partition Options ► Set To Active Partition**.

When your computer boots, it reads the partition table of the first drive to find out which partition is active and boots from that partition. For a partition to be the boot partition, the following must be true:

- The partition must be on the first drive.
- The partition must contain an operating system.

IMPORTANT! If the partition is not bootable or you are not certain if it is, have a boot diskette ready.

- 3** Press <Enter> to confirm that you want to make the partition active, or press <Esc> to cancel.

ServerMagic sets the partition to active and returns to the **Advanced Options** menu.

Options for FAT and FAT32 Partitions

ServerMagic has some options that apply only to FAT and FAT32 partitions.

Cluster Size on FAT Partitions

The **Cluster Analyzer** checks a FAT or FAT32 partition and allows you to change the cluster size. Reducing cluster size can help you reclaim wasted space on your hard disk.

All files on FAT and FAT32 partitions are stored in allocation units called clusters. Each file is made up of complete clusters, even though this usually results in wasted space, especially in clusters containing small files. The size of a partition determines the minimum cluster size. Larger partitions have larger clusters, and, therefore, more wasted space.

A partition's cluster size is set by the DOS FORMAT operation, based on the size of the partition, as shown in the following tables.

DOS and Windows 3.x default FAT cluster sizes

Partition Size (MB)	FAT Type	Sectors Per Cluster	Cluster Size
0-15	12-bit	8	512 bytes
16-127	16-bit	4	2 KB
128-255	16-bit	8	4 KB
256-511	16-bit	16	8 KB
512-1,023	16-bit	32	16 KB
1,024-2,047	16-bit	64	32 KB
2,048-4,096	16-bit	128	64 KB*

*Only available with Windows NT.

Windows 95 OSR2, 98, and NT default FAT32 cluster sizes

Partition Size (GB)	Sectors Per Cluster	Cluster Size
0.256-8.01	8	4 KB
8.02-16.02	16	8 KB
16.03-32.04	32	16 KB
> 32.04	64	32 KB

It is not recommended that you use the smallest cluster size on partitions containing a single, large file, such as a database or swap file.

The **Cluster Analyzer** displays the possible cluster sizes from 512 bytes to 64 KB. The line with the current cluster size is selected.

For each cluster size, ServerMagic displays the following:

- Used space in megabytes
- Wasted space as a percentage and in megabytes
- The range of allowable partition sizes (in megabytes) or other information

Not Enabled appears for the 64 KB cluster size if **Allow 64K FAT Clusters for Windows NT** is disabled in the ServerMagic preferences. You can enable the 64 KB cluster size, but it is not recommended unless you will only be accessing the partition from Windows NT and the size of the partition requires it. For more information, see “Setting Preferences” on page 6.

At the bottom of the Cluster Analyzer is the recommended cluster size for the partition and a line that allows you to select a new cluster size.

Resizing FAT and FAT32 Clusters

- 1 Select a FAT or FAT32 partition.
- 2 Select **Partition Options ► Cluster Analyzer**.

The **Cluster Analyzer** screen appears.

- 3 Using the information in the dialog, decide which cluster size you want to use (and can use) and type it in the **New cluster size** line.

Choosing a smaller cluster size may resize the partition smaller, creating free space next to the partition.

4 Press <Enter>.

ServerMagic changes the cluster size for the partition. ServerMagic adheres to the established limits for partition and cluster sizes and rejects a cluster size that is invalid for the selected partition.

Testing FAT Partitions for Bad Sectors

The FAT file system allocates disk space for file storage in units called clusters, which are composed of a fixed number of sectors. Because the FAT file system tracks bad sectors at the cluster level, it marks an entire cluster bad even though the problem may exist in a single sector.

When you move or resize a partition or increase cluster size, ServerMagic marks all new clusters containing any part of old bad clusters as bad even when the clusters do not contain bad sectors. Similarly, when you decrease the cluster size, ServerMagic divides bad clusters into multiple bad clusters.

If ServerMagic reports bad sectors after you complete these tasks, you can perform **Bad Sector Retest** and reclaim the good sectors that are no longer in clusters with bad sectors.

Use **Information** to discover whether a partition contains bad clusters. Most modern hard drives detect bad sectors and automatically remap the sector, so in general, you do not see bad sectors on modern hard drives. If you do get bad sector errors on a modern hard drive, you should replace the drive. For more information, see “Getting Information about Non-NetWare Partitions” on page 30.

IMPORTANT! Some sectors marked as bad are “marginally bad,” meaning that one time the sector works fine and another time it does not. **Bad Sector Retest** may mark a marginally bad sector as good. This can result in data loss if the marginally bad sector fails in the future.

Restesting Bad Sectors

- 1** Select a FAT or FAT32 partition.
- 2** Select **Partition Options ► Test Disk For Bad Sectors**.
- 3** Press <Enter> to confirm that you want to perform the test, or press <Esc> to cancel.
ServerMagic checks for bad sectors and returns to the **Partition Options** menu.

Resizing the Root Directory in a FAT Partition

The **Resize Root Directory** operation can change the maximum number of entries in the root directory of a FAT partition. In a FAT partition the number of entries that can be placed in a root directory is defined when the partition is formatted. The number of entries does not increase as needed the way entries in subdirectories and FAT32 partitions do.

The need to increase the number of entries in the root directory is greater if you use Microsoft long filenames in the root directory because long filenames use additional directory entries.

Changing the number of entries in the root directory does not affect the data within the partition.

- 1** Select a FAT partition.
- 2** Select **Partition Options ► Resize Root Directory**.

ServerMagic displays information about the current root directory.

- 3** Type the new number of entries.
- 4** Press <Enter> to change the number of entries or press <Esc> to cancel.

ServerMagic rounds the number to an increment supported by the current cluster size if necessary, changes the number of entries for the root directory, and returns to the **Partition Options** menu.

IMPORTANT! Enlarging the root directory sometimes displaces the first few files on the partition (such as IO.SYS and MSDOS.SYS if the partition contains an operating system). If the root directory is on a boot partition and the partition fails to boot after resizing the root directory, you should move the displaced files back to the front of the disk. For instructions on doing this, contact PowerQuest technical support.

Changing FAT Properties

The options for changing FAT Properties appears on the **Partition Options** menu for all FAT and FAT32 partitions. This option allows you to change a number of characteristics of a FAT or FAT32 partition in one spot.

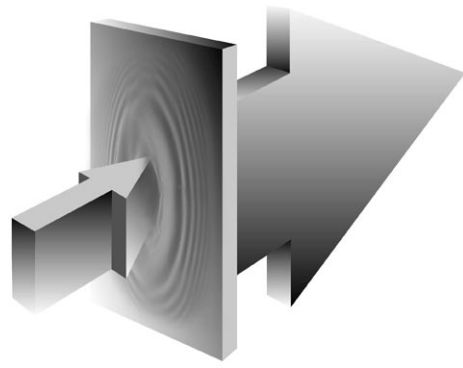
You can change the following properties for a partition:

- Partition size
- Cluster size

- Label
- Root directory capacity

Refer to the individual commands for limitations on the changes you can make.

CHAPTER 5



Upgrading Your Server

This chapter contains the following information:

- Replacing a NetWare Server Disk
- Upgrading from NetWare 4.x to NetWare 5.x

Replacing a NetWare Server Disk

ServerMagic enables you to replace a NetWare server disk without reinstalling NetWare. This ensures that the new server disk performs exactly the same as the old one and can save you many hours of effort.

- 1** Back up all partitions on the old hard disk.
You can use PowerQuest's Server Image, which is included on the ServerMagic CD, to perform this task.
- 2** Shut down the server and turn off the power.
- 3** Install the new hard disk as a secondary disk.
- 4** Restart the computer and load ServerMagic.
- 5** Copy the DOS partition from the original drive to the new drive.
- 6** Resize the new DOS partition as needed.
- 7** Copy the NetWare partition from the original drive to the new drive.
- 8** If you plan to keep the old hard disk attached to the server, hide the NetWare partition on the old hard disk.
- 9** Exit ServerMagic, shut down the server, and turn off the computer.
- 10** Set the new hard disk as the primary disk, and either remove the old hard disk or set it as a secondary disk.
- 11** Start the computer and load ServerMagic.
- 12** Enlarge the NetWare partition and volume segments as needed.
- 13** Exit ServerMagic.

Upgrading from NetWare 4.x to NetWare 5.x

ServerMagic can minimize server down time and make the transition to NetWare 5.x a safe and efficient process.

There are innumerable hardware and software configurations you may have. This section details the steps for moving from a single drive, IDE-based NetWare server to a larger SCSI drive that is mirrored on a second SCSI drive.

Chapters 2 and 3 of this user guide include general instructions that apply to any system configuration.

System Configuration for this Scenario

Operating System	NetWare 4.11
Server Hardware	Compaq Prosignia 200 300 MHz One Compaq SCSI controller One IDE CD ROM
Old NetWare Disk Storage Configuration	One 3093MB IDE Drive: 33MB Compaq system partition, 33MB Primary DOS partition, and a 3,023MB NetWare partition with a SYS volume
New NetWare Disk Storage Configuration	Two 8,675MB drives attached to a single SCSI controller; both drives are free space with no partitions defined

The 33MB primary DOS partition is adequate for NetWare 4.x, but the DOS partition requirements for NetWare 5.0 increased to 90MB.

Objective

The objective is to upgrade this server by moving the partitions from the IDE drive to the first 8,675MB SCSI drive and then mirror that SCSI drive with the second 8,675MB SCSI drive.

Process Overview

The following steps are required to prepare a NetWare server for an upgrade:

- Installed two 8,675MB SCSI drives and controller. (Done)
- Copy the Compaq system partition from Drive 1 to Drive 2.
- Copy the DOS partition from Drive 1 to Drive 2.
- Resize the DOS partition on Drive 2 larger.
- Move the NetWare partition from Drive 1 to Drive 2.

- Resize the NetWare partition to fill the drive.
- Mirror the NetWare partition from Drive 2 to Drive 3.
- Shut the system down, remove Drive 1 and power up the system running from Drive 2. We now have adequate disk space on our DOS partition and a more fault-tolerant configuration for our NetWare server environment.

Load ServerMagic

- 1** To access the ServerMagic main menu, type **LOAD SMAGIC** at the server console prompt.

The first screen will prompt you to **Dismount Volumes Y/N?** Because NetWare operates with open files on the disk device, ServerMagic must dismount the volumes before performing any partition manipulation on the server. This is the only way to ensure that the disk device is completely inactive with no open files. It also prevents any data corruption due to activity by users on the network while partition changes are being made.

- 2** Select **YES** to dismount the volumes.

The ServerMagic main menu displays.

Copy the Compaq System Partition from Drive 1 to Drive 2

- 1** Select **Select a Drive** from the main menu.

In this example, the Compaq, DOS boot, NetWare partitions are located on Drive 1.

- 2** Select **Drive 1**.

The next menu prompts you to select a partition from Drive 1.

- 3** Select **SYSTEMCFG** (Compaq partition).

The main menu displays again.

- 4** Select **Partition Options ► Copy**.

Drive 2 and 3 will be displayed as available space to copy the partition to.

- 5** Select **Drive 2**.

- 6** Select **Free Space**.

You will be prompted to **Begin Copy Y/N?** The screen has a Copy Confirmation box that reports "Copy From Drive 1 Partition 1 to Drive 2 Partition 1".

- 7** Select **YES** to begin the partition copy.

A bar graph will show the percent completed of the entire copy process and bad sector checking. A screen should report the operation completed successfully.

- 8** (*Optional*) To verify that the move completed successfully, select **Select a Drive** from the main menu. Select **Drive 2**.

ServerMagic will display the copied SYSTEMCFG partition and remaining free space. The SYSTEMCFG partition from Drive 1 only used 33MB of the 8,675MB available on Drive 2. Drive 2 reports 8,636MB of free space.

Copy the DOS Partition from Disk 1 to Disk 2

- 1** Choose **Select a Drive** from the main menu.
- 2** Choose **Drive 1**.

The next menu prompts you to select a partition from Drive 1.

- 3** Select the DOS (FAT) partition.

The main menu displays.

- 4** Select **Partition Options ► Copy**.

Drive 2 and 3 will be displayed as available space to copy the partition to.

- 5** Select **Drive 2**.

You will see the Compaq partition and the 8,636MB of free space on Drive 2.

- 6** Select **Free Space**.

You will be prompted to begin copying. The screen has a Copy Confirmation box that reports "Copy From Drive 1 Partition 2 to Drive 2 Partition 2."

- 7** Select YES to begin the partition copy.

A bar graph will show the percent completed of the entire copy process and bad sector checking. A screen should report the operation completed successfully.

- 8** (*Optional*) To verify that the move completed successfully, choose **Select a Drive** from the main menu. Select **Drive 2**. ServerMagic will show the copied SYSTEMCFG and DOS partitions and remaining free space.

Resize the DOS Partition on Drive 2 Larger

- 1** Select **Select a Drive** from the main menu.

2 Select **Drive 2**.

3 Select the DOS partition.

The main menu displays.

4 Select **Partition Options ► Resize**.

The Resize Partition screen gives you a valid range to resize the DOS partition.

5 Type 200MB, then press <Enter>.

6 Press <F10> to save the partition size and continue.

The next screen reports the new partition size and the amount of free space available. In this scenario, the new new partition size is 196 MB and free space is 8,440 MB.

7 Select YES to confirm that you want to resize the partition.

The resize process takes a short time to complete. Then a message reports that the operation completed successfully.

8 Press <Enter> to return to the **Partition Options** menu.

9 (*Optional*) To verify the resize completed successfully, choose **Select a Drive** from the main menu. Select **Drive 2**. ServerMagic shows that the copied DOS partition is 196 MB.

Move the NetWare Partition from Drive 1 to Drive 2

1 Select **Select a Drive** from the main menu.

2 Select **Drive 1**.

The next menu prompts you to select a partition from Drive 1.

3 Select the NetWare partition.

The main menu displays.

4 Select **Partition Options ► Move NetWare Partition to Another Drive**.

Drive 2 and 3 will be displayed as available space to move the partition to.

It is important to move the NetWare partition rather than copying it. Otherwise, you will have two volumes with the same name and NetWare will not know which volume to mount. If you plan to keep both disks in your system, you can copy the

NetWare partition and then hide the original partition on Disk 1. See “Hiding or Unhiding NetWare Partitions” on page 16 for information about hiding NetWare partitions.

5 Select Drive 2.

4. You will see the Compaq and DOS partitions and the 8,440MB of free space on Drive 2.

6 Select Free Space.

7 Select Beginning to move the partition to the beginning of the free space.

8 Select YES to confirm that you want to move Drive 1 Partition 3 to Drive 2 Partition 3.

A bar graph will show the percent completed of the entire move process and bad sector checking. Then a message displays that the operation completed successfully.

9 (Optional) To verify the move completed successfully, choose **Select a Drive** from the main menu. Select **Drive 2**. ServerMagic displays the copied SYSTEMCFG, DOS, NetWare partitions and remaining free space.

Enlarge the NetWare Partition on Drive 2

1 Select Select a Drive from the main menu.

2 Select Drive 2.

3 Select the NetWare partition.

The main menu displays.

4 Select Partition Options ► Resize ► Resize by Moving Right Boundary.

The Resize Partition Right Boundary dialog gives you a valid range to resize the partition.

5 Type 8440 MB to use all of the available free space on the drive, then press <Enter>.

6 Press <F10> to save the partition size and continue.

The next screen reports the new partition size and the amount of free space available. In this scenario, the new partition size is 8,440 MB and free space is 0 MB.

7 Select YES to confirm that you want to resize the partition.

- 8 (Optional) To verify the resize completed successfully, choose **Select a Drive** from the main menu. Select **Drive 2**. ServerMagic shows that the copied NetWare partition is 8,440MB.

Mirror the NetWare Partition onto Drive 3

Mirroring improves the fault tolerance of the NetWare environment.

- 1 Select **Select a Drive** from the main menu.
- 2 Select **Drive 2**.
- 3 Select the NetWare partition.
The main menu displays.
- 4 Select **Partition Options ► Create Mirror**.
Drive 3 will be highlighted as available space to create a mirror.
- 5 Press <Enter> to select Drive 3.
- 6 Press <Enter> again to select the free space.
- 7 Select YES to confirm that you want to mirror Drive 2 Partition 3 to Drive 3 Partition1.
- 8 (Optional) To verify that the mirror completed successfully, choose **Select a Drive** from the main menu. Select **Drive 3**. ServerMagic shows the mirrored NetWare partition.

Remove Drive 1 from the System

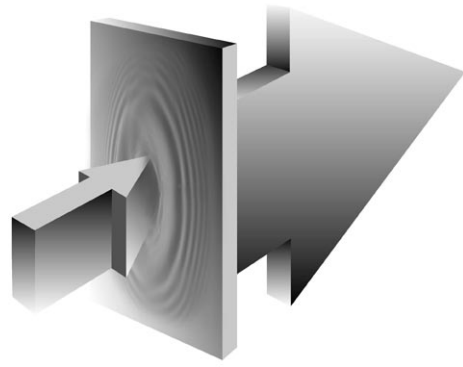
- 1 Exit ServerMagic
- 2 Down the NetWare server
- 3 Shut the system down.

You can now remove Drive 1 and power up the system on Drive 2.

You can also use ServerMagic to manipulate your server to upgrade NetWare on the same disk. To do so, you would select the NetWare partition, select **Partition Options ► Resize**, select **Resize by Moving Left Boundary** (smaller), select the DOS partition, and resize DOS to fill the free space. Refer to *Chapter 2* of this user guide for additional information about each of these steps.

A P P E N D I X

A



Troubleshooting

This appendix contains the following information:

- Resolving Check Errors
- Resolving Partition Table Errors
- Partition Tables and Viruses
- Error Messages and Solutions

Resolving Check Errors

ServerMagic checks the integrity of a partition thoroughly before making changes to it. The **Check** operation performs the same checks and displays error messages when they discover problems.

ServerMagic also checks a partition after modifying it. If this check fails, report the problem to PowerQuest technical support. For more information, see “Contact Information” on page 67.

While data loss is possible, it is not typical. For your NetWare partition, you can resolve such errors by running VREPAIR.NLM. If you receive a Check error message for any partition, back up your hard disk and run your operating system’s CHKDSK program on that partition (but do not use the /F switch on the initial run). (Run SCANDISK if you have MS-DOS 6.x or Windows 95.) These programs usually show the same problems as ServerMagic, except the DOS CHKDSK program does not detect problems in extended attributes.

If CHKDSK does not show the same errors as the **Check** operation, contact PowerQuest technical support. For more information, see “Contact Information” on page 67.

If CHKDSK and the **Check** operation detect the same errors, which is usually the case, run CHKDSK with the /F switch to fix the problems. Then run CHKDSK again without the /F switch to ensure that the partition is error free.

When CHKDSK reports no errors on the partition, run the **Check** operation. If ServerMagic still reports a problem, contact PowerQuest technical support.

Resolving Partition Table Errors

Unless instructions outlined later in this appendix specify otherwise, you must resolve partition table errors by creating new, error-free partition tables:

- 1 Ensure you have no viruses. (See “Partition Tables and Viruses” on page 51.)
- 2 Back up the data on the affected partitions.
- 3 Delete the partitions, and recreate them.
- 4 Restore their contents.

You may need to use the Disk Administrator program to perform these actions. You can use Server Image, included on the ServerMagic CD, to back up and restore data on affected partitions.

Partition Tables and Viruses

Use a virus check utility that can detect the latest viruses. If a virus is found, data loss is likely. Before removing the virus, boot each operating system and use the **Check** operation to evaluate the integrity of the partition. Back up the files on any partition that passes the **Check** operation. Then remove the virus and perform the **Check** operation on the partitions again. Delete and recreate any partitions that fail the check. Finally, reinstall the proper OS and restore the backup files as necessary.

Error Messages and Solutions

ServerMagic error messages and possible resolutions are listed below. The messages are grouped in number ranges, by error category, and listed by number.

If you encounter an error that is not mentioned in this appendix, visit PowerQuest's website at www.powerquest.com/support/ER/er0000.html for a complete listing of program error messages.

Miscellaneous Errors (3–38)

#3 Not enough memory.

The server does not have enough memory. Unload other NLMs or add more memory to the server. For additional information about the memory requirements for ServerMagic operations, refer to “System Requirements” on page 2.

#5 Unexpected internal error.

#7 Operation canceled by the user.

#9 Not enough memory to complete the operation. No changes were made.

If ServerMagic detects that there is not enough memory to complete the next set of changes, it displays this error. Rather than risk losing data, ServerMagic aborts the operation without making changes.

#21 Illegal handle or no move handles for logical reading or writing.

Unknown problems or too many open partitions. The maximum number of open partitions is eight.

#23 Unsupported version of operating system.

The operating system versions that are required to run ServerMagic are listed in “System Requirements” on page 2.

#34 This beta or evaluation version is no longer safe to use.

PowerQuest occasionally releases beta versions and evaluation versions of ServerMagic. Both versions are not as safe as release versions; therefore, PowerQuest builds an expiration date into each version. After a predetermined test period, the beta or evaluation version no longer functions.

#37 File or app is open on partition.

Under NetWare, ServerMagic must lock a partition before it can safely modify it. If the hard disk contains files that are in use by another process, ServerMagic cannot lock the partition. Be certain that everyone is logged off and no files are open.

Disk Access Errors (40–56)

Errors in the 40–56 number range indicate that accessing your disk is not possible, and often are the result of hardware problems. Some problems may have simple solutions. For other problems, the only solution may be replacing the hard disk. When possible, ServerMagic detects major errors before any changes have been made so you can back up your data before replacing the hard disk.

#41 Disk is write protected.

#44 Drive not ready.

Drive is not ready; check hardware.

This error occurs on NetWare 3.12, 3.2, and IntraNetWare 4.11 when you are using IDE hard disks with older *.HAM and *.CDM disk drivers (as opposed to *.DSK disk drivers) and have hidden a NetWare partition on a disk that contains no other visible partitions.

To correct the problem under NetWare 3.x, use *.DSK disk drivers (IDE.DSK or ISADISK.DSK) instead of *.HAM and *.CDM disk drivers, or update your *.HAM and *.CDM disk drivers as follows:

- 1** Download NetWare 4.10 patch CDUP5A.EXE from Novell’s web site at <http://support.novell.com>. It should appear under the minimum patch list for IntraNetWare 4.10.
- 2** Execute CDUP5A.EXE to extract all files.

- 3** Refer to the DCUP5A.TXT file included with the patch for installation instructions for NetWare 3.12.
- 4** Download NetWare Support Pack v6.0 for IntraNetWare and NetWare 4.11 from Novell's web site at <http://support.novell.com>. It should appear under the minimum patch list for IntraNetWare and NetWare 4.11. **DO NOT INSTALL THIS SUPPORT PACK.**
- 5** Execute IWSP6.EXE to extract all files.
- 6** Locate the file IDEHD.CDM dated 08/05/98 in the path IWSP6\PRODUCTS\ODI331\SYSTEM, and copy this file into your NetWare 3.x server boot directory (usually C:\SERVER.312). This is the only file from the Support Pack that you will use.

To fix the problem in IntraNetWare and NetWare 4.11, do the following:

- 1** Download NetWare Support Pack v6.0 for IntraNetWare 4.11 from Novell's web site at <http://support.novell.com>. It should appear under the minimum patch list for IntraNetWare and NetWare 4.11.
- 2** Execute IWSP6.EXE to extract all files.
- 3** Refer to the IWSP6.TXT file included with the patch for installation instructions.

#49 Write fault.

ServerMagic could not write to the disk.

#50 Read fault.

ServerMagic is unable to write to/read from a specific sector on the hard disk. Possible causes of this error include:

- If your computer beeps or displays a black box in the middle of the screen, virus protection is enabled in your computer's BIOS. Disable virus or boot sector protection in the BIOS.
- There is a bad sector on the hard disk. This is unlikely to occur with newer hard disks. Run SCANDISK or CHKDSK on the hard disk to perform a surface scan to verify the existence of bad sectors. If your drive has bad sectors, we recommend you replace the drive.

#51 General hard disk failure.

#57 Cylinder number is too large for the BIOS.

Some BIOSs require using extended BIOS functions, which allows the BIOS to see larger hard drives. If this function is not supported in your system, you may receive this error.

#58 Unable to write to the boot sector.

If you are unable to write to the boot sector (track 0), your hard drive is malfunctioning and must be replaced.

Partition Table Errors (100–199)

Errors in the 100–199 number range are partition table errors. For general information about solving this type of error, see “Resolving Partition Table Errors” (page 50) and “Partition Tables and Viruses” (page 51).

#100 Partition table is bad.

The master boot record (MBR) can contain, at most, one extended partition, and each extended partition boot record (EPBR) can contain, at most, one link to another EPBR. This error occurs when a partition table violates the foregoing rule. Since any modifications ServerMagic makes may decrease the amount of data that is recoverable from the hard disk, ServerMagic does not recognize any of the hard disk’s partitions. If you must create new, error-free partition tables to resolve your problem, see “Resolving Partition Table Errors” (page 50) for specific instructions.

#102 Invalid Boot.

Boot sector information is incorrect.

#104 No sectors in partition.

No partition should contain zero sectors. Delete the partition before using ServerMagic.

#105 Partition starts on wrong boundary.

The hard-disk partition table contains erroneous values. ServerMagic expects FAT, NTFS, and HPFS partitions to begin and end on the boundaries used by FDISK. If they do not, the disk may be partially corrupted. In this circumstance, if ServerMagic were to make any modifications it might cause the loss of data. Therefore, ServerMagic refuses to recognize any of the hard disk’s partitions. To resolve this problem, see “Resolving Partition Table Errors” (page 50).

#106 Partition doesn't start with sector one.

See error #105.

#107 Partition begins after end of disk.

This error occurs if a partition erroneously extends beyond the physical end of the hard disk. This may happen if the hard disk has been used on a different computer or with a different hard-disk controller or if BIOS settings have been changed. Be advised that the physical geometry of the hard disk may differ from the logical geometry assigned to the hard disk by the operating system.

#108 Partition doesn't end at end of cylinder.

See error #105.

#109 Partition ends after end of disk.

See error #107.

#110 Partition table number of sectors is inconsistent.

The hard-disk partition table contains two inconsistent descriptions of the number of sectors on the hard disk. This error is serious if both DOS and another operating system use the hard disk. Because DOS uses one description and other operating systems may use the other, data loss is likely once the partition is almost full. To resolve this error, see "Resolving Partition Table Errors" (page 50).

#111 Logical partition starts outside Extended.

The hard-disk partition table contains erroneous values. All logical partitions must be totally contained within the extended partition. To resolve this error, see "Resolving Partition Table Errors" (page 50).

#112 Logical partition ends outside Extended.

See error #111.

#113 Partitions overlap.

The hard-disk partition table contains erroneous values. If data partitions overlap, writing to one may destroy data in another.

#116 Partition table Begin and Start inconsistent.

The hard-disk partition table contains two inconsistent descriptions of the partition's starting sector. This error can occur if the operating system reports a hard-disk geometry that is different than the geometry in use when the partition table was written.

#117 Partition's drive letter cannot be identified.

#118 Two partitions have the same serial number.

#120 The logical drive chain is incompatible.

This error occurs when logical partitions are not chained together in the expected order.

For solutions to this problem, see "Resolving Partition Table Errors" (page 50). If you decide to back up your data and recreate your partitions, you may have to use the same partitioning program that you used to create the partitions in order to delete them.

#121 The first sector of the drive cannot be read.

The first sector of the hard disk (cylinder 0, head 0, sector 1) contains the master boot record (MBR) and the primary partition table. ServerMagic cannot make changes to this hard disk because an error occurred when it read the first sector. See error #50 for information on resolving this error.

#122 A bad sector was found in the current or new partition area.

The partition cannot be moved safely because there is a bad sector in the new or current partition area. ServerMagic aborts the move operation before any corruption can occur. To resolve this error, try moving the partition to a different location. If your hard disk has bad sectors, we recommend that you replace the hard disk.

File I/O Errors (300–399)

#300 A file with the specified name already exists.

This error message will be displayed if there is a file name conflict when ServerMagic attempts to change a partition's cluster size. To perform a cluster resizing operation, ServerMagic creates files that have a .MAG extension. If there are existing files with the same filename, ServerMagic will not write over those files.

To resolve this error, either rename or delete the existing files. To see existing files that have a .MAG extension, type **ATTRIB *.MAG -r -s -h**. Either rename or delete the existing files, then retry the operation.

Check Errors (500–599)

Check errors occur when ServerMagic checks the integrity of a partition. For general information on resolving these errors, see “Resolving Check Errors” (page 50).

#500 Subdirectory is corrupted.

This error message reveals the name of the corrupted subdirectory. Back up the contents of that directory and its subdirectories, then delete the corrupted subdirectory.

#506 Not enough free space on partition to shrink.

Some free space (which is dependent on the hard disk’s current contents) is required to resize a partition smaller. Delete unneeded and duplicate files in the partition and then attempt the operation again.

#508 As specified, the operation does not change the partition.

You have entered a value that is the same as or, when rounded to the required cylinder boundary, rounds to the same as the partition’s present value. Enter a larger change.

#509 A bad sector was detected in the current or new FS area.

In order to perform the requested resize operation, ServerMagic attempted to expand the file system area. However, the program found a bad sector in the new area. Try moving the partition before resizing it. No corruption will occur when you encounter this error.

User Interaction Errors (950–999)

#950 Unable to detect any disk drives.

No partitionable hard disks were found on your computer. Diskette drives and many removable media drives do not support partitioning. ServerMagic cannot perform operations on these disks.

#951 User entered an invalid value.

The value entered is outside the range or, when rounded to the required cylinder boundary, rounds to a value that is outside the range for the operation specified. Check the displayed range and re-enter the value.

#952 Value entered is the same as the current value.

See error #508.

#953 Need larger change.

See error #508.

#968 Incorrect Volume Label entered, Deletion not performed.

To delete a partition, ServerMagic requires you to enter that partition's volume label. If the volume label you enter does not match the volume label of the partition you want to delete, this error appears.

#969 Incorrect Volume Label entered, unable to proceed.

To format an existing partition, ServerMagic requires you to enter that partition's volume label. If the volume label you enter does not match the volume label of the partition you are attempting to format, this error appears.

#971 The label entered was too long.

When you enter a volume label, the process that checks the validity of the label displays this message if the label is too long. The label must be no longer than 11 characters.

#972 Invalid characters in the label.

When you enter a volume label, the process that checks the validity of the label displays this message if the label has characters that are invalid. Invalid characters include the following: [* ? : < > | + = ; \ / " ,].

#973 Volume Label cannot have leading spaces.

When you enter a volume label, the process that checks the validity of the label displays this message if you enter a label in which a space or spaces are the leading characters.

Check Errors (1000–1500)

Check errors occur when ServerMagic checks the integrity of a partition. For general information on resolving these errors, see “Resolving Check Errors” (page 50).

#1008 First directory entry is incorrect.

#1010 Number of sectors not equal to file size.

This error may indicate that there are open files on the hard disk. Shut down and restart.

#1045 Stac volume detected—delete Stac volume before converting.

This error message occurs when you attempt to convert a partition to HPFS, and the existing partition contains a STAC volume. Stacker cannot access a STAC volume that is on an HPFS partition. Delete the STAC volume from the partition before converting to HPFS.

NetWare-Specific File System Errors (1400–1499)

#1400 Redirect block size not 4K.

Only 4K blocks are supported. If the block size is not 4K, the NetWare partition is probably bad. In that case, reinstall NetWare.

#1401 Bad Redirect Info Table.

If the redirect information table is bad, the NetWare partition is probably bad. In that case, reinstall NetWare to reinitialize.

#1402 No NetWare Volume Def Table.

There are NetWare volumes signatures in the volume definition table. This error indicates this table is either missing or corrupt. The NetWare partition is probably bad. In that case, reinstall NetWare to reinitialize the volume definition table.

#1403 Volume segment not found.

No volume segments are found for the volume name specified. The volume name could be incorrect or corrupted.

#1404 Can't allocate resource tag.

To initialize NetWare's Media Manager API, you must allocate a resource tag. This error is displayed when the call to allocate the resource fails.

#1405 Register application.

To initialize NetWare's Media Manager API, you must register the application. This error is displayed when the call to register the application fails.

#1406 Invalid vol block req.

This error is displayed if the NLM attempts to read a volume block whose address is larger than the volume segment size.

#1411 Read version.

To verify that it is running on a correct version of NetWare, SMAGIC.NLM requests a version number through a NetWare API. This message is displayed when that request fails.

#1414 Missing segments.

This error is displayed when a volume is missing a segment. Check to be sure all disk drivers are loaded and configured properly, and that there are not multiple volumes with the same name. Also check to be sure all drives are properly cabled and powered on.

#1415 Mirrored partition is not found.

The designated partition which was originally mirrored is not found. Make sure all disks are running and cabled correctly.

#1416 Current Partition has multiple mirrors and cannot be enlarged.

ServerMagic assumes a primary with only one secondary. To allow the program to run, remove all mirrors except the last secondary.

#1417 One of the mirror groups is currently processing a re-mirror.

It is invalid for mirroring to be taking place during manipulation of the partition. Either wait for the remirror to finish, or at the console, type **mirror status** and then abort the remirror with the appropriate partition number.

#1418 Unknown media manager errors.

There has been an unknown error involving NetWare's disk access API.

#1474 Not enough memory for directory

Your NetWare directory is too large to allow this operation with the available memory in your system. Refer to "System Requirements" on page 2 for additional information about the RAM required to run ServerMagic.

NTFS Check Errors (1500–1699)

Errors 1500–1699 are NTFS-specific error messages. In this context, "attribute" does not mean read-only, hidden, system, and so on. Rather, "attribute" means one of a file's data streams.

Check errors occur when ServerMagic checks the integrity of a partition. For general information on resolving these errors, see "Resolving Check Errors" (page 50).

#1501 Wrong version of NTFS.

The partition was created using a version of the NTFS file format that ServerMagic does not support.

#1503 Bad NTFS cluster size.

The NTFS cluster size must be 512, 1,024, 2,048, or 4,096 bytes.

#1512 Restart record mismatch.

The two restart entries in the journal file are different. This may happen if Windows NT is not properly shut down. To fix this problem, restart Windows NT and shut it down using the Shut Down command.

#1516 Partition improperly dismounted.

The partition dirty flag is set in a restart record in the journal file. This error may have been caused by a power failure or system crash while the Windows NT operating system was writing the partition. Reboot Windows NT and execute CHKDSK /F to repair the damage.

#1527 Bad update sequence number.

A buffer contains mismatched update sequence numbers. This error may have been caused by a power failure or system crash while the Windows NT operating system was writing to the partition. Reboot Windows NT and execute CHKDSK /F to repair the damage.

#1529 Information mismatch in directory entry.

A file attribute stored in a file record is different from the attribute stored in its directory entry. If this error is in a system file (file 0–10), Windows NT's CheckDisk program will not fix it, but Windows NT rebuilds the root directory on the partition the next time the operating system is started.

#1538 Can't find contiguous space to move.

The partition does not contain enough contiguous free space to hold the new copy of a file that must be contiguous. You will normally encounter this error when you use the Resize option to make a partition smaller.

#1539 File size mismatch.

The size of a system file (file 0–10) recorded in its file record does not match either the size recorded in its directory entry in the root directory or the size of its data stream.

#1544 External attribute list in external attribute.

An external file record has an external attribute list.

#1545 File attributes out of order.

The attributes in a file must appear in order of increasing numeric type.

#1546 Attribute neither resident nor nonresident.

The attribute resident flag has a value other than resident or nonresident.

#1547 Wrong run limits.

A run has more clusters than the difference between its highest and lowest cluster.

#1548 File table has fewer than 16 entries.

The file table must have at least 16 entries.

#1549 File table has more than 4 billion entries.

The file table must have fewer than 4 billion entries.

#1644 Bad system file sequence number.

A system file has a bad sequence number. System files must have a sequence number from 0 to 10. A partition with this problem may pass a run of Windows NT's CheckDisk program, but Windows NT will not mount the partition the next time the operating system is started.

#1647 Error in root directory index.

There is an error in the root directory's index. Running Windows NT's CheckDisk program will not fix this problem, but the Windows NT operating system automatically rebuilds the root directory on the partition the next time it is started.

FAT Check Errors (2000–2099)

Check errors occur when ServerMagic checks the integrity of a partition. For general information on resolving these errors, see "Resolving Check Errors" (page 50).

#2001 FAT copies are not identical.

Run SCANDISK to fix this error. This problem may be caused by a virus. Run a virus checker and remove the virus if possible.

#2002 There are invalid entries in the FAT.

#2003 File size does not match FAT allocation for the file.

#2004 An invalid cluster was found in the directory.

#2005 One or more lost clusters were found.

Run SCANDISK or CHKDSK to fix this error.

#2012 Formatted FAT file system too big for partition.

This error can be caused by the following circumstances:

- The number of sectors in the partition is larger than 65,536, and the bsHugeSects field of the boot sector (“Big total number of sectors” in Norton’s DISKEDIT utility) shows that there are more sectors in the partition than the partition table shows.
- The number of sectors in the partition is less than 65,536, and the bsSects field of the boot sector (“Total sectors on disk” in Norton’s DISKEDIT utility) shows that there are more sectors in the partition than the partition table shows.

This situation can result in data loss when the FAT file system tries to use space outside the partition that does not exist or belongs to another partition. Since file data may exist outside the partition boundary, you cannot fix the problem by simply patching the boot sector.

To correct the error, back up all data on the partition, delete the partition, recreate the partition, and restore the data. You can also use Norton Disk Doctor to fix this problem.

#2013 A component of FAT geometry is bad.

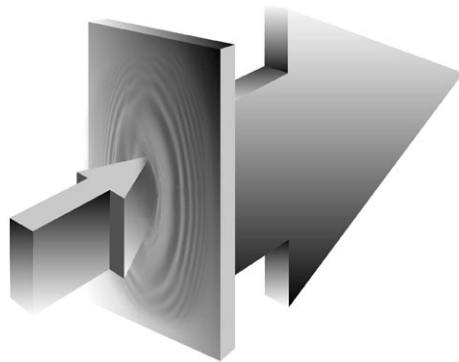
This error can be caused by the following circumstances:

- The number of clusters on the hard disk is greater than the FAT limits allow. This can result from bad values in the boot sector for the number of sectors, FATs, root entries, reserved sectors, and sectors per cluster.
- The number of sectors in the FAT is not large enough to hold the number of clusters present on the hard disk.

A qualified consultant may be able to fix the hard disk by performing simple patches. Alternately, you can back up the data on the partition, delete the partition, recreate the partition, and restore the files.

A P P E N D I X

B



PowerQuest Technical Support

This appendix includes the following information:

- Before Contacting Technical Support
- Contact Information

Before Contacting Technical Support

PowerQuest is committed to providing you with comprehensive technical support. However, before contacting our technical support department, please try to resolve your problem by using this guide, the README file, and PowerQuest's corporate web site.

Tips

- Your problem may be resolved by applying the most recent patch or upgrade of the software.
- Your product serial number is required to obtain technical support.

Term of Technical Support for ServerMagic 3.0

Technical support is available to all registered users throughout the life of the product, which began when PowerQuest released ServerMagic 3.0 to manufacturing and ends six months after the release of ServerMagic 4.0.

Upon registration, PowerQuest provides 45 days of complimentary technical support from the day of your first call. In addition, registered users are eligible for special upgrade pricing when PowerQuest releases a new version of ServerMagic. Contact PowerQuest Customer Service for additional information about upgrade pricing.

Contact Information

E-mail

Language	E-mail (for specific technical problems)
Dutch	eurots@powerquest.com
English	help@powerquest.com eurots@powerquest.com
French	france@powerquest.com
German	germany@powerquest.com
Italian	italian@powerquest.com
Portuguese	latina@powerquest.com
Spanish	spanish@powerquest.com

To obtain e-mail technical support for specific technical questions, you can fill out the form at <http://www.powerquest.com/support/emsupport.html>.

E-mail on Demand

PowerQuest maintains an e-mail on demand system to resolve common problems. You can view a list of available documents at <http://www.powerquest.com/support/demand.html>.

To request one of the documents, send an e-mail message to **support@powerquest.com** with the index number of the document in the subject of the message. You can only request one document per e-mail message.

Corporate Web Site

The PowerQuest web site includes a wide array of information, including answers to frequently asked questions.

Information	Web Site Address
Overview of support options	www.powerquest.com/support/support.html
E-mail support request form	www.powerquest.com/support/emsupport.html
Error messages	www.powerquest.com/support/er/er0000.html
ServerMagic FAQs	www.powerquest.com/support/FAQs.html

Fax

Location	Number
USA	(801) 437-4218
Europe	+31 (0) 20 582 9260

Fax a description of your problem to the technical support fax number. This service is available in the U.S., Canada, and Europe 24 hours a day, 7 days a week. PowerQuest technicians try to respond to all fax requests within 24 hours.

Telephone

Language	Location	Number
Dutch	Netherlands	+31 (0) 20 581 3906
English	Netherlands	+31 (0) 20 581 3907
English	UK	+44 (0) 0171 341 55 17
English	USA	(801) 226-6834
French	France	+33 (0) 1 69 32 49 30
German	Germany	+49 (0) 069 66 568 516
Italian	Italy	+39 (0) 02 45 28 1312
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