

9 Virtual Sizing and Online Capacity Expansion

Virtual Sizing is a unique feature designed by AMI. With virtual sizing, the Administrator can use the disk space of a hard drive that was just added to an existing disk array, without rebooting the operating system.

Virtual Sizing supports Windows NT 3.5x, 4.x, Windows 2000 and NetWare 3.12, 4.x, 5.x only.

Location and Enabling

The Virtual Sizing option is found in the Boot Up Configuration Manager. This option is in the Objects menu, under Logical Drive and View/Update Configuration. Enable this option after you configure a logical drive and before you exit the Boot Up Configuration Manager.

The ability to use this feature for an existing logical drive depends on the firmware version. Older firmware versions may not allow you to enable this feature once you have saved the configuration.

The Virtual Sizing option is in Power Console Plus versions 1.06 and higher. When you select this option in Power Console Plus, you must restart the operating system before Disk Administrator will see the virtual size.

Theory of Operation

When the operating system boots, it looks for storage devices such as HDD, CD-ROMs, and tape drives. The controller reports these devices to the operating system, except for the HDD. The controller reports a false disk capacity for the configured Logical Drive. The value reported to NT's Disk Administrator is approximately 80GB for older firmware, and 500GB for newer firmware.

Because Disk Administrator recognizes a virtual storage capacity of 80 or 500 GB, the user or Administrator can create logical drive partitions in the free space on the virtual disk. In other words, the capacity is already present before the HDD is added, so you do not need to shut down and reboot the operating system to see the added capacity.

MegaRAID Drive Characteristics

Mraid35x.sys Driver versions 2.19 and above are capable of reporting newly configured logical drives to Windows NT Disk Administrator without rebooting the operating system.

After creating the drive arrays and logical drives in Power Console Plus, configure the new logical drive(s) in the NT Disk Administrator. If you're not familiar with NT Disk Administrator, refer to the Windows NT Operations manual.

There are rules that need to be followed for proper operation:

- If the controller's configuration is reset, any logical drives created after the reset will not be seen properly, and the operating system must be rebooted.
- If you delete a logical drive, the capacity of the next logical drive that you add will not be seen properly in Disk Administrator. Disk Administrator will see the capacity of the deleted logical drive. You must reboot the operating system to display the proper capacity of the newly configured logical drive.
- If Virtual Sizing is enabled during the creation of the logical drive, the operating system must be rebooted. Virtual Sizing is reported to Disk Administrator by the firmware, not the driver. The driver reports the size; however, it is valid only on operating system load time.

Deleting Logical Drives

Logical drives can be deleted, but only the last logical drive that was created can be deleted. Once a logical drive is deleted, the capacity of the next logical drive that you add will not be seen correctly in Disk Administrator until the operating system is rebooted.

Adding Capacity under Windows NT 3.5x, 4.x and Windows 2000

Adding capacity under NT 3.51 and 4.x You can add capacity or a HDD to an existing array only under the following conditions:

- the Virtual Sizing option is enabled in the "Boot Up Configuration Utility"
 - the FlexRAID Power Fail Option needs to be enabled
 - only one logical drive can be configured per array (**not** per controller)
 - drives can be added to RAID levels 0, 3, or 5 only
 - new drive(s) have been added to the SCSI bus or subsystem
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Adding capacity under Windows 2000 You can add capacity or a HDD to an existing array only under the following conditions:

- the FlexRAID Power Fail Option needs to be enabled
 - only one logical drive can be configured per array (**not** per controller)
 - drives can be added to RAID levels 0, 3, or 5 only
 - new drive(s) have been added to the SCSI bus or subsystem.
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Adding Hard Disk Drives under Power Console

Step	Action
1	On the main menu screen, verify that the drive(s) that were added display on the appropriate channel.
2	On the Logical Drive tool bar above the channel display, right click on the Logical Drive icon.
3	From the pull down menu select Advanced Menu, then Add Drive.
4	The Enhanced Logical Drive window appears.
5	Click on the drive(s) you want to add to the existing array. Note: There is a limit of eight physical drives in an array. Stripe size cannot be changed, even though it displays on this screen.
6	Select RAID Level from the top part of the screen to change RAID levels.
7	Click on the Apply button and the array will go into a rebuild state.
8	After the rebuild is complete, the additional space must be added to the NT Disk Administrator.

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Adding Capacity under Window NT 3.5x, 4.x, and Windows 2000, Continued

Adding Hard Disk Drives using Power Console Plus v1.x

On the main Power Console Plus screen, verify that the drive(s) that were added display on the appropriate channel. There are three ways you can add a HDD to an existing array. The first method is:

Step	Action
1	Highlight the drive(s) you want to add, and the logical drive to add them to.
2	On the Menu Bar, select Logical Drive.
3	Select Change Configuration.
4	Select Add Capacity. A menu displays for you to select the RAID level.
5	Select a RAID level and click on the Apply button. The array will begin reconstructing.

The second method is:

Step	Action
1	Highlight the drive(s) you want to add, and the logical drive to add them to.
2	Right click on the logical drive.
3	Select Advanced Menu.
4	Select Add Drive.
5	Select a RAID level and click on the Apply button. The array will begin reconstructing.

The third method is:

Step	Action
1	Highlight the drive(s) you want to add, and the logical drive to add them to.
2	Click on highlighted drive(s) and drag them to the logical drive you want to add them to.
3	Select a RAID Level and click on the Apply button. The array will begin reconstructing.

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Adding Capacity under Window NT 3.5x, and 4.x, and Windows 2000,

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Applying additional space to NT Disk Administrator After the array rebuilds, go to the Disk Administrator Utility. You should see at least one HDD size of 81917 MB or 500 GB, and there should be a logical drive created before the new drive(s) are added. There are two ways to apply the new space to Disk Administrator:

- add a new logical drive using - “Create” or “Create Extended Partition”, or
- add a new Logical Drive using “Extend Volume Set” (this is available only when using the NTFS format; it is not available under FAT.)

Step	Action
1	Click on existing partition.
2	Hold down the shift key and right click on available space.
2	From the pull down menu, select Extend Volume Set.
3	Enter the total space of both partitions, and the total size of the volume. For example, if the first partition is 500MB, and the new capacity of the array is 1000MB, then the volume space entered would be 1500MB. Note: NT will make you reboot when exiting Disk Administrator.

Adding Capacity under NetWare 3.12 and 4.x

Adding capacity or adding a HDD to an existing array You can add capacity or a HDD only under the following conditions:

- the Virtual Sizing option is enabled in the "Boot Up Configuration Utility"
 - the FlexRAID Power Fail option needs to be enabled
 - only one logical drive can be configured per array (**not** per controller)
 - drives can be added to RAID levels 0, 3, or 5 only
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Adding a new drive to NetWare using Megamgr.nlm

Step	Action
1	Physically connect your new drive(s) to the SCSI bus or subsystem.
2	From the NetWare System Console, load Megamgr.nlm.
3	On the Main Menu, select Adapter if you have more then one adapter in the system.
4	On the Main Menu, select Configure.
5	Select Add/View Configuration.
6	Make sure the drive appears in the View/Add Configuration option. The new drive should at a READY status.
7	Return to the Main Menu.
8	Select Advanced Menu.
9	Select Reconstruction Of Logical Drive.
10	Select the logical drive you want to contain the new drive(s). The system will scan the channels for the new drive(s) and display a menu to reconstruct the logical drive.
11	Highlight the new drive(s) using the up or down arrow keys and press the space bar to select the drive(s). The system will reconstruct the new drive into the existing array.
12	When finished, exit or change to NetWare System Console.

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Adding capacity under NetWare 3.12 and 4.x, Continued

Adding new space into the NetWare Volume

Step	Action
1	Load INSTALL.NLM.
2	Highlight the VOLUME OPTIONS (configure, mount, or dismount volumes).
3	Press <Enter>.
4	Press <Insert>.
5	Highlight the drive that has available space (it should be nearly 81 GB).
6	Press <Enter>.
7	Highlight the option Make Segment Part of Another Volume or New Volume.
8	Press <Enter>.
9	Highlight the existing volume that you want to add to, if adding to an existing volume.
10	Press <Enter>. At this point, NetWare will show the rest of the free space of FlexRaid as 81GB.
11	Press <Enter> to modify the size of the new segment.
12	Under Disk Segment Parameters, type the size of the new drive to modify the disk segment size.
13	After entering the size of the new drive(s), press <Enter>.
14	Press the F10 key.
15	Press the F10 key again (to save the new information.)
16	Press <Esc>.
17	Highlight Yes to save the changes.
18	Mount all the volumes. Additional space is ready to be accessed without rebooting.
