

Microsoft

# Server 2003 Network Environment

(70-290)

Microsoft Certified  
Systems Engineer (MCSE)



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Training**

This LearnSmart exam manual prepares candidates for the Server 2003 Network Environment exam (70-290) by providing in-depth information about the following exam-related content:

- Managing and Maintaining Physical and Logical Devices
- Managing Users, Computers and Groups
- Managing and Maintaining Access to Resources
- And more!

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# Managing and Maintaining Physical and Logical Devices

## Managing Basic and Dynamic Disks

Disks are managed through the Disk Management MMC snap-in. It allows the administrator to manage the physical disks, and logical volumes, or partitions. The interface allows:

- Disk initialization
- Formatting of volumes (NTFS and FAT)
- The creation of fault-tolerant disk systems

Windows 2003 has two different types of disks:

- Basic disks – Contain basic volumes (primary partitions and logical drives in extended partitions). Basic disks are used on portable devices, or on devices that will have multiple operating systems involved.
- Dynamic disks – Dynamic disks were introduced in Windows 2000, and allow the administrator greater flexibility in disk subsystem configuration. Dynamic disks allow the following:
  - ▶ Extension of volumes
  - ▶ Mirroring
  - ▶ Addition of disks without restarting
  - ▶ Fault tolerant configurations

Note: System and boot volumes cannot be extended.

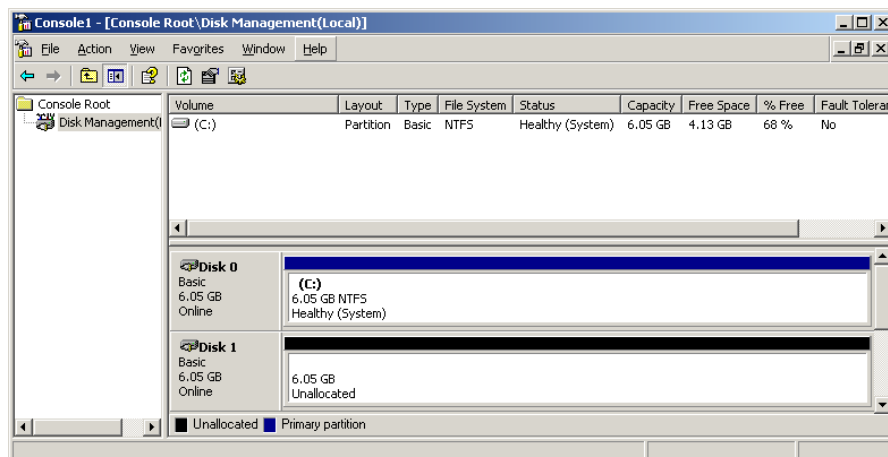


Figure 1 - Disk Management Console

## Converting Basic Disks to Dynamic Disks

Dynamic disks provide features that basic disks do not, such as the creation of multi-disk volumes for fault tolerance and enhanced performance. Some items to know about the conversion:

- Before converting disks, you need to close any programs that are running.
- Note that the conversion is not reversible as dynamic disks cannot be changed back to basic partitions without first deleting all the dynamic volumes on the disk.
- If a volume or partition is in use before conversion, you must reboot for the changes to take affect. Any files that are locked open during the conversion may be lost – do not convert the disks from basic to dynamic while users are accessing resources on the server.
- Dynamic disks cannot be directly accessed by MS-DOS, Windows 95/98, Windows Me, Windows NT or XP Home.
- Only Windows 2000, XP Professional and Windows .NET server can access dynamic MBR disks.
- You cannot dual-boot multiple installations of Windows 2000, Windows XP Professional, or Windows 2003 off of the same dynamic disk. A dynamic disk set can only be “owned” by one copy of Windows (through registry settings) – the other installations trying to use the same dynamic disk set will refuse to boot.
- When converting a basic disk that contains Shadow Copies, you can do a straight conversion without data loss only if the Shadow Copy storage resides on a boot volume. If the Shadow Copies are stored elsewhere you will need to dismount and take offline the disk containing the original files before the disk holding the Shadow Copies is upgraded from Basic to Dynamic. The volume containing the original files must then be brought back online within 20 minutes to avoid data loss.

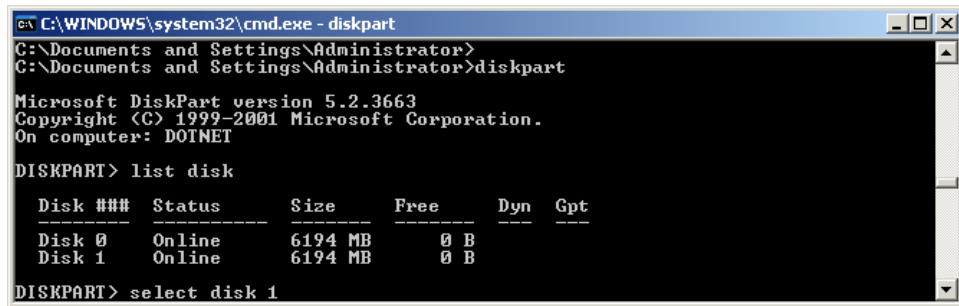
There are two ways to convert disks from basic: from the Disk Management GUI, or the command line.

Steps using Disk Management GUI:

1. Open the Computer Management interface.
2. Right-click the basic disk you would like to convert, and select Convert to Dynamic Disk. Here are two reasons you may not see this option: a) you have clicked a volume instead of a disk; b) the computer you are using is a portable (Dynamic Disks are not supported on removable or detachable disks, shared SCSI disks, fire wire or USB).

Steps using the command line:

1. Open a command prompt.
2. Type `diskpart`.
3. You have now entered the Disk Partition command line utility. At the prompt, type ***list disk***. This will show the disks on the server, and their associated number and properties.
4. Type ***select disk disk-number***. Enter the desired disk number from the previous step.
5. Type ***convert dynamic***.



```
C:\WINDOWS\system32\cmd.exe - diskpart
C:\Documents and Settings\Administrator>
C:\Documents and Settings\Administrator>diskpart

Microsoft DiskPart version 5.2.3663
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: DOTNET

DISKPART> list disk

   Disk ###  Status         Size           Free           Dyn  Gpt
   -----  -
   Disk 0    Online        6194 MB        0 B
   Disk 1    Online        6194 MB        0 B

DISKPART> select disk 1
```

Figure 2 – The diskpart command

## Monitoring Server Hardware

### Device Manager

Device Manager allows the administrator to view all the hardware devices that are installed on the server. The interface can be used to manage devices, troubleshoot, upgrade drivers, and modify hardware settings.

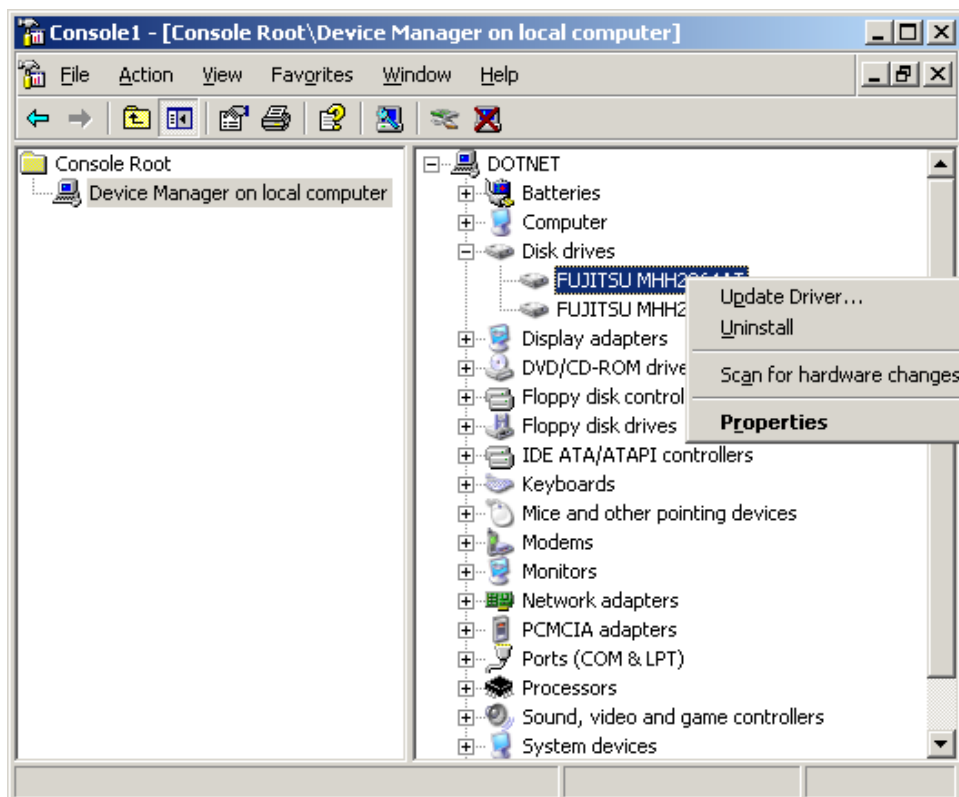
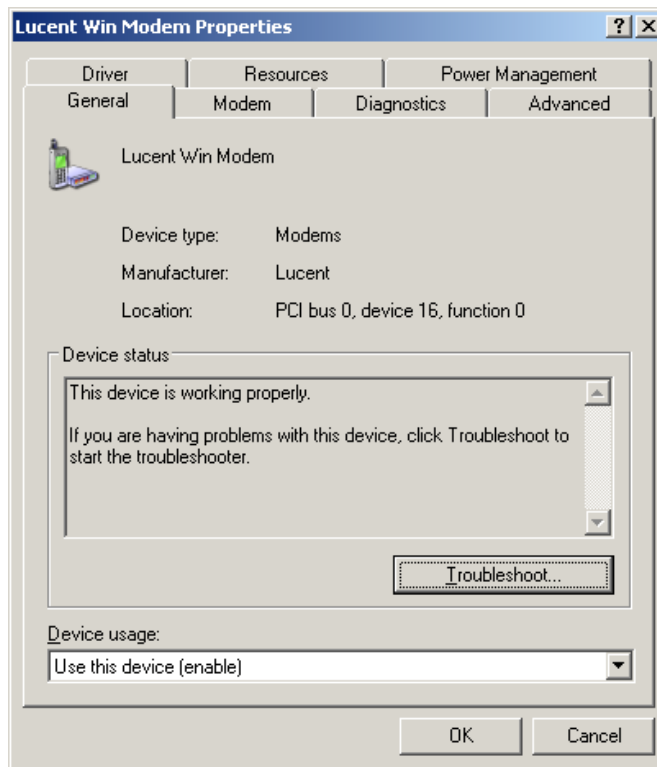


Figure 3 - Device Manager interface and options

More specifically, Device Manager can be used to:

- Determine whether or not a device is functioning properly.
- Change hardware configuration settings (DMA, IRQ, I/O, etc).
- Identify and gain information about the current driver and firmware.
- Change advanced settings and properties.
- Update device drivers.
- Uninstall, enable and disable devices.
- Print a summary of devices installed on the server.
- Set power management options.



**Figure 4** - Device Manager and the tabs for configuration and information

## Hardware Troubleshooting Wizard

The Hardware Troubleshooting Wizard allows convenient troubleshooting through the Device Manager interface. By clicking the Troubleshoot button on the General tab for a device, you will be walked through a series of pages to help resolve the problem.

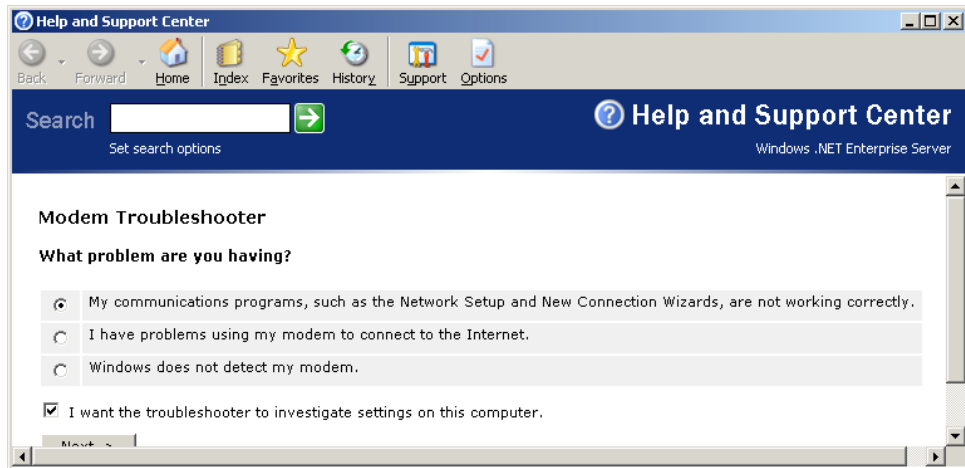


Figure 5 - The troubleshooting screen for a modem

## Optimizing Server Disk Performance

### Implementing a RAID Solution

Windows Server 2003 allows the creation of software RAID solutions, and has the added flexibility, through the use of dynamic disks, to extend volumes without repartitioning or reformatting the disks. Windows 2003 does not support any volumes, stripe sets, mirror sets, or stripe sets with parity on a Basic Disk (these are installed by Windows NT 4 Server). These features are now only available on Dynamic Disks and have been renamed accordingly. Below are the disk sets, and the different names for each OS:

Windows NT 4.0	Windows 2003
Volume Set	Spanned Volume on a Dynamic Disk
Mirror Set	Mirrored Volume on a Dynamic Disk
Stripe Set	Striped Volume on a Dynamic Disk
Stripe Set with Parity	RAID 5 Volume on a Dynamic Disk