

70-290 Chapter 12 Concept Map

Disk Types

Basic

- Compatible with other OS types
- Supports up to 4 partitions
- Basic disks can contain 4 Primary Partitions
- Basic disks can contain 1 Extended Partition (leaving room for up to 3 primary partitions)
- Extended partitions contain logical drives (as many as desired)
- Under NT and later, primary partitions are preferred to extended partitions unless more than 4 are needed
- Removable storage can only contain primary partitions (except external USB/1394 hard drives)
- All disks are basic until converted to dynamic

Dynamic

- Exceed the limitation of the MBR by using the Logical Disk Manager (LDM) database to store volume information
- Simple: like a primary partition
- Spanned: Includes space on more than 1 physical disk (up to 32 disks)
  - Negative fault tolerance
  - Cannot contain the OS
- Striped Volume: RAID-0 of up to 32 disks
  - Stripes data with no parity
  - Negative fault tolerance
  - Improved disk performance if disks do not share an IDE channel
  - Cannot contain the OS
- Mirrored Volume: RAID-1 of two physical disks
  - Good fault tolerance
  - Improved disk performance if disks do not share an IDE channel
  - Can contain the OS
  - Costs 50% of drive space (ex. two 100GB drives in a mirrored volume can store 100GB max of data)
- RAID-5 Volume: 3 or more physical disks in a redundant array
  - Stripes data with parity
  - Good fault tolerance
  - Improved disk performance if disks do not share an IDE channel
  - Cannot contain the OS
  - Costs 1/n of drive space (ex. 5 drives lose 1/5 of total space to parity)

Type Conversion

- Basic can be converted to dynamic with no data loss
- Converting dynamic to basic loses the data on the drive

Disk Quotas

- Quotas enabled on a per-volume basis
- Quota defaults specify allowed storage usage for all user
- Quota entries are exceptions to the quota default rule
- Quotas monitored through System log or Quota Entries dialog

Troubleshooting

- File system errors repaired with chkdsk.exe
  - /r switch attempts recovery of bad data
- Windows Disk Defragmenter
  - Needs 15% free space to effectively defragment
- Recovering from Disk Mirror Failure
  - Sporadic IO errors
    - Address the physical problem, then choose "Reactivate Volume" on problematic disk
  - Failed mirror member
    - 1) Remove failed disk
    - 2) Choose missing disk, right-click & select Remove Mirror
    - 3) Replace failed disk
    - 4) Choose surviving disk, right-click & select Add Mirror
- Recovering from RAID-5 failure
  - 1) Replace failed volume
  - 2) In Disk Management, Rescan Disks
  - 3) Reactivate the volume on the newly restored disk
  - 4) Using the "Repair volume" option may be necessary if step 3 fails

NTFS Mount Points

- Allows a volume or partition to be mounted to an empty NFS folder
- Any type of volume or partition can be mounted

Terminology

- Physical disk: a hard drive
- Partition: an area of disk space that functions as a physically separate unit of storage
- Volume: Logical unit of disk storage represented by a single drive letter or mount point
  - Can be made up of multiple disks or partitions

Adding new storage to Server 2003

- 1) New disk must be initialized first
- 2) Partitions or volume settings can be created