5.5.5 MBR Partitioning Facts

A *partition* is a logical division of the storage space on a hard disk drive. Partitions are identified by 16-bit entries that make up the partition table located in the master boot record (MBR) of that drive. A hard disk can contain a single partition that encompasses the entire drive or multiple partitions that divide up the storage space on the hard disk drive.

Windows supports two different kinds of disks, basic and dynamic. The disk type controls characteristics about how partitions and volumes are defined.

Disk Type	Description

Basic	Basic disks have the following characteristics:
	▪ Basic disks use primary and extended partitions.
	  ▪ Each physical disk can have up to four primary partitions or three primary partitions and one extended partition.
	  ▪ Logical drives are defined within an extended partition. You can have up to 24 logical partitions on an extended partition. The extended partition can be divided into multiple logical drives.
	▪ You must create a logical drive in an extended partition before you can format and store data (the logical drive is the storage unit, not the partition).
	▪ Basic disks are supported by all operating systems.
	▪ A basic disk only supports volumes made up of contiguous disk space.
	▪ Basic disks store partition information in a portion of the master boot record (MBR) known as the partition table.
	  ▪ The partition table has room for up to four partition entries.
	  ▪ When an extended partition is used, one of the four entries points to an extended boot record (EBR). The EBR is located within the extended partition and contains information about the logical drives within the extended partition.

Dynamic	Dynamic disks have the following characteristics: ▪ Volumes on dynamic disks are like partitions and logical drives on basic disks. ▪ Dynamic disks support up to 128 volumes. ▪ Dynamic disks support volumes that use noncontiguous disk space. ▪ *Simple* volumes contain disk space from a single hard disk (either contiguous or noncontiguous space). ▪ *Spanned* volumes contain disk space from multiple hard disks grouped as a single logical volume. ▪ Dynamic disks store partitioning information in a hidden database on all dynamic disks in the system.

Be aware of the following when managing partitions and volumes:

- Use Disk Management or DiskPart to create, format, and manage partitions and volumes. You access Disk Management on Windows systems through Computer Management. You access DiskPart from the command prompt by entering **cmd**.
- Basic and dynamic disks use the same hardware, but different partitioning methods.

- You can convert a basic disk to a dynamic disk without losing data in existing partitions.
  - Existing basic volumes and logical drives in the extended partition are converted to dynamic volumes.
  - You must reboot the system to complete the conversion if the disk contains the boot or system volume or if the volume includes the page file.
  - To convert from a dynamic disk to a basic disk, you must delete all existing volumes.
- The *active* partition identifies the partition that contains the operating system (or the program that loads the operating system) used to start the computer.
- The extended partition or a logical drive on the extended partition cannot be set to active.

- You cannot install the operating system on a dynamic disk. You can, however, upgrade a basic disk containing the operating system to a dynamic disk after installation.
- When you shrink a partition, unmovable files (the paging file or the shadow copy storage area) are not automatically relocated, and you cannot decrease the allocated space beyond the point where the unmovable files are located. If you need to shrink the partition further, check the Application log for Event 259, which identifies the unmovable file. Next, move the paging file to another disk, delete the stored shadow copies, shrink the volume, and then move the paging file back to the disk.
- You can shrink primary partitions and logical drives on raw partitions (those without a file system) or partitions using the NTFS file system.
- To shrink a partition, you must be a member of Backup Operators or Administrators (or equivalent) to complete this process.