Multimedia Devices and Mass Storage - Chapter #11

Amy Hissom

Key Terms

Array—

basic disk — A way to partition a hard drive, used by DOS and all versions of Windows, that stores information about the drive in a partition table at the beginning of the drive. Compare to dynamic disk.

CDFS (Compact Disc File System) — The 32-bit file system for CD discs and some CD-R and CD-RW discs that replaced the older 16-bit mscdex file system used by DOS. *See also* Universal Disk Format (UDF).

CD-R (CD-recordable) — A CD drive that can record or write data to a CD. The drive may or may not be multisession, but the data cannot be erased once it is written.

CD-RW (CD-rewritable) — A CD drive that can record or write data to a CD. The data can be erased and overwritten. The drive may or may not be multisession.

constant angular velocity (CAV) — A technology used by hard drives and newer CD-ROM drives whereby the disk rotates at a constant speed.

constant linear velocity (CLV) — A CD-ROM format in which the spacing of data is consistent on the CD, but the speed of the disc varies depending on whether the data being read near the center or the edge of the disc.

data cartridge — A type of tape medium typically used for backups. Full-sized data cartridges are 4 × 6 2_ inches in size. A minicartridge is only 3¼ × 2½ 2_ inches in size.

drop height — The height from which a manufacturer states that its drive can be dropped without making the drive unusable.

DVD (digital video disc or **digital versatile disk)** — A faster, larger CD format that can read older CDs, store over 8 GB of data, and hold full-length motion picture videos.

dynamic disk — A way to partition one or more hard drives, introduced with Windows 2000, in which information about the drive is stored in a database at the end of the drive. Compare to basic disk.

dynamic volume — A volume type used with dynamic disks for which you can change the size of the volume after you have created it.

fault tolerance — The degree to which a system can tolerate failures. Adding redundant components, such as disk mirroring or disk duplexing, is a way to build in fault tolerance.

half life — The time it takes for a medium storing data to weaken to half of its strength. Magnetic media, including traditional hard drives and floppy disks, have a half-life of five to seven years.

hertz (Hz) — Unit of measurement for frequency, calculated in terms of vibrations, or cycles per second. For example, for 16-bit stereo sound, a frequency of 44,000 Hz is used. *See also* megahertz.

JPEG (Joint Photographic Experts Group) — A graphical compression scheme that allows the user to control the amount of data that is averaged and sacrificed as file size is reduced. It is a common Internet file format. Most JPEG files have a .jpg extension.

lands — Microscopic flat areas on the surface of a CD or DVD that separate pits. Lands and pits are used to represent data on the disk.

minicartridge — A tape drive cartridge that is only 3¼ × 2½ × _inches. It is small enough to allow two drives to fit into a standard 5½ -inch drive bay of a PC case.

Mirrored volume – also called RAID 1; duplicates data on another drive and is used for fault tolerance.

MMX (Multimedia Extensions) — Multimedia instructions built into Intel processors to add functionality such as better processing of multimedia, SIMD support, and increased cache.

MPEG (Moving Pictures Experts Group) — A processing- intensive standard for data compression for motion pictures that tracks movement from one frame to the next and only stores the data that has changed.

MP3 — A method to compress audio files that uses MPEG level 1. It can reduce sound files as low as a 1:24 ratio without losing much sound quality.

multisession — A feature that allows data to be read from or written to a CD during more than one session. This is important if the disk was only partially filled during the first write.

pits — Recessed areas on the surface of a CD or DVD, separating lands, or flat areas. Lands and pits are used to represent data on a disc.

RAID (redundant array of inexpensive disks or **redundant array of independent disks)** — Several methods of configuring multiple hard drives to store data to increase logical volume size and improve performance, or to ensure that if one hard drive fails, the data is still available from another hard drive.

RAID 0 – also called striped volume; can use space from two or more physical disks and increase the disk space available for a single volume

RAID 1 – see mirrored volume!

RAID-5 volume – striped across three or more drives and uses parity checking, so that if one drive fails, the other drives can recreate the data stored on the failed drive. RAID-5 volume also increases performance and volume capacity and provide fault tolerance.

sampling rate — The rate of samples taken of an analog signal over a period of time, usually expressed as samples per second, or hertz.

sequential access — A method of data access used by tape drives, whereby data is written or read sequentially from the beginning to the end of the tape or until the desired data is found.

SIMD (single instruction, multiple data) — A process that allows the CPU to execute a single instruction simultaneously on multiple pieces of data, rather than by repetitive looping.

simple volume — A type of dynamic volume used on a single hard drive that corresponds to a primary partition on a basic disk.

spanned volume — A type of dynamic volume used on two or more hard drives that fills up the space allotted on one physical disk before moving to the next.

SSE (Streaming SIMD Extension) — A technology used by the Intel Pentium III and later CPUs and designed to improve performance of multimedia software.

streaming audio — Downloading audio data from the Internet in a continuous stream of data without first downloading an entire audio file.

striped volume — A type of dynamic volume used for two or more hard drives that writes to the disks evenly rather than filling up allotted space on one and then moving on to the next. Compare to spanned volume.

TIFF (Tagged Image File Format) — A bitmapped file format used to hold photographs, graphics, and screen captures. TIFF files can be rather large, and have a .tif file extension.

Universal Disk Format (UDF) file system — A file system for optical media used by all DVD discs and some CD-R and CD-RW discs.

Review Questions

1.) **What must be true before MMX, SSE, SSE2, and 3DNow! Technology can improve multimedia performance on a PC?**
The software must be written to use it specific capabilities.

2.) **What is the significance of the multisession feature on a CD drive?**
Data can be written to the disc at different times rather than in a single long session.

3.) **Name 3 ways a CD drive can interface with a motherboard.**
By using an EIDE interface, using a SCSI interface with a SCSI host adaptor, and by using a portable drive and plugging into an external port on your PC, such as a USB port.

4.) **Which side of a CD contains data?**
Data is only written to the shinny underside of a CD, which should be protected from damage.

5.) **If a CD drive and a hard drive are sharing the same data cable in a computer system, what type of connection is the CD drive using? Which of the 2 drives should be set to master? Which to slave?**
IDE2- hard drive should be set to master and CD should be set to slave.

6.) **What unit of measure is used to express the sampling rate of a sound card?**
Hertz (Hz)

7.) **Why must sound and video input into a PC be converted from analog to digital?**
To improve the quality of sound.

8.) **What is the sampling rate (in Hz) of music CDs?**
44,100 Hz

9.) **How many samples can be stored in 8 bits?**
Can range from -128 to +127

10.) **What would be a quick, short test to see if a sound card was successfully installed?**
Reboot your computer and enter into Windows

11.) **In a system that uses a CD drive instead of a DVD drive, the audio wire connects the CD drive to the sound card.**

12.) **Why would you want to retension a backup tape?**
To ensure that you can fit as much data on the tapes as possible.

13.) **Which holds more data, a Microdrive or a Zip drive?**
Zip drive

14.) **How is the direction of data flow different for data transfers for MP3 players and digital cameras?**

15.) **Name 3 advantages that MMX technology added to the Pentium processor family.**

16.) With which Pentium processor was SSE introduced?

Pentium III

17.) What is the significance of Sound Blaster compatibility for a sound card?

They understand the commands sent to them that have been written for a sound blaster card, which generally considered that standard for PC sound cards.

18.) Which port(s) on a sound card is used to send sound out?

With the MP3 player files are downloaded to the MP3 player, where with a digital camera the files are uploaded to the PC from the camera.

19.) What is the difference between MPEG, JPEG, and MP3? Explain what each one is used for.

MPEG tracks movement from one frame to the next and stores only what changes, rather than compressing individual frames. JPEG is a picture file format that can be imported into documents. MP3 is a popular audio compression method that can reduce the size of a sound file as much as 1:24 without much loss of quality.

20.) Name at least 4 features you should look for when buying a video capture card.

An IEEE 1394 (firewire) port to interface with a digital camcorder. Data transfer rates, which affect price. Capture resolution and color-depth capabilities. Ability to transfer data back to the digital camcorder or VCR.

21.) What are the 3 ways that data on a DVD can be decoded?

MPEG-2 which contains a firmwire on a controller card that comes bundled with the DVD drive, software that comes bundled with the DVD drive and is installed at the time the DVD drive is, or the decoder is contained on a video capture card.

22.) What is the most popular way an internal DVD drive interfaces with a motherboard?

The EIDE data cable

23.) What is the difference between CD, CD-R, and CD-RW drives?

CD is a read only medium, which means it can not write. CD-R stands for CD Recordable, meaning it is easier to create a burnt CD. CD-RW stands for CD-rewritable, meaning it allows you to overwrite old data with new data.

24.) Rank these storage methods in order of their storage capacity: DVD, floppy disk, CD, tape.

Floppy disk, CD, and tape. DVD, Tape, CD, Floppy.

25.) Which version of RAID is supported by Windows XP? Does this RAID version provide fault tolerance?

RAID 0, No does not provide fault tolerance