



# Storage Media

---

Asad M. Nafees



# Outline

---

- DVD/DVD-R/DVD+R/DVD-RW/DVD+RW
- CD/CD-R/CDRW
- Flash Disk
- Portable Hard Drive



# DVD Technology

---

- An evolution from the CD-ROM
- Developed in 1996 it was initially called digital video disc but eventually known as digital versatile disc
- Movie companies immediately took advantage
- DVD-Video disc can carry multi-channel digital sound
- For computer users, DVD-ROM drives came to exist
- Initially, the principal application to make use of DVD's greater capacity has been movies
- Modern-day programs fast outgrowing CD, multiple disc sets ever closer
- Numerous applications for developers of edutainment, reference titles, free use of video and audio clips, game developers, surround-sound audio, etc



# DVD - Summary of Features

---

- Over 2 hours of high-quality digital video (a double-sided, dual-layer disc can hold about 8 hours of high-quality video, or 30 hours of VHS quality video).
- Support for widescreen movies on standard or widescreen TVs (4:3 and 16:9 aspect ratios).
- Up to 8 tracks of digital audio (for multiple languages, commentaries, etc.), each with as many as 8 channels.
- On-screen menus and simple interactive features (for games, quizzes, etc.).
- Multilingual identifying text for title name, album name, song name, cast, crew, etc.
- Instant rewind and fast forward
- Instant search to title, chapter, music track, and timecode.
- Durable (no wear from playing, only from physical damage).
- Not susceptible to magnetic fields. Resistant to heat.
- Compact size (easy to handle, store, and ship; players can be portable; replication is cheaper than tapes or laserdiscs).



# DVD - Recording

---

- There are six recordable versions of DVD (4.7Gb):
  - DVD-R for General
  - DVD+R for Authoring
  - DVD-RAM
  - DVD-RW
  - DVD+RW
  - DVD+R
- DVD-R and DVD+R can record data once, like CD-R
- DVD-RAM, DVD-RW, and DVD+RW can be rewritten thousands of times, like CD-RW
- DVD-RAM is more of a removable storage device for computers than a video recording format
- The other two recordable format families (DVD-R/RW and DVD+R/RW) are essentially in competition with each other
- Many companies began making drives that could record in both "dash" and "plus" format.
- Dana Parker's [Writable DVD - A Guide For the Perplexed](#)



# CD Technology

---

- Sony and Philips invented the Compact Disc (CD) in the early 1980s
- Audio CD's durability
- Random access features
- Audio quality
- CD-ROM followed in 1984
- Countless games, software applications, encyclopedias, presentations and other multimedia programs available on CD-ROM
- Holds up to 650MB of computer data



# CD - Recording

---

- Two standards exist
  - CD-R
  - CD-RW
- Drives can read nearly all the existing flavors of CD-ROMs
- Low cost of media; CD-RW media is cheap and CD-R media even cheaper
- CD-RW discs have to be reformatted to recover the space taken by "deleted" files when a disc becomes full



# Flash Technology

---

- Flash Memory (Solid-State Removable Storage)
- A high-performance plug-and-play storage device that contains no moving parts
- Used mainly in laptops, digital cameras, digital audio players, hand-held computers and video game consoles Small, light and fast
- Works a like computer's memory, but acts like a hard drive
- Some Common Types of Removable Flash Memory
  - SmartMedia
    - Holds up to 128MB of data
    - High-transfer rate for copying and downloading
  - CompactFlash
    - Offers storage up to 1GB
  - USB Flash Drives
    - Functions as a portable hard drive
    - Up to 2GB of storage capacity
    - Easy-to-use as
    - Plug into any computer with a USB drive
    - Excellent choice for file sharing and for use in small electronic devices.





# Portable Hard Drive

---

- Durable - resists scuffs and scrapes
- Hot swappable
- Stays cool
- USB 2.0 Drives Compatible with USB 1.1