Optical Drives

An optical drive is the generic name given to a disk drive that will read and/or write data to optical disks. Commercial software purchased in store is almost always packaged in this manner, as are movies and music.

**Key Components of an Optical Drives**

Similar to a traditional hard disk drive, optical drives read data from the disk by spinning it and using a laser to reflect light from the disk surface which is read an interpreted as binary values. The write process uses the laser to burn the outer layer of special disks.

**Factors when purchasing an Optical Drive**

1. **Connection Types**
   1. IDE - 40 pin ribbon cable, older technology
   2. SATA - Most popular for internal optical drives
   3. USB - Some external Optical drives connect via USB ports.
2. **Form Factor (Size)** - Optical Drives are a standard 5.25" wide, though the height of the drive will vary.
   1. Laptop use a slimmer (shorter) drive to conserve space.
3. **Burner vs. Read Only**
   1. Burners allow you to write data to the disk, as well as read data.
   2. Many optical drives are read only.
4. **Optical Formats**
   1. **CD (Compact Disk)**
      1. Can store about 700MB of data or 74 minutes of audio (music usually)
      2. The original CD-ROM could read data at approximately 150 KBps.
      3. As faster CD-ROM were released, their speed was listed as 2X, 4X,etc…
      4. 2X means it reads twice as fast as the original CD-ROM, or 300 KBps
      5. 52X is fastest CD-ROM Drive which is about 7.6 MBps
      6. CD-ROM Drives cannot read DVD or Blu-ray disks.
   2. **DVD - (Digital Video Disk**)
      1. Can store about 4.7 GB of data
      2. First DVD could read/write at approximately 1.5 MBps
      3. Similar to CD-ROM, we use 3X to display how must faster than the original it can run
      4. 18X is fasted DVD-ROM drive, which is about 27 MBps
      5. DVD-ROM drives cannot read Blu-ray disks, but can read CD-ROM disks
   3. **BD - (Blu-ray Disk)**
      1. Can store 25 GB of data
      2. Similar to CD-ROM, we use 3X to display how must faster than the original it can run
      3. First Blu-ray could read at 4.5 MBps
      4. Fastest Blu-ray drive current is 12X, which is about 54 MBps
5. **Single/Double Layer**
   1. Double Layer disks have two separate writeable layers, effectively doubling the storage capacity
   2. Requires special disks
6. **Optical Disk Acronyms** - These often follow the drive type and give you info about their features
   1. -ROM (Read Only Memory) - Cannot write
   2. -R (Recordable) - Can write only once to the disk
   3. -RW(Rewriteable) - Can write, erase and rewrite to these disks.
   4. -RE (Recordable Erasable) - Blu-ray version of RW
   5. DL - Dual Layer
7. **Cache** -
   1. Optical drives have cache memory so the drive can "read ahead", minimizing latency.
   2. Typical cache memory is either 2 MB or 4MB.
8. **Internal vs. External**
   1. Similar to hard drives, you can buy external optical drives.
   2. External optical drives connect via a USB port and don't require additional power.