

HARDWARE FUNDAMENTALS AND INSTALLATION 3



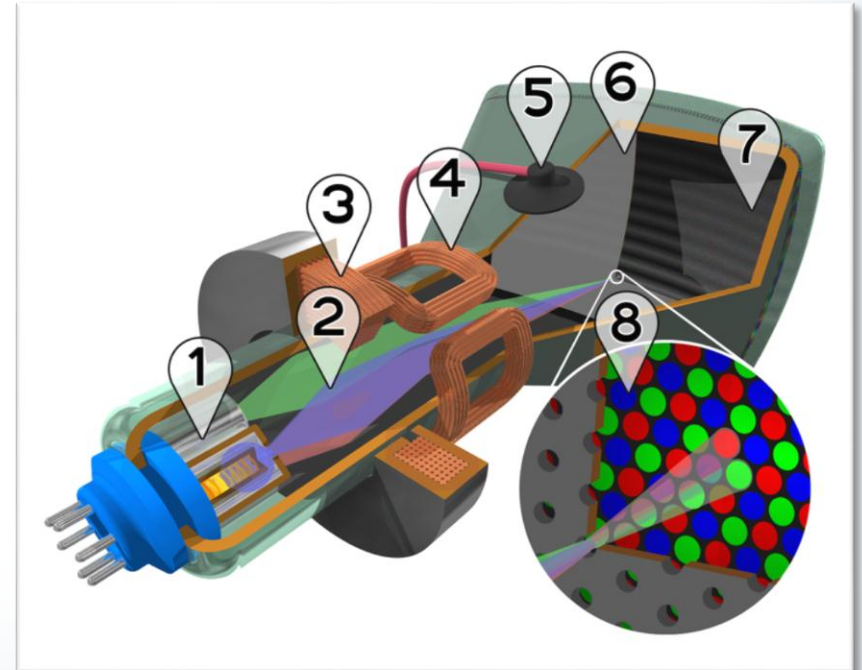
- Display
 - CRT
 - LCD
 - LED
 - Plasma
 - Projector
- Display Connectors
 - Coaxial
 - Composite
 - Component
 - VGA
 - DVI
 - HDMI
 - DisplayPort

- Hard Disk Drive
- PATA
- SATA
- SCSI
- RAID
- Optical Disks
- USB Connections
- Firewire IEEE 1394
- Flash Memory
- Removable Drives
- SSD

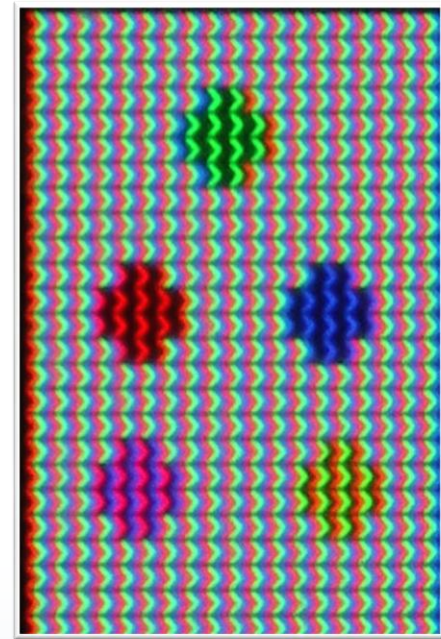
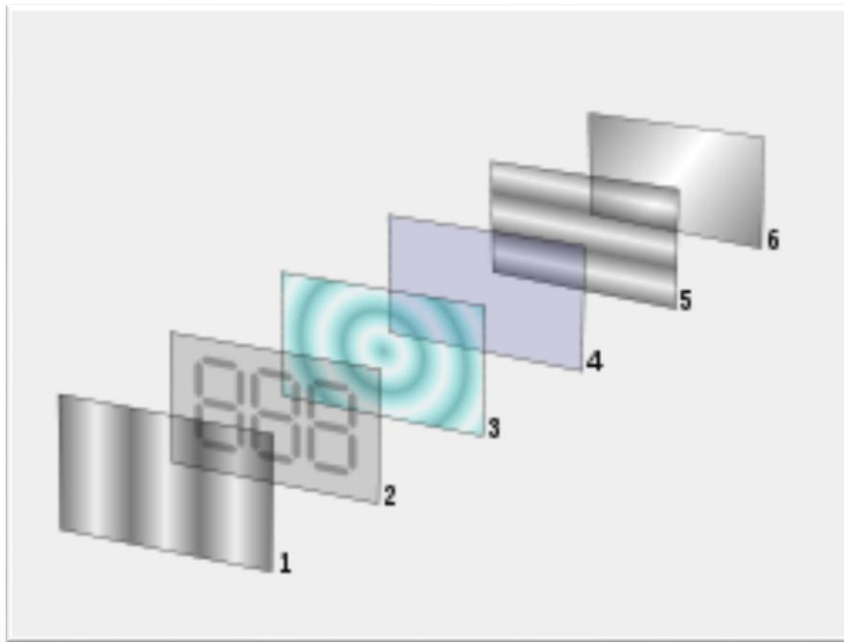
- Drive Installation
- Drive Configuration
- Windows 7
- Windows XP
- RJ45 Connector
- RJ11 Connector
- Mouse
- Keyboard
- Touchscreen
- Scanner
- Barcode Reader
- Biometric Devices
- Gamepad and Joysticks

- MIDI
- Webcam
- KVM
- Input Devices
- Installation
 - Configure a Mouse
 - Windows 7
 - Windows XP
 - Configure a Keyboard
 - Windows 7
 - Windows XP

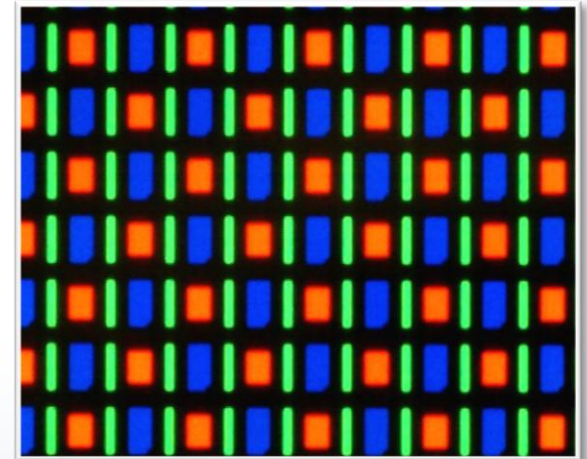
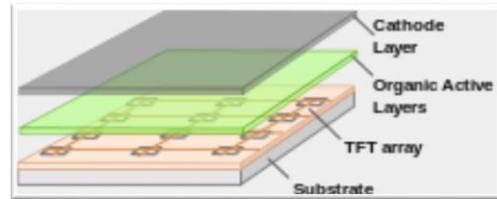
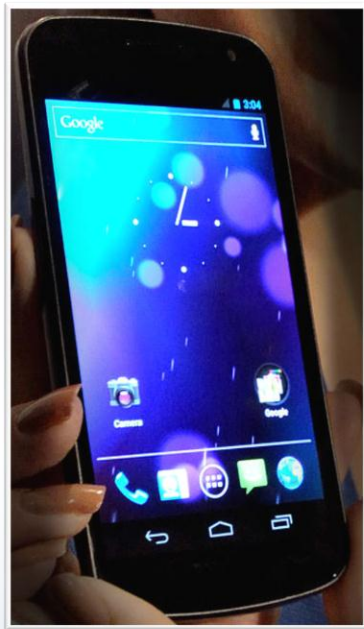
- Cathode Ray Tube – 15 – 21 inches
- Resolution – XGA 1024x768, SXGA 1280x1024, UXGA 1600x1200



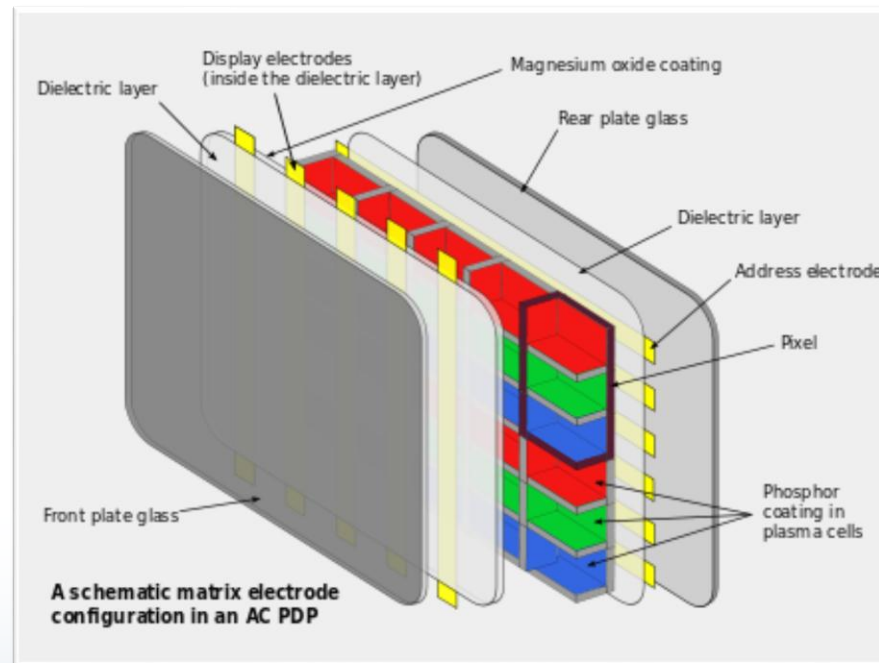
- Liquid Crystal Display



- Light Emitting Diode
 - Less power than LCD
- OLED - Organic LED
- AMOLED – Active Matrix Organic LED



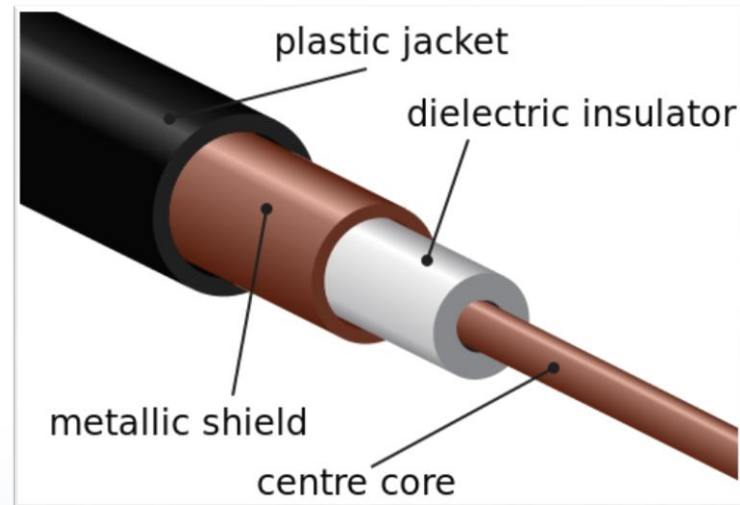
- Voltage creates plasma
- UV light strikes colored phosphor
- Deep blacks



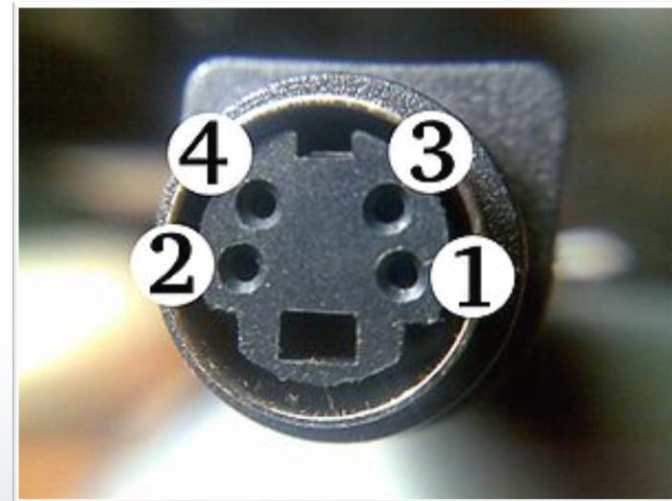
- LCD
- Bulbs
- Always allow bulbs to cool off



- Analog 1 wire
- RG59, RG6 connectors
- Transmission of radio frequencies
- Video and data



- Analog, interlaced
- NTSC, PAL, SECAM
- Uses RCA plugs and cables
- 480i, 576i
- S-Video
 - 2 channel, 4 pin mini-DIN
 - Separates luminance and color



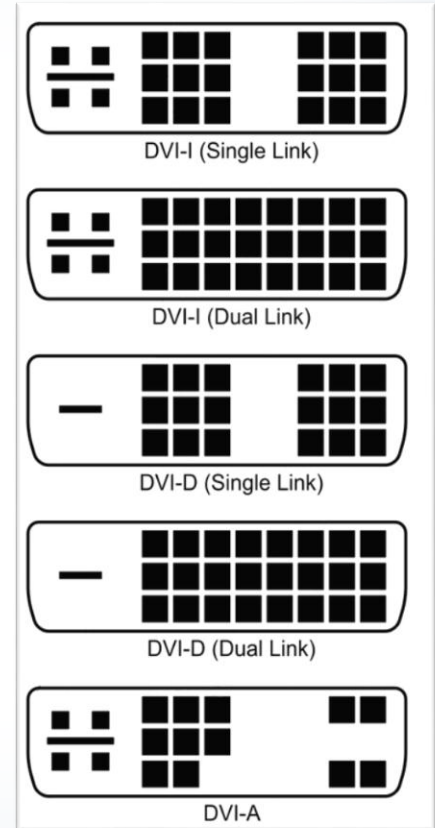
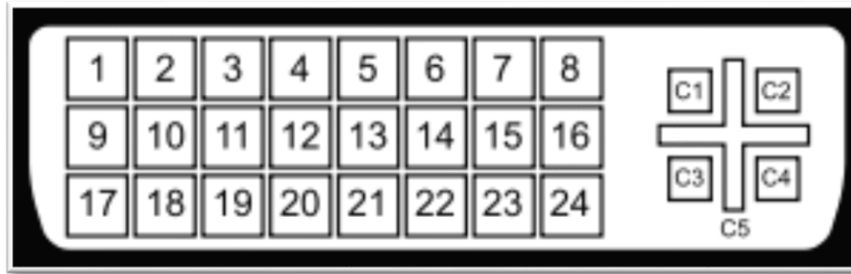
- Analog, 3 separate signals
- YpbPr
 - Y: luminance
 - Pb diff blue yellow
 - Pr diff red yellow
- RGB – red, green, blue,
- Uses RCA plugs and cables and VGA port



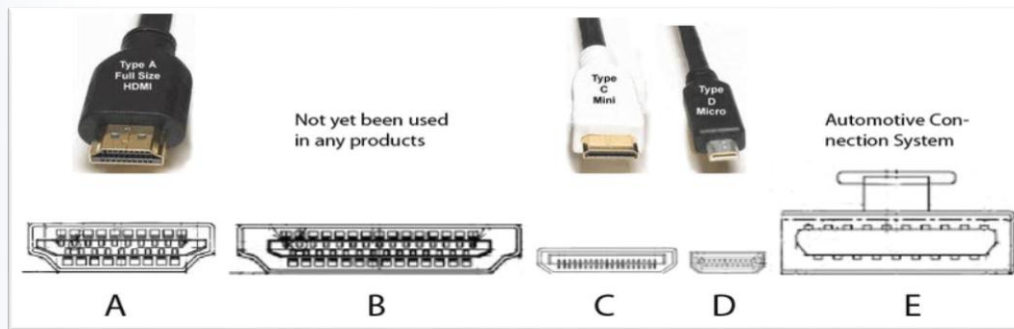
- VGA – Video Graphics Array
- DE-15, 15 pin analog
- Found on video cards, motherboards, monitors, HD TV



- DVI – Digital Visual Interface, 1999
- Uncompressed video
- Analog and digital modes
- Compatible with VGA spec
- Mostly computer industry, early HD TV



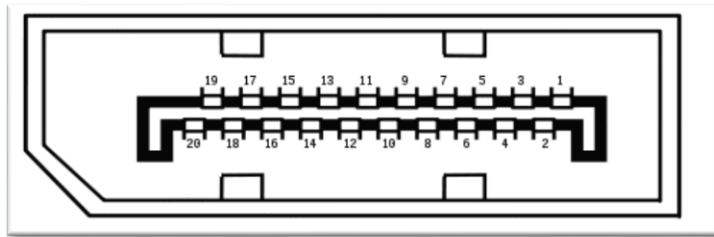
- HDMI – High Definition Multimedia Interface
- Digital, uncompressed video, compressed / uncompressed audio
- Found on video cards, motherboards, monitors, HD TV



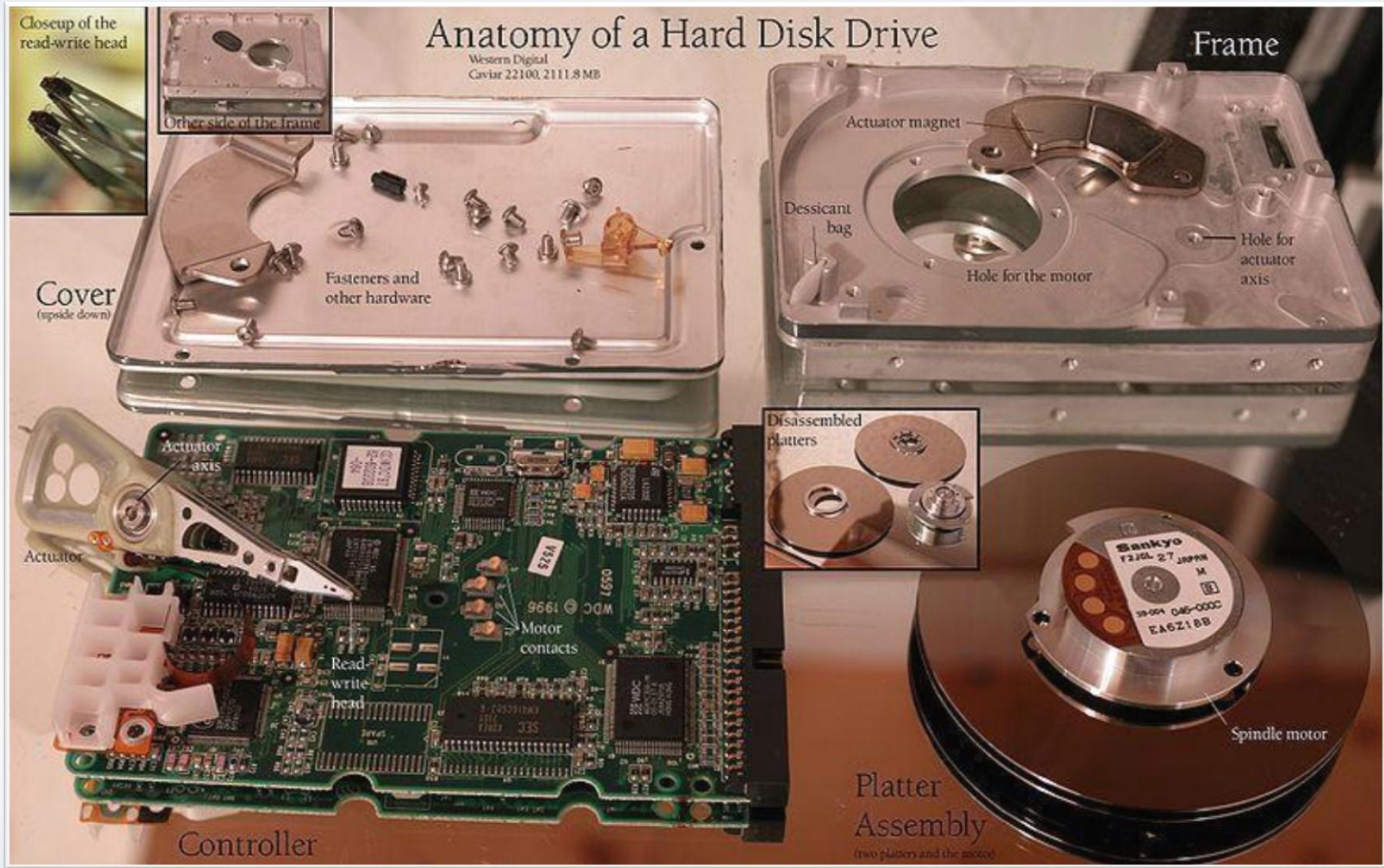
- V1 – 2002, uncompressed
- V1.2a – 2005, sRGB, YCbCr, command sets (CEC)
- V1.3 – 2006, higher bit video, audio sync, HD audio, HDMI type C mini connector
- V1.4 – 2009, higher resolution (QuadHD), HDMI Ethernet Channel (HEC), Audio Return Channel



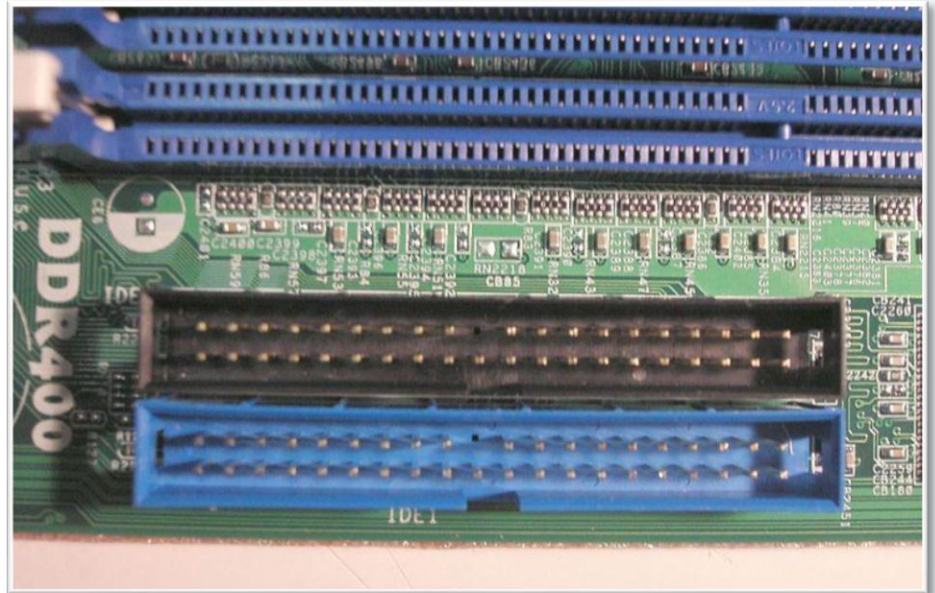
- Connects video, audio, USB, data
- Royalty free from VESA – Video Electronics Standards Association
- Uses packeted data transmission
- Data rate: 5.1 – 17.28 Gb/s



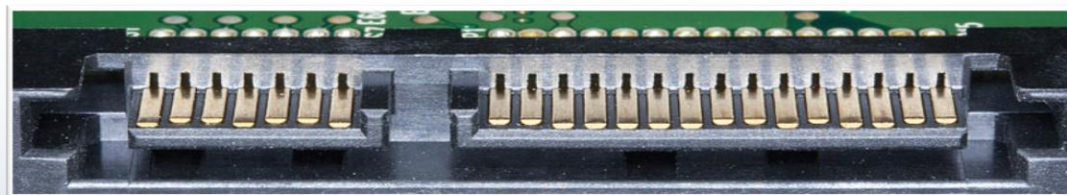
- RGB, YCbCr, 3D, encryption, 6,8,10,12,16 bit color depth
- 8 channel 24 bit 198 kHz audio
- Replaces VGA, DVI, complements HDMI
- Standards – mini DisplayPort (mDP), Direct Drive Monitor (DDM), Embedded DisplayPort (EDP), Internal DisplayPort (iDP), Portable Digital Media Interface (PDMI), Wireless DisplayPort (wDP), Mobility DisplayPort (mDP)



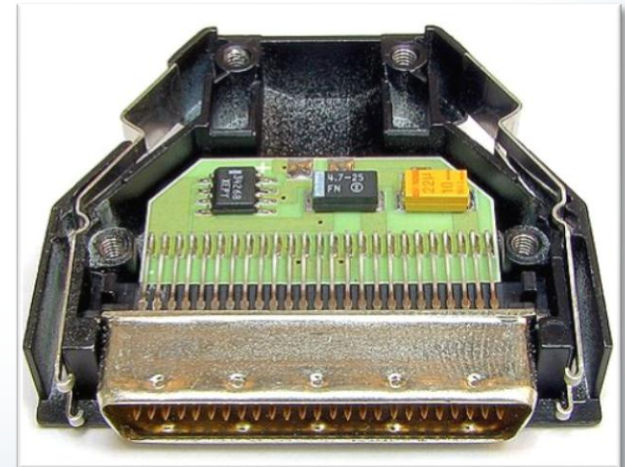
- Parallel ATA, born in 1999
- IDE – Integrated Drive Electronics
- EIDE – Enhanced IDE
- Speed – 16 - 133 MB/s
- 40 and 80 wire
- Master/Slave, Cable Select



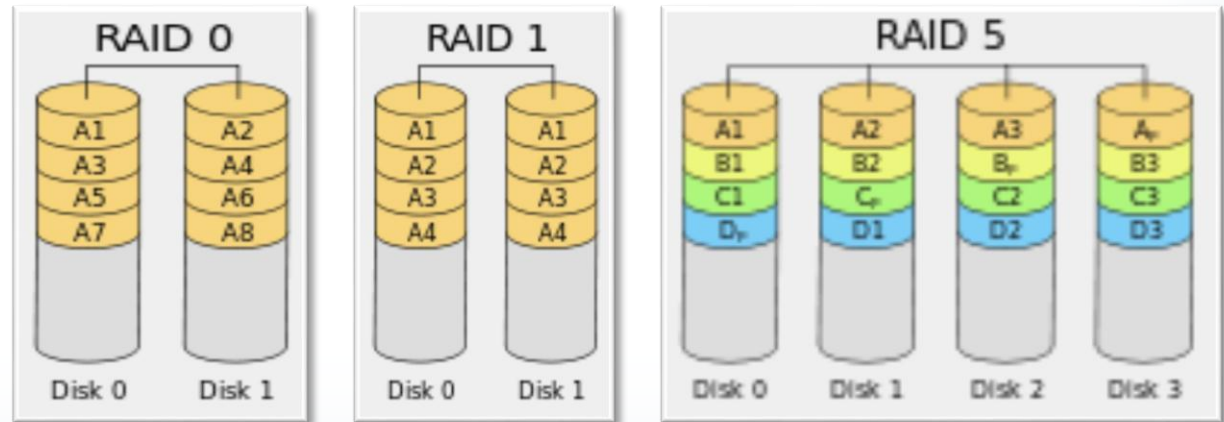
- Serial ATA
- 7pin data connector
- 15pin power
 - 3.3, 5, 12 V
- eSATA – external SATA
- Speed
 - V1 1.5 Gb/s
 - V2 3 Gb/s
 - V3 6 Gb/s



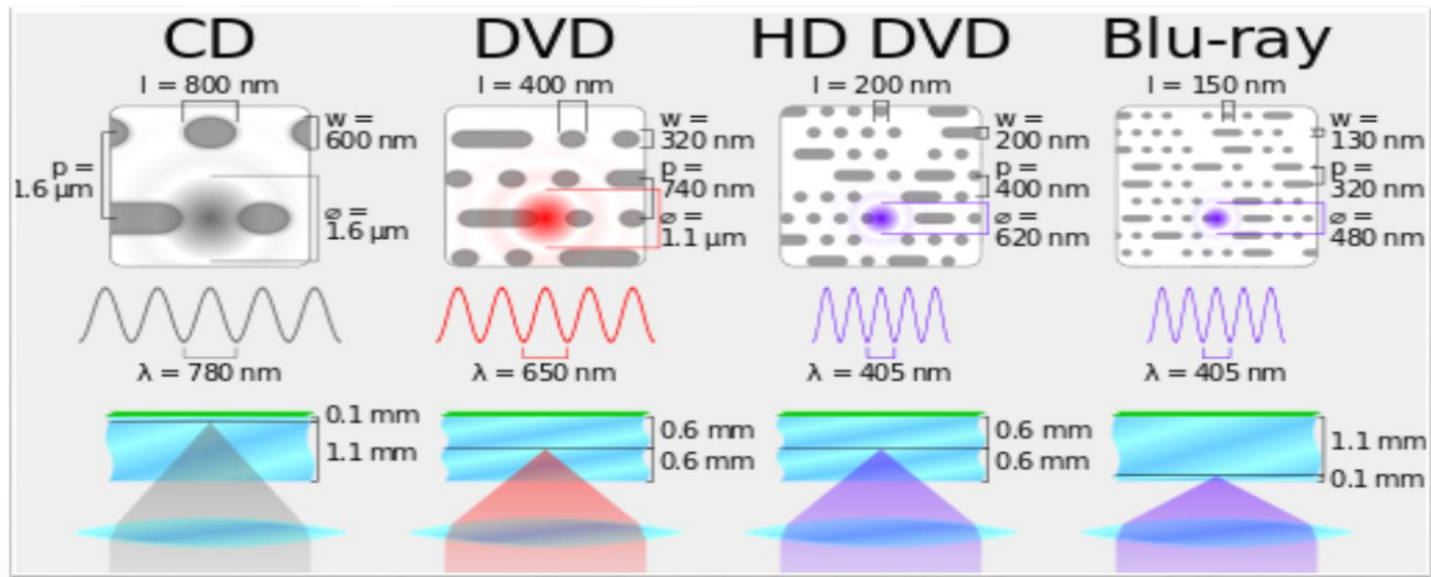
- Small Computer Systems Interface, 1981
- Formats – Fast SCSI, Ultra SCSI, Ultra Wide SCSI, Ultra2/3 SCSI, Ultra 320/640 SCSI, iSCSI
- Speed – 5 – 640 MB/s
- Automatically configures, no jumpers, ID 0-7 or 0-15
- Need to terminate



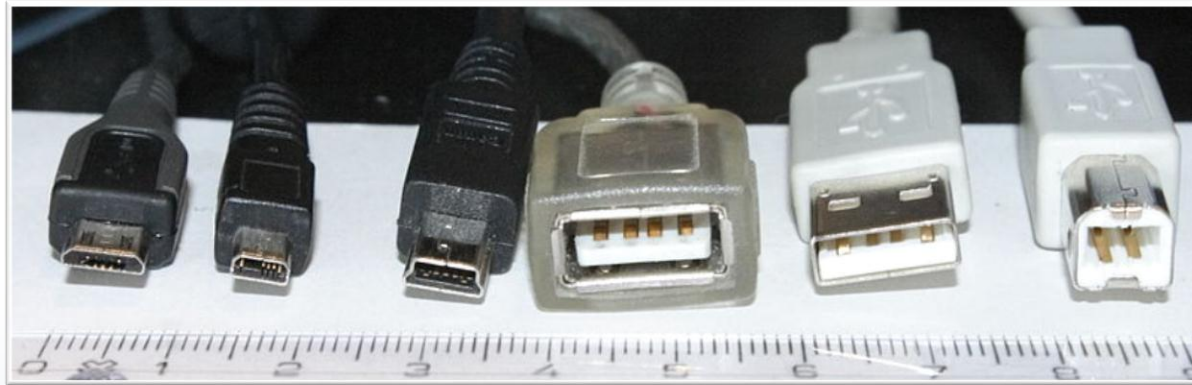
- Redundant Array of Independent Disks
- RAID 0 – Striping
- RAID 1 – Mirroring
- RAID 5 – Striping + Mirroring
- RAID 10 (1+0)– a Strip of Mirrored drives
- Controllers
 - Software
 - Hardware



- CD 640, 700 MB
- DVD 4.7 / 8.5 GB
- Blu-Ray 25 / 50 GB

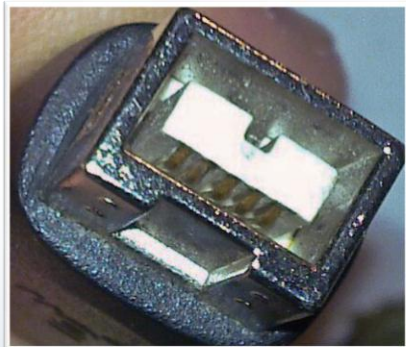


- USB
- Speed
 - v1.1 – 12 Mb/s
 - v2 – 480 Mb/s
 - v3 – 4 Gb/s

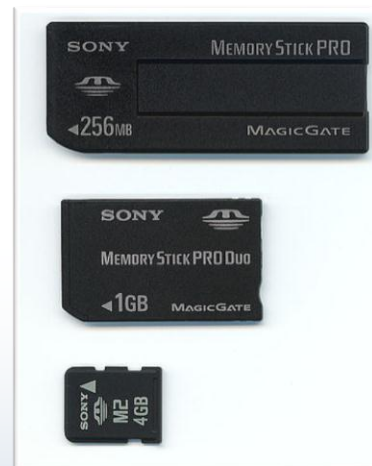
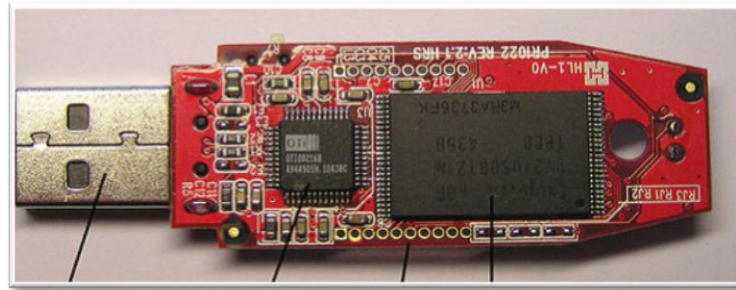


- Connect up to 127 devices
- Backward compatible
- USB Hubs and cables are not forward compatible
- 3-5 meters distance
- (Below) from L to R: micro, non USB, mini-B, type A receptacle, type A, type B

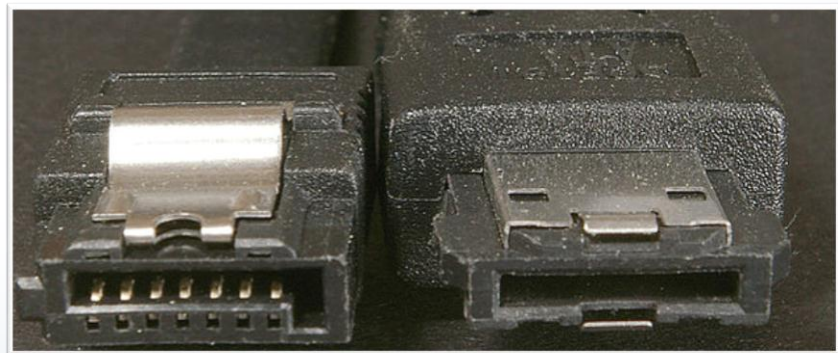
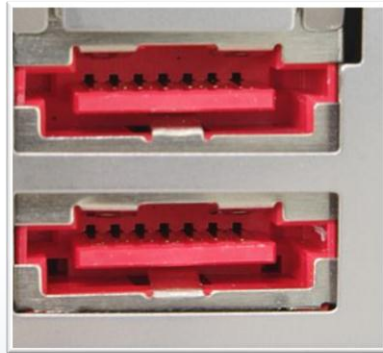
- “Firewire” IEEE 1394
 - Connect 63 devices
 - 1394a – 400 Mb/s
 - 4 and 6 pin connectors
 - 1394b – 800 Mb/s
 - 9 pin
 - Rare speeds - S800T, S1600, S3200
 - Distance between devices 15 feet, max length of connected devices 72 meters



- USB
- V1.1, 2, 3
- Secure Digital – SD, SDHC, SDXC, Mini SD, Micro SD
- Compact Flash
- Memory Stick



- USB
 - V1.1, 2, 3
- FireWire
- eSATA – external SATA



- Solid State Drive (SSD)
- Large capacity designed to supplement or replace HDD 60 GB – multiple TB
- Very fast seek times (100 μ s vs 2.9 ms, no moving parts) and high transfer rate (7.2 GB/s and 2.52 M IOPS – Input Output Operations Per Second vs 140 MB/s 210 IOPS for HDD)

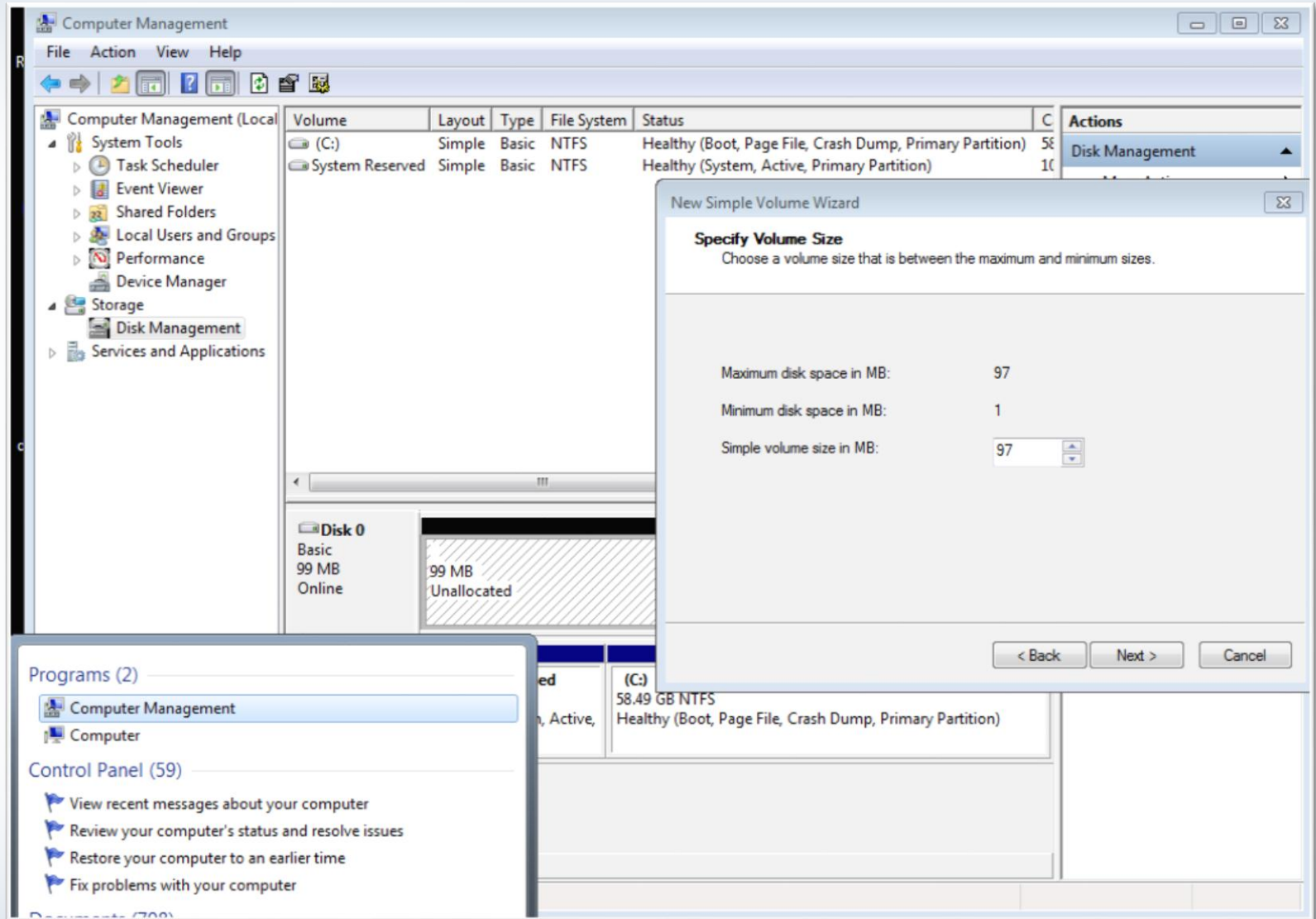


- Can significantly speed up a computer system
- Hybrid SSD combine solid state memory and a classic hard drive for increased performance of SSD and reduced cost of HDD

- Ensure motherboard/drive compatibility
- Power off and unplug everything, open the system case, ground yourself
- Remove power and data connections from old drive (if needed), unscrew, and remove
- Install expansion card for drive controller (if necessary)

- Set jumper pins, termination for new and remaining drives (if necessary)
- Insert new drive, secure to case with screws, plug in power, data, and fan connectors
- Replace the case and power cord
- Power on, adjust BIOS settings, test

- Open Computer Management
 - Windows 7: Start Menu → Search “Computer Management” → Computer Management
 - Windows XP: Control Panel → Administrative Tools → Computer Management
- Select Disk Management
- Right click on new disk, select New Volume
- Follow wizard prompts



The screenshot shows the Windows 7 Computer Management console, specifically the Disk Management section. A 'New Simple Volume Wizard' dialog box is open, displaying the 'Specify Volume Size' step. The wizard indicates a maximum disk space of 97 MB and a minimum of 1 MB. The 'Simple volume size in MB' is set to 97 MB. In the background, the Disk Management console shows Disk 0 with a 99 MB unallocated space. A Start menu search window is also visible in the bottom-left corner, showing results for 'Programs (2)' and 'Control Panel (59)'.

Volume	Layout	Type	File System	Status	Size	Actions
(C:)	Simple	Basic	NTFS	Healthy (Boot, Page File, Crash Dump, Primary Partition)	58.49 GB	Format and Partition
System Reserved	Simple	Basic	NTFS	Healthy (System, Active, Primary Partition)	100 MB	Format and Partition

New Simple Volume Wizard

Specify Volume Size
Choose a volume size that is between the maximum and minimum sizes.

Maximum disk space in MB: 97
Minimum disk space in MB: 1
Simple volume size in MB: 97

< Back Next > Cancel

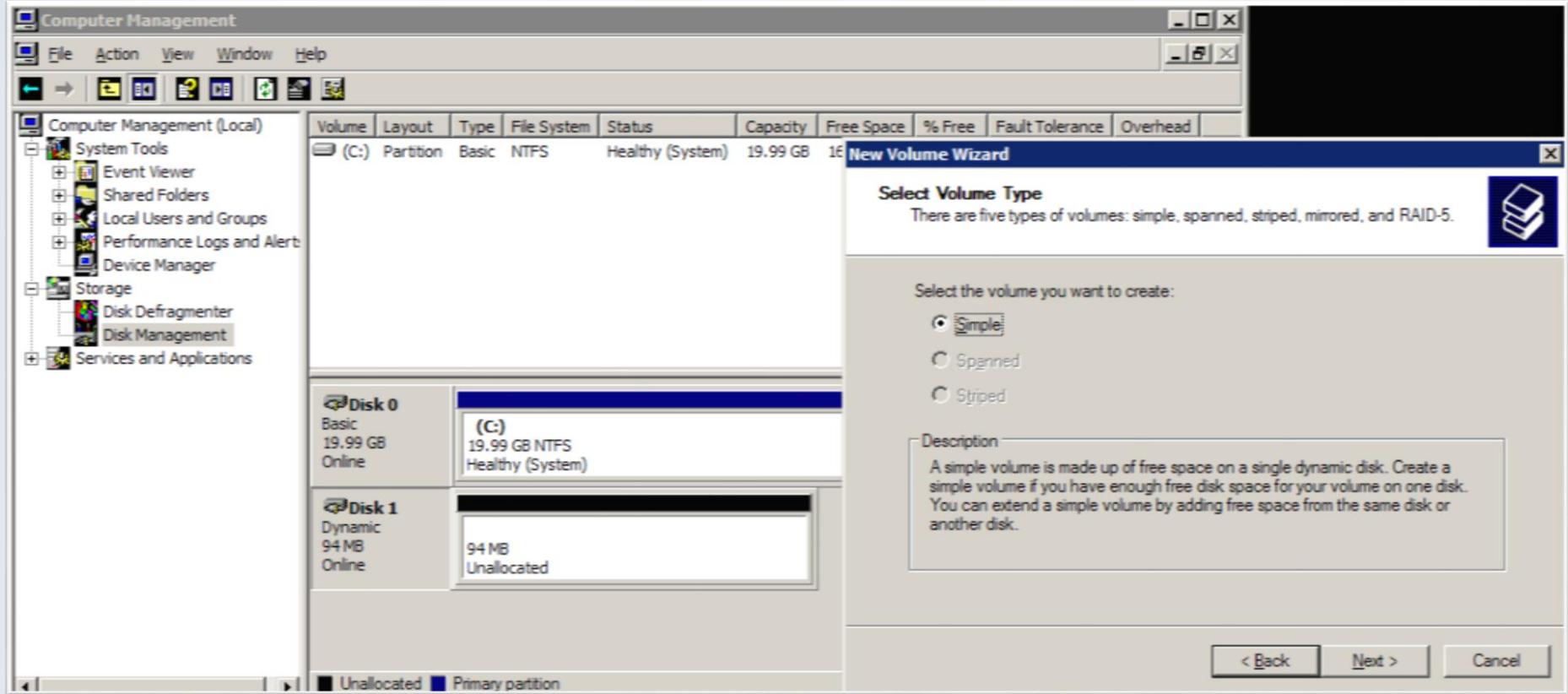
The screenshot shows the Windows XP Computer Management console. The left pane shows the tree view with 'Storage' expanded to 'Disk Management'. The main pane shows a table of disks and partitions:

Volume	Layout	Type	File System
(C:)	Partition	Basic	NTFS

Below the table, 'Disk 0' is shown as a Basic disk (19.99 GB, Online) with a Primary partition (C:) of 19.99 GB NTFS, which is Healthy (System). 'Disk 1' is shown as a Dynamic disk (94 MB, Online) with an Unallocated space of 94 MB.

The 'Administrative Tools' menu is open, listing various system management tools such as Accessibility Options, Add Hardware, Add or Remove Programs, Component Services, Computer Management, Data Sources (ODBC), Event Viewer, Local Security Policy, Microsoft .NET Framework 1.1 Configuration, Microsoft .NET Framework 1.1 Wizards, Performance, and Services.

The taskbar at the bottom shows the user is logged in as 'Administrator'. Open applications include Google Chrome, Outlook Express, and Internet Explorer. Quick launch icons for 'My Documents', 'My Computer', and 'Control Panel' are visible.



The screenshot displays the Windows XP Computer Management console. The left pane shows the tree view with 'Storage' expanded to 'Disk Management'. The main pane shows a table of disks and their partitions.

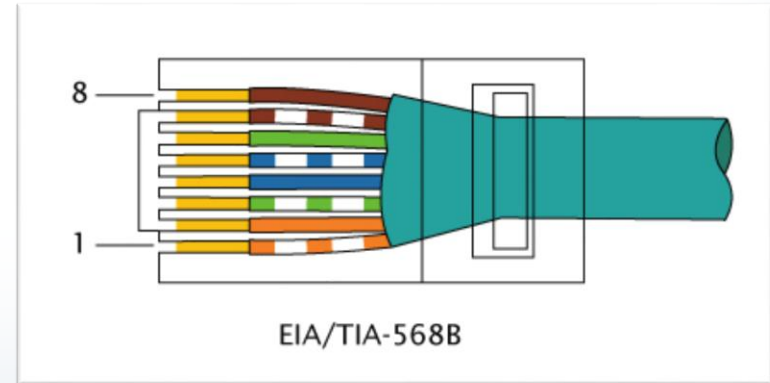
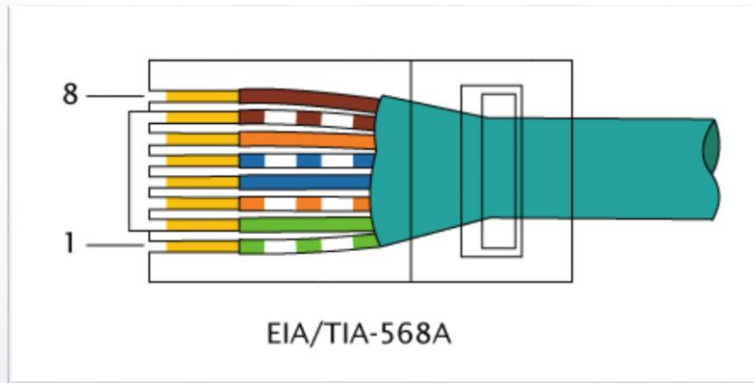
Volume	Layout	Type	File System	Status	Capacity	Free Space	% Free	Fault Tolerance	Overhead
(C:)	Partition	Basic	NTFS	Healthy (System)	19.99 GB	16 GB	80%		

Disk	Type	Capacity	Status
Disk 0	Basic	19.99 GB	Online
Disk 1	Dynamic	94 MB	Online

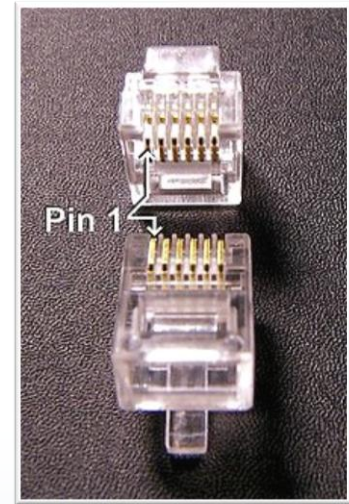
The 'New Volume Wizard' dialog box is open, showing the 'Select Volume Type' step. It lists five options: Simple, Spanned, Striped, Mirrored, and RAID-5. The 'Simple' option is selected. A description box explains that a simple volume is made up of free space on a single dynamic disk.

< Back Next > Cancel

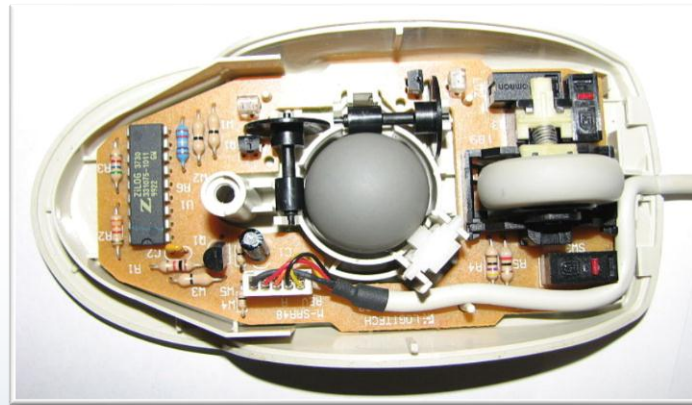
- 8 contact, 8 wire
- Unshielded/shielded twisted pair
- Ethernet networking
- TIA/EIA-568-B standard



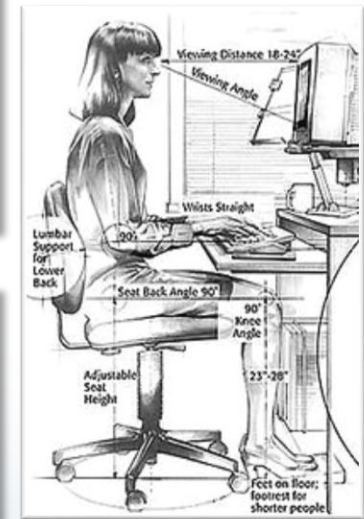
- 6 positions, 4 contacts, 2-4 wires
- Telephone audio/fax/phone system



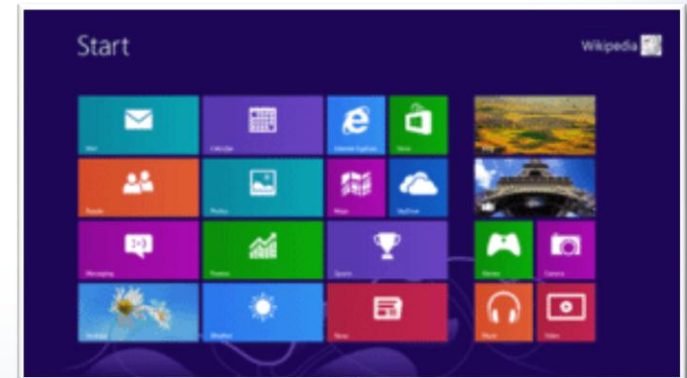
- GUI cursor input device
- Connection PS/2, USB, wireless, Bluetooth
- Mechanical and optical



- Character input device
- Connection PS/2, USB, wireless, Bluetooth
- Mechanical, optical, foldable
- 101/104 key US, 102/105 international
- Laptop – smaller, less keys, usually no 10-key number pad



- GUI control through a touch interface
- Resistive – single touch
- Capacitive – multi touch
- High use in mobile devices
- Increased use with Windows 8 Metro interface



- Optically scans images, text, handwriting, objects, etc. and converts it to a digital image with a CCD capture device
- Connection: Parallel, SCSI, USB, FireWire, network
- SANE – Scanner Access Now Easy – open source
- TWAIN – standard protocol and API, high speed scanning, digital cameras, multiOS



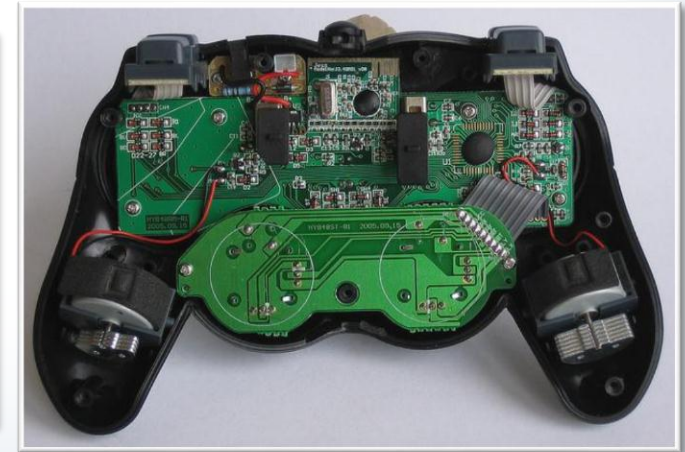
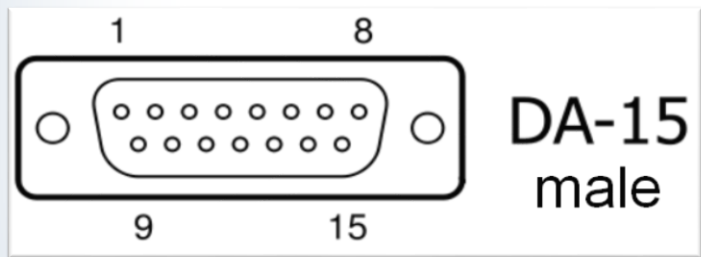
- Optically scans barcodes for rapid data entry
- Pen, laser, CCD, camera based technology
- Connection: RS-232, EPOS, PS/2, USB, 802.11 network, Bluetooth



- Primarily used to identify humans by their unique traits:
 - Fingerprint
 - Vein matching
 - Iris recognition
 - Facial analysis
 - Vocal analysis



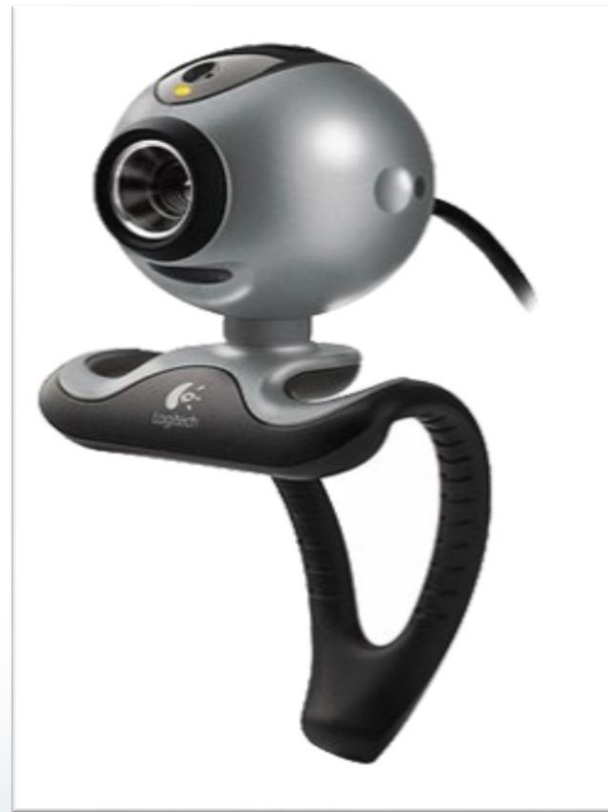
- Controllers with multiple buttons, directional pads, joysticks, sliders, force feedback, etc. for game software
- Handheld, joysticks, 1 or 2 hands
- Connection:
 - Gameport – 15 pin
 - USB
 - Bluetooth, 802.11



- Musical Instrument Digital Interface
- Protocol for digital musical instruments and computers to connect
- MIDI file – musical sequence and sound information, small file size, widespread use in early computers, ringtones, web pages



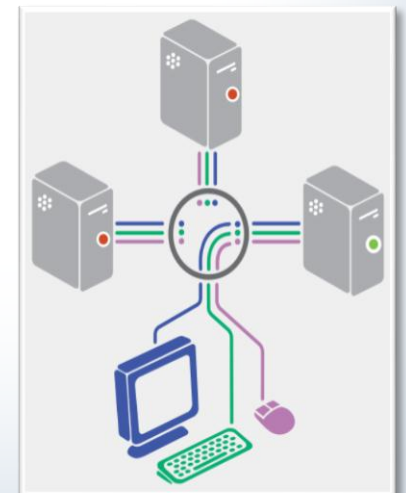
- Video camera that feeds real time video images to a computer or over a computer network
- Use: video conferencing, video phones, video capture and stills



- Many laptops, tablets, and smart-phones have a webcam integrated
- Performance measured in megapixels and frames per second
- Connection:
 - USB
 - Bluetooth, 802.11



- Keyboard, video, mouse
- Allows multiple computer system connections to a single keyboard, monitor, and mouse
- Not Kernal Virtualization Machine – Linux virtualization technology
- PS/2, USB, VGA, DVI, HDMI, 3.5mm mini plug audio connections

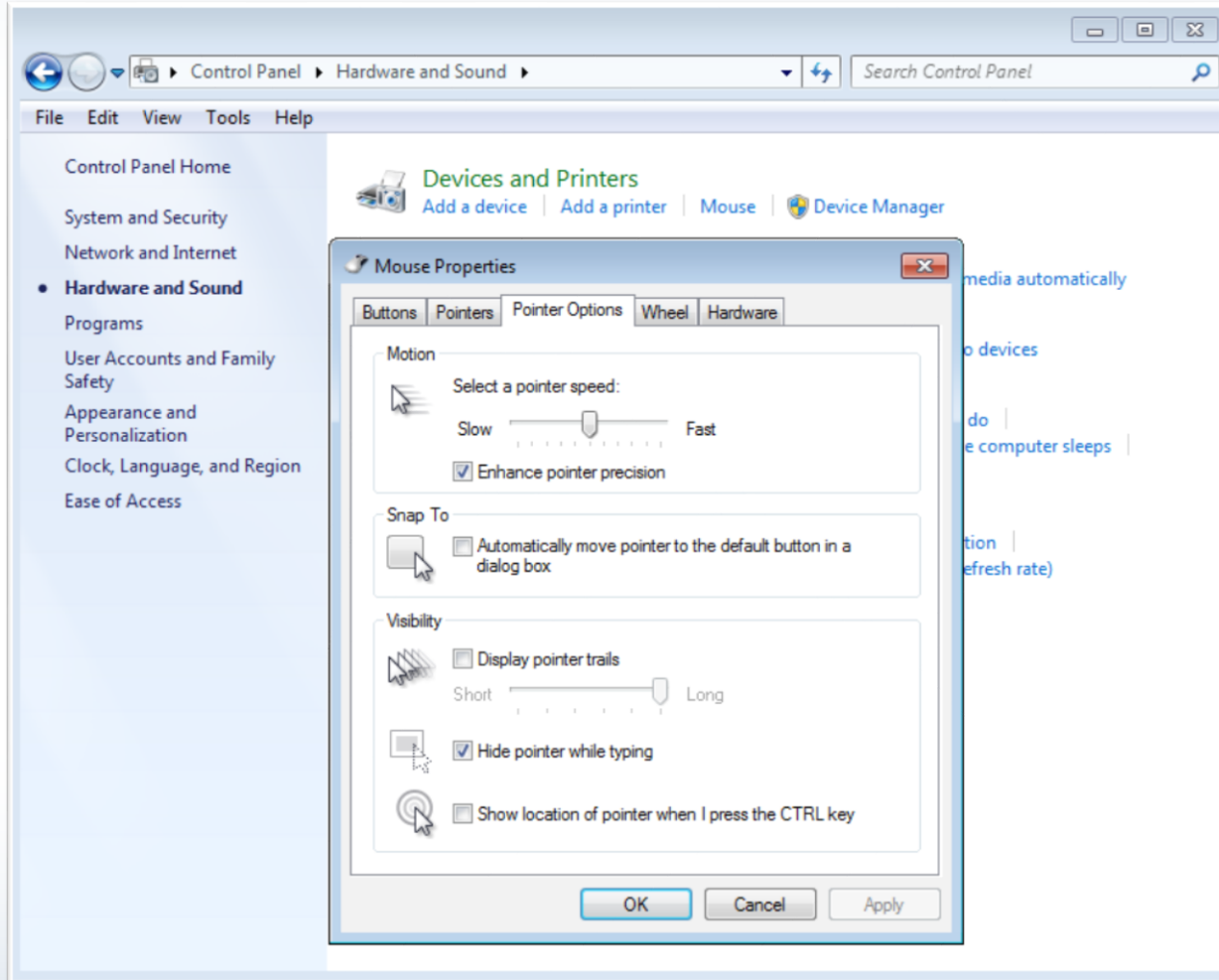


- Power off and unplug everything
- Install an expansion card if necessary
- Locate USB, PS/2, or custom ports on computer system/expansion card and connect the input device
- Install software or drivers (if needed)
- Configure software (if needed)
- Verify input device is working

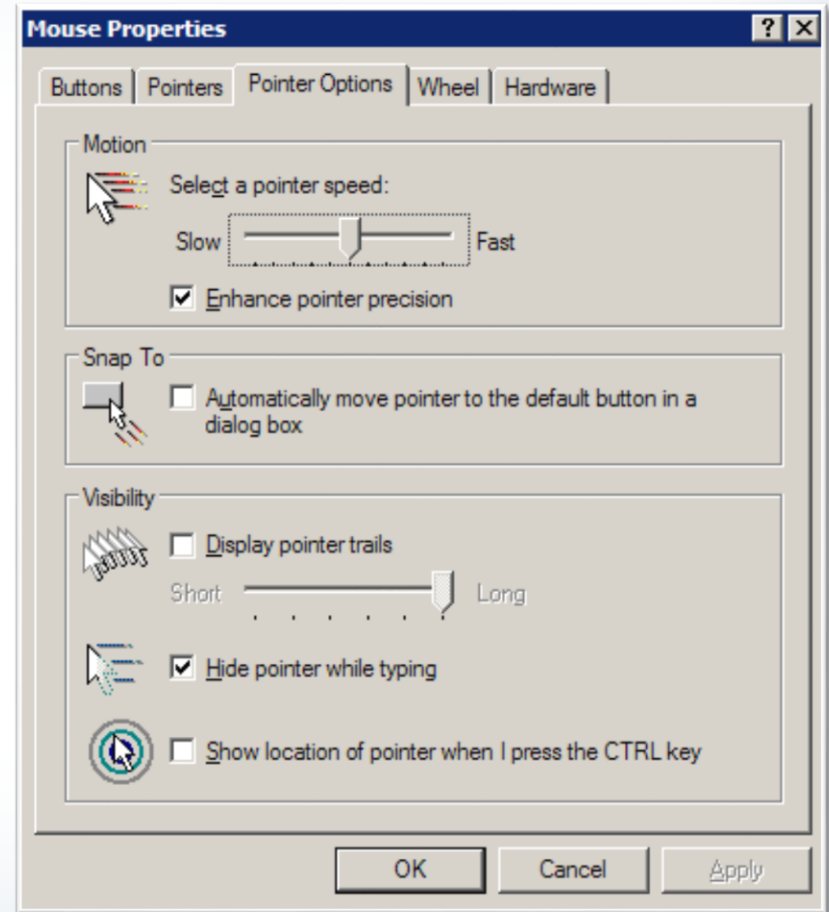
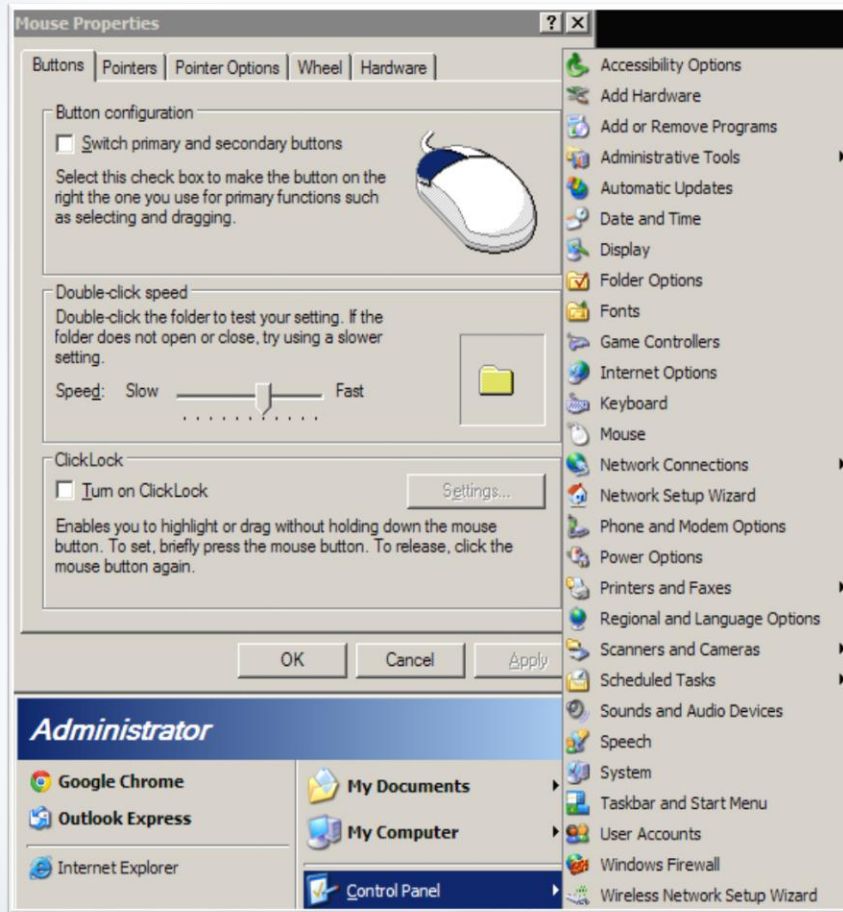


- Start → Control Panel
 - Windows 7: Hardware and Sound → Mouse
 - Windows XP: Mouse
 - Buttons: primary mouse button, click speed, ClickLock
 - Pointers: scheme, pointer shadow
 - Pointer options: pointer speed, Snap To, visibility
 - Wheel: vertical and horizontal scrolling rates
 - Hardware: advance settings, hardware driver

Windows 7

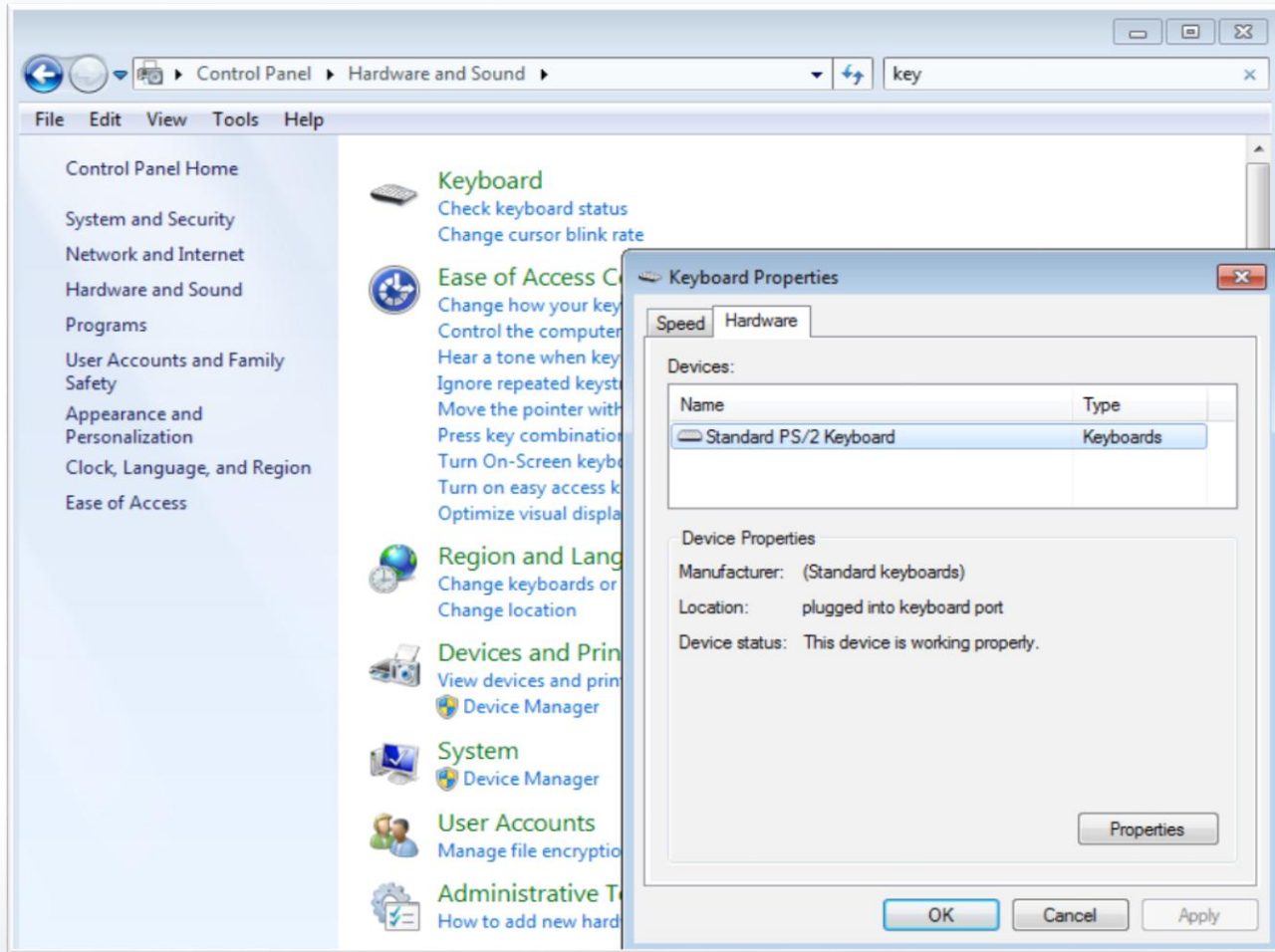


Windows XP

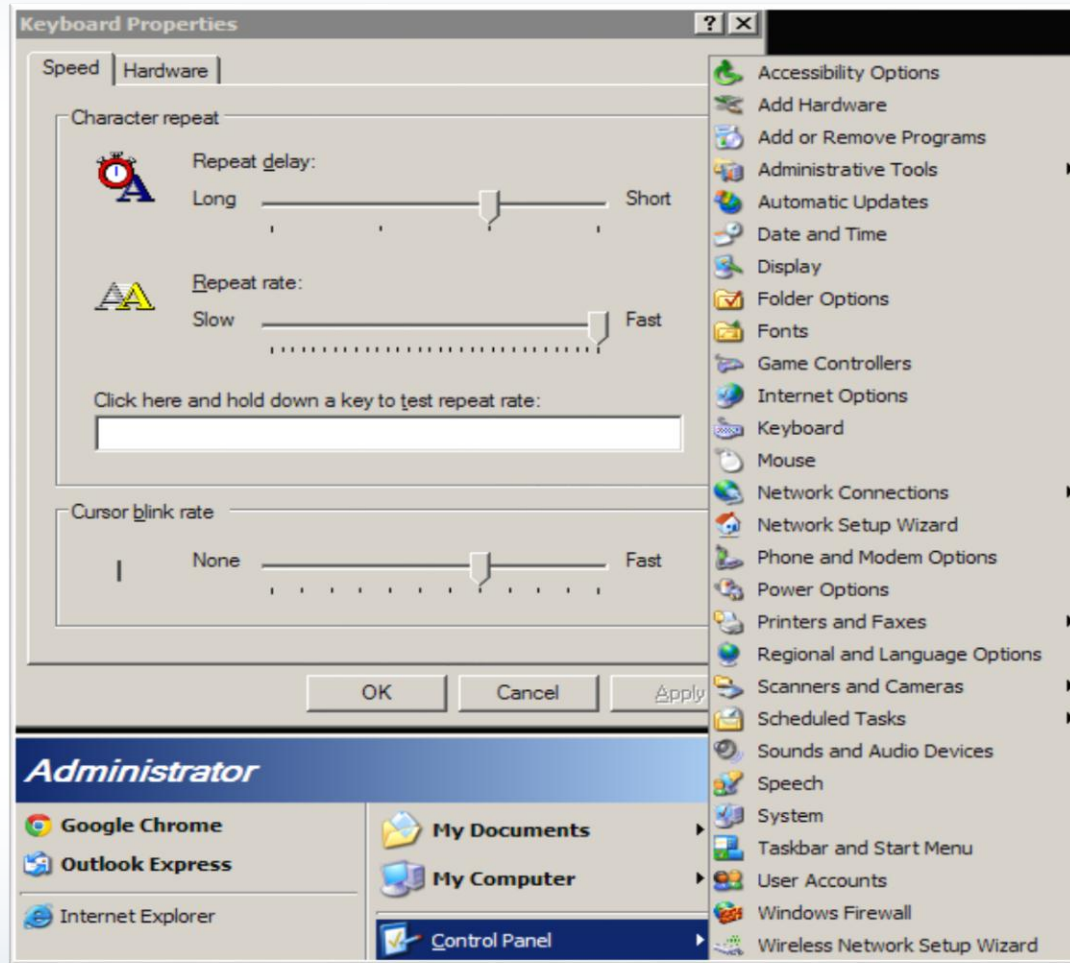


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Windows 7



Windows XP





THANK YOU
