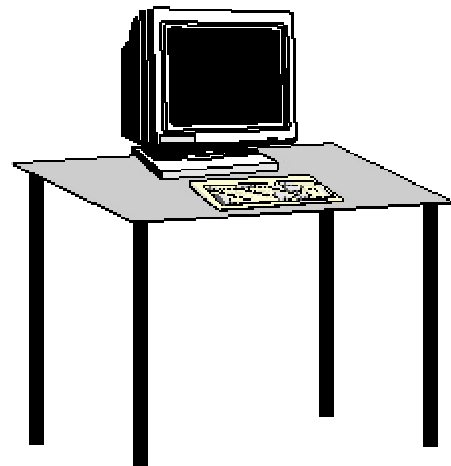
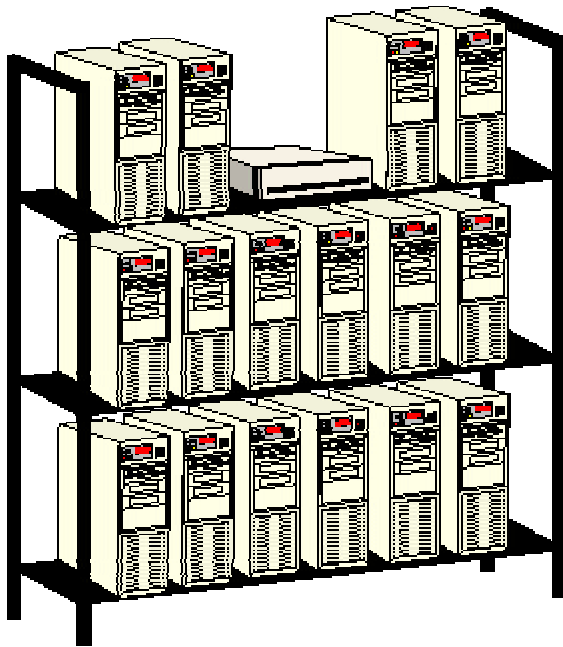
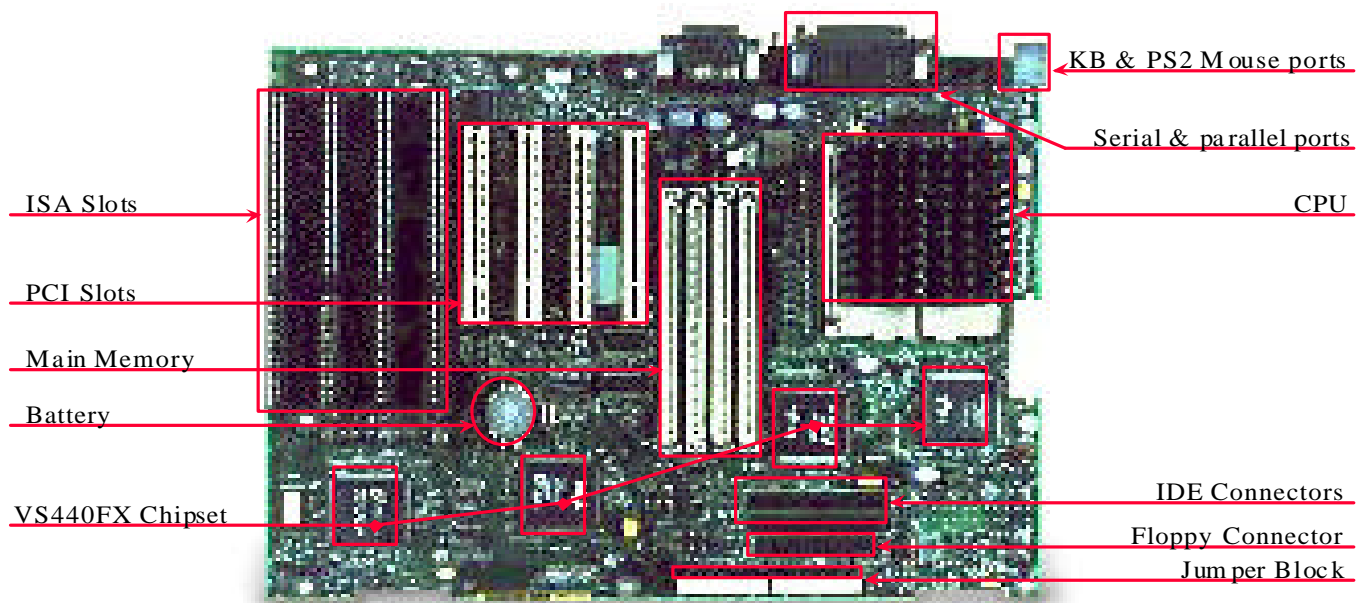


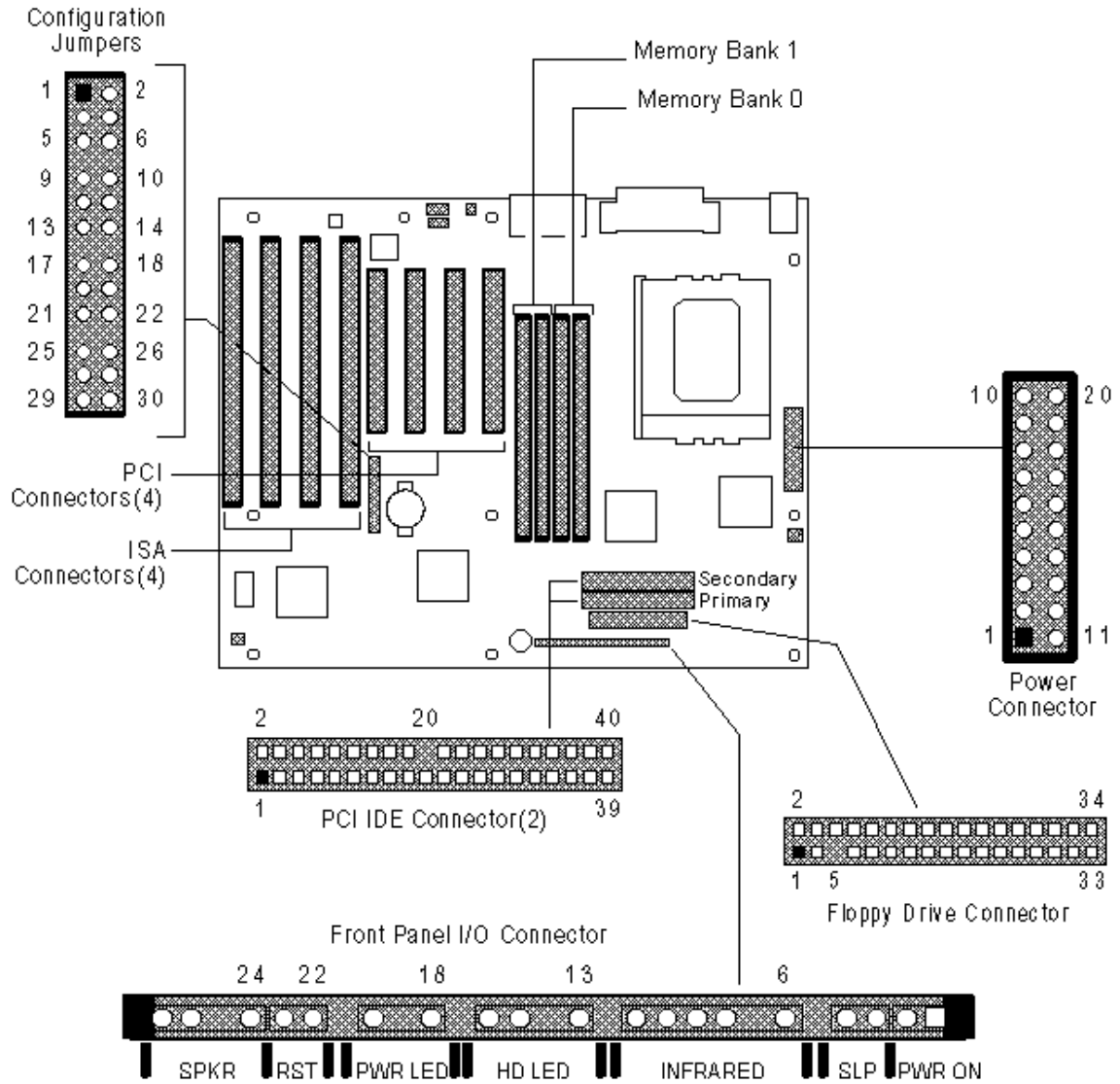
BITS AND PIECES



Pentium Pro Motherboard



MOTHERBOARD JUMPERS and CONNECTORS



CASE

ATX or AT style, depending on the motherboard.

Desktop or Tower

Desktop cases could be stacked for space considerations.

Tower cases usually have more space inside for drives, option cards, etc.

POWER SUPPLY

Usually comes packaged with the case.

230 watt should be viewed as a minimum rating

Power supplies for an ATX motherboard are not usable with an AT style motherboard because of difference in the power connectors

MOTHERBOARD

- CPU type and speed.
 - Alpha 366/433/500 MHz
 - Pentium Pro 166/180/200 MHz
 - Pentium 75/100/120/133/150/166/200 MHz
- Chipset (the specialized chips that control the memory, cache, external buses, and some peripheral devices)
- Secondary cache type
 - Built into the Pentium Pro, either 256k or 512k
 - Other CPUs have the cache on the motherboard, usually either 256k or 512k
- Types of slots (bus): ISA or PCI slots
 - ISA was the original AT 16 bit bus, basically low speed
 - PCI - high speed bus used by high performance adapters
- Number of bus slots
 - Pentium class motherboards usually have a mix of 3-4 ISA slots and 3-4 PCI slots
 - so that you can mix adapter types in the same system
- Type of memory (EDO, SDRAM, parity, ECC, etc.)
 - Number of memory sockets and maximum amount of memory
- BIOS
 - EPROM or Flash, flash BIOS's are upgradeable without opening up the PC
- Built in options
 - IDE interface (most Pentium and Pentium Pro motherboards have this built in)
 - Floppy interface (most Pentium and Pentium Pro motherboards have this built in)
 - COM ports (most Pentium and Pentium Pro motherboards have this built in)
 - SCSI (nice if you want a lot of disk space)
 - Video (could be a good idea in a cluster of PCs, no need to plug in a separate card)

MOTHERBOARD, continued

- Manufacturers (not exhaustive)
 - American Megatrends (AMI) - <http://www.megatrends.com/>
 - Acer - <http://www.acer.com>
 - Alpha Products - <http://www.dcginc.com/alpha.htm>
<http://www.carrera.com>
<http://www.aspsys.com>
 - AMD - <http://www.amd.com/html/overview/corppr/9619.html>
 - Amptron - <http://users.deltanet.com/users/amptron/prod.html>
 - Biostar - <http://slf.gweep.net/~sfoskett/hardware/mb8433uud.html>
 - Freetech - <http://www.freetech.com/>
 - Genoa - <http://www.genoasys.com/>
 - Intel - <http://developer.intel.com/design/motherbd/>
 - Micronics - <http://www.micronics.com/>
 - Microstar - <http://www.msi.com.tw/>
 - OPTi - <http://www.opti.com/>
 - Shuttle - <http://www.shuttlegroup.com/>
 - SuperMicro - <http://www.supermicro.com/>
 - Tyan - <http://www.tyan.com/>
 - Vextrec - <http://www.vextrec.com/>

CPU's

- For Pentium motherboards, you can choose Intel, Cyrix (or IBM) 6x86, or AMD K5 chips
- Manufacturers (not exhaustive)
 - AMD - <http://www.amd.com/>
 - Cyrix - <http://www.cyrix.com/>
 - Intel - <http://www.intel.com/intel/product/index.htm>
 - Sparc - <http://www.sparc.com/>
 - Alpha - <http://www.digital.com/>

MEMORY (RAM)

- Pentium and Pentium Pro motherboards have to have memory installed in pairs
- Get the densest package you can (buy two 16 MB SIMM's instead of four 8 MB SIMM's)
- Minimum 60 ns speed
- Pentium II machines general need SDRAM.

HARD DISK

- IDE
 - Cheaper
 - Most Pentium class motherboards have the controller built in
 - Performance can be as good as SCSI in smaller systems
- SCSI
 - The way to go if you want to hang a lot of disks on each node
 - Larger capacity offered
- Seek times
 - The lower the number, the better the seek time. 12 ms is good.
- Rotational speed
 - The higher the number, the faster the media is spinning, which in turn mean take less time for any given physical location on the media to get under the read/write head for access, thus reducing latency.
- Buffer
 - A memory cache on the drive itself, helps performance by placing recent data in fast-access memory
- Size
 - Obviously you can put more drives in a given amount of space if they are smaller. The 3.5 inch form factor is pretty much standard

HARD DISK (continued)

- Manufacturers (not exhaustive)
 - Fujitsu - <http://www.fujitsu.com/>
 - Hitachi - <http://www.hitachi.com/Products/>
 - IBM - <http://www.almaden.ibm.com/storage/>
 - Iomega - <http://www.iomega.com/>
 - JVC - <http://www.jvcservice.com/>
 - Maxtor - <http://www.maxtor.com/>
 - Micropolis - <http://www.microp.com/>
 - Paasonic - <http://www.panasonic.com/>
 - Quantum - <http://www.quantum.com/>
 - Seagate - <http://www.seagate.com/>
 - Storage Tek - <http://www.stortek.com/>
 - Syquest - <http://www.syquest.com/>
 - Teac - <http://www.teac.com/>
 - Western Digital - <http://www.wdc.com/>
 - Winchester - <http://www.winsys.com/>

FLOPPY DISK

- Only necessary to load software on the first system. All others can be cloned off of the first hard disk
- The 1.44 MB disk drive is necessary for booting and file portability
- The 2.88 MB drives/media are more expensive and hardly worth the change
- Controller usually built into Pentium class motherboards

VIDEO

- Only necessary to do the initial CMOS setup, after that the bootup can be automate. Some BIOS's need to be setup not to halt on the error that may be generated if there video card installed
- Resolution is determined by the amount of video ram installed on the card. High re cards can have 4 - 8 Mb of video ram
- Video Speed is determined by the Video accelerator functions built into the card
- Is a video card necessary on each node?
 - If low resolution (text) is all that is necessary, use a cheap ISA or integrated VGA control 256k or 512k of video ram on the card
- Manufacturers (not exhaustive)
 - ATI - <http://www.atitech.ca/drivers/drivers.html>
 - Avance - <http://www.avance.com/>
 - Chips & Technologies - <http://www.chips.com/>
 - Cirrus Logic - <http://www.cirrus.com/>
 - Diamond Multimedia - <http://www.diamondmm.com/>
 - Genoa - <http://www.genoasys.com/>
 - Hercules - <http://www.hercules.com/>
 - Matrox - <http://www.matrox.com>
 - Number Nine - <http://www.nine.com>
 - S3 - <http://www.s3.com/>
 - Trident - <http://www.tridentmicro.com/>
 - Tseng Labs - <http://www.tridentmicro.com/>

MONITOR

- For hi- resolution activities, get a 19 or 21 inch with at least .25 mm dot pitch. The smaller the dot pitch, the finer the that the monitor can display clearly
- For text only, you can get by with a 15 or 17 inch
- Get digital controls, not analog
- Manufacturers (not exhaustive)
 - CTX - <http://www.ctxintl.com/>
 - Hitachi - <http://www.hitachi.com/>
 - Hyundai - <http://www.hea.com/products/monitors/>
 - MAG - <http://www.maginnovation.com/>
 - NEC - <http://webserver.nectech.com/textgraph/tocmon.htm>
 - Nokia - <http://www.nokia.com/products/monitors/index.htm>
 - Panasonic - <http://www.panasonic.com/>
 - Samsung - <http://www.sec.samsung.co.kr/>
 - Sony - <http://www1.it.sony.com/>
 - Viewsonic - <http://www.viewsonic.com/>

KEYBOARD

- Only necessary to do the initial CMOS setup, after that the bootup can be automated. Some BIOS's need to be setup not to halt on the error that may be generated if there is no keyboard installed
- Most aftermarket keyboards have the standard AT style 5 pin large DIN connector, the Pentium Pro motherboards usually have the PS2 style mini-DIN socket on the motherboard, so it is necessary to get a short adapter cable to mate them

CD-ROM

- Useful for installing software packages
- Speeds measured against original single speed (1X) drives: higher the number, faster the access time (similar to hard disk but focused laser is the pickup) get an 8X or higher.
- IDE or SCSI
 - SCSI is more expensive, and performance isn't really an issue anyway since the access times for a CD-ROM is much higher than for a hard disk, so get an IDE.
- Manufacturers (not exhaustive)
 - Hitachi - <http://www.hitachi.com/Products/Comprod/Cdrom/cdrom.l>
 - Panasonic - http://www.panasonic.com/PCSC/PCPC/multimedia/pd_to
 - Teac - <http://www.teac.com/dsp/dsp.html>

MICE

- Useful if one or more of the nodes will be running GUI
- Serial or PS2
- Serial mice plug into a serial port, very common most systems have a serial port available
- PS2 mice use a special port that is available on most systems. Most Pentium Pro systems have this, and frees up a serial port for other uses.
- Manufacturers (not exhaustive)
- Logitech - <http://www.logitech.com/>
- Microsoft - <http://www.microsoft.com/>

SOUND

- Internal integrated sound hardware can be purchased with the motherboard, but you are usually limited to Sound Blaster 16 emulation
- Purchasing an add-on card opens up more possibilities, but takes up a slot
- Manufacturers (not exhaustive)
- Creative Labs - <http://www.creaf.com/>
- Multimedia Labs - <http://204.174.94.120/business/lifestyle/ahome.htm>

NETWORK INTERFACE CARD

- 10 Base-2
 - Coaxial cable – RG/58U type
 - Cable must be terminated at both ends and loops through all nodes
- 10 Base-T
 - Multi stranded cable similar (but NOT the same) as telephone cable
 - Cluster Topology
 - A switch is necessary to route messages from one node to another, if each node is to be able to communicate with each other node
 - » A switch can be eliminated if a different topology can be used
 - » As an example, an 8 node Hypercube could be implemented with 3 NI nodes and special crossover cables.
- 100 Base-T
 - Similar to 10 Base-T, but requires CAT 5 cable specification
 - Cluster Topology – see 10 Base -T
- Manufacturers (not exhaustive)
 - D-Link - <http://www.dlink.com/>
 - Intel - <http://www.intel.com/>
 - 3Com - <http://www.3com.com/>
 - National Semiconductor - <http://www.national.com/>
 - Novell - <http://www.novell.com/>