1. Synergy – Individual components are designed to work together in such a way that overall performance is enhanced beyond the performance of each component.
2. Virtualization – An individual computer system is used to simulate multiple computers, all sharing the same CPU and I/O facilities.
3. Virtual computers – What those machines are called.
4. Five basic components involved between the CPU, memory and I/O peripherals:
   1. CPU(s)
   2. I/O devices
   3. Memory
   4. I/O modules
   5. Buses
5. System bus – connects through one or more bus interface circuits to a number of different interconnected buses. Also known as Front Side Bus. Primary interface with the CPU.
6. Open Architectures – A standards system that simplifies the purchase, setup and proper operation of peripherals from multiple vendors.
7. Motherboard – The CPU, memory, and other major components are mounted to wiring on this printed circuit board. The wiring on the motherboard interconnects all of the peripheral cards that are plugged in to connectors, together with circuitry that steers I/O to the CPU and memory.
8. Backplane – In general, that’s what it’s known as. (Ex. PCI-Express bus)
9. Burst – The PCI bus is designed to transfer several pieces of data in a rapid sequence.
10. Device Drivers – Specific device control is built into a controller within some devices and into the computer software programs that control I/O from these devices.
11. USB, SCSI, SATA, IEEE 1394 buses
    1. USB – Universal Serial Bus
    2. Small Computer System Interface
    3. Serial Advanced Technology Attachment
    4. IEEE 1394 is more commonly called FireWire.
12. Hubs – Used to provide multiple connection points for I/O devices.
13. Isochronous data transfer – USB transfers data in packets. Each packet contains a device identifier and a small set of data. A single device cannot tie up the system. USB protocol allows packets to be scheduled for delivery at regular time intervals.
14. USB information –
    1. Supports 127 devices
    2. Two lines make up a single data pair to carry the data. The other two lines provide power to devices connected to the buses.
15. FireWire information –
    1. Serial, multipoint bus specification. Designed for extremely fast data transfer. 3.2 Gigabits per second. Fiber optic cable or copper. Each segment of the bus can handle up to 63 devices.
16. SCSI information –
    1. Rarely found on current PCs. Still in use on larger computer systems. SCSI devices include disk drives, optical drives, tape drives, scanners and other I/O devices. “Daisy-chained.”
17. Channel Subsystem – Channel architecture is based on separate I/O processors known as channel subsystem.
18. Channel Control Words – Channel subsystem’s own set of instructions.
19. Subchannels – Each of which is connected through a control unit module to an individual device by one or more channel paths. Up to eight different channels can exist per I/O device.
20. Loosely coupled systems – Each computer is complete in itself, each with its own CPU, memory, and I/O facilities. Data communications provide the link between the different computers. Also known as multicomputer systems.
21. Clustered computers – connected directly together with a dedicated communication channel.
22. Networked computers – Data communication channel between machines is used to exchanged and share data to external resources.
23. Cluster – Group of loosely coupled computers configured to work together as a unit.
24. Node – what each computer is called in a cluster.
25. Clustering –
    1. Used to increase the available computing power by combining the power of the individual systems.
    2. Used to create fault tolerant systems.
    3. Used to create high-availability systems.
    4. Used for load-balancing systems with large workloads.
26. Failover – Software controlling the cluster can simply switch processing to other nodes in the cluster when things go wrong.
27. Shared-nothing and Shared-disk
    1. Primary models used for clustering
    2. Shared-nothing model bears resemblance to point-to-point network connection between two computers. Difference is high-speed messaging link between the nodes.
    3. Shared-disk model data may be shared between cluster nodes because of the presence of disks that are accessible to every node.
28. Beowulf clusters – simple, highly configurable clusters designed to provide high performance at low cost.
29. COTS (commodity-off-the-shelf) – simply inexpensive computers connected together to form a Beowulf cluster.
30. Blade –components are computers mounted on a board that can be plugged into connectors on a rack, I much the same way peripheral cards are plugged into a PC motherboard.
31. Supercomputing – field of high-performance computing which arose in an attempt to meet the challenge of solving difficult problems that require massive amounts of computing power.
32. Grid computing – Each computer is given a small portion of the task to process in its spare time.