



Part II – IT Infrastructure (Computer Hardware)

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DCS

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Management Information Systems (MIS)

Things to discuss

Three Major Areas

**IT Infrastructure:
Hardware and Software**
**Foundation of Business
Intelligence: Databases
and Information
Management**
**Securing Information
Systems**

IT Infrastructure → Hardware & Software

- ★ American businesses spend about \$2 trillion every year on computing and information systems.
 - Businesses require a wide variety of computing equipment, software, and communications capabilities simply to operate and solve basic business problems.
 - ⦿ Computers are available, including desktops, laptops, and handhelds.



Computer Hardware

- ★ Do your employees travel or do some work from home?
 - You will want to equip them with laptop computers (over half the computers sold in the U.S. are laptops).
 - If you are employed by a medium to large business, you will also need larger server computers, perhaps an entire data center or server farm with hundreds or even thousands of servers.
 - ◎ Google, for instance, is able to answer 300 million queries a day in the United States, most within one second, by using a massive network of over 1 million PC servers linked together to spread the workload.



Networks and Communications

- ★ In addition you will probably want several networks:
 - a local-area network connecting employees in your office,
 - and remote access capabilities so employees can share e-mail and computer files while they are out of the office.
 - You will also want all your employees to have access to landline phone systems, cell phone networks, and the Internet.
 - ⦿ Finally, to make all this equipment and software work pleasantly, you will also need the services of trained people to help you run and manage this technology

IT Infrastructure Components



Computer Hardware → Types of Computers

- ★ Computers come in an array of sizes with differing capabilities for processing information, from the smallest handheld devices to the largest mainframes and supercomputers.
 - Personal computer
 - Work station
 - Server
 - Mainframe
 - Super Computer
 - Grid Computing
 - Cloud Computing

Computer Networks and Client Server Computing

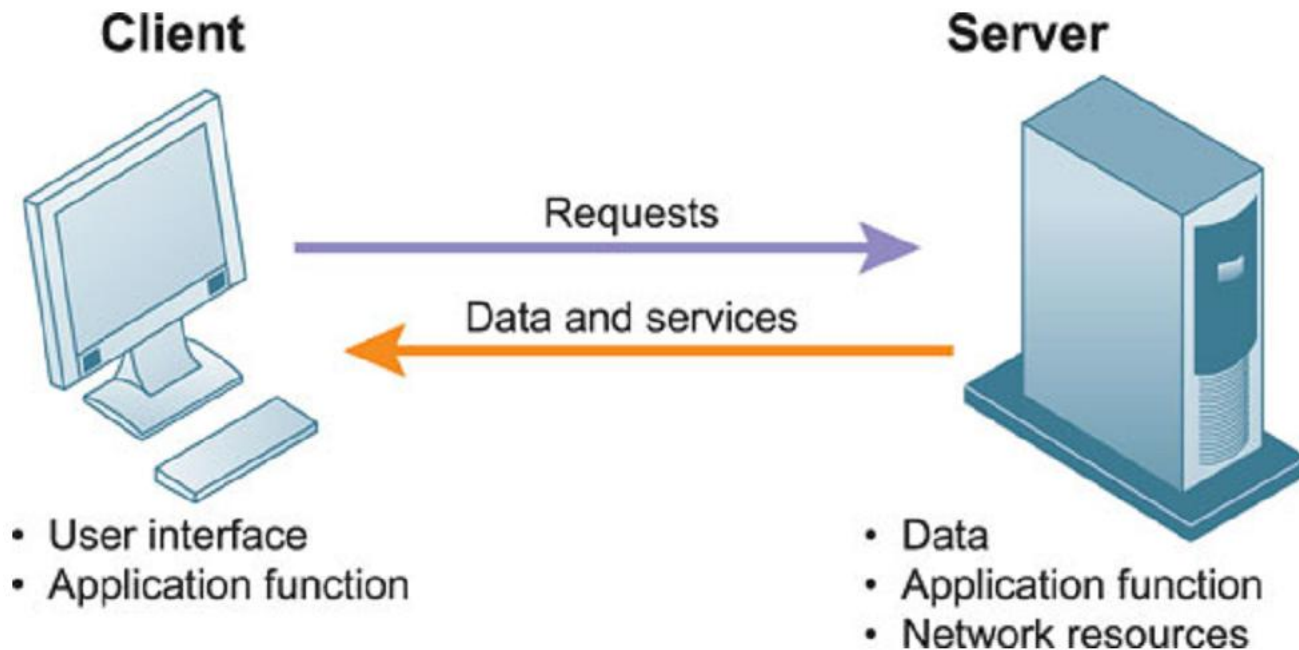
- ★ Connecting computers with each for sharing hardware and software resources, this is done through computer networks.
 - For small business,
 - ⊙ Network computers will be used for most of the processing.
 - Distributed processing
 - ⊙ The use of multiple computers linked by a communications network for processing.
 - Centralized Processing
 - ⊙ All processing is accomplished by one large central computer

Computer Networks and Client Server Computing

★ Client/Server Computing

- Client/server computing splits processing between "clients" and "servers."
- Both are on the network, but each machine is assigned functions it is best suited to perform.
- The **client** is the user point of entry for the required function and is normally a desktop or laptop computer.

Client/Server Computing



★ Web server

- Will serve a Web page to a client in response to a request for service.
- Web server software is responsible for locating and managing stored Web pages.
 - ⦿ For example, APACHI, MS IIS, IBM Lotus, lighttpd etc.

★ Application Server

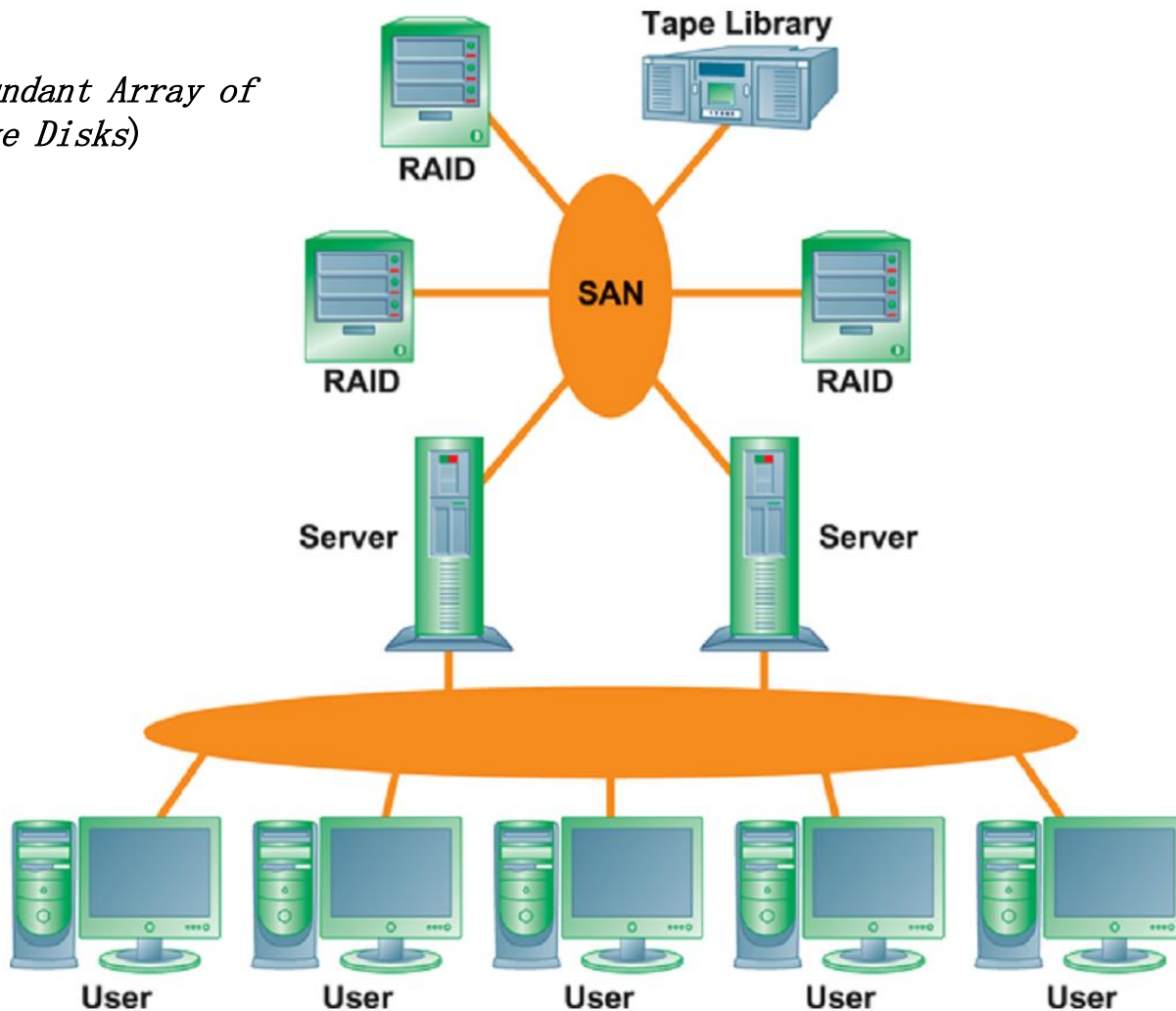
- Software handles all application operations between a user and an organization's back-end business systems.
 - ⦿ The application server may reside on the same computer as the Web server or on its own dedicated computer.
 - ⦿ For example Tomcat, jetty, jboss, resin etc.

Storage, Input and Output Technology

- ★ Storage and input and output devices are called *peripheral devices* because they are outside the main computer system unit.
 - The amount of data that companies now need to store is doubling every 12 to 18 months.
 - The principal storage technologies are
 - Magnetic Disks
 - ∩ Hard Drives, SSD, Flash Drives
 - Optical Disc
 - ∩ CDs, DVDs
 - Magnetic tape
 - ∩ Sequential Data Storage, VCR Cassettes
 - Storage networks
 - ∩ SAN (Storage Area Networks) → RAID



RAID (Redundant Array of Inexpensive Disks)



Input and Output Devices

- ★ Human beings interact with computer systems largely through input and output devices.
 - Input devices
 - ⊙ Gather data and convert them into electronic form for use by the computer.
 - ↷ Keyboard, Computer Mouse, Touch Screen, OCR (Optical Character Recognition) → BarCode, Magnetic Ink Character Recognition (MICR), Pen Based Input→Electronic Stylus, Pen Based Input, Digital Scanner, Audio Input, Sensors etc.
 - Output devices
 - ⊙ Display data after they have been processed.
 - ↷ Monitors, printers, Audio Output.

Cloud Computing

- ★ **Cloud Computing** refers to a model of computing in which firms and individuals obtain computing resources and software applications over the Internet (also referred to as “the cloud”).
 - Thousands or even hundreds of thousands computers are located in cloud data centers, where they can be accessed by desktop computers, notebooks, entertainment centers, mobile devices, and other client machines linked to the Internet.

Cloud Computing

- ★ IBM, HP, Sun Microsystems, Dell, and Amazon operate huge, scalable cloud computing centers that provide both
 - computing power, data storage, and high-speed Internet connections to firms that want to maintain their IT infrastructures remotely.
- ★ Software firms such as
 - Google, Microsoft, SAP, Oracle, and Salesforce.com sell software applications as services delivered over the Internet.

- ★ Three main type of services
 - IaaS
 - ⊙ Infrastructure as a Service
 - PaaS
 - ⊙ Platform as a service
 - SaaS
 - ⊙ Software as a service

