

Chapter 3 - Networking and Group Computing

History of Networks

Networking is not a recent phenomenon. Universities and governments have been networking for decades. What is new is that since the availability of the desktop computer in the early 1980's, the value of networking is available to everyone.

The history of computers and networks has evolved from huge mainframe computers that were not networked to small laptops that can be networked and connected to any other computer in the world. With the emergence of the PC, networks have become commonplace. The invasion of the PC's surprised data processing departments who lost control of the computing power in companies. Now users can take data from the mainframes or minicomputers and manipulate the data in productive ways on their own computers. Almost overnight, data processing departments lost their presence and power in companies. Data processing departments are referred to as MIS (Management Information Services), IT (Information Technology), or some name with the word INFORMATION in it. New names are starting to appear with the word KNOWLEDGE included in the title, such as Chief Knowledge Officer.

The first networking systems were called "sneaker net". This name implied that to share files, one had to physically put on sneakers and carry a file on a floppy to a different computer.

One of the first hardware sharing devices was the "data switch", which allowed several computers to share a single printer. The first networked applications were client based. This meant that an application program, such as Microsoft Access™, generally resided on the client or user PC. When the user activated the application, then the server would transfer the sometimes-complete data file to the user computer for the user to work with the data. This resulted in delayed searches and the network system would slow down when used by many users. To solve this problem, applications have been developed - called client/server applications - where the server does all the computing and the results are sent back to the user. This is similar to the original mainframe-computing environment. The system has been met with acceptance because performance is better and more cost effective, since the server can be expensive, and not each individual computer. Also, your data is better protected since only the results of your search are sent to your computer and not the whole computer file. Although it has become feasible to provide virtually every office worker with a PC, it is more cost-effective for PC users to share files and common peripherals such as printers, facsimile boards, modems, and scanners.

The downside of client/server systems is the maintenance cost due to the complexity of client/server systems and the expense of the server. The argument for the changeover from the mainframe to PC was the concept of distributive computing. This fancy term means that individual PC's could run programs and not have to share the programs or processing power of the mainframe. Thus, the argument goes that it gives individual computing power to the individual PC user and small departments. This distributive computing argument was successful, and we have seen a huge implementation of networking systems in companies across the country. One PC server may have 5, 10, 100, or higher number of other computers connected to it. With this distributed computing came the problems of software upgrades, maintenance, systems operators, network administrators, and a huge support cast for this new "productivity" tool. Also, each computing group has special needs that are often met by using off the shelf software and "end user" programming to control the information they need.

The local area network (LAN) was created in response to the need for a standardized system of linking computers together in a company. Installing cables that connect each computer to the network is still the most common linking method, but other means are being explored, such as the use of infrared radiation, radio frequency waves, and, as the conducting medium, a building's electrical wiring system. The evolution of networking has evolved into two primary types of distributive computing, client/server and peer-to-peer networking.