Networking

Networking is all about sharing—data, software, and peripherals such as printers, modems, fax machines, tape drives, hard disks and other data storage equipment—among a group of computers. A network can be as small as two computers linked by cable or so large that it connects hundreds of computers and peripherals in various configurations.

Why Do I Need a Network?

A network saves time and money, by enabling employees to communicate and share information. It cuts costs further by eliminating the need for extra printers, modems, and file storage; on a network, all of this technology can be shared. Even an outside line for Internet access can be shared over the network.

Network Glossary

Although we recommend trying understand basic theory of networks instead of acronyms, here is a glossary of terms used throughout this web site. Click here to go to the glossary.

Network Layout

Network layout (also called "topology") refers to the physical design of a network. There are three basic layouts: star, bus and ring. Star and bus, the most common layouts for local area networks (LANs), are described below.

Star layout
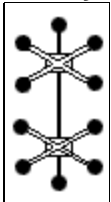
 As its name implies, this layout resembles a star. At the center of each star is a hub or switch that connects directly to each node via a thin, flexible cable (such as 10BASE-T cable). One end of the cable plugs into the connector on the network adapter card; the other is connected directly to the hub or switch.

Installing a star layout is simple, inexpensive and fast because of the flexible cable and the modular connector. The number of hubs you can add to a network is limited, but a star layout can support as many as 1,024 nodes. The star layout can operate as an independent workgroup or it can be connected to other workgroups to form a larger network.

Bus Layout
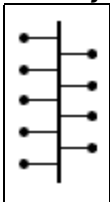
 The bus layout connects all computers in the workgroup or network in a single line on a single cable. The data signal is transmitted to the entire population on the cable.

A single coaxial (coax) cable is used to connect all pieces of the network. A barrel connector (BNC) is attached to each network adapter card. This allows the cable to connect directly to each computer, then on to the next computer, attaching to the hub's BNC (coax) connector when a hub is used (a hub is not required).

Network Configurations

There are two types of configurations you can implement using the star or bus layout: peer-to-peer and client/server.

Peer-to-Peer Network
In a peer-to-peer network configuration, computers and peripherals are connected directly to one another. Each computer on the network has its own hard drive. All networked computers may share a CD-ROM drive, tape backup system and one

or more printers. Each node has the ability to talk directly to the node that has the information or service it needs, so resources can be shared within the network.

Client/Server Network
In a star layout, the server is the principal connection point. All nodes, including the server, are connected to a hub. This enables the server to house and administer software, file sharing, file saving, and to allocate printers, fax machines, modems and other communication connections.

In a bus layout, the server acts as an arbitrator. Each node talks to the server when requesting information. The server then locates the information, either internally or on one of the connected clients, and sends it to the requesting client.

Network Components

A variety of equipment can be used to build a network.

Network Adapter Cards (also called Network Interface Cards or NICs) provide the link between your computer and your network, converting data from your computer into a format that an Ethernet network can accept. ("Ethernet" refers to the most common set of standards for networking equipment.)

Hubs (also called wiring hubs or concentrators) are the central connectivity point in a star workgroup. A hub allows each node to communicate with all other connected nodes. Two or more hubs can be connected, allowing you to expand your network easily and inexpensively.

A **server** is a low- or high-capacity computer that provides various resources to the network. A typical server contains several hard disk drives, a tape backup and a CD-ROM drive. It enables employees to share resources such as printers, fax machines, modems, e-mail and Internet connections. Servers are often used to store database information, files and file backups. Computers connected to the server are called "clients."

A **print server** provides the same connectivity for a printer that a network adapter card provides for a computer. It enables all computers on the network to share the same printer. Print servers are often a basic component of client/server networks.

Communication products include fax cards, modems and routers that allow for Internet connections. All of these products enable you to communicate with computers that are not on your local area network (LAN).

A **network operating system**, or NOS, enables computers and components of the network to communicate with one another. The NOS can range from simple software features built into Windows* 95 to more complicated systems such as Novell IntraNetWare* or Microsoft Windows NT*.

How to Get Started

Typically a company decides to install its first network because of a need to share files, programs and printers among a few computers. Such basic networks are inexpensive and easy to set up. Just give PCX a call and we'll help you with your needs. (504) 566-7600

Expanding Your Network

As your business grows, your network can expand to meet its new demands. PCX help you build on your basic equipment rather than starting from scratch each time you add to the network. For example, you can expand a peer-to-peer network by adding a hub. Or you can transform it into a client/server network by adding a server and more powerful and manageable network operating system. Either way, the flexible, modular nature of networking makes it easy for small businesses like yours to "get connected."

Definition	Local Area Network (LAN)	A network in a localized (not remote) location that allows users to share information, equipment and resources.

Node	A server, computer, printer, modem, fax machine, auxiliary hard drive or other equipment that is connected to the network device.
Hub	Device whose primary function is to send and receive signals along the network between the nodes connected to it.
10BASE-T Cable	A popular Ethernet cable system using twisted-pair wiring with RJ-45 plugs at each end. Category 3 10BASE-T cable is used with standard 10Mbps Ethernet networks. Category 5 cable is used with either 10Mbps Ethernet or higher-performance 100Mbps Ethernet.
Mbps	Millions of bits per second, or the amount of data that travels across the cable in 1 second.
Workgroup	Nodes connected to a hub to form a small communication grouping for the purposes of networking.
Coax	Cable that *resembles* TV or antenna cabling, but is rated for network use.