

Networking Basics - General

Networking is defined as connecting computers so they can communicate with each other as well as share resources and peripheral devices.

The driving reasons companies network computers include the desire to:

- Access, save, share, and backup data files in a central location.
- Share peripheral devices including: printers, scanners, faxes, and modems.
- Control access to sensitive information.

Networking technology consists of hardware and software components.

The primary hardware components are the NIC (Network Interface Card) and the wiring that connects the population of the network to each other.

The NOS, (Network Operating System), is the software component that enables communications over the network's hardware.

At the most basic level, anything you can physically touch is hardware (i.e. a computer, a floppy disk, cables, printers, circuit boards).

Software on the other hand, is a little more intangible. Software will always live on hardware but you never touch it directly. For example, the floppy disk, hard drive, or backup tape you might have is **hardware**; the program/data stored on the floppy disk, hard drive, or backup tape is **software**.

Hardware

The network interface card (NIC) is typically a circuit board installed in a computer. There are also models that can be attached externally like the XIRCOM pocket ethernet adapters. (XIRCOM is a reliable brand name, but there are other manufacturers of possibly equal quality). An external network card will either attach to a serial or parallel port of the computer.

Wiring, or network cabling, physically links the nodes or components of the network to each other.

Network cabling will normally follow one of two wiring topology schemes – a star network topology or a linear-bus topology. Each topology has its strengths.

A star network has great advantages over a linear-bus network in terms of fault tolerance and modularity. Many small offices get a quick and dirty start in networking by installing a linear-bus topology network. This is largely due to the fact that the network wiring can be laid across the floor, behind desks and cabinets, making installation cheaper and permission from landlords to run wiring unnecessary.

As a network grows, it often changes to a star topology - as expanding the linear-bus wiring becomes problematic. **The star topology is much more common than the linear-bus topology, especially in new installations.**

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Software

A network operating system, (NOS), expands the resources of a computer by creating virtual connections to physically remote hardware and software.

For example, a user may sit at their desk and be able to print to printer, photocopier, or fax that they have no direct physical connection to. Likewise, the same user may have access to accounting software that lives on a fileserver, (read fileserver as centrally shared computer), many feet or even miles away from their desk.

A NOS accomplishes this by convincing the computer it has a direct connection to these remote resources. The computer is convinced by the creation of ‘mappings’ that establish a virtual connection to the remote device, mimicking a physical connection to the device.

Potentially, a networked user will have access to every printer or peripheral device on a network and every megabyte of central storage space on the file servers.

For example, a user on a Novell Netware network will, in addition to their ‘local’ A: and C: drives, have an F:, G:, H:, etc..... drive. These ‘remote’ drives (F:, G:, H:, etc...) will be virtual drive mappings to remote resources. Likewise, their printer ports are not limited to local hardware and may be ‘mapped’ to network printing devices.