

What Do I Need To Install A LAN?

A LAN (local area network) is a network that links together computers and other devices at an office, within a building, or among buildings on a campus. LANs are built with three components:

Network Interface Cards (NICs)

To enable computers, printers or other devices to talk to one another on a LAN, each requires a NIC. This relatively inexpensive device fits into a computer's expansion slot and provides the physical connection for the network's cabling and the intelligence that allows computers and printers on the LAN to communicate with each other. Some computers and printers come standard with NICs. NICs are easy to install and require no ongoing administration. For notebook/laptop computers, there are PC Card versions.

Ethernet NICs connect computers at 10 Mbps (megabits per second) speeds. Fast Ethernet NICs connect computers at 100 Mbps speeds.

Dual-speed 10/100 Mbps NICs are "auto-sensing." They provide either speed, automatically adjusting to the speed of the network to which they are connected. As a result, 10/100 NICs offer strong investment protection because you can start with Ethernet speed and upgrade to Fast Ethernet without replacing the NICs in every computer, server or printer.

A Switch or Hub

A switch is the core of your network. A switch is a box to which your computers, printers and servers each connect, forming the network. Its purpose is to pass traffic, like messages and files, from senders to their destination(s), much like a telephone switchboard routes calls between telephones. They provide each user with dedicated bandwidth, or throughput, ensuring optimal networking performance.

Switches generally offer either Ethernet or Fast Ethernet speeds. Dual-speed switches provide both, offering flexibility if your computers have a combination of Ethernet and Fast Ethernet NICs.

Switches are more robust and efficient than hubs and deliver higher levels of networking performance. 3Com's latest generation of small business switches, for example, even support traffic prioritization. This capability ensures that time-sensitive applications, like streaming video or networked telephony, are delivered jitter-free to users. As your business grows and your network must support additional users or increasingly sophisticated applications, you eventually will deploy switches to ensure your network operates optimally.

Hubs serve the same purpose as switches – distributing network traffic. They are less costly and truly easy to operate. They are not as robust as switches, however. Users must share available bandwidth, which means if someone is sending a huge file over the network, others will have less bandwidth and network performance decreases.

Hubs also “broadcast” network traffic. A hub will forward all messaging to every device connected to it. Although only the intended destination computer(s) will be able to actually access the message, the broadcast results in unneeded network traffic that consumes bandwidth and degrades performance. Switches are far more efficient because they forward messaging only to the destination devices, reducing the amount of network traffic.

Switches and hubs simplify the cabling, or wiring, of your network by concentrating all cabling in a single location. Multiple switches and hubs can connect together to support more users as your business grows. They also reduce the points of failure in your network. In other words, when using a switch, your entire network won't crash if one computer fails. In networks without switches or hubs, where computers are connected directly to each other, a computer crash can crash the other computers on the network.

Switches, hubs and NICs are easy to install. Make sure you purchase switches and hubs that feature installation wizards. These wizards enable you to install them quickly and without technical expertise. NICs are easy to install and require no ongoing administration. Many computers and printers come standard with NICs.

Cabling

Cables are the wires that physically connect your computers, printers and other devices together and provide the infrastructure upon which your data will travel across your LAN. The proper cabling, correctly installed, is essential to an effective and reliable computer network.

There are basically two kinds of cables you can use for your network – coax and twisted pair. Coax resembles TV wire. It has the benefit of not requiring a hub and can be used to connect large numbers of computers together in a single “string.” But this configuration has its drawbacks; if one computer goes down, the whole network is down. It is also less flexible than newer twisted-pair cabling and does not support high-speed technologies.

Twisted pair is the most common type of network cable used today. It resembles the wire that connects your telephone to the wall jack and its connector looks like a phone jack as well. Twisted pair cables are low cost. They allow you to make additions and changes to the network easily, and can support high-speed technologies such as Fast Ethernet.

For investment protection, we strongly recommend that you install cabling that supports both Ethernet and Fast Ethernet speeds. Typically these are called 10Base-T or Cat-5 wiring. Cabling is one of the more difficult parts of your network to upgrade, so it makes good business sense to lay a foundation that will grow as your network needs do. As your business and its needs expand, you will be able to upgrade to Fast Ethernet performance without replacing your network's cables.

Can I install cabling myself?

Yes, depending on the complexity of your network and office space. If you are adding a few additional devices to an existing network or if you want to link a handful of devices within a single room into a LAN, you may want to install the cabling yourself.

If the installation involves many devices located in multiple rooms, you may want to have professionals do it for you. Remember, in addition to ensuring that your devices are properly connected to each other, you also want your cabling to be unobtrusive in your workspace. You may want to consult a professional network installer to help you evaluate your cabling requirements.