



ROBERT LEWIS TEACHING NETWORKING AND CONECTIVITY



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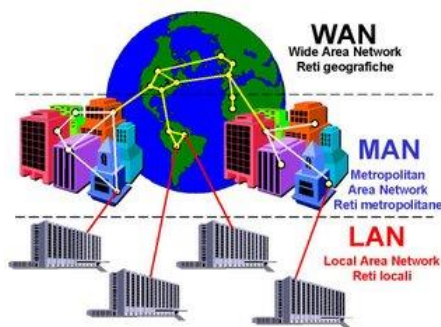
Understanding LAN and WAN

by Computer Village

LAN

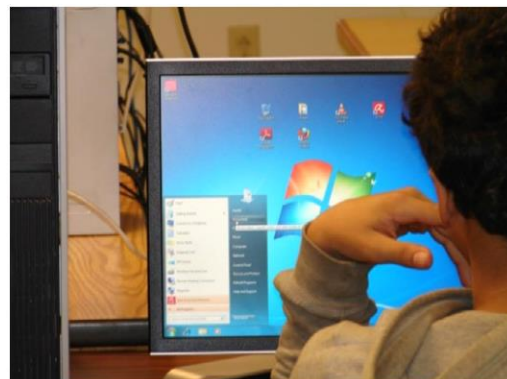
Stands for "Local Area Network," and is pronounced like "land" without the "d". (Computer people will think you're weird if you pronounce it "L-A-N"). A LAN is a computer network limited to a small area such as an office building, university, or even a residential home. Most mid to large-sized businesses today use LANs, which makes it easy for employees to share information. Currently, the most common type of LANs are Ethernet-based and use software from Novell or Oracle. However, with the emergence of wireless networking, wireless LANs has become a popular alternative.

You could even call the Internet a Super WAN BAM if you wanted to, or maybe not.



WAN

Stands for "Wide Area Network," it is similar to a Local Area Network (LAN), but it's a lot bigger. Unlike LANs, WANs are not limited to a single location. Many wide area networks span long distances via telephone lines, fiber optic cables, or satellite links. They can also be composed of smaller LANs that are interconnected. The Internet could be described as the biggest WAN in the world.



Setting up a Router

The class demonstrates how to set-up a router and its access points using ip address 192.168.1.1

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The Computer Village staff doing a question and answer session with the students.

What Do You Need to Create a Network?

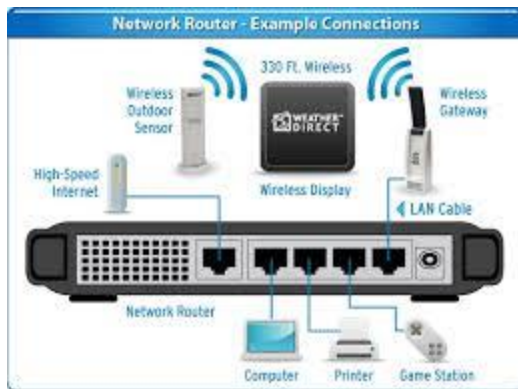
MODEMS



The word modem is actually short for Modulator/Demodulator.

(There's something you can really impress your friends with). A modem is a communications device that can be either internal or external to your computer. It allows one computer to connect another computer and transfer data over telephone lines. The original dial-up modems are becoming obsolete because of their slow speeds and are being replaced by the much faster cable and DSL modems.

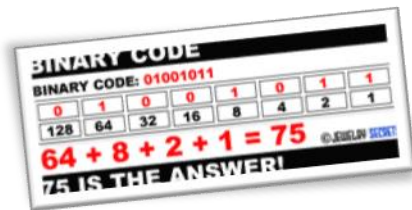
ROUTERS



This is a hardware device that routes data (hence the name) from a local area network (LAN) to another network connection. A router acts like a coin sorting machine, allowing only authorized machines to connect to other computer systems. Most routers also keep log files about the local network activity.

Gateways: A gateway is either hardware or software that acts as a bridge between two networks so that data can be transferred between a number of computers. For example, when you send an e-mail to a friend or when you log in to a Web site, there is a gateway that allows the connection take place. Often, your connection to a Web site will involve many smaller connections to other servers along the way. In these cases, a number of gateways are used. In a completely unrelated story, Gateway is also the name of a popular direct-order PC manufacturer.

BINARY



Binary is a two-digit (Base-2) numerical system, which computers use to store data and compute functions. The reason computers use the binary system is because digital switches inside the computer can only be set to either on or off, which are represented by a 1 or 0. Though the binary system consists of only ones and zeros, the two digits can be used to represent any number.

For example:

A single 0 in binary represents zero.

A single 1 represents (2^0) or 1.

10 represents (2^1) or 2.

11 represents ($2^1 + 2^0$) or 3.

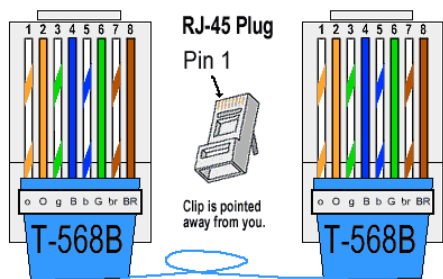
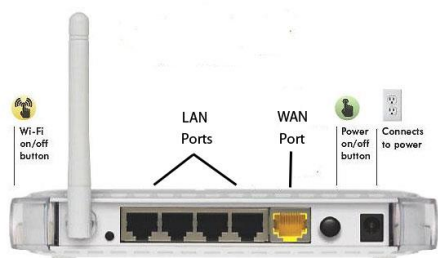
100 represents (2^2) or 4.

101 represents ($2^2 + 2^0$) or 5.

110 represents ($2^2 + 2^1$) or 6.

111 represents ($2^2 + 2^1 + 2^0$) or 7.

1000 represents (2^3) or 8, and so on.



Networking and Connectivity

During the week of January 12 thru 16 Computer Village in collaboration with the Juvenile Detention Center, taught an intermediate class on the subject of Networking and connectivity. This class was led by A+ certified instructors Robert Lewis and Darryl Richardson. Both instructors have a combined technology education of 40 plus years, inclusive of installation and instruction of networks.

The students covered these subjects during their 10 hour abbreviated course:

- What does a network consist of
- What is LAN, WAN and MAN
- The three primary components to understanding networks:
 - Physical Connections:
 - The physical components are the network topology and network connecting devices, which include network interface cards (NIC), cabling, connections, and all other hardware to connect the computers.
 - Network Operating System
 - In order to communicate on a network, computers must use the appropriate operating protocol selected for the network.
 - TCP/IP - Unix, Windows NT™ server, Linux, Internet products. (TCP/IP is the protocol being used on the Internet and for intranets)
 - Application Component
 - The value of networking lies in the capability of sharing up-to-date information, software and hardware resources with other users on the system.

Our students also installed a wired and wireless network inclusive of programming the router to be a repeater.