
بسم الله الرحمن الرحيم
In The Name Of Allah, The Most Beneficent, The Most Merciful

ROUTER


LINKSYS
2.4GHz
54g

Definition

A router is a computer networking device that forwards data packets toward their destinations through a process known as routing.

Explanation

- A router is a device that forwards data packets between computer network creating an overlay internetwork.

- A router is connected to two or more data lines from different networks. When a data packet comes in one of the lines, the router reads the address information in the packet to determine its ultimate destination.

- Then, using information in its routing table or routing policy, it directs the packet to the next network on its journey.

- Routers perform the "traffic directing" functions on the internet. A data packet is typically forwarded from one router to another through the networks that constitute the internetwork until it reaches its destination node

History (Cont…)

- The first broadband networks emerged in the later portion of the 1990's.The initial high speed offerings were centered around the cable industry and its associated high speed offerings through cable modems.
- ADSL technology predates the cable offerings of high speed access in the home and business, but it came to the commercial market approximately one to two years after the introduction of cable technologies in 1996.

- Router technology evolved parallel to the increase in bandwidth availability. As the technology improved, router cost was driven down at the same time that router manufacturers provided greater automation for router installation.

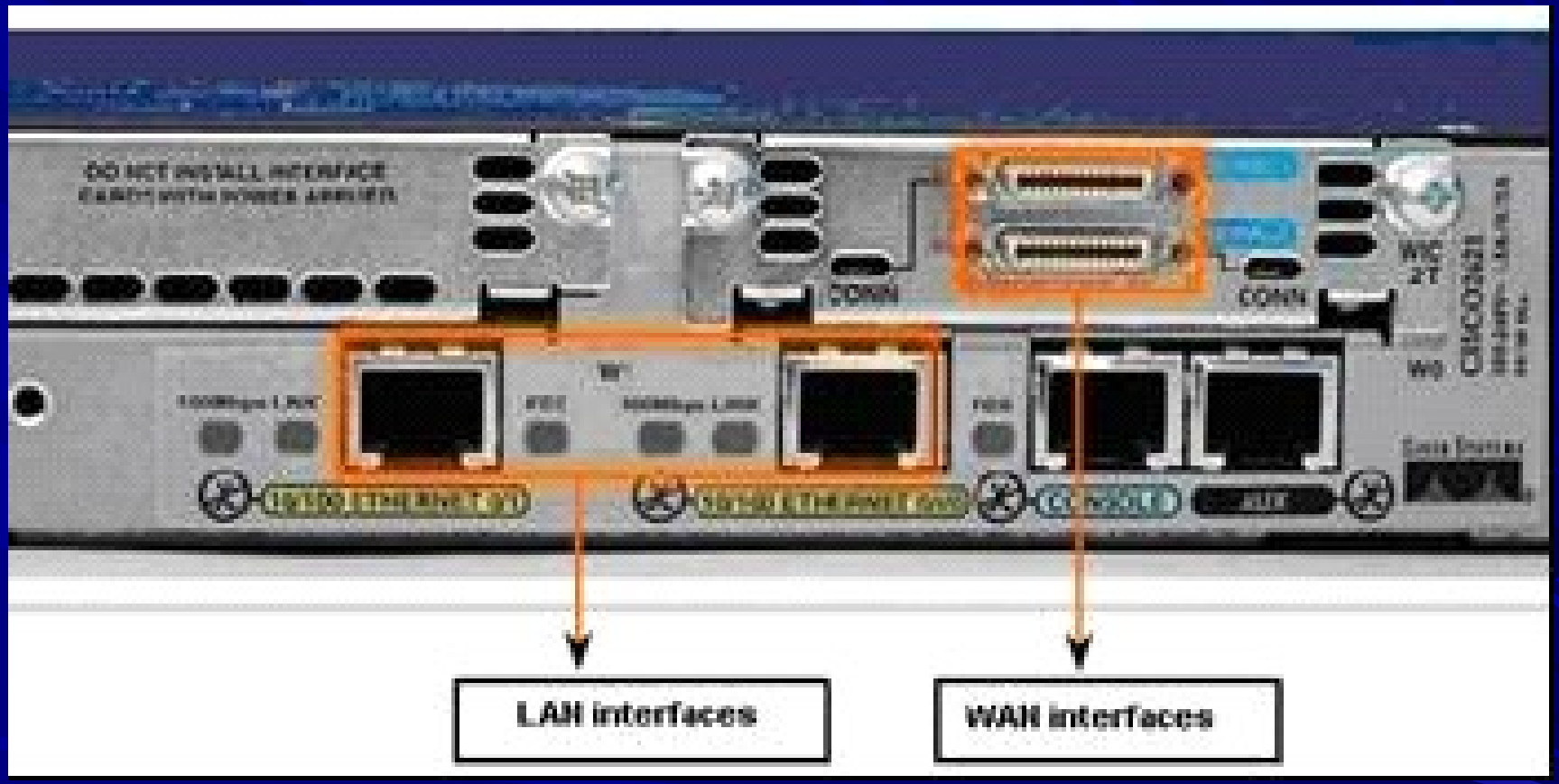
- These factors enabled the average consumer to be capable of establishing wired-and later wireless-networks in the home and business.

There are two major groups of router interfaces:

- LAN Interfaces
- WAN Interfaces

LAN Interfaces

- Are used to connect router to LAN network
- Has a layer 2 MAC address
- Can be assigned a Layer 3 IP address
- Usually consist of an RJ-45 jack


LAN interfaces
WAN interfaces

WAN Interfaces

- Are used to connect routers to external networks that interconnect LANs.
- Depending on the WAN technology, a layer 2 address may be used.
- Uses a layer 3 IP address

TYPES OF ROUTERS:

There are several types of routers in the market.

- Broadband Routers
- Wireless Routers
- Core Routers
- Edge Router

Broadband Routers

- A device that provides access to the Internet for multiple computers. It typically includes a network switch with four or more Ethernet ports for wired connections to desktop and laptop computers.
- The router also provides network address translation (NAT), which allows multiple users to reach the Internet with one public IP address assigned by the cable or telephone company to the service outers capture the information that come through broadband connection via a modem and deliver it to your computer
- The router choose route for the packet so that you receive the information Firstly. Routers are multiport devices and more sophisticated as compared to repeaters and bridges.

Wireless Routers

- Wireless routers create a wireless signal in your home or office. So, any computer within range of Wireless routers can connect it and use Internet.
- It works much like a wired router but replaces wires with wireless radio signals to communicate within and to external network environments.
- It enables you to run a computer or gaming system from anywhere in the house without having to run cables through the walls
- In order to secure your Wireless routers, you simply need to come secure it with password or get your IP address. Then, you'll log on into your router with the user ID and passwords will that come with your router

Core Router

- A core router is a router designed to operate in the Internet backbone, or core.
- To fulfill this role, a router must be able to support multiple telecommunications interfaces of the highest speed in use in the core Internet and must be able to forward IP packets at full speed on all of them. It must also support the routing protocols being used in the core.

Edge Router

- Edge devices are that which provide entry points into enterprise or service provider core networks. Examples include routers, routing switches, integrated access devices (IAD), multiplexers, and a variety of metropolitan area network (MAN) and wide area network (WAN) access devices. Edge devices also provide connections into carrier and service provider networks.

Routing Protocols

- A routing protocol specifies how routers communicate with each other, disseminating information that enables them to select routes between any two nodes on a computer network.
- Routing algorithms determine the specific choice of route. Each router has a priori knowledge only of networks attached to it directly.
- A routing protocol shares this information first among immediate neighbors, and then throughout the network. This way, routers gain knowledge of the topology of the network.

Types of routing protocols

- Enhanced Interior Gateway Routing Protocol (EIGRP)
- Interior Gateway Routing Protocol (IGRP)

Advantages

- Connecting an Internet modem directly to a PC exposes that PC to a host of security issues.
- A router is not a replacement for a firewall or anti-malware measures, but it's an important first step towards a largely secure network environment.
- Using a router as an intermediary between the "outside" network of the Internet and the "inside" network of your organization provides a scalable environment that is also, to a degree, easier to secure.

Disadvantages

- routers add additional IP-based headers. These headers include information such as source and destination addresses, UDP information and checksums. These headers are attached to every payload of data.
- Large pieces of data are typically broken into thousands of smaller headers, making this header data consume a percentage of the total available bandwidth.

Think Hundred Time Before you take a Decision
But once that Decision is Taken, Stand by it as one man

Thank you!