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Course Name: O Level (2nd Sem) **Subject:** Introduction to ICT Resources
Topic: Computer Network – Devices(Part 3) **Date:** 18-06-2020

Computer Network

Network Devices

Gateway

To connect totally dissimilar networks, a device called gateway is used. Gateways perform protocol conversion for all seven layers of the OSI model. A common use for a gateway is to connect a LAN and SNA mainframe computer, changing protocols and transmitting packets between two entirely different systems. Gateways handle messages, addresses and protocol conversions necessary to deliver a message from one network to another. Gateways offer the greatest flexibility in internetworking communications. This flexibility is at the cost of higher price, more complex design, implementation, maintenance and operation of a gateway. A gateway can receive e-mail messages in one format and convert them into another format. You can also connect systems with different communications protocol, languages and architecture. However, a gateway can be slow because it needs to perform intensive conversions, and it can be very expensive.
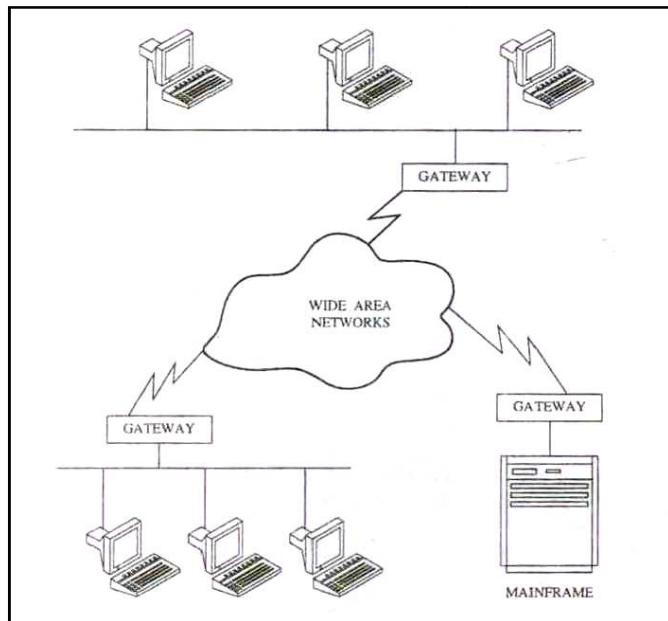

Figure: Pictorial representation of gateway functions

Comparison between routers and gateways

- Routers and gateways can manipulate the packets being transmitted.
- In the case of a router, the manipulation may be simply some determination of where the packet comes from (Net A) and where the packet is to go (Net C). But, an intelligent decision is made.
- In a gateway, the decision may be a little more complex because it can perform more functions. It not only performs the router's function (determines where the packet is to go) but also converts the message from one packet format to another or from one data code system to another.

- As interconnection takes place at higher levels of the OSI model (for example, a router compared to a bridge or a gateway compared to a router), the task of interconnection becomes more complicated. Also, more processing power is needed to perform the task.
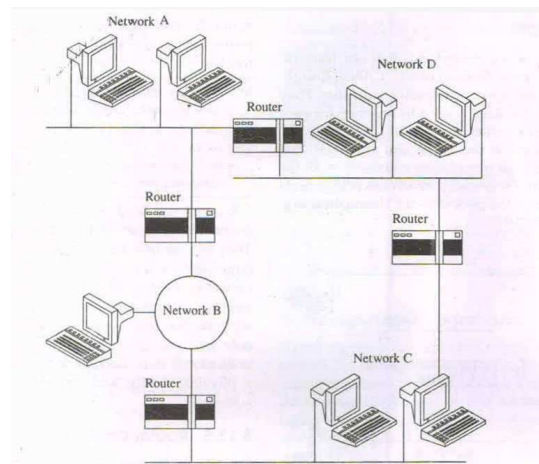
- Other things being equal, a gateway is slower than a router and the latter is slower than a bridge, unless the processing capability is raised proportionally.
- This fact seems to suggest that a good strategy is always to use the lowest level connection possible. That is, you should use a repeater instead of a router if either device can do the job. But, other issues too are involved in the selection process.
- Routers actually split a network, reading every packet on the network and passing internetwork traffic on to another network. They do not necessarily alter the form of the packet. They may merely retain each packet in its original form. A repeater or bridge simply regenerates and repeats a signal, usually after the signal has traversed a long cable section and suffered attenuation and distortion. A router performs store-and-forward services in addition to re-transmitting signals.

Exercise:

1: What is Gateway?

2: Write the Comparison between routers and gateways?