**For n devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology?**

The number of cables for each type of network is:

a. Mesh: n (n–1) / 2

b. Star: n

c. Ring: n – 1

d. Bus: one backbone and n drop lines

What are some of the elements that go into deciding whether a communication system is a LAN or WAN?

Answer:

Multiple computers are linked together by a network called a local area network (LAN).

That might be a tiny office. A wide area network (WAN) is made up of numerous local area networks (LANs). The internet, which links tens of millions of networks, is the ideal illustration of a WAN.

Why is the necessity for protocols?

Answer:

To ensure that both the sender and the recipient can understand each other's messages, we need certain common guidelines for data transfer over the internet.

The internet's communication protocols set forth these regulations.

If each LAN should be able to directly communicate with any other LAN, how many point-to-point WANs are necessary to connect LANs?

Every LAN must be connected to (n - 1) LANS. This relates to the fact that there are n x (n-1) connections.

Discuss the consequences if a connection fails for each of the following four networks.

a. mesh topology with five devices is used.

b. A star-topology arrangement of five devices (not counting the hub)

c. A bus topology with five devices.

d. A configuration of five devices in a ring topology

1. Mesh Topology

If five hardware units are organised in a mesh topology, each hardware unit will have four I/O ports and ten links. If one of their links goes down, it will be simple to identify which one it is and it won't affect other links. however, a bulk of wires and can create problem in re-installation and re-configuration

b Star topology

 Each device in the Star topology has a unique point-to-point connection to the Hub. The other links won't be impacted if one link fails and connections break. It is simpler to reorganise and clean up the trouble spot.

c bus topology

A backbone cable is linked to the device in a bus architecture, and additional taps and drop lines connect the clients. If any link fails, signals won't be able to go further and return to their source, which will cause noise on both sides. Additionally, if a backbone wire is damaged, all communication will be lost. Its modification and reconfiguration are more challenging than others.

d Ring Topology In order to prevent network outages, we must use either the dual ring approach or a switch if our devices are placed in a ring topology. If not, all connections must be connected because the signal only goes in one direction and completes the ring from point A to point B before reaching its destination. Every point receives the signal and then repeats it using the integrated repeater. The network operator will be alerted if any point goes down.