

Computer networking

[Technology](#), [Computer](#)



Sophisticated Hardware and Software technology is required. What is communication channel? Name the basic type of communication channels available. 0 Communication channels mean the connecting cables that link various workstations. There are 3 basic types of cables: 2. Coaxial cables 3. Fiber-optic cables What is MAC address? A Media Access Control address (MAC address) is a unique identifier assigned to most network adapters or network interface cards (NIC) by the manufacturer for identification, and used in the Media Access Control protocol sublayer.

What is IP address? A unique number consisting of 4 parts separated by dots, e. G. 165. 113. 245. 2 Every machine that is on the internet has a unique IP number- if a machine does not have an IP number; it is not really on the internet. What is a domain name? How is it alternatively known? 0 The unique name that identifies an internet site. 0 Domain names always have 2 or more parts, separated by dots. The part on the left is the most specific, and the part on the right is the most general. E. G. : Matisse. Net What are the various types of networks?

Network can be classified on the basis of their size, complexity and geographical spread. On the basis of geographical spread it can be classified as Local Area Network, Metropolitan Area Network and Wide Area Network. What is the difference between MAN and WAN? 0 A metropolitan area network (MAN) is a large computer network that usually spans a city or large campus. 0 WAN is a network that covers an area larger than a single building or campus such as across the cities or countries. What is meant by topology? Name some popular topologies.

Network Topology is defined as the interconnection of the various elements (link, nodes, etc.) of a computer network. In computer networking, topology refers to the layout of connected devices. 0 Bus topology 0 Star topology 0 Ring topology Tree topology 0 Mesh topology What are the factors that must be considered before making a choice for the topology? Cost of Expenses required for implementation of network, Reliability of a particular topology and flexibility of system for future adjustment; are the various factors that must be considered before making a choice for the topology.

What are the similarities and difference between bus and tree topologies? In bus topology each machine is connected to a single cable. Each computer or server is connected to the single bus CBS CSS N IP Page 1 of 13 12 14 15 16 17 cable through some kind of connector. Tree topology is a network with the shape of an inverted tree in which a single link between two nodes. What are the limitations of star topology? 0 Central node dependency: In this topology central node is a controller of the network. If the central node fails, the entire network will be failed. Difficult to expand: The addition of a new node to a network involves a connection all the way to the central node.

When do you think, ring topology becomes the best choice for a network? In case if we need less connection of wires, very fast communication speed; a ring topology becomes the best choice for a network. This is because optical fiber offers the possibility of very high speed transmission in one direction.

Write two advantages and two disadvantages of bus Topology in network.

Advantages : 1 . Easy to connect a computer or peripheral to a linear bus. 2.

Requires less cable length than a star topology. 0 Disadvantages: 1. Entire network shuts down if there is a break in the main cable. 2. Terminators are required at both ends of the backbone cable. Briefly mention two advantages and two disadvantages of star topology in network. 0 Advantages : 1. Easy to install and wire. 2. Easy to detect faults and to remove parts.

Disadvantages : 1. Requires more cable length than a linear topology. 2. If the hub, switch, or concentrator fails, nodes attached are disabled. Give two advantages and two disadvantages of following network topologies: (I) Star Tree Star: 2.

If the hub, switch, or concentrator fails, nodes attached are disabled. (it) 0 Advantages : 1 . Point-to-point wiring for individual segments. 2. Supported by several hardware and software vendors. 1. Overall length of each segment is limited by the type of cabling used. 2. If the backbone line breaks, the entire segment goes down. Give two advantages and two disadvantages of following network topologies: (I) Bus Bus: 1. Entire network shuts down if there is a break in the main cable. Page 2 of 13 18 19 20 21 2. Terminators are required at both ends of the backbone cable. Jawbone line breaks, the entire segment goes down. Write two advantages and disadvantages of the following: Optical fibers Satellites Microwaves. Optical fiber: 1 . Secure transmission. 2. Very high transmission capacity. 1. Expensive. 2. Difficult to connect to fibers. Satellite: 0 Advantage : 1 . Large area coverage of earth. 2. Useful for sparsely populated areas. 0 Disadvantage : 1. Cannot deploy large, high gain antennas. 2. Require high investment in case off failure. Microwaves 1. Free from land acquisition rights. 2. Provides ease of communication over difficult terrain.

Disadvantage: 1. Insecure Communication. 2. High cost for implementation and maintenance. Write two disadvantages of twisted pair cables.

Disadvantage : 1. Incapable for long distance. 2. Unsuitable for long distance. 3. Supports maximum data rates 1 Mbps without conditioning and 10 Mbps with conditioning. Define the following: Hub The central connecting device in a computer network is known as a hub. When data packets arrive at hub, it broadcast them to all the LAN cards in a network and the destined recipient picks them and all other computers discard the data packet.

Switch A switch is a device that is used to segment networks into different sub networks called subnets or LAN segments. Segmenting the network into smaller subnets prevents traffic overloading in a network. What is eavesdropping? Eavesdropping is the act of secretly listening/intercepting someone else's private communication/data/information. Page 3 of 13 Type B: Short Answer Questions What is network? What are its goals and applications? A computer network is a system in which computers are connected to share information and resources. 0 Goals of network: 1 .

Resource sharing: The aim to make all programs, data and peripherals available to anyone on the network irrespective of the physical location of the resources and the users. 2. Reliability: A file can have copies on two or more machines, so if one of them is unavailable due to hardware or software crash, the other copies could be used. E. G. : Railway reservation, Airways reservation etc. 3. Cost Factor: Personal computers have better price/performance ratio as the important data are stored on file server machine available for sharing. 0 Application of network: 1 .

Access the remote database: User can access to remote database sitting at his home to make reservation for airplanes, trains hotels and so on anywhere in the share text, images, digitized voice or movie to any users anywhere in the world. 3. Cost deduction: Using computer network communication system, amount required for traveling of user or data from one location to another can be reduced to very less and also saves energy for the same.

What do you understand by Domain Name Resolution? Domain Name Resolution is the task of converting domain names to their corresponding IP address.

This is all done behind the scenes and is rarely noticed by the user. When you enter a domain name in an application that uses the internet, the application will issue a command to have the operating system convert the domain name into its IP address, and then connect to that IP address, and then connect to that IP address to perform whatever operation it is trying to do. What are communication channels? Discuss various communication channels available for networks. 0 Communication channel mean the connecting cables that ink various workstations. 0 There are 3 basic types of cables: 1 .

Twisted Pair cables: A cable composed of two small insulated conductors twisted together without a common covering. Also known as copper pair.

Twisted pairs have less bandwidth than coaxial cable or optical fiber. 2.

Coaxial cables: A cable consisting of two concentric conductors (an inner conductor and an outer conductor) insulated from each other by a dielectric; commonly used for the transmission of high-speed electronic data/or video

signals. 3. Fiber Optic cables: It is flexible optically transparent fiber, usually made of glass or plastic through which light can be transmitted by successive internal reflections.

Write some advantages and disadvantages of the following: Coaxial cable

Twisted pair cables Radio waves Micro waves Satellites. Page 4 of 13 1 .

Better data transmission than twisted-pair cables. 2. Used as source for shared cable network. 1 . Single cable failure can take down an entire network. 2. Expensive 1. Simple. 2. Flexible. 3. Inexpensive. 4. Connected easily. 1. Unsuitable for long distance. 2. Supports maximum data rates 1 Mbps without conditioning and 10 Mbps with conditioning. (v) 3. Provide mobility. 1. Insecure communication. 2. Susceptible to weather effects.

Discuss and compare various types of networks. Information and resources.

There are four types of networks : a) LAN (Local Area Network) - A group of computers that shares a common connection and is usually in a small area or even in the same building. For example, it can be an office or a home network. It is usually connected by Ethernet cables and has high speed connections. If it was a wireless setup, it would be called a WLAN, which would have a lower connection speed. B) MAN (Metropolitan Area Network) - This is a larger network that connects computer users in a particular geographic area or region.

For example, a large university may have a network so large that it may be classified as a MAN. The MAN network usually exists to provide connectivity to local ISPs, cable TV, or large corporations. It is far larger than a LAN and smaller than a WAN. Also, large cities like London and Sydney, Australia,

have metropolitan area networks. C) WAN (Wide Area Network) - This is the largest network and can inter-connect networks throughout the world because it is not restricted to a geographical location. The Internet is an example of a worldwide public WAN. Most Page 5 of 13 7

Wants exist to connect Lana that are not in the same geographical area. This technology is high speed and very expensive to setup. D) PAN (Personal Area Network) - PAN is a computer network organized around an individual person. Personal area networks typically involve a mobile computer, a cell phone and/or a handheld computing device such as a PDA. You can use these networks to transfer files including email and calendar appointments, digital photos and music. Explain various mostly used topologies. Bus or Linear Topology - It is characterized by common transmission medium shared by all the connected hosts, managed by dedicated nodes.

It offers simultaneous flow of data and control. 2. Ring Topology - A ring topology connects one host to the next and the last host to the first. This creates a physical ring of cable. 3. Star Topology - It is characterized by central switching mode (communication controller) unique path (point-to-point link) for each host. It is easy to add and remove additional host by upgrading the centralized node. 4. Tree Topology - A tree topology may be defined as a group of bus topologies put together and controlled by one node. Discuss the factors that govern the selection of a topology for a network.