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Answer in details

Explain different network topologies with its advantages and disadvantages

Ans: the arrangement of a network which compromise of notes and collecting lines were sender and receiver is referred as network topology the various network topologies are

In mesh topology every device connected to another device via a particular channel every device is connected with another via dedicated channel these channel are known as links if suppose a number of devices are connected with each other in mesh technology then total number of ports that is required by each device is n - 1

advantages

It is robust fault
It is diagnosed easily data is reliable because data is transform among the device through dedicated channels all links

It provides security and privacy.

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disadvantages

- Installation and configuration is difficult
- Cost of cables are high as bulk writing is required
cost of maintenance is high.

2. star topology

- in Star topology all the devices are connected to a single hub through a cable this hub is central node and all other nodes are connected to the central node the hub can be passive in nature

advantages

- If all devices are connected to each other in Star topology and a number of cables required to connect m is an so it is easy to set up

- Each device requires only one port that is connected to the hub

Problems with this topology

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Bus topology

- bus topology is a network type in which every computer and network device is connected to single cable to transmit the data from one end to another in single direction no bi-directional feature is available in bus topology

advantages

- if n devices are connected to each other in bus topology then the number of keywords is equal to one which is known as backbone cable and N chop lines are required

Problem set is this topology

- In the common cable fails then the whole system crashes down if the network traffic is very high it increases collisions in network

Ring Topology

- in ring topology if phone is ordering connecting devices with exactly two neighbouring devices and number of repeaters used for ring topology with a large number of nodes because if someone wants to send some theatre to the last node in the ring topology 100 nodes that the data will have pass 99 nodes hence the prevent of theatre lost repeaters are used in the network

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in the connector on which the whole topology relies
failed the whole system crash dump cost for
installation is high performance is based on the
single connector and that is hub.

bus topology

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and network device is connected to single cable
to transmit the data from one end to another
in single direction no bi-directional feature is available
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ring topology

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- The possibility of collision is minimum in this type of topology cheap to install and expand

disadvantages
- Troubleshooting is difficult in this topology
- Addition of statements is between or removal of stations can disturb whole topology

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Explain the types of transmission media transmission

- medium is a physical path between the transmitter and the receiver that is the channel through which data is sent from one place to another transmission media is broadly classified into following categories

1. guided media
2. unguided media

Guided media it is also referred to as a wired or bounded transmission media

first twisted pair cable it consists of two separately insulated conductor wires found about each other generally said such pairs are bounded most likely use transmission media

twisted pair is of two types unshielded twisted pair this type of cable has a belated to block interferences does not depend on a physical

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shield for this purpose it is used for telephonic.

Advantages

1. least expensive
2. easy to install and
3. high speed capacitor

Disadvantages

- external interface lower capacity
- performance short distance transmission due to attenuation

coaxial cable

it has an outer plastic covering containing two parallel connection each having a separate into insulated protection cover coaxial cable transmits information into two modes basement mode and broadband modem cable TV and analogue communication networks widely used coaxial cables are

the advantages of coaxial cables are hai band with better noise immunity easy to install

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and expand and expensive

disadvantages
It is single cable failure can disrupt the entire network

optical fibre cable
it uses the concept of reflection and light through a core made up of glass or plastic tumko is surrounded by less dense glass or plastic covering called the cladding it is used for transmission of large volumes of data.

Advantages
It is of optical fibre cable are
it has increased capacity and bandwidth it is also lightweight and has less signal attention nation it is immunity to electromagnetic interference it is resistance to corrosion of materials

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disadvantages
it is difficult to install
and maintain it is very high cost it is a very fragile approach and it is an directional in nature.

Explain OST model in brief

Physical layer
the lowest layer of OSI reference model is the physical layer it is responsible for the actual physical connection between the devices the physical layer contains information in the form of BIT
it is responsible for transmitting individual bits from one node to the next when receiving data the layer will get the signal received and converted into as and send data to data link layer which will put the frame back together the function of physical layer are bit synchronisation with control transmission mode in which synchronisation the physical layer provides the synchronisation of the bridge

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by providing a clock the physical layer also defines the transmission rate that is how many bytes for second transmission mode physical layer are define the way which the data flows between the two connected devices the various transmission modes possible her simplex half duplex and full duplex.

2. Data link layer

the data link layer is responsible for the node to node delivery of the message the main function of this layer is to make the use of the data transfer in Adobe form and from one form to another over the physical layer when the packet and arrives in the network it is the responsibility of the dll to transmit in the host2 using m a c address

the packet received from network layer is further divided into 2 subgroups

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1. logical link control - LLC

2. media access control m a c

the packet received from network layer is further divided into frames depending on the frame size of LLC also encapsulate sender and receiver IP address in the header

The receivers embassy address is open by placing an aarp request onto the wire asking who has that IP address and the destination host will reply with its m.a.c. address

- The function of the data link layer are framing physical addressing error control flow control access control switch and bridge our data link layer devices.

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3. Network layer

Network layer vote for the transmission and data from one host to another located in different networks call to take care of packet routing that is selection of the shortest path to transfer the packets from the number of rows available the sender and receiver IP address are placed in the header by the network layer the functions of network layer are routing and logical address.

4. Transport layer

- it provides service application layer and take service from network layer the data in the transport layer is referred as segment it is responsible for the end-to-end delivery of the complete message the transport layer also provide the acknowledgment of the successful data transmission entry transfer the data if the error is bound the function of the transport layer are segmentation and reassembly and service point address

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Session layer

- this layer is responsible for establishment of connection maintenance patients authentications and also ensure security the function of session layer is session establishment maintenance termination and synchronisation

Presentation layer

- presentation layer is also called the translation layer the data from the application layer is extracted here and manipulated as per the required format to transmit over the network

- Function of presentation layer are translation from ASCII to EBCDIC encryption and decryption compression reduce the number of bits that needs to be transmitted on the network.

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Application layer

at the very top of the OSI reference model stack of liver be fine application layer which is implemented by the network applications this application procedure the data that has to be transferred over the network the slave also serves as the window for the application services to access the network and for displaying the received information from the user the function of application layer network virtual terminal file transfer axis and management mail services and directory services

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Explain network application architecture

A network application is an application running on one hos
Android from an occasion to another application running on a different there are two possible structure of application

1 client server architecture
2. peer to peer architecture

in client server architecture there is always host call the server which provide service requested for many to many host call clients in the client server architecture when the client computer science request for data the server through the internet the server accept the request process and delivers the data packet requested to the client do not share any of the resources example client server model are world wide web

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Expalin Delay, loss, and throughput in output.

Ans: Network delay is a design and performance characteristics of telecommunication network it specifies the latency for a bit of data to travel across the network from one communication to another

Loss

los packet loss occurs when one or more packets of data traveling across of computer network style to reach the destination packet loss is either caused by errors in data transmission typical across wireless networks or network congestion

Throughput

It is the number of messages successfully transmitted per unit time it is controlled by available bandwidth is available signal-to-noise ratio and hardware limitation the maximum throughput of a network

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may be consistently higher than actual throughput achieved in everyday conception throughput is measured by tabulating the amount of data transferred between multiple locations during and specification period of time like bps kpbs to gbps and mbps to gbps.

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Explain http, POP3, smtp

1. Http

http is a web application layer protocol which defines how web client request with pages from web server and how web server transfer web page to client.

Http uses TCP as its underline transport protocol.

http client first initiate a TCP connection with server once the connection is established the browser and the server process TCP through their socket interface.

2. POP3

post office protocol version 3 is a standard mail protocol used to receive emails from remote server to local incline of three allows you to download message on your local computer and read even when you are offline their advantages of it it provides easy and fast access to the

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emails as their local is stored on ABC there is no limit on the size of the email which receivers and it requires less server storage space and all the males are stored on the local machine and it is easy to configure and use.

Disadvantages:

- the demerits of the emails are downloaded rom the server then all the emails are deleted from the server by default and transferring the mail folder from the local machine to another machine can be difficult the email folder which is downloaded from the mail server can also become corrupted

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3. smtp

1. Smtp tands for simple mail transfer protocol
2. smtp the set of communication guidelines that allows software to transmit an electronic mail over the internet is called simple mail transfer protocol.

3. it is a program used to send messages to other computer users based on email addresses it provides an e exchange between users on the same and different co and it also supports

4. It can send single message to one or more receptive and sending message can include text voice video or graphics it can also send the messages on network outside the internet

5. The main purpose of Smtp is to setup communication

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rules between server the server has a way of underlying themselves and announcing what kind of communication they are trying to perform the also have a way of handling the errors that is incorrect email addresses

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Explain Tcp and udp

TCP

- Connection application process make aur connection before message can be exchange the usage suitable for application that coin higher reliability and transmission time is relatively less critical.

- Reliability guaranteed delivery of application messages with error free and proper data.

- Rearranges data segment in the order specified.

- Segments are acknowledged when received.

UDP

- Application process is exchanges message without creating a connection

- Suitable for application that need fast efficient transmission reliability as critical

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multimedia application video online multiplayer games

- The DNS they doesn't guarantee that search the receiving application for the more messages may arise out of order.

- No acknowledgement is seen in UDP.

Explain DNS in detail

An application layer protocol define the application process is running on different system pass the messages on each other DNS stands for domian name system

DNS required for the functioning of the internet ; t node in a tree has a domain name and the ball domain name is a sequence of simple specified by dots

DNS servers to translate the domain to IP

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address this allows the user of networks to utilise user-friendly names where are looking for other host instead of remembering the IP address

Q10 Explain peer to peer file distribution in detail

In computer sharing peer-to-peer file sharing technology allowing the users to access mainly the multimedia files like a video of ask ebooks games at sector the individual users in the network refer to the squares the PS request for the file from other pairs were established in TCP or udp connection

new latest how p2p works is p2p network works that p2p network allows computer hardware and software communicate without need of server and client server architecture there is no Central server processing request in p2p the peer directly interacts

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with one without requirement of a central server no II peer makes a request it is possible that multiple pairs of the copy of the request object not the problem is how to get the IP address of all these years this is required is decided by the underlying architecture supported by peer-to-peer system by means of one the method the client Kiya can get to know all the pairs have the requested the object file and the transfer takes place directly between those two pairs

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Computer network

- It is a system in which multiple computers are connected to each other to share information resources

Unicast

- unicorn refers to 121 transmission from one point in the network to another point that is sender and the receiver is identified by the network address

frequency

- it is the duty ratio of the radio signal to send and receive communication signal measured in hotspot second data used in Wi-Fi communication in 2.4 gigahertz for 5 gz.

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router

router is a networking device that forwards data packets between computer network router performs directional function on the internet with the traffic

repeater is an electronic device that receives a signal and retransmitted repeaters are used to extend transmission so the signal can cover a longer distance ok and received on the other side of the transaction

switch

- It is a networking hardware that connect devices on a computer network by a packet switching to receive and forward data to destination device

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