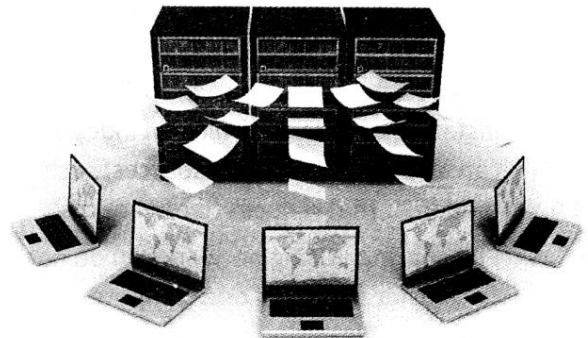




Need of Networking

A computer network is a group of computers which are interconnected. The first networks were implemented by both IBM's SNA (Systems Network Architecture) and Digital's network architecture. Internet is the biggest example of computer networking. Through Internet you can send email or file to any location in the world. While developing computer network you need to use communication devices, such as modem and router. Basically communication devices are useful to send and receive data on the network. There are three different types of networking having different purpose. These are LAN, MAN and WAN. LAN means Local Area Network. This network is mainly used in the offices.



It has the following characteristics:

- ❖ Diameter of LAN does not exceed more than few kilometers. It is typically one kilometer.
- ❖ The computer connects with LAN required NIC (Network Interface Card).
- ❖ The data transfer rate over LAN is up to 100 Mbps.
- ❖ LAN use only one type of transmission medium.

MAN (Metropolitan Area Network) is a network technology that covers whole town. It has the following characteristics:

- ❖ Helps in covering the entire city,
- ❖ The rate of data transfer is very fast up to 200 Mbps,
- ❖ Is owned by multiple organizations.
- ❖ MAN connects more than one LANs.

WAN is Wide Area Network, it covers wide area means whole world. With the help of WAN we can access many sites on the Internet.



It has the following characteristics:

- ❖ More scalable than LAN and MAN,
- ❖ Connects many sites spread across large geographic distances,
- ❖ Provides sufficient capacity to permit several computers to communicate simultaneously.



The main advantages of networking are the following:

- ❖ **Reduce Cost:** Using network you can share peripheral and software. You need to load software only on the file server all interconnected users used these software from server. This technique saves time and cost compared to installing and tracking files on independent computers. Using network you can also share several resources, such as printers, scanners, fax machines and modems. That reduces hardware cost.
- ❖ **File sharing:** Using network you do not need any USB drive or other media to transfer files from one computer to another computer. You can directly share the files using a network.
- ❖ **Email:** Using Internet you can send any information, greeting and much more all over the world,

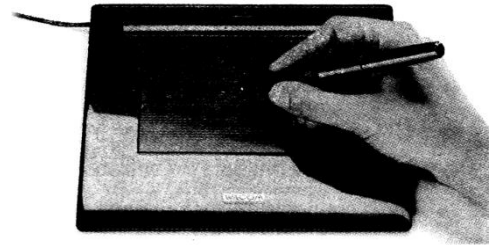


Basic Terminology of Network



Client/Server System

Railway inquiry system is a good example of client/server system. When you use your computer to check the schedule time about any train, the client program that runs in your computer forwards the request to a server program runs at the railway computer. The server program retrieves the information from railway server and returns back to your personal computer. Your personal computer displays the schedule time of requested train. In the client-server system, client is a computer application that runs on a local computer and requests service from a remote computer. Server is a computer application that runs on a remote computer and provides the requested service to a client. The client-server system can be used by programs running on a single computer, and different computers which are located on different locations.



Advantage

The main advantage of a client-server networking system is that you can perform administration or configuration of your entire network from a single location.



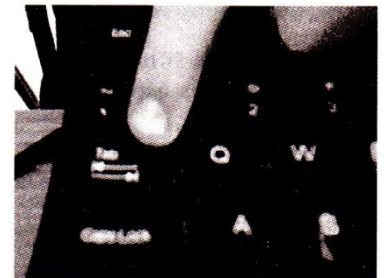
Disadvantage

Client-server networking model is very costly because it requires more hardware and the server operating system, such as Windows Server 2008 for the server.



Switch

A switch is a connection device that is used to developed computer network. It contains multiple ports that allow connecting more than one computer. Switch increases your network speed. It is faster than the bridge because it only looks at destination address. Bridge is also a device which is used for connecting computers. Switches are more expensive than bridges.



Router

A router is also a network connection device. The main difference between switch and router is that router decides the best path for data transmission from source to the destination. Router also increases your network speed.



Workstation

Workstation is a computer which is designed for technical or scientific applications. The term workstation has also been used to refer to a mainframe computer terminal or a personal computer connected to a network.



A workstation may have the following features:

- ❖ A larger number of memory sockets
- ❖ Multiple processor sockets
- ❖ Multiple displays
- ❖ Support for ECC (Error Correcting Code) memory



Ethernet Networking Card or Network Interface Card (NIC)

The NIC (Network Interface Card) is also called Ethernet Networking card. It is a circuit board equipped with microchips that is physically installed within an active network node, such as a computer, server or printer. It enables to connect your computer with network.



The first network was implemented by both IBM's SNA (Systems Network Architecture) and Digital's network architecture. Which one of the following is a disadvantage of network?

- (A) Increase printer cost
- (B) Make system insecure
- (C) File sharing
- (D) All of these
- (E) None of these

Answer: (e)

Explanation

Correct Option:

(E) All statements are wrong. Using network you can share your printer to more than one users that reduces the cost. File sharing is an advantage of network.

Incorrect Options:

Therefore, option (E) is correct and rest of the options is incorrect.



Client is a computer application that runs on a local computer and requests service from a remote computer. Which one of the

- (A) Internet Banking
- (B) Railway Reservation System
- (C) Cinema Ticket Booking System
- (D) All of these
- (E) None of these

Answer: (d)

Explanation

Correct Option:

(D) All given systems are based on client/ server model.

Incorrect Options:

"None of these" only wrong option here. Therefore, option (D) is correct and rest of the options is incorrect.



While developing computer network you need to use some network connection device. Which one of the following network connection devices decides the best path for data transmission?

- (A) Bridge
- (B) Router
- (C) Switch
- (D) All of these
- (E) None of these

Answer: (b)

Explanation

Correct Option:

(B) Router decides the best path for data transmission from source to the destination.

Incorrect Options:

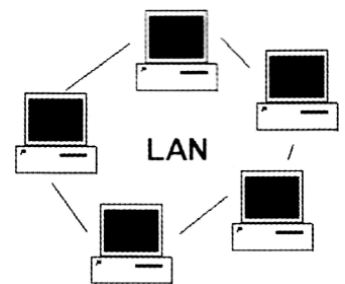
(A) Bridge is a device that is used for connecting computers.

(C) A switch is a connection device that is used to develop the computer network.



Local Area Network (LAN)

LAN (Local Area Network) is a network which is established in a local area such as office, group of buildings or at home. A LAN can be of two computers and a printer in office, home or it can be extended throughout an organization. It is basically based on number of technologies such as switched 802.3 Ethernet technologies which is running at 10, 100 or 1,000 M bit/s or it may be on IEEE 802.11 WI-FI technology.



Illustrative EXAMPLE

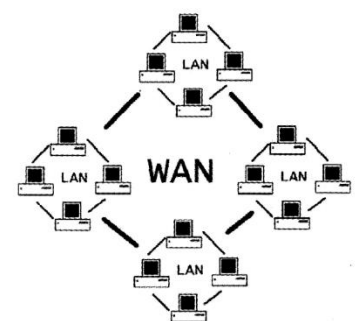


Suppose there is a branch of a particular Bank (A) which is situated on some distance from branch (B) of the same Bank, then the transferring of data done between them comes under the LAN process. This whole process comes under



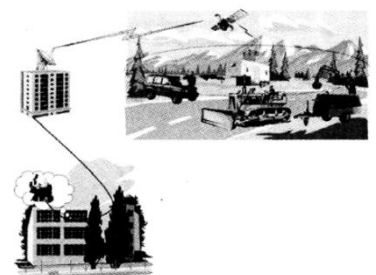
Wide Area Network (WAN)

WAN (Wide Area Network) is one of the computer networks which is established in a large geographical area. While accessing through the Internet and connecting to the locations of an organization to each other it uses data links provided by the carrier services. It generally carries a variety of traffic types such as data, video and voice. Data services and telephone services are the most commonly used services.



To develop a WAN you can use the following transmission media:

- ❖ Telephone lines
- ❖ Satellites
- ❖ Microwave
- ❖ Fiber optic





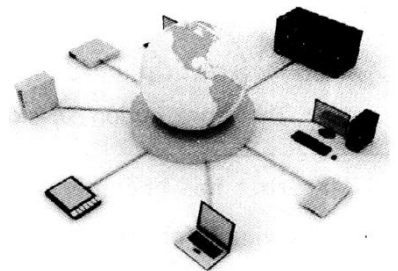
Uses of Internet

Internet is a global network. Basically Internet is a type of WAN that uses TCP/IP protocol. Protocol is a set of rules. If you want to use the Internet on your PC you need an Internet connection and a browser. There are number of browsers available in market, such as Internet Explore and Mozilla firfox. Basically browser is software that enables a GUI to open a Website.



Internet allows you to do the following tasks:

- ❖ **Email:** Using Internet you can send any information, greeting and any type of file, such as picture to any location of the world.
- ❖ **Ticket booking:** Using Internet you can book your railway ticket, air ticket and movie ticket. You do not need to go anywhere, just connect your corn puter with the Internet and book whatever you want.
- ❖ **Banking:** Using Internet you can check the status of your bank account. You can also transfer money from one account to other account.
- ❖ **Searching:** It is one of the important features through which we are able to grasp knowledge of any thing through any of the search engine. Google is one of the common search engines through which we can get any information regarding any topic, organization, and many other things can be learnt through this.
- ❖ **Chatting:** Using Internet you can chat with your friend in live environment. There are various chatting tools available in market, such as Google Talk.
- ❖ **E-learning:** E-learning is a new revolution in learning world. Using Internet you can learn any subject anywhere anytime.



Commonly Asked QUESTIONS



Intranet is the world largest WAN. To setup a WAN environment you can usetransmission media.

- | | |
|-------------------|--------------------|
| (A) Fiber optic | (B) Telephone line |
| (C) Satellites | (D) All of these |
| (E) None of these | |

Answer: (d)

Explanation

Correct Option:

(D) To setup a WAN environment you can use fiber optic, telephone line and satellite transmission media.

Incorrect Options:

Therefore, option (D) is correct and rest of the options is incorrect.



Internet has become an essence for modern man. Which one of the following is/are the advantages of Internet?

- (A) Email
- (B) Online Chatting
- (C) Online banking
- (D) All of these
- (E) None of these

Answer: (d)

Explanation

Correct Option:

(D) Email, online chatting and online banking are advantages of Internet.

Incorrect Options:

Therefore, option (D) is correct and rest of the options is incorrect.



Using Internet you can chat with your friend online. Which of the following chatting tools is/are available on the Internet?

- (A) Google talk
- (B) Rediff Bol
- (C) Yahoo Messenger
- (D) All of these
- (E) None of these

Answer: (d)

Explanation

Correct Option:

(D) Google Talk, Rediff Bol, and Yahoo Messenger all allows online chatting.

Incorrect Options:

Therefore, option (D) is correct and rest of the options is incorrect.

You Must KNOW

- ❖ VPN (Virtual Private Network) is a type of network which is used by mobile companies.
- ❖ ISP is an organization that provides Internet connections.
- ❖ DARPA (Defense Advanced Research Projects Agency) launched the first Internet program.

IMPORTANT TERMS

- ❖ **Router:** Is also a network connection device.
- ❖ **Workstation:** Is a computer that is designed for technical or scientific applications.
- ❖ **NIC:** Is a circuit board equipped with microchips that are physically installed within an active network node.

SUMMARY



- ❖ A computer network is a group of computers which are interconnected.
- ❖ In the client-server system, client is a computer application that runs on a local computer and requests service from a remote computer.
- ❖ Server is a computer application that runs on a remote computer and provides the requested service to a client.
- ❖ A switch is a connection device that is used to develop computer network.
- ❖ Switches are more expensive than bridges.
- ❖ The NIC (Network Interface Card) is also called Ethernet Networking card.



Abbreviations

CPE	-	Customer Premises Equipment
NIC	-	Network Interface Card
ECC	-	Error Correcting Code



Find the odd one out.

- (A) Router
- (B) Switch
- (C) Bridge
- (D) NIC
- (E) None of these



Using internet you can search any information. Which one of the following is an example of search engine?

- (A) Gmail
- (B) Rediff
- (C) Google
- (D) India times
- (E) None of these



Which one of the following OS is used by network administrator to perform admin task, such as giving different privileges to different users?

- (A) Windows Server 2008
- (B) Windows Vista
- (C) Windows?
- (D) Windows XP
- (E) None of these



Which one of the following statements is true about Client/Server model?

- (A) Client is a computer application that runs on a server computer
- (B) Client is a computer application that runs on a remote computer
- (C) Server is a computer application that runs on a remote computer
- (D) All of these
- (E) None of these



Which one of the following statements is not true about switch?

- (A) A switch is a connection device that is used to developed computer network
- (B) Switch increases network speed
- (C) Switch is slower than the bridge
- (D) Switch looks at destination address
- (E) None of these



Which one of the following is not looking only destination address?

- (A) Switch
- (B) Router
- (C) Bridge
- (D) All of these
- (E) None of these



..... is a circuit board equipped with microchips that is physically installed within an active network node.

- (A) Router
 - (B) Switch
 - (C) Bridge
 - (D) NIC
 - (E) None of these
-



Which one of the following statements is true?

Statement A : Switch is faster than bridge.

Statement B : Switch is cheaper than bridge.

- (A) Statement A is correct
 - (B) Statement B is correct
 - (C) Both Statement A and B are correct
 - (D) Neither statement A nor statement B is correct
-



Which one of the following is used to connect digital data into analog form and vice versa?

- (A) Router
 - (B) Switch
 - (C) Bridge
 - (D) All of these
 - (E) None of these
-



Match the following:

A

- 1. Public Switched Telephone
- 2. Router
- 3. Workstation
- 4. Satellites

B

- a. Supports for ECC memory
- b. Is an example of MAN
- c. Is an example of WAN
- d. Decides the best path for data Transmission
- e. Communication channel

- (A) 1-c, 2-d, 3-b, 4-a
 - (B) 1-d, 2-c, 3-e, 4-b
 - (C) 1-a, 2-c, 3-d, 4-e
 - (D) 1-c, 2-d, 3-a, 4-e
 - (E) None of these
-

Explanation for Selected Questions

1. Correct Option:

(D) NIC (Network Interface Card) is an Ethernet Networking card. However, router, switch and bridge are network connection devices.

Incorrect Options:

- (A) Router is a network connection device.
 - (C) Switch is a network connection device.
 - (C) Bridge is a network connection device
-

2. Correct Option:

(C) Google is a search engine that allows you to search any information.

Incorrect Options:

- (A) Gmail provides email facility.
 - (B) Rediff provides email facility.
 - (D) India times provides email facility.
-

3. Correct Option:

(A) Windows Server 2008 is the latest version of Windows server.

Incorrect Options:

- (B) Windows Vista is an operating system
 - (C) Windows 7 is an operating system
 - (D) Windows XP is an operating system
-

4. Correct Option:

(C) Server is a computer application that runs on a remote computer

Incorrect Options:

Therefore, option (C) is correct and rest of the options is incorrect.

5. Correct Option:

(C) Switch is faster than the bridge.

Incorrect Options:

Therefore, option (C) is correct and rest of the options is incorrect.

6. Correct Option:

(C) Bridge is not looking only destination address.

Incorrect Options:

(A) Switch looks at destination address.

(B) Router also looks at destination address and decides best path for data transmission.

7. Correct Option:

(D) NIC is a circuit board equipped with microchips that is physically installed within an active network node.

Incorrect Options:

(A) Router is a network connection device.

(C) Switch is a network connection device.

(C) Bridge is a network connection device

8. Correct Option:

(A) Switch is faster than bridge.

Incorrect Options:

(B) Statement B is wrong because switch is costlier than bridge.

9. Correct Option:

(E) Modem is used to connect digital data into analog form and vice versa.

Incorrect Options:

Therefore, option (E) is correct and rest of the options is incorrect.

10. Correct Option:

(D) Option (D) show the correct match.

Incorrect Options:

Therefore, option (D) is correct and rest of the options is incorrect.

