Review Paper on Computer Network

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, ABSTRACT:
Computers are connected with each other for sharing information in a network. Many computer connect with each other Form a network. All computers connect via links. Computer network support access information over a world wide web. Computer network perform many task through exchanging information. Network device use different protocol and application for sharing information from one device to another one. Computer network use distributed processing for achieving the task and access by network. In this research paper we are introduce about the network and related term which we are using in our life. Computer network are used to exchanging of information through achieve large no of task.

KEYWORDS: **Computer networks, Applications, Protocols, Types of networks, Topology, Nodes,**

INTRODUCTION

A computer network also called a data network, this a series of interconnected nodes that can transmit, receive and exchange data, voice, and video traffic. Computer networks typically help endpoint users share and communicate resources. They are generally visible in all the places like homes, offices, and government administration. The use of computer networks can remove geographic barriers and enable the exchange of information. the computer network in the use and sharing of any number of applications and services over the Internet, including email, video, audio, and other types of data.

Network devices use different types of protocols and algorithms to specify proper how endpoints should transmit and receive data.

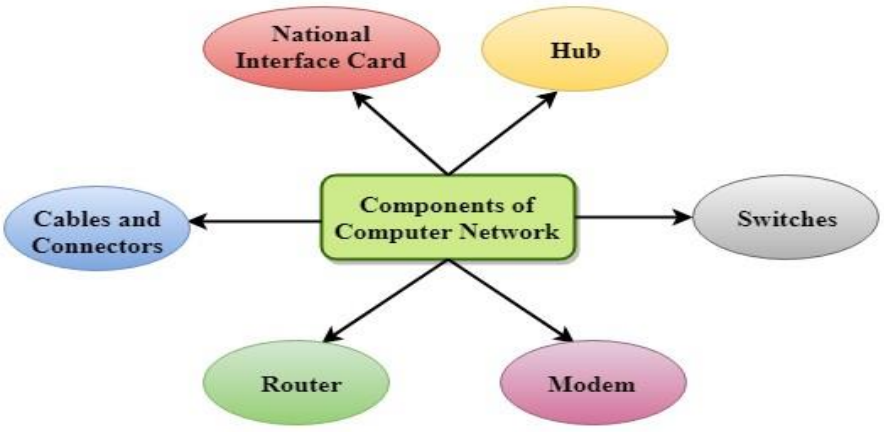


Fig. 1: Components of Computer Network

APPLICATION OF COMPUTER NETWORK

There are different types of Computer applications over a network:

- Pure network application
- Stand-alone network application

Pure network application

This is an application that is designed for use in a network; Running pure network app on the same machine is not a good idea. They help us in the transport of data and communication of information through a network. Such applications have separate and distinct user interfaces. Here are some examples.

1. ***E-mail program***

It enables users to type messages on their local nodes and then send them through the network to anyone else on the network. This is the fastest way to transfer information from one computer to another computer. examples of electronic mail programs (clients):

- Pegasus Mail
- Outlook Express
- Eudora mail
- Foxmail
- Opera
- Pocomail
- Mozilla Thunderbird
- Windows Mail

2. ***File Transfer Protocol (FTP)***

This makes it easy to transfer program files from one computer to another, such as from a client to a server. In FTP, two main processes work. Examples of FTP programs are FTP in Unix, FTP in Linux, FTP in Windows, etc.

- **Download:** In this process data is transferred from server to the system. Client will access the data over a network.
- **Uploading:** This is getting a file from the workstation to the server

3. ***Terminal Emulation (Telnet)***

This allows the workstation to access the server for application programs. you can control the server and communicate with a different server over a network. Workstations appear as down terminals that are connected directly to the server. Users feel like using the server directly. Telnet allows PCs and workstations to act as mute terminals in a single session with hosts on the inter-network

4. ***Groupware***

This application is used to automate administrative tasks from modern offices to video conferencing and chatting. They facilitate group work to increase productivity. They are used to communicate, work together, coordinate, solve problems, compete and negotiate.

Stand-alone Application

It is an application that runs on a computer that is not connected to the other. To explore their activities, they are built to run in the network environment, e.g., word processing, spreadsheets, and database management systems. If the computer is not connected, it will still work.

Some stand-alone applications are

- VLC Media Player
- Adobe Photoshop
- Notepad ++
- Word Processing
- Spreadsheets
- Database Management System
- Graphics presentation
- Project management

Computer Network Application

- Share resources such as printers
- Sharing software and expensive databases
- Communication from one computer to another computer
- Data exchange and information between users over the network

- Share information about various fields geographically

Home Application from Computer Networks

- Access to remote information
- Communication of people-to-people
- Interactive entertainment
- Electronic trade

Other Applications of Computer Networks

- Marketing and sales
- Financial service
- CAD, CAM, etc.
- Information service
- Cell phone
- Television cable
- Teleconferencing
- Electronic Data Interchange (EDI)
- Directory services
- E-mail etc.

ADVANTAGES OF COMPUTER NETWORK

1. In terms of information security, computer networks provide greater opportunities.
2. Almost everyone can benefit from computer networks.
3. Computer networks offer a personalized experience.
4. You can increase the potential of computer networks.
5. Almost anyone can use a computer to make network experiences.
6. A computer network makes it easier to collaborate on the project.
7. Information sharing is made simple by this technology.
8. Computer networks can transfer very large file sizes in seconds.
9. We have the opportunity to learn because of computer networks.
10. Entrepreneurs can generate money as a result of computer networks.
11. Computer networks assist us to be more effective with our time since they allow us to share resources.
12. There are many ways to save money with computer networks.

13. Computer networks can share a single Internet connection.
14. It gives people the opportunity to solve problems creatively.

DISADVANTAGES OF COMPUTER NETWORK

1. Computer networks can result in various disorders.
2. Computer networks require specific settings to be useful.
3. People can stop relying on their memories because of computer networks.
4. National legislation has not followed the activities of modern computer networks.
5. Computer networks change our perspectives about the balance of work life.
6. There are several ways to exploit computer network vulnerabilities.
7. You may lose access to your information in a short period.
8. One computer can cause problems for the entire network.
9. The computer network causes us to put all our eggs in one basket

Types of Network Topology

Basically topology defines the structure of the network how all the devices are interconnected with each other. There are two types of topology, first is physical and other logical. The main purpose of topologies is representing all nodes connectivity to each other.

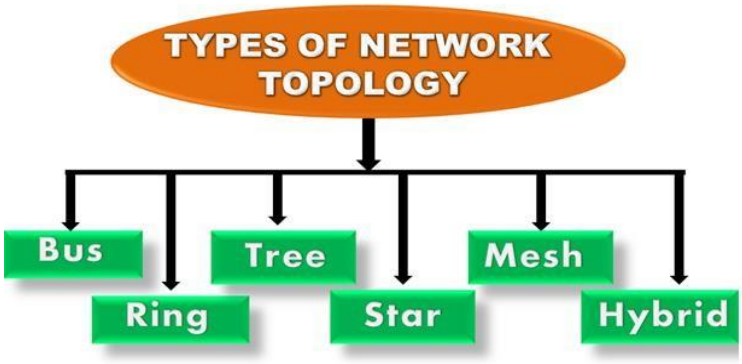
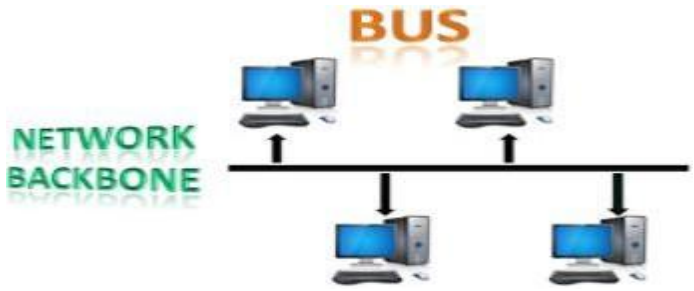


Fig. 2: Types of Network Topology

1. Bus Topology

Bus topology is a type of network topology where each node, that is, every device on the network, is connected to a single main cable line. Data is transmitted from one point to another, in a single route. We cannot transmit data both ways. When this topology has exactly two endpoints, it is known as linear bus topology. It is used for small area.



.Fig. 3: Bus Topology

2. Ring Topology

Ring topology is a type of topology in which each computer is connected to another computer on each side. The last computer is connected to the first, this is called a ring shape. This topology allows each computer to have exactly two neighboring computers.

In this topology, the main computer is known as the monitor station, which is responsible for all the tasks. Data transmission between devices is done with the help of tokens. The computer station has to keep the token for transmitting the data. The token is issued only when the transmission is complete, after which other computer stations can use the token to transmit data.

Fig. 4: Ring Topology

3. Star Topology

Star topology is a type of network topology in which all nodes are connected via cables to a single node called a hub, which is the central node. Hubs are active or passive in nature. Active hubs are stored repeaters, and passive hubs are treated as a non-intelligent nodes. Each node has a reserved connection to the central node, which acts as a repeater during the central node data transmission.

Fig. 5: Star Topology

4. Mesh Topology

Mesh topology is a type of topology in which all nodes are connected to all other nodes through a network channel. Mesh topology is a point-to-point connection.

There are two techniques for data transmission in mesh topology, i.e. routing and flooding. In routing technology, nodes have routing logic, such as logic for the shortest distance to a destination node or logic to

avoid routes with broken connections. In flooding technique, all network nodes receive the same data. This technique makes the network stronger but it results in unwanted load on the network.

Fig. 6: Mesh Topology

5. Tree Topology

Tree topology is the topology in which nodes are hierarchically linked, with all nodes connected to the topmost node or root node. It other name is hierarchical topology. There are at least three levels of hierarchy in a tree topology.

Tree topology is applied in wide area networks. It is the combination of bus topology and star topology. It is best if the workstations are located in groups for easier work and management.

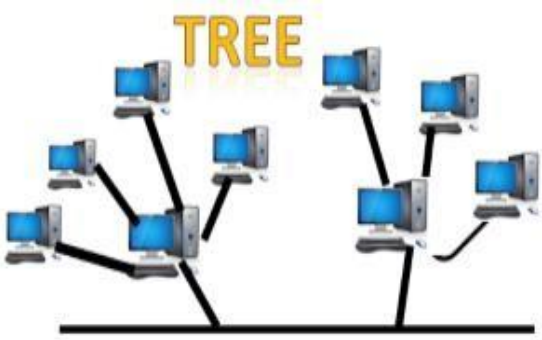


Fig. 7: Tree Topology

6. Hybrid Topology

Hybrid topology is basically a network topology consisting of two or more different types of topologies. It is a reliable and scalable topology, but at the same time, it is also expensive. It gets the merits and demerits of the topology used to create it.

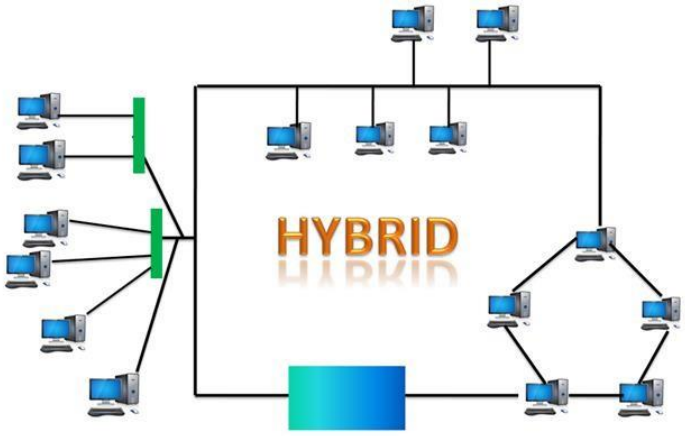


Fig. 8: Hybrid Topology

CONCLUSION

In this paper tell we study different type of topologies. They provide knowledge of topologies. Explain the analytical study of various basic topologies in this paper which gives us a brief idea about each topology. The topology is reliable, scalable, flexible and effective. The only disadvantages in this are the complexity of the design, the costly infrastructure when combining two or more different topologies. Computer networks have changed the human lifestyle forever.

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