Virtual Networks In Laptop By Web Application

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Abstract:

In developing world, virtual network plays an important role where A virtual network connects devices and virtual machines, irrespective of the location of the user is, using software. Virtual networks form their connections through internet. Virtual network has grown massively in recent years and it involves researchers from different fields. This chapter classifies these methods into two categories. The first category concerns strategies used for the network data collection, while the second category deals with strategies used for network data visualization.

I. Introduction

The internet is a great success with more than one billion users over the world. The internet model is mainly based on data transfer that the network is simple and transfer. On the other way the internet in laptops,making it difficult to solve few problems like mobility, no management, security(research from virtual networks isolation performance and trends)

Regrading this reference application is developed to overcome the problem that we are facing the issues with wi-fi in laptops. The modules in the application are:

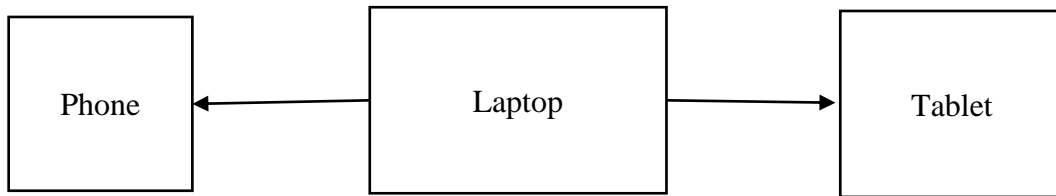- Settings

- Speed-up

- Connections

- Share

- About

Not all the laptop owners use their laptops to go to online wirelessly, although the majority do so using wi-fi or mobile broad band connection. That works out mostly who use laptop to connect wireless to the internet, at that time of laptop owners went online wirelessly using a laptop computer.
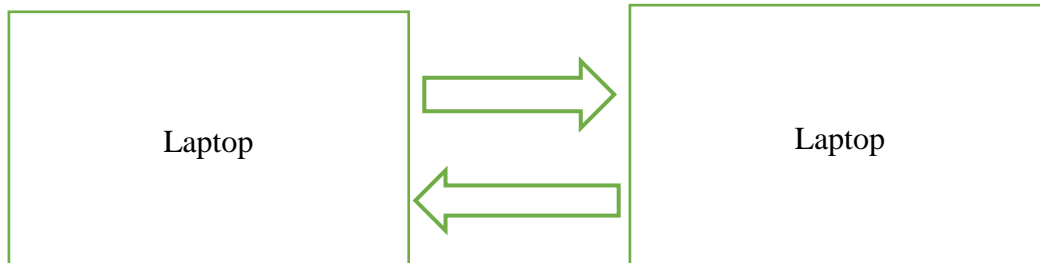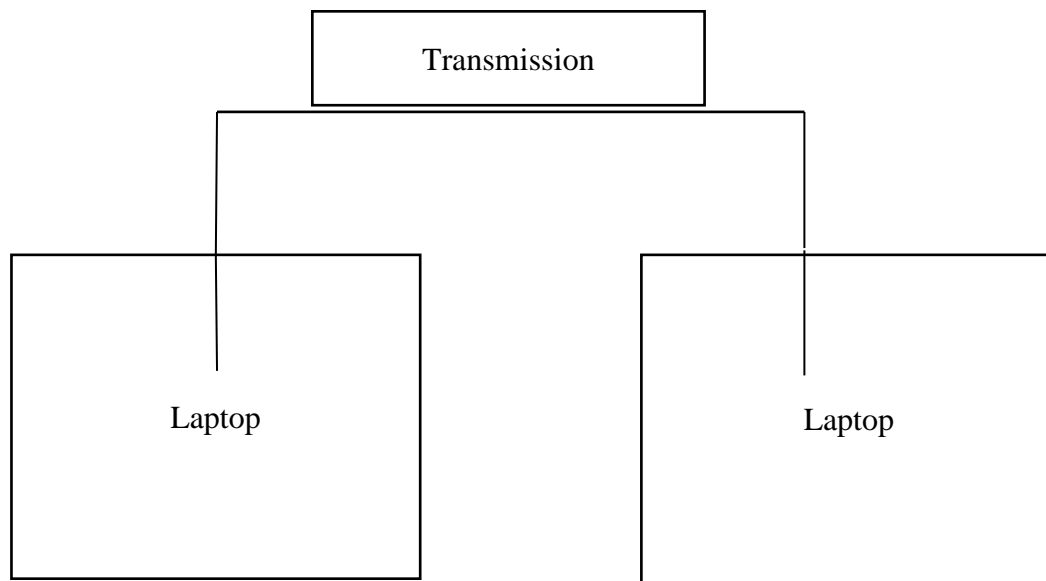
Connecting a via wi-fi connection is by far the most common way laptop owners access the wireless internet. More than eight in ten laptop owners (84%)use wi-fi to go online and one quarter(23%) do so using mobile wireless broad band to go online .There is some overlap between the these two technologies, as around one in five laptop owners use both the wi-fi and mobile wireless broadcast to go online.

Laptop owners utilize the portable nature and wireless capabilities of these devices to go online from a range of locations .Among those who use there laptop to go online wirelessly(using either a wi-fi or mobile broad card) 86% do so at home 37% do so work, and 54% do some place other than home or work .six in ten wireless laptop users(61%) go online from more than one of these locations ,with two in five (20%) using their laptop to access the internet from all three locations(home, work and somewhere else).

The application can be used regardless of the power in the area. The virtual network in laptop is a concept that has the network facility for laptops in world-wide location without having the struggle of using the mobile network and facing power issues.

Here the virtual network in laptops allows companies and individuals to create a network that exists between the computers and severs inspite of the location. Where the network virtualization function is a virtualization solution for communication technology demands which use standardizing IT virtualization technology to implement many network appliances on to industrial standard highvolume servers,(research by Alireza pirankashani) switches and storages which could be located in data centers.

| Phone | ← | Laptop | → | Tablet |

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Network resources are combined into parts by effectively splitting up the network's bandwidth into separate channels.

The ability to run multiple virtual networks with each has a separate control and data plan. In application virtualization helps a user to have remote access to an application from a server, the server stores all personal. (reference of computer network text book)

Types of virtual networks:

- PAN

- LAN

- MAN

- WAN

Types of Networks

PAN   LAN   MAN   WAN
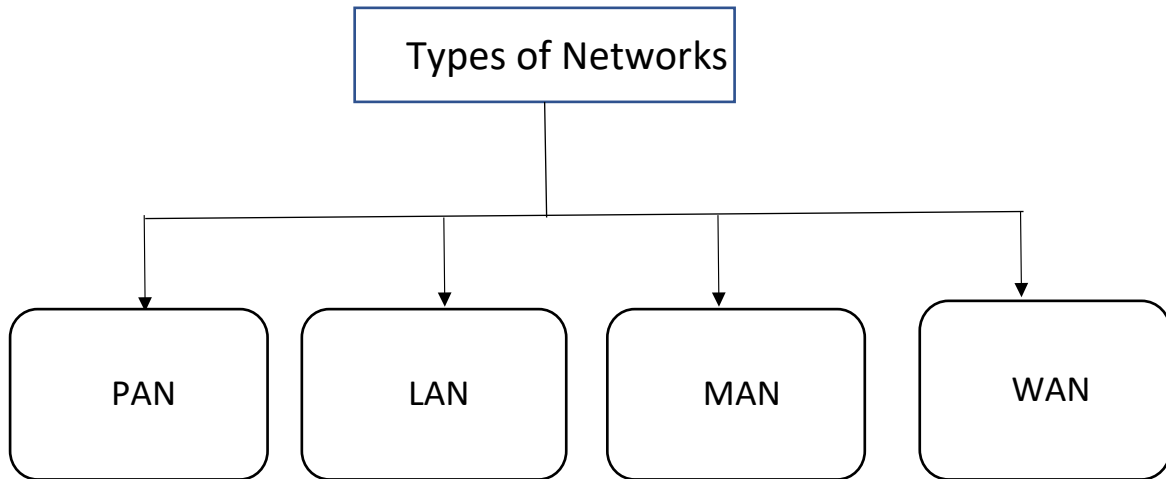
PAN: PAN stands for **Personal Area Network**.**PAN** is the computer network that connects computers/devices within the range of an individual person. As PAN provides a network range within a person's range typically within a range of 10 meters(33 feet) it is called a Personal Area Network. A Personal Area Network typically involves a computer, phone, tablet, printer, PDA (Personal Digital Assistant) and other and other entertainment devices like speakers, video game consoles, etc.

LAN: LAN stands for **Local Area Network**. These are privately-owned networks within a single building or campus of up to a few kilometers in size. LAN's are widely used to connect personal computers and work stations in company Offices and factories to share resources like printers, and to exchange information. LAN's are different from other networks by three characteristics (1). With their size, (2).With their transmission technology, (3). Their topology.

       LAN's run at a speed of 10 to 100Mbps.LANs use a transmission technology consisting of a single cable to which all the systems are attached. Like a telephone lines. Here it uses IEE 802.3 popularly known as Ethernet, and IEEE 802.5 IBM Token ring. Various topologies are used for broadcasting the LANs. The most common topologies are Bus, Ring and Star.

MAN: MAN stand for **Metropolitan Area Network**. t is a network with a size between a LAN and a WAN. Both the buses contain Head-End which initiates the transmission. The traffic of the right side of the sender uses upper bus. And to send left side uses lower one. It is designed for customers who need a high-speed connectivity. These are private and public-owned networks. It covers a large geographical area and may serve as an ISP (Internet Service Provider).It connects two or more computers that are apart but reside in the same or different cities.
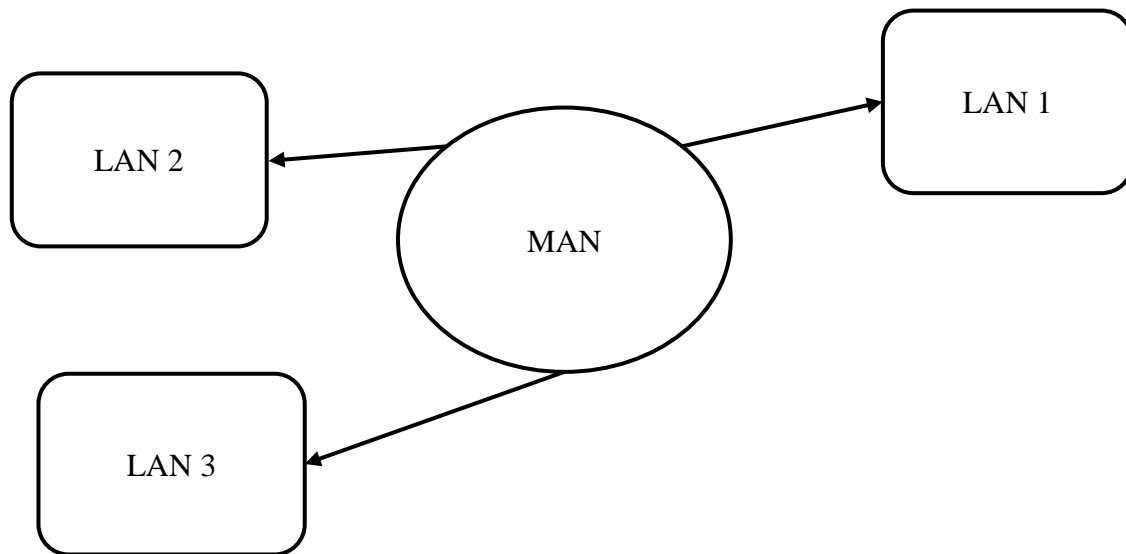
WAN: WAN stands for **Wide Area Network**. The range of WAN is different countries. WAN provides long-distance transmission of data voice, image and information over Large geographical area that may comprise a country, continent or even the whole world. In WANs systems are connected by a communication subnet or subnet. The job of the subnet is sto carry messages from system to system.

It is just like a telephone which carries words from speaker. In most wide area networks, the subnet consists of two distinct components; transmission lines and switching elements. Transmission lines are also called a circuits, channels or trunks move bits between machines. The switching elements are specialized computers used to connect two or more transmission lines connecting multiple networks known as routers.

Topology: The physical arrangement of computers which are connected to each other through via communication channel is called Topology.

Types of Topologies:
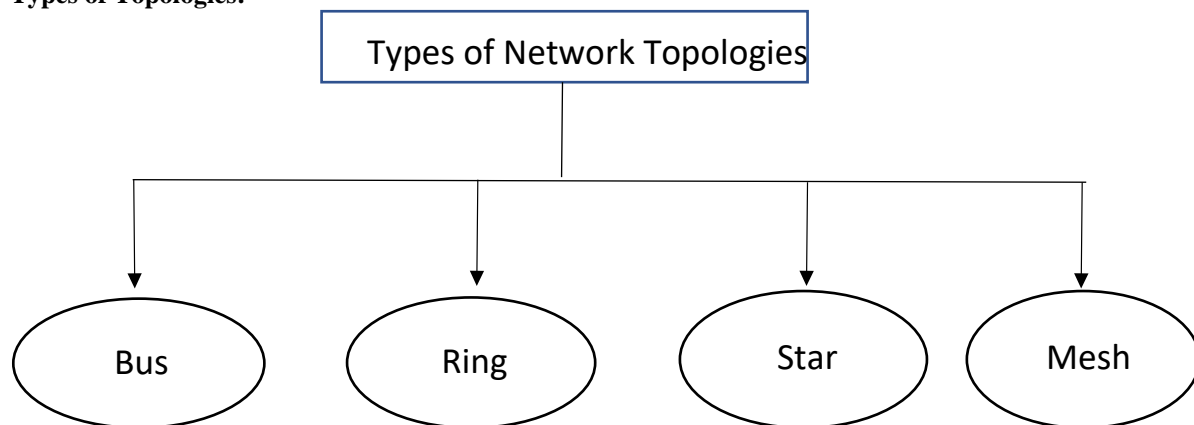
Bus Topology: Bus topology is a network type in which every computer and network device is connected to a single cable. When it has exactly two endpoints, then it is called **LinearBus Topology**.

Features of Bus Topology:

⭕ It transmits data only in one direction.

⭕ Every device is connected to a single cable.

Advantages of Bus Topology:

⭕ It is cost effective.

○ All nodes are easily added or removed.

○ Used in small network .

○ It is easy to understand.

○ Easy to expand joining two cables together.

Disadvantages of Bus Topology:

○ If cables fails then whole network fails.

○ If network traffic is heavy or nodes are more the performance of the network decreases.

○ Cable has a limited length.

Ring Topology: It is called a Ring Topology because it forms a ring as each computer is connected to another computer, with the last one connected to the first. Exactly two neighbors for each device.

Features of Ring Topology:

○ Numbers of repeaters are used for Ring topology with large number of nodes, because if someone wants to send some data to the last node in the ring topology with 100 nodes, then the data will have to pass through the remaining 99 nodes to reach the 100th node. Hence to prevent data loss repeaters are used in the network.

○ The transmission is unidirectional.

○ Data is transferred in a sequential manner that is bit by bit.

 Advantages of Ring Topology:

○ Transmitting network is not affected by high traffic or by adding more nodes, as only the nodes having tokens can transmit the data.

○ Cheap to install and expand

Disadvantages of Ring Topology:

○ Troubleshooting is difficult in ring topology.

○ Adding or Deleting the computers disturbs the network activity.

○ Failure of one computer disturbs the whole network.

Star Topology: In this type of topology all the computers are connected to a single hub through a cable. The hub is the central node and all other nodes are connected to node.

Features of Star Topology:

○ Every node has its own dedicated connection to the hub.

○ Hub acts as a repeater for data flow.

○ Cn be used with twisted pair, Optical fiber or Coaxial cable.

Advantages of Star Topology:

○ Hub can be upgraded easily.

○ Easy to trouble shoot.

○ Easy to setup and modify.

○ Only that node is affected which has failed, rest of the nodes can work smoothly.

Disadvantages of Star Topology:

O Cost of Installation is high.

O Expensive to use.

O If the hub fails then the whole network is stopped because all the nodes depend on the hub.

Mesh Topology: It is point to point connection to other nodes. Traffic is carried only between two devices to which it is connected. Mesh has n(n-2)/2 physical channels.

Features of Mesh Topology:

O Fully connected.

O Robust.

O Not flexible.

Advantages of Mesh Topology:

O Each connection can carry its own data load.

O It is robust.

O Provide security and privacy.

Disadvantages of Mesh Topology:

O Cable cost is more.

O Installation configuration is different.
➢Bulk wiring is required.

There is another type of topology which is different from the above topologies.

Hybrid Topology: It is combination of two or more network topologies. Inherits the advantages and disadvantages of the topologies included.

Advantages of Hybrid Topology:

O Reliable as error detecting and trouble shooting is easy.

O Effective. ➢Flexible.

Disadvantages of Hybrid Topology:

O Complex in design. ➢Costly.

Functioning:

• Settings:
    We log in to the network by means of phone number and password. We have a tab as Profile which contains the user information and the username is public which means it is visible to everyone. We have separate password for each and every user and we can change the password anytime. Incase of password recovery they can recover the password by means of getting an otp and security questions.

• Speed-Up:
    We can set the speed of our network in this icon. We can change the speed of the network based on our location. If the user is in the area where they can access network easily so they can set the speed with minimum range which helps them while purchasing the package.

- Connections:

    The user can share the network with others even though they didn't subscribe to the network and has logged into the application. The users get notified when they share the connection with others with the count.

- Share:

    They can share the connection with others by tapping this icon. The other person can access the network by scanning the QR code in the subscribers application. They can also share the reference link to others to install the application.

- About:

    It contains payment method and the about the number of connections with their usernames and how much network have they used, and with what speed. It also contains about the application and how it is used and all the information about the application.

Note:

✟ The persons who are buying their new laptops already have the application installed in their laptops and they can only need to log-in and connect with it.

✟ The persons with old laptops can install the application in Microsoft store or Apple store.

✟ They can also install from the users who have already installed and subscribed by their reference link.

Advantages:

- There's no involvement of power supply.
    -Irrespective of the location and signal strength they can access network in any area.

- Users can work on their own data plan by application in laptops.
-As there are offers for the recharge which we have for our mobile it will help us to use it after the plan has ended.

- Multiple user access.
    -If one person has done the recharge he can share it to some group of people.

- Apps are updated time-to-time.
    -New features are added and updated.

Uses:

- For the users who are doing work from home jobs, they can easily access the network at the time of power loss.

- In schools, colleges and private companies they can easily access the network without any conflict.

- The network communication in laptop can be easily done same as the network communications in mobiles.

Literature survey :
- This research work is based on the virtual network connection in laptops which gives 24by 7 network with or without power and without connecting our lapi to any other mobile net ,wifi& USB cable
- Based on the survey & research the notice we finalize that the connection of network in laptop is only on mobile data ,wifi , and USB cable so that we design a reference web application to connect network with wifi

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