CCA-102:DATA COMMUNICATIONS

ASSIGNMENT

1. What are the different types of networks?

ANS. 11 Types of Networks in Use Today

1. Personal Area Network (PAN)

The smallest and most basic type of network, a PAN is made up of a wireless modem, a computer or two, phones, printers, tablets, etc., and revolves around one person in one building. These types of networks are typically found in small offices or residences, and are managed by one person or organization from a single device.

2. Local Area Network (LAN)

We're confident that you've heard of these types of networks before – LANs are the most frequently discussed networks, one of the most common, one of the most original and one of the simplest types of networks. LANs connect groups of computers and low-voltage devices together across short distances (within a building or between a group of two or three buildings in close proximity to each other) to share information and resources. Enterprises typically manage and maintain LANs.

Using routers, LANs can connect to wide area networks (WANs, explained below) to rapidly and safely transfer data.

3. Wireless Local Area Network (WLAN)

Functioning like a LAN, WLANs make use of wireless network technology, such as Wi-Fi. Typically seen in the same types of applications as LANs, these types of networks don't require that devices rely on physical cables to connect to the network.

4. Campus Area Network (CAN)

Larger than LANs, but smaller than metropolitan area networks (MANs, explained below), these types of networks are typically seen in universities, large K-12 school districts or small businesses. They can be spread across several buildings that are fairly close to each other so users can share resources.

5. Metropolitan Area Network (MAN)

These types of networks are larger than LANs but smaller than WANs – and incorporate elements from both types of networks. MANs span an entire geographic area (typically a town or city, but sometimes a campus). Ownership and maintenance is handled by either a single person or company (a local council, a large company, etc.).

6. Wide Area Network (WAN)

Slightly more complex than a LAN, a WAN connects computers together across longer physical distances. This allows computers and low-voltage devices to be remotely connected to each other over one large network to communicate even when they're miles apart.

The Internet is the most basic example of a WAN, connecting all computers together around the world. Because of a WAN's vast reach, it is typically owned and maintained by multiple administrators or the public.

7. Storage-Area Network (SAN)

As a dedicated high-speed network that connects shared pools of storage devices to several servers, these types of networks don't rely on a LAN or WAN. Instead, they move storage resources away from the network and place them into their own high-performance network. SANs can be accessed in the same fashion as a drive attached to a server. Types of storage-area networks include converged, virtual and unified SANs.

8. System-Area Network (also known as SAN)

This term is fairly new within the past two decades. It is used to explain a relatively local network that is designed to provide high-speed connection in server-to-server applications (cluster environments), storage area networks (called “SANs” as well) and processor-to-processor applications. The computers connected on a SAN operate as a single system at very high speeds.

9. Passive Optical Local Area Network (POLAN)

As an alternative to traditional switch-based Ethernet LANs, POLAN technology can be integrated into structured cabling to overcome concerns about supporting traditional Ethernet protocols and network applications such as PoE (Power over Ethernet). A point-to-multipoint LAN architecture, POLAN uses optical splitters to split an optical signal from one strand of singlemode optical fiber into multiple signals to serve users and devices.

10. Enterprise Private Network (EPN)

These types of networks are built and owned by businesses that want to securely connect its various locations to share computer resources.

11. Virtual Private Network (VPN)

By extending a private network across the Internet, a VPN lets its users send and receive data as if their devices were connected to the private network – even if they’re not. Through a virtual point-to-point connection, users can access a private network remotely.

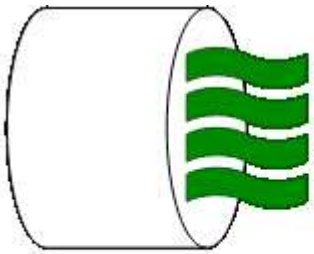
If you have questions about which type of network is right for your organization, or want to learn more about Belden’s network solutions that improve uptime, maintain security, and help improve user access, click here.

1. Explain the Shielded twisted pair (STP) and Unshielded twisted pair(UTP)

ANS. Difference between Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) cables

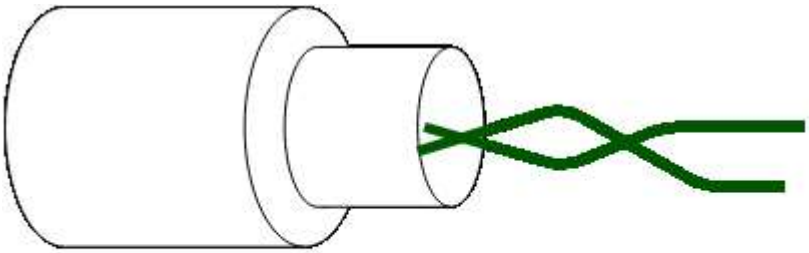
Last Updated: 21-05-2020

UTP:
UTP is the type of twisted pair cable. It stands for Unshielded twisted pair. Both Data and voice both are transmitted through UTP because its frequency range is suitable. In UTP grounding cable is not necessary also in UTP much more maintenance are not needed therefore it is cost effective.



Unshielded Twisted Pair

STP:
STP is also the type of twisted pair which stands for Shielded twisted pair. In STP grounding cable is required but in UTP grounding cable is not required. in Shielded Twisted Pair (STP) much more maintenance are needed therefore it is costlier than Unshielded Twisted Pair (UTP).



Shielded Twisted Pair

Difference between Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) cables:

S.NO	UTP	STP
1.	UTP stands for Unshielded twisted pair.	STP stands for Shielded twisted pair.
2.	In UTP grounding cable is not necessary.	While in STP grounding cable is required.
3.	Data rate in UTP is slow compared to STP.	Data rate in STP is high.

4.	The cost of UTP is less.	While STP is costlier than UTP.
5.	In UTP much more maintenance are not needed.	While in STP much more maintenance are needed.
6.	In UTP noise is high compared to STP.	While in STP noise is less.
7.	In UTP the generation of crosstalk is also high compared to STP.	While in STP generation of crosstalk is also less.
8.	In UTP, attenuation is high in comparison to STP.	While in STP attenuation is low.

3. What is difference between baseband and broadband transmission?

ANS. Difference between Broadband and Baseband Transmission

Last Updated: 25-11-2019

Broadband system use modulation techniques to reduce the effect of noise in the environment. Broadband transmission employs multiple channel unidirectional transmission using combination of phase and amplitude modulation.
Baseband is a digital signal is transmitted on the medium using one of the signal codes like NRZ, RZ Manchester biphase-M code etc. is called baseband transmission.
These are following differences between Broadband and Baseband transmission.

Baseband transmission –

1. Digital signalling.
2. Frequency division multiplexing is not pssible.
3. Baseband is bi-directional transmission.
4. Short distance signal travelling.
5. Entire bandwidth is for single signal transmission.
6. Example: Ethernet is using Basebands for LAN.

Broadband transmission –

1. Analog signalling.
2. Transmission of data is unidirectional.

3. Signal travelling distance is long.
4. Frequency division multiplexing possible.
5. Simultaneous transmission of multiple signals over different frequencies.
6. Example : Used to transmit cable TV to premises.

4. What is the difference between a hub, modem, router and a switch?

ANS. Do You Know the Difference Between Hub, Switch & Router?

Orenda

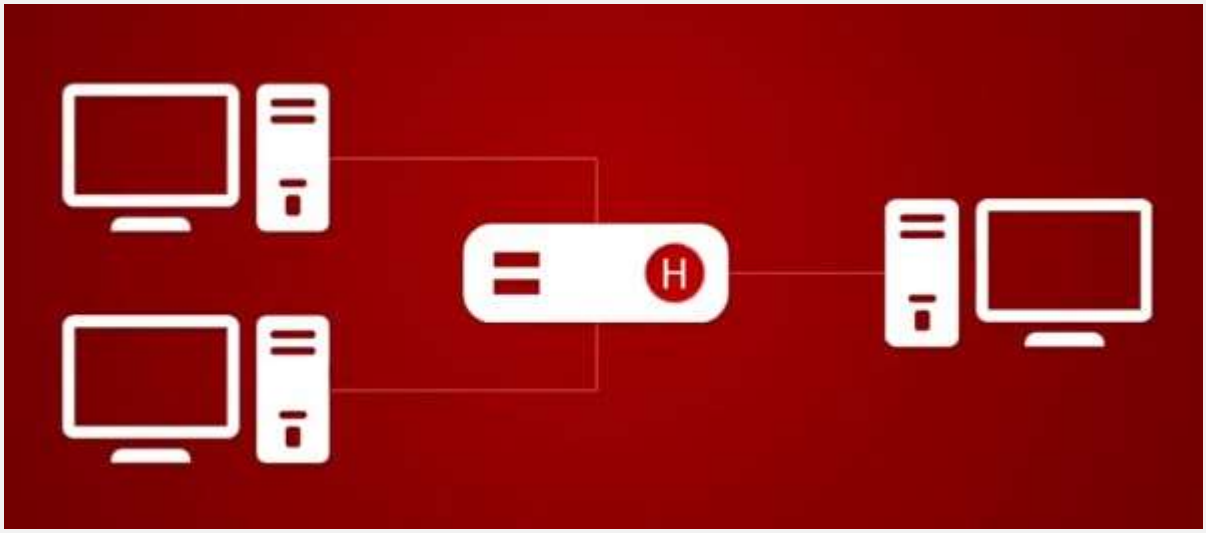
Feb 15, 2017·3 min read

When computers, network devices or other networks are required to be connected, hubs, **switches** and routers are the bridges to link them together. All the three types of devices can perform the same function, and technicians sometimes may use the terms interchangeably. However, this will make people confuse whether they are the same thing or different from each other. This post is going to explore the actual meanings of hub, switch, router and what they are used for.

Overview of Hub, Switch & Router

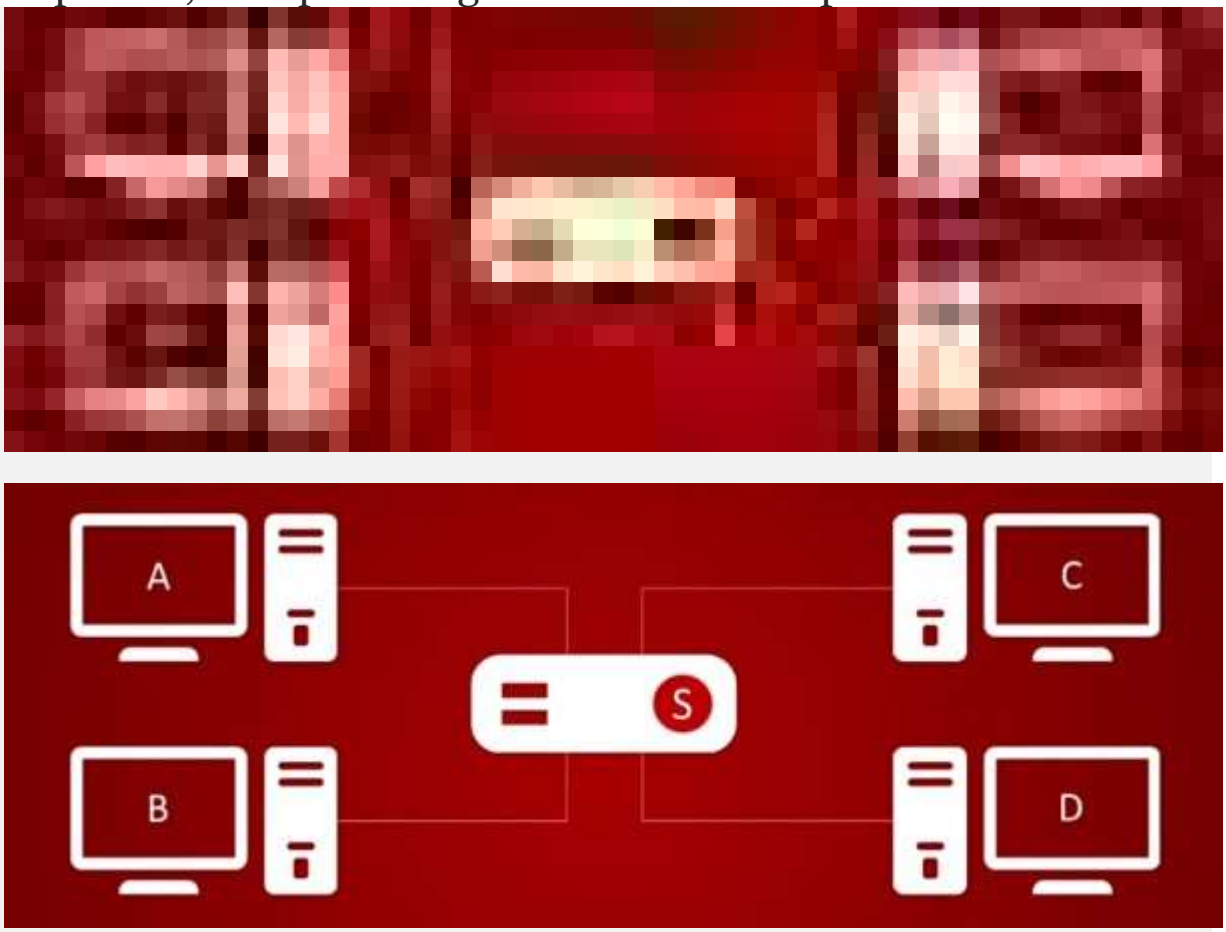
Hub

A hub is to sent out a message from one port to other ports. For example, if there are three computers of A, B, C, the message sent by a hub for computer A will also come to the other computers. But only computer A will respond and the response will also go out to every other port on the hub. Therefore, all the computers can receive the message and computers themselves need to decide whether to accept the message.



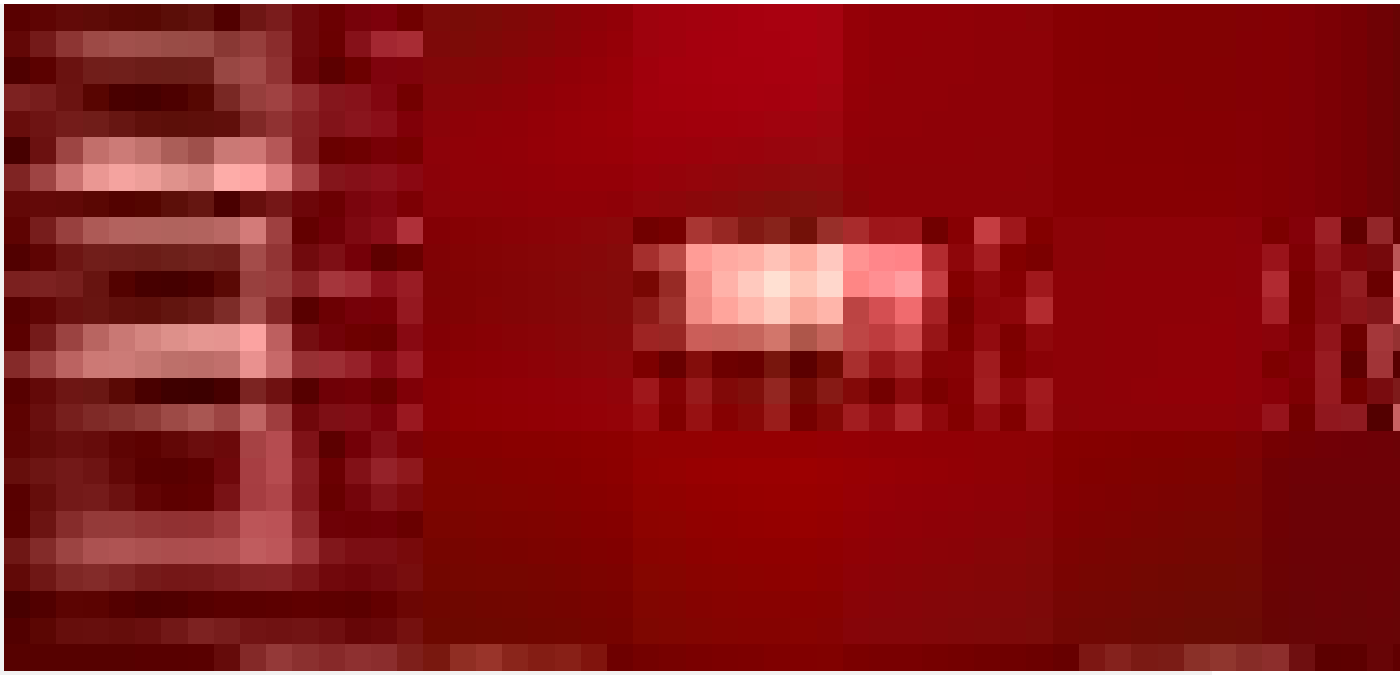
Switch

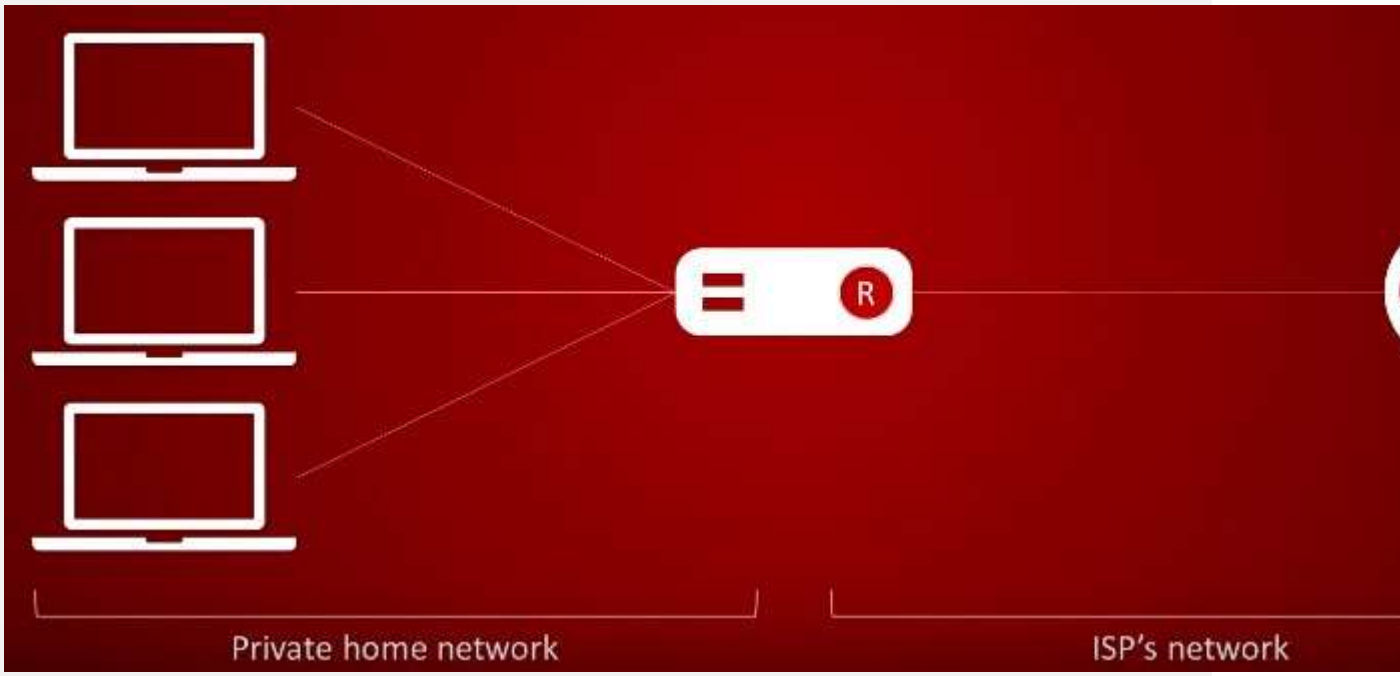
A switch is able to handle the data and knows the specific addresses to send the message. It can decide which computer is the message intended for and send the message directly to the right computer. The efficiency of switch has been greatly improved, thus providing a faster network speed.



Router

Router is actually a small computer that can be programmed to handle and route the network traffic. It usually connects at least two networks together, such as two LANs, two WANs or a LAN and its ISP network. Routers can calculate the best route for sending data and communicate with each other by protocols.





What Is the Difference?

Hub Vs. Switch

A hub works on the physical layer (Layer 1) of OSI model while Switch works on the data link layer (Layer 2). Switch is more

efficient than the hub. A switch can join multiple computers within one LAN, and a hub just connects multiple Ethernet devices together as a single segment. Switch is smarter than hub to determine the target of the forwarding data. Since switch has a higher performance, its cost will also become more expensive.

Switch Vs. Router

In the OSI model, router is working on a higher level of network layer (Layer 3) than switch. Router is very different from the switch because it is for routing packet to other networks. It is also more intelligent and sophisticated to serve as an intermediate destination to connect multiple area networks together. A switch is only used for wired network, yet a router can also link with the wireless network. With much more functions, a router definitely costs higher than a switch.

Hub Vs. Router

As mentioned above, a hub only contains the basic function of a switch. Hence, differences between hub and router are even bigger. For instance, hub is a passive device without software while router is a networking device, and data transmission form in hub is in electrical signal or bits while in router it is in form of packet.

Which One Should I Buy?

Whatever device you use for your network, you must make sure it can perform all the functions required by the network. As for performance, wireless router is recommended because it allows different devices to connect to the network. If you have a limited budget, switch is a good solution with relatively high performance and lower cost.

Conclusion

Although sometimes specialists alternatively use hub, switch or router to describe these devices, they still have their own differences. Understanding their distinctions can be helpful to find the most appropriate device for your network.

5. When you move the NIC cards from one PC to another PC, does the MAC address getstransferred as well?

ANS.

6. When troubleshooting computer network problems, what common hardware-relatedproblems can occur?

ANS.

7. In a network that contains two servers and twenty workstations, where is the best place to install an Anti-virus program?

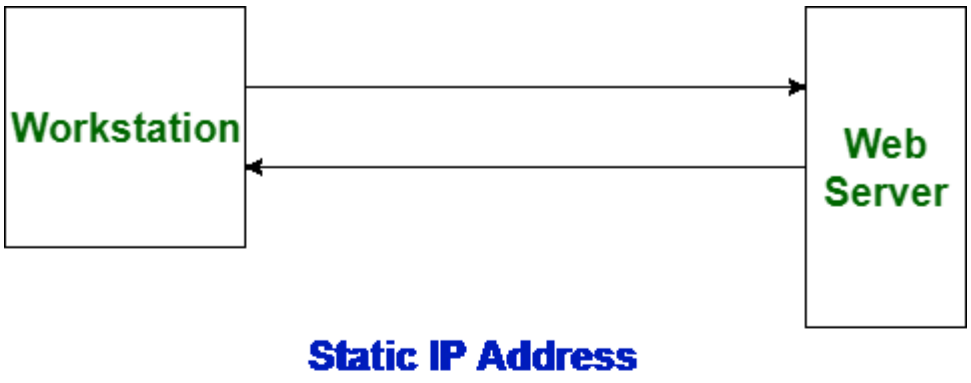
ANS.

8. Define Static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6.

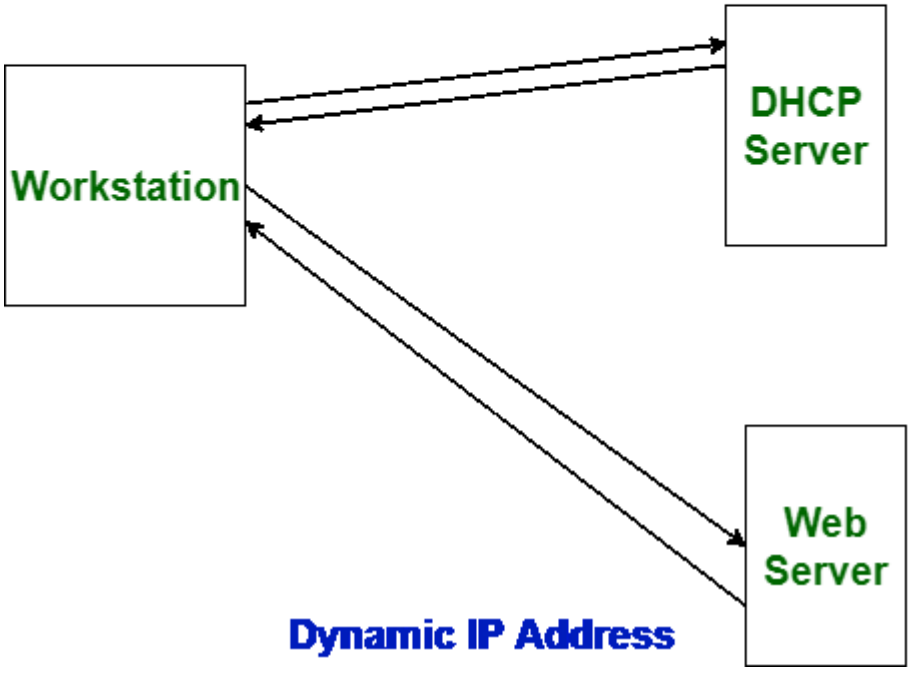
ANS. Difference between Static and Dynamic IP address

Last Updated: 15-06-2020

IP stands for **Internet Protocol**. IP address may be a distinctive numerical symbol allotted to every device on a network to spot each affiliation unambiguously.
The distinction between Static and Dynamic IP address lies inside the length of allotted scientific discipline address. The static scientific discipline address is fastened scientific discipline address that is manually allotted to a tool for a protracted amount of your time. On the opposite hand, the Dynamic scientific discipline address oft changes whenever user boots his/her machine, and it's mechanically allotted.



Static IP Address



Dynamic IP Address

Difference between Static and Dynamic IP address:

S.NO	STATIC IP ADDRESS	DYNAMIC IP ADDRESS
1.	It is provided by ISP(Internet Service Provider).	While it is provided by DHCP (Dynamic Host Configuration Protocol).
2.	Static ip address does not change any time, it means if a static ip address is provided then it can't be changed or modified.	While dynamic ip address change any time.
3.	Static ip address is less secure.	While in dynamic ip address, there is low amount of risk than static ip address's risk.
4.	Static ip address is difficult to designate.	While dynamic ip address is easy to designate.
5.	The device designed by static ip address can be trace.	But the device designed by dynamic ip address can't be trace.
6.	Static ip address is more stable than dynamic ip address.	While dynamic ip address is less stable than static ip address.
7.	The cost to maintain the static ip address	While the maintaining cost of

S.NO	STATIC IP ADDRESS	DYNAMIC IP ADDRESS
	is higher than dynamic ip address.	dynamic ip address is less than static ip address.
8.	It is used where computational data is less confidential.	While it is used where data is more confidential and needs more security.

9. Discuss TCP/IP model in detail.

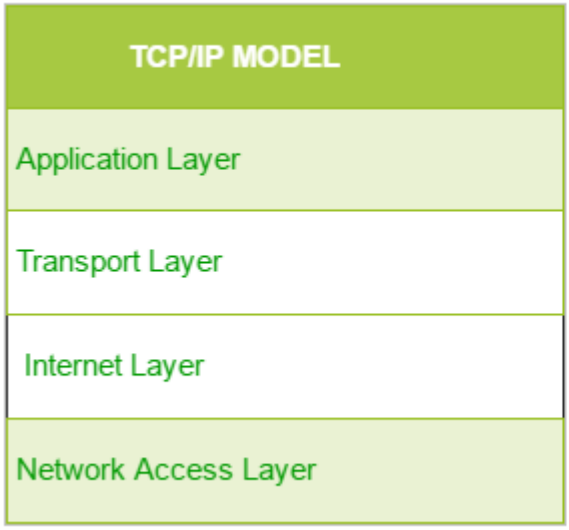
ANS. TCP/IP Model

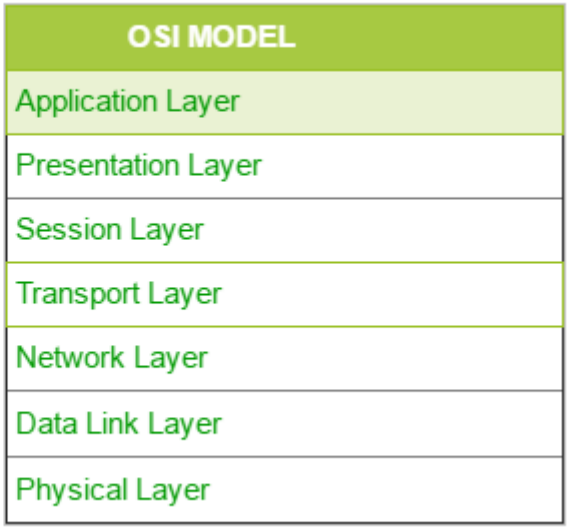
Last Updated: 30-09-2020

Prerequisite – Layers of OSI Model
The **OSI Model** we just looked at is just a reference/logical model. It was designed to describe the functions of the communication system by dividing the communication procedure into smaller and simpler components. But when we talk about the TCP/IP model, it was designed and developed by Department of Defense (DoD) in 1960s and is based on standard protocols. It stands for Transmission Control Protocol/Internet Protocol. The **TCP/IP model** is a concise version of the OSI model. It contains four layers, unlike seven layers in the OSI model. The layers are:

1. Process/Application Layer
2. Host-to-Host/Transport Layer
3. Internet Layer
4. Network Access/Link Layer

The diagrammatic comparison of the TCP/IP and OSI model is as follows :





Difference between TCP/IP and OSI Model:

TCP/IP	OSI
TCP refers to Transmission Control Protocol.	OSI refers to Open Systems Interconnection.
TCP/IP has 4 layers.	OSI has 7 layers.
TCP/IP is more reliable	OSI is less reliable
TCP/IP does not have very strict boundaries.	OSI has strict boundaries
TCP/IP follow a horizontal approach.	OSI follows a vertical approach.

TCP/IP uses both session and presentation layer in the application layer itself.	OSI uses different session and presentation layers.
TCP/IP developed protocols then model.	OSI developed model then protocol.
Transport layer in TCP/IP does not provide assurance delivery of packets.	In OSI model, transport layer provides assurance delivery of packets.
TCP/IP model network layer only provides connection less services.	Connection less and connection oriented both services are provided by network layer in OSI model.
Protocols cannot be replaced easily in TCP/IP model.	While in OSI model, Protocols are better covered and is easy to replace with the change in technology.

The first layer is the Process layer on the behalf of the sender and Network Access layer on the behalf of the receiver. During this article, we will be talking on the behalf of the receiver.

1. Network Access Layer –

This layer corresponds to the combination of Data Link Layer and Physical Layer of the OSI model. It looks out for hardware addressing and the protocols present in this layer allows for the physical transmission of data.
We just talked about ARP being a protocol of Internet layer, but there is a conflict about declaring it as a protocol of Internet Layer or Network access layer. It is described as residing in layer 3, being encapsulated by layer 2 protocols.

2. Internet Layer –

This layer parallels the functions of OSI's Network layer. It defines the protocols which are responsible for logical transmission of data over the entire network. The main protocols residing at this layer are :

1. **IP –** stands for Internet Protocol and it is responsible for delivering packets from the source host to the destination host by looking at the IP addresses in the packet headers. IP has 2 versions:
   IPv4 and IPv6. IPv4 is the one that most of the websites are using currently. But IPv6 is growing as the number of IPv4 addresses are limited in number when compared to the number of users.
2. **ICMP –** stands for Internet Control Message Protocol. It is encapsulated within IP datagrams and is responsible for providing hosts with information about network problems.
3. **ARP –** stands for Address Resolution Protocol. Its job is to find the hardware address of a host from a known IP address. ARP has several types: Reverse ARP, Proxy ARP, Gratuitous ARP and Inverse ARP.

3. Host-to-Host Layer –

This layer is analogous to the transport layer of the OSI model. It is responsible for end-to-end communication and error-free delivery of data. It shields the upper-layer applications from the complexities of data. The two main protocols present in this layer are :

1. **Transmission Control Protocol (TCP) –** It is known to provide reliable and error-free communication between end systems. It performs sequencing and segmentation of data. It also has acknowledgment feature and controls the flow of the data through flow control mechanism. It is a very effective protocol but has a lot of overhead due to such features. Increased overhead leads to increased cost.
2. **User Datagram Protocol (UDP) –** On the other hand does not provide any such features. It is the go-to protocol if your application does not require reliable transport as it is very cost-effective. Unlike TCP, which is connection-oriented protocol, UDP is connectionless.

4. Application Layer –

This layer performs the functions of top three layers of the OSI model: Application, Presentation and Session Layer. It is responsible for node-to-node communication and controls user-interface specifications. Some of the protocols present in this layer are: HTTP, HTTPS, FTP, TFTP, Telnet, SSH, SMTP, SNMP, NTP, DNS, DHCP, NFS, X Window, LPD. Have a look at Protocols in Application Layer for some information about these protocols. Protocols other than those present in the linked article are :

1. **HTTP and HTTPS –** HTTP stands for Hypertext transfer protocol. It is used by the World Wide Web to manage communications between web browsers and servers. HTTPS stands for HTTP-Secure. It is a combination of HTTP with SSL(Secure Socket Layer). It is efficient in cases where the browser need to fill out forms, sign in, authenticate and carry out bank transactions.

2. **SSH –** SSH stands for Secure Shell. It is a terminal emulations software similar to Telnet. The reason SSH is more preferred is because of its ability to maintain the encrypted connection. It sets up a secure session over a TCP/IP connection.
3. **NTP –** NTP stands for Network Time Protocol. It is used to synchronize the clocks on our computer to one standard time source. It is very useful in situations like bank transactions. Assume the following situation without the presence of NTP. Suppose you carry out a transaction, where your computer reads the time at 2:30 PM while the server records it at 2:28 PM. The server can crash very badly if it's out of sync.

This article is contributed by **Achiv Chauhan** and **Palak Jain**. If you like GeeksforGeeks and would like to contribute, you can also write an article using contribute.geeksforgeeks.org or mail your article to contribute@geeksforgeeks.org. See your article appearing on the GeeksforGeeks main page and help other Geeks.
Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above.

10. What is a Web Browser (Browser)? Give some example of browsers.

ANS. # Web Browser

A web browser, or simply "browser," is an application used to access and view websites. Common web browsers include Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari.
The primary function of a web browser is to render HTML, the code used to design or "mark up" webpages. Each time a browser loads a web page, it processes the HTML, which may include text, links, and references to images and other items, such as cascading style sheets and JavaScript functions. The browser processes these items, then renders them in the browser window.
Early web browsers, such as Mosaic and Netscape Navigator, were simple applications that rendered HTML, processed form input, and supported bookmarks. As websites have evolved, so have web browser requirements. Today's browsers are far more advanced, supporting multiple types of HTML (such as XHTML and HTML 5), dynamic JavaScript, and encryption used by secure websites.
The capabilities of modern web browsers allow web developers to create highly interactive websites. For example, Ajax enables a

browser to dynamically update information on a webpage without the need to reload the page. Advances in CSS allow browsers to display a responsive website layouts and a wide array of visual effects.Cookies allow browsers to remember your settings for specific websites.
While web browser technology has come a long way since Netscape, browser compatibility issues remain a problem. Since browsers use different rendering engines, websites may not appear the same across multiple browsers. In some cases, a website may work fine in one browser, but not function properly in another. Therefore, it is smart to install multiple browsers on your computer so you can use an alternate browser if necessary.

11. What is a search engine? Give example.

ANS. A **search engine** is software accessed on the Internet that searches a database of information according to the user's query. The engine provides a list of results that best match what the user is trying to find. Today, there are many different search engines available on the Internet, each with its own abilities and features. The first search engine ever developed is considered Archie, which was used to search for FTP files, and the first text-based search engine is considered Veronica. Currently, the most popular and well-known search engine is Google. Other popular search engines include AOL, Ask.com, Baidu, Bing, DuckDuck Go, and Yahoo.

How to access a search engine

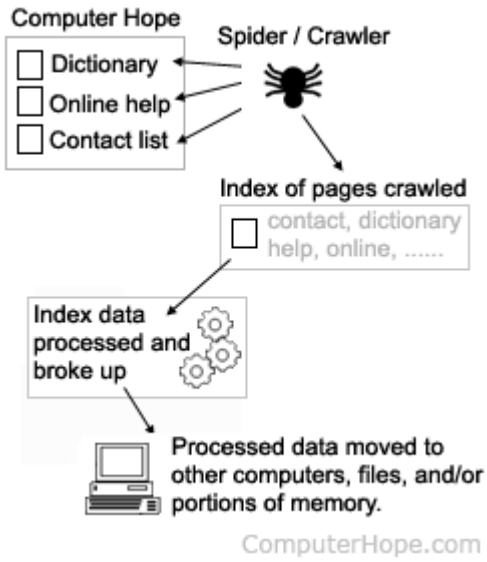
For users, a search engine is accessed through a browser on their computer, smartphone, tablet, or another device.

Today, most new browsers use an omnibox, which is a text box at the top of the browser. The omnibox allows users to type in a URL or a search query. You can also visit one of the major search engines' home page to perform a search.

- How to find information on the Internet.

How a search engine works

Because large search engines contain millions and sometimes billions of pages, many search engines display the results depending on their importance. This importance is commonly determined by using various algorithms.



As illustrated, the source of all search engine data is collected using a spider or crawler that visits each page on the Internet and collects its information.

Once a page is crawled, the data contained in the page is processed and indexed. Often, this can involve the steps below.

- Strip out stop words.
- Record the remaining words on the page and the frequency they occur.
- Record links to other pages.
- Record information about any images, audio, and embedded media on the page.

The data collected is used to rank each page. These rankings then determine which pages to show in the search results and in what order.

Finally, once the data is processed, it's broken up into files, inserted into a database, or loaded into memory where it's accessed when a search is performed.

Do all search engines give the same results?

Not necessarily. Search engines use proprietary algorithms to index and correlate data, so every search engine has its own approach to finding what you're trying to find. Its results may be based on where you're located, what else you've searched for, and what results were preferred by other users searching for the same thing. Each search engine uniquely weights these and offers you different results.

What is the best search engine?

There isn't one search engine that is better than all the others. Many people could argue that Google's search engine is the best, and it is the most popular and well-known. It's so popular that people often use it as a verb when telling someone to search for their question.

Microsoft's Bing search engine is also popular and used by many people. Bing does an excellent job of finding information and answering questions. Bing is also what powers the search in Windows 10 and the Yahoo search engine.

Users concerned with privacy, enjoy using Duck Duck Go. This search engine makes its users anonymous and is an excellent solution for users concerned with how much information Google and Bing collect on its users.

12. What is the Internet & WWW?

Many folks consider that they both are same but are they really same?

The Internet is a global network of networks while *the Web*, also referred formally as World Wide Web (www) is collection of information which is accessed via *the Internet*. Another way to look at this difference is; *the Internet* is infrastructure while *the Web* is service on top of that infrastructure. Alternatively, *the Internet* can be viewed as a big book-store while *the Web* can be viewed as collection of books on that store. At a high level, we can even think of *the Internet* as hardware and *the Web* as software!
Please do Like/Tweet/G+1 if you find the above useful. Also, please do leave us comment for further clarification or info. We would love to help and learn

12.What are the uses of internet in our daily life?

ANS. Uses of the Internet and Internet-related services in our Daily Life

The following points will help you learn why the internet is important. How the internet changed the world. What are the advantages for you if you’re connected to the internet? How the internet is influencing your life. So, Let’s begin:

1. Uses of the Internet for business promotion and digital marketing:

Today, the Internet is a prime and main source for business promotion and marketing. You use the internet to build the presence of your local business online to get more customers.
You can sell your products on your own online store website or also by using online selling platforms such as amazon. You can also create, run, and grow your online store by using third party software and business services.

Due to the uses of the internet, and large of amount consumer and broad market eCommerce, online selling, digital marketing, dropshipping, advertising and software development industries are in a boom.

We can see new apps, services, and creative businesses starting up every single day, which in turn is creating jobs, employment Opportunites, economic development. It’s also challenging traditional shopping and selling experiences. But more than that providing growth opportunities for small business owners, traditional store owners, and marketers to utilize eCommerce options.

I believe that the uses of the Internet in business have brought about an exciting stir in the business world and it will not hold back anymore. Use of Google Ad words, Facebook ads, and content marketing are common in product and services marketing on the Internet.

You can use the internet to promote and advertise any type of business:

- You can build an online presence for your business through google my business, google map, and Facebook page.
- You can promote and market products by using social media apps such as WhatsApp.
- You can use email marketing to send personalized and targeted offers.
- You can create your business website to promote your product and services.
- You can use eCommerce or online selling platforms to sell products online.
- You can use search engine optimize, content marketing to drive more customers to your online store or business website.
- You can use the internet to create daily deals, coupon codes, product discounts, and many other new and existed customers.
- You can also use the Affiliate Marketing platform – performance-based marketing to promote and sell your products online.
- You can use paid video, search engine, and social media advertising.

The Internet is populated by online marketing, eCommerce, Advertising, education, and entertainment content. There are millions of IT professionals, content creators, consumers and business are involved in these daily activities 24/7/365.

Not only that, but there are also various web-based applications and companies that help you in promotion, marketing, and sales process.
You as a business owner don't have to do all the works on your own. You can use hire digital marketing agencies or contractors, you can automate lead generation and marketing, You can track, manage customers, deals, tasks by using CRM and many other things.

2. Uses of the Internet in Students daily life

Students have a free platform to learn throughout their lifetime. People in the age group 18 to 35 are among the most frequent users of the Internet today and these people are mostly students from all over the world. They are using the Internet to learn new skills and even acquire degrees in professional online courses.

Students can learn technical, non-technical skills by using the internet. And the cost of online learning is less than the traditional method of learning. It's because there are various sources, educators, and methods to acquire new knowledge and skills.

One of those is the following, where you can learn any kind of skills in a few hours/week/months/year at a low price. And you will also get lifetime access to all the course material and future updates. You can do it on a mobile, desktop, tablet, and anywhere, anytime.

Top 11 Most important Computer Skills to learn for career development

It wasn't possible before the advent of the Internet to expand knowledge at this speed and low price. That's why the Internet is playing a crucial role in our education. That's why due to easy access to education on the internet, technological and lifestyle changes happen fast.

3. Uses of the Internet to increase the speed of daily tasks

Our routine is initiated by the Internet. It is the first thing in the morning we do- see our notifications and emails. The Internet has made human life so much easier, now the biggest and toughest tasks are done in minutes. No matter it is a simple email, pizza order, shopping or money transfer it is so much easier by the use of the Internet in life.

4. Uses of the Internet for online selling or Shopping

Shopping has become a hassle-free task now and almost anybody can order products online after comparison with other websites. The boom and the resultant competition in the online shopping business are evident. Shopping sites are more interesting because of the huge discounts different companies are offering customers.

People are attracted to them and this is good news especially for the Indian shopper because of our frugal spending habits. The customer can pay cash for the delivery of a product delivered to his house in a few hours and can return the product if he is not satisfied with it.

Shopping on the Internet is affordable, convenient, and saves time. The Use of Walmart, Amazon, Flipkart, Paytm, snapdeal, and many others for online shopping is common on the internet.

People can sell and buy anytime anywhere and through any device. That's how the Internet is affecting our shopping habits in daily life. And all this process is called eCommerce. eCommerce has changed business and now it's an important part of our life.

Learn: How eCommerce has changed business

5. Use of the Internet for research and development

The pace of work towards innovation and quality of research is developed by Internet tools. It is not tough to research on the Internet. From small business owners to big universities everyone is getting the benefits of the Internet for research and development. Data analysis, data entry, data research, data management, etc. services are in demand.

A person who is a data scientist and **data analyst** are really important for innovative decision-making. Even the **importance of Microsoft Excel in business** is being realized by people now. Similarly, CRM and Google Analytics are helping businesses to track, analyze the consumer's behavior on the websites and advertising campaigns.

Decision making is an important part of all kinds of businesses and organizations. Success and failure depend on our decision. After the rise of online business and higher competition on the Internet to conduct business, it's really important that decisions do not be a burden on the organization. That's why today you can visualize, analyze, and monitor customers' data in real-time by using data analysis tools. That helps the business to remain competitive in the market through better data analysis.

Any information we need regarding health, money, law, RTI, etc. everything is in front of us within a few seconds. So, it is really important that we use the power of the Internet for practical benefits.

6. Use of the Internet provide us quick and free communication

The Internet is undoubtedly the most effective and far-reaching communication tool we have at present. Communication on the Internet is free and fast. We all are connected with each other on various computers and IP. Skype, chat messengers, social media is common for personal and professional purposes.

Indeed we are also using standardized communication protocols but the Internet evolves constantly by using artificial intelligence and search engines to find out how we communicate, how this can be made simpler for us to use, and have a better experience in the shortest possible time.

This ability to communicate at breakneck speeds enables us to finish our tasks faster and become more efficient.

7. International uses of the Internet by working remotely and providing business services

It is obvious that the presence of the Internet has made doing business much easier. But it has also created its own set of challenges such as high competition, needs for quality content, etc. But knowledge is power and anyone can do business and job after learning more about it.

As the newer generations start to log into the Internet there are possibilities of completely new business and jobs. Nowadays the Internet is widely used in making money. If you have talent, then you can earn money by sitting at home on the Internet.

It is hard to imagine how many people working in 9-5 jobs want to leave into jobs and work independently as freelancers or start their own Internet business. The emergence of websites such as Upwork.com, Freelancer websites has given people

the option to work remotely (from home) according to their own schedule and commitment.

Thousands of freelancers or professionals are doing this on a daily basis to earn more than their bread and butter costs. Facebook business pages, Google AdWords, Paytm, blogs, YouTube channels, Amazon, and other affiliate marketing methods are various tools used to make money by providing things of value to Internet users.

If you have an idea which can provide a facility to people then you can start an online business by using any computer and information technology tool.

8. Uses of the Internet in Money Management

The use of the Internet is not limited to only earning money, it can also be used to manage money. We can now see hundreds of websites, apps, and other tools that help us in handling daily transactions, transfers, management, budget planning, etc. and this trend is growing steadily.

The use of Internet banking and mobile banking use is also growing. All the banks are really working hard to provide Internet banking and mobile apps to empower people to utilize the power of the Internet and the latest money management tools. Buxfer.com, mint.com, etc. websites and apps are providing free and premium services to manage your money.

9. Uses of the Internet in Everyday Politics

The Internet is a great tool for politicians to connect with people. The uses of the Internet are not only in personal and business life but it is common now in politics. Politicians are using various methods to influence people and youth on social media to favor their party. They are also using it to criticize other political parties.

Our Prime Minister of India Mr. Narender Modi and Chief Minister of Delhi Mr. Arvind Kejriwal are very active with their followers on Twitter and Facebook and sharing views on a particular topic. It is a widely accepted fact that Mr. Modi's success is largely attributed to his presence on social media and an active social media team. It is also good for people to know about the progress of ministers on a particular task. If governing political parties use social media to show the progress of their work then it is great. But if they are only using for condolence purposes then I think they have to think again about their social media political strategies.

10. Uses of the Internet for Teaching and Sharing Knowledge with others

The Internet is a very important tool for educators. Similarly, educators are using the Internet for teaching and sharing our knowledge and experience with the world. The Internet and its application is user-friendly and make students life easy. A teacher can use YouTube channels to teach students around the world. Teachers can use the blog in which they can share their career experiences with college graduates. There are various websites for teachers to teach online. Teachers can use blogs, websites, youtube, online course ebooks, online tools, content to create and distribute educational content.

If you're free and want to spend your time doing productive things then create your own website. On the website, you can train people about the skills you're a master in.

11. Solving the problems of others by the use of the internet

You can determine the importance of the internet that it is mostly used today to solve the problems of others. Online forms, social groups are the platform in which you can provide a solution. For example, people ask on Quora, and then people who know the solution answer.

This use of the internet is not only beneficial for others who are getting the solution but also for the people who give the answer. Answer providers on the forums are mostly bloggers, internet marketers, and businesses. They use such a platform to connect with their target users or clients or readers.

Related: **Best courses for starting your own online business**

12. Uses of the Internet in Cashless Economy

The Internet is very useful for economic development. The use of internet banking, mobile banking, and e-wallets also helps at some point to decrease corruption in India or in any nation.

It's because when using digital transactions it will be recorded in the database. Bank databases can be easily tracked by the income tax department. So, it will be helpful for a government that all income tax pair shows correct details or income report in the ITR.

Another thing is that offline cash transactions often not calculated and mentioned by people such as rent. If we use the internet or cashless internet transactions then it will help others to show their income report. If we're giving rent money in cash or paying in cash for other services then it is highly possible for the receiver to hide that money for income tax report.

I am not saying that it should be mandatory to use but it can be helpful. But for that people also need education and awareness about internet banking. Also, banks need to update their banking systems. The government also needs to create privacy and cybersecurity policies etc.

So, uses of the internet in digital transactions are time-saving and helpful for the country. But be aware of cyber crimes and get more knowledge about internet security.

13. Uses of the Internet in the environmental development

The Internet can play a very important role in Environmental development. We can use internet tools such as social media and blogs by promoting environment development activities. Sharing valuable information and knowledge regarding trees, plants and water will make positive effects on internet users. There are billion people who use the internet if each day one people inspired to save trees and plants then it will be a great use of the internet.

14. Uses of the internet for parents

Not all parents are computer and internet literate. But the internet literate people can use the internet to guide their kids. They can analyze the content on the internet better than students. So, they can suggest what is helpful for kids to do on the internet. Another thing is that they can help kids in their studies and education. I know various kids know more about the internet than their parents. But it's highly important for parents to guide children for the best use of the internet in daily life.

15. Uses of Internet in Tour and Travel

Uses of the Internet on tour and traveling are highly effective. We now search on Google before visiting the places. We booked our tour through the use of the Internet. We can read blogs about tour and travel experiences and tips. Tour and traveling service providers and companies are using innovative ways and marketing campaigns to attract people to their website to book the tour package.

We can now compare the tour package prizes on the INTERNET and choose the one which best suits our budget and requirement. The use of the Internet is highly effective because now we can see and analyze the place before we book our tour package. This is one of the biggest use of the Internet.

16. Government policies and schemes are easily accessible by the use of the Internet

The right utilization of Internet power is challenging for governments across the world. Government expenses are reduced due to providing data and information for people on government websites. People are taking advantage of Government policies and websites. Any government information and service are easily accessible for the citizens. Using tools such as Right to Information, we can have online access to important government documents.

So, after seeing the above uses we have to agree that the Internet is playing an irreplaceable role in human development. No field can exclude or escape this ever-growing worldwide web we call the Internet.

Economic development is becoming stronger by the use of the Internet in any country. Till the use of the Internet is done for good things our social, economic development will continue. The Internet is harmful if we're using it for wrong things and wrong ways. Our daily activities are enhanced and our knowledge expanded by the Internet but at the same time, the Internet is providing powerful development tools for humans. That's why the good uses of the Internet are really important in everyday life.

17. Invention Engine

Today almost all the things are connected and working through the Internet. There should be no doubt that the Internet is becoming the engine of every new invention. Such as machine learning, cloud computing, business intelligence, internet of things, automation, and artificial intelligence tools and services evolution never possible without the Internet.

13. What is an Internet Service Provider? Give some example of ISP in India.

ANS. List of internet service providers in India

From Wikipedia, the free encyclopedia

Jump to navigationJump to search

This is a list of **internet service providers in India**. There were 358 internet service providers (ISPs) offering broadband and narrow band internet services in India as of 31 December 2019.[1]

Contents

By subscribers[edit]

The following table shows the top 10 ISPs in India by total subscriber base as of 31 December 2019. Broadband is defined as "an always-on Internet connection with download speed of 512 kbit/s or above." The number of internet users are 718.74 million, out of which 56.80 million are narrow band subscribers and 661.93 million are broadband subscribers.[2]

Rank	ISP	Narrowband	Broadband	Total
1	Airtel	0	549,872,755	370,872,755
2	Reliance Jio	26,632,137	244,395,168	167,027,305
3	Vodafone Idea	23,614,475	118,453,704	142,068,179
4	BSNL	6,299,248	23,963,441	30,262,689
5	ACT Fibernet	0	1,518,853	1,518,853
6	MTNL	201,088	891,113	1,092,201
7	Hathway	0	898,834	898,834

Rank	ISP	Narrowband	Broadband	Total
8	APSFL	0	850,000	850,000
9	You broadband	14,675	770,609	785,284
10	GTPL Broadband Pvt. Ltd.	0	325,927	325,927
11	Excitel Broadband Pvt. Ltd.	0	319,323	319,323

Note:

1. On 28 February 2018 Aircel filed for bankruptcy at NCLT and a substantial number of customers have migrated to other services due to closing down of most of the consumer services.[3][4]
2. The services of Telenor India has been merged with Airtel on 14 May 2018.[5]
3. On 31 August 2018, Vodafone India has been merged with Idea Cellular and renamed as Vodafone Idea Limited.[6]

Other notable ISPs[edit]

ISP	Coverage area
RailTel Corporation of India	State-owned ISP with pan-India optic fiber network along Railway track

Enterprise/wholesale only[edit]

- CtrlS Datacenters Ltd
- GAILTEL
- National Knowledge Network for educational institutions in India
- Tulip Telecom
- PowerGrid
- ERNET

See also[edit]

- List of telecom companies in India
- Internet in India

References[edit]

1. ^ *"The Indian Telecom Services Performance Indicators October — December, 2019" (PDF). TRAI. Retrieved 6 June 2019.*
2. ^ *"The Indian Telecom Services Performance Indicators October – December, 2019" (PDF). Telecom Regulatory Authority of India. 6 June 2020.*
3. ^ *Sengupta, Devina (28 February 2018). "Aircel, country's last small mobile phone operator, files for bankruptcy". The Economic Times. Retrieved 28 February 2018.*
4. ^ *"Aircel's bankruptcy note on Facebook".*
5. ^ *Gulveen Aulakh. "DoT approves Bharti Airtel and Telenor India merger". The Economic Times.*
6. ^ *Parbat, Kalyan (31 August 2018). "NCLT gives go-ahead to Idea-Vodafone merger". The Economic Times.*

External links[edit]

- ISP market share grouped by ASNs used (APNIC report)
- List of ASNs assigned to India
- DoT website
- List of Telecom Service Providers on TRAI website

List of internet service providers in India

From Wikipedia, the free encyclopedia

Jump to navigationJump to search

This is a list of **internet service providers in India**. There were 358 internet service providers (ISPs) offering broadband and narrow band internet services in India as of 31 December 2019.[1]

Contents

By subscribers[edit]

The following table shows the top 10 ISPs in India by total subscriber base as of 31 December 2019. Broadband is defined as "an always-on Internet connection with download speed of 512 kbit/s or above." The number of internet users are 718.74 million, out of which 56.80 million are narrow band subscribers and 661.93 million are broadband subscribers.[2]

Rank	ISP	Narrowband	Broadband	Total

Rank	ISP	Narrowband	Broadband	Total
1	Airtel	0	549,872,755	370,872,755
2	Reliance Jio	26,632,137	244,395,168	167,027,305
3	Vodafone Idea	23,614,475	118,453,704	142,068,179
4	BSNL	6,299,248	23,963,441	30,262,689
5	ACT Fibernet	0	1,518,853	1,518,853
6	MTNL	201,088	891,113	1,092,201
7	Hathway	0	898,834	898,834
8	APSFL	0	850,000	850,000
9	You broadband	14,675	770,609	785,284
10	GTPL Broadband Pvt. Ltd.	0	325,927	325,927
11	Excitel Broadband Pvt. Ltd.	0	319,323	319,323

Note:

1. On 28 February 2018 Aircel filed for bankruptcy at NCLT and a substantial number of customers have migrated to other services due to closing down of most of the consumer services.[3][4]
2. The services of Telenor India has been merged with Airtel on 14 May 2018.[5]
3. On 31 August 2018, Vodafone India has been merged with Idea Cellular and renamed as Vodafone Idea Limited.[6]

Other notable ISPs[edit]

ISP	Coverage area
RailTel Corporation of India	State-owned ISP with pan-India optic fiber network along Railway track

Enterprise/wholesale only[edit]

- CtrlS Datacenters Ltd
- GAILTEL
- National Knowledge Network for educational institutions in India
- Tulip Telecom
- PowerGrid
- ERNET

See also[edit]

- List of telecom companies in India
- Internet in India

References[edit]

1. ^ *"The Indian Telecom Services Performance Indicators October — December, 2019" (PDF). TRAI. Retrieved 6 June 2019.*
2. ^ *"The Indian Telecom Services Performance Indicators October – December, 2019" (PDF). Telecom Regulatory Authority of India. 6 June 2020.*
3. ^ *Sengupta, Devina (28 February 2018). "Aircel, country's last small mobile phone operator, files for bankruptcy". The Economic Times. Retrieved 28 February 2018.*
4. ^ *"Aircel's bankruptcy note on Facebook".*
5. ^ *Gulveen Aulakh. "DoT approves Bharti Airtel and Telenor India merger". The Economic Times.*
6. ^ *Parbat, Kalyan (31 August 2018). "NCLT gives go-ahead to Idea-Vodafone merger". The Economic Times.*

External links[edit]

- ISP market share grouped by ASNs used (APNIC report)
- List of ASNs assigned to India
- DoT website
- List of Telecom Service Providers on TRAI website

14. Discuss the difference between MAC address, IP address and Port address.

ANS. Both MAC Address and IP Address are used to uniquely identify a machine on the internet. MAC address is provided by the chip maker while IP Address is provided by the Internet Service Provider.

Following are the important differences between MAC Address and IP Address.

1	Definition	MAC Address stands for Media Access Control Address.	IP Address stands for Internet Protocol Address.
2	Usage	MAC Address ensure that physical address of the computer is unique.	IP Address is a logical address of the computer and is used to uniquely locate computer connected via a network.
3	Format	MAC Address is of six byte hexadecimal address.	IP Address is of 4 bytes or of 16 bytes.
4	Access Protocol	MAC Address can be retrieved using ARP protocol.	IP Address can be retrieved using RARP protocol.
5	Provider	Chip maker manufacturer provides the MAC Address.	Internet Service Provider, ISP provides the IP Address.

15. How do we view my Internet browser's history?

ANS. As you browse the web, most web page data is cached locally on your computer to help pages load faster and reduces the amount of data you need to transfer over your internet connection.

To help keep your browsing history private, and to free up disk space on your computer, you can clear your local browsing history.

Microsoft Edge

Microsoft Edge is the default browser in Windows 10, replacing Internet Explorer on new computers.

To view your Edge browsing history

In a Microsoft Edge browser window, open the history menu using the keyboard shortcut Ctrl+H. You can also access this menu with the following steps:

1. Click the Hub button in the upper right-hand corner of the window.
2. Click the History icon to open the history menu.

This menu allows you to view the pages you've visited in chronological order.

To clear your Edge browsing history

1. Open the history menu as described above.
2. Click Clear all history.

3. Check the box next to each type of data you'd like to clear. Browsing history is the first item listed, so make sure this is checked.
4. Click Show more for additional options. Select any that you would like to clear.
5. Click Clear to erase the selected data.
6. If you want the selected items to be cleared automatically when you close your browser, set Always clear this when I close the browser to On.
7. When you're done, click the Hub button.

Google Chrome

To view your browsing history in Chrome

1. In any Chrome window, use the keyboard shortcut Ctrl+H, or navigate to the URL chrome://history .
2. Or, click the Menu button, which is located near the top-right side of the browser window, and choose History, then History again.

To clear your browsing history in Chrome

1. Click the Menu button , choose More tools and then Clear browsing data... Or, use the keyboard shortcut Ctrl+Shift+Del.
2. Select what data you'd like to clear from your history using the drop-down menu and check the appropriate boxes.

When you're ready to clear your history, click Clear browsing data.

Google Chrome on Android phone or tablet

Viewing and Deleting History

1. Open the Chrome browser on your Android phone or tablet.
2. Tap the Menu icon in the top right corner of the screen next to the address bar.
3. In the drop-down menu, tap History.
4. Tap CLEAR BROWSING DATA... at the bottom of the screen.
5. Select the appropriate boxes.
6. Tap the Clear button.

Google Chrome on iPhone

1. Open Google Chrome on your iPhone or iPad.
2. Click in the Google search or URL bar at the top of the screen.
3. A the bottom click View search history
4. Click the CLEAR ALL at the top right of the screen.
5. If you're sure, click CLEAR ON-DEVICE HISTORY.

Mozilla Firefox

There are several ways to view and edit your history in Firefox.

To view your browsing history in Firefox

1. If you do not have a custom homepage set, you can click the History button in any new browsing window.
2. Or you can always view your browsing history in the History sidebar. Open it by pressing Alt to show the menu bar, then choosing View → Sidebar → History. Or, you can use the keyboard shortcut, Ctrl+H.
3. You can also view your history if you click the hamburger menu button in the top right-hand corner of your window, then click History. This gives you a quick look at your history. From this menu you can also View History Sidebar.
4. Lastly, you can open your browsing history in the Firefox Library. To open this view, press Alt to show the menu bar, then choose History → Show All History. The keyboard shortcut for this view is Ctrl+Shift+H. When viewing your history here, you can highlight individual pages in your history and press Del to delete them. Right-click any item for more options.

To clear your browsing history in Firefox

1. Click the hamburger menu button and select History.
2. Choose Clear Recent History...
3. The *Clear Recent History* window will open. In the drop-down menu, choose how far back you want to clear the history, then click Clear Now.

You can also access this menu using the keyboard shortcut Ctrl+Shift+Del.