

What is the Internet?

Internet is a global network that connects billions of computers across the world with each other and to the World Wide Web. It uses standard internet protocol suite (TCP/IP) to connect billions of computer users worldwide. It is set up by using cables such as optical fibers and other wireless and networking technologies. At present, internet is the fastest mean of sending or exchanging information and data between computers across the world.



It is believed that the internet was developed by "Defense Advanced Projects Agency" (DARPA) department of the United States. And, it was first connected in 1969.

Why is the Internet Called a Network?

Internet is called a network as it creates a network by connecting computers and servers across the world using routers, switches and telephone lines, and other communication devices and channels. So, it can be considered a global network of physical cables such as copper telephone wires, fiber optic cables, tv cables, etc. Furthermore, even wireless connections like 3G, 4G, or Wi-Fi make use of these cables to access the Internet.

Set Up

Physical copper or optical fiber data transmission cables, as well as other networking technologies like LAN, WAN, and MAN, are used to set up the internet. Even the 2g, 3g, and 4g services, as well as Wi-Fi, need this physical cable arrangement in order to access the

Internet connection. The Internet Corporation for Assigned Names and Numbers (ICANN), a US-based organization, is in charge of overseeing the management of the Internet and its related protocols, including IP addresses.

How does internet work?

Before understanding this let us understand some basics related to internet:

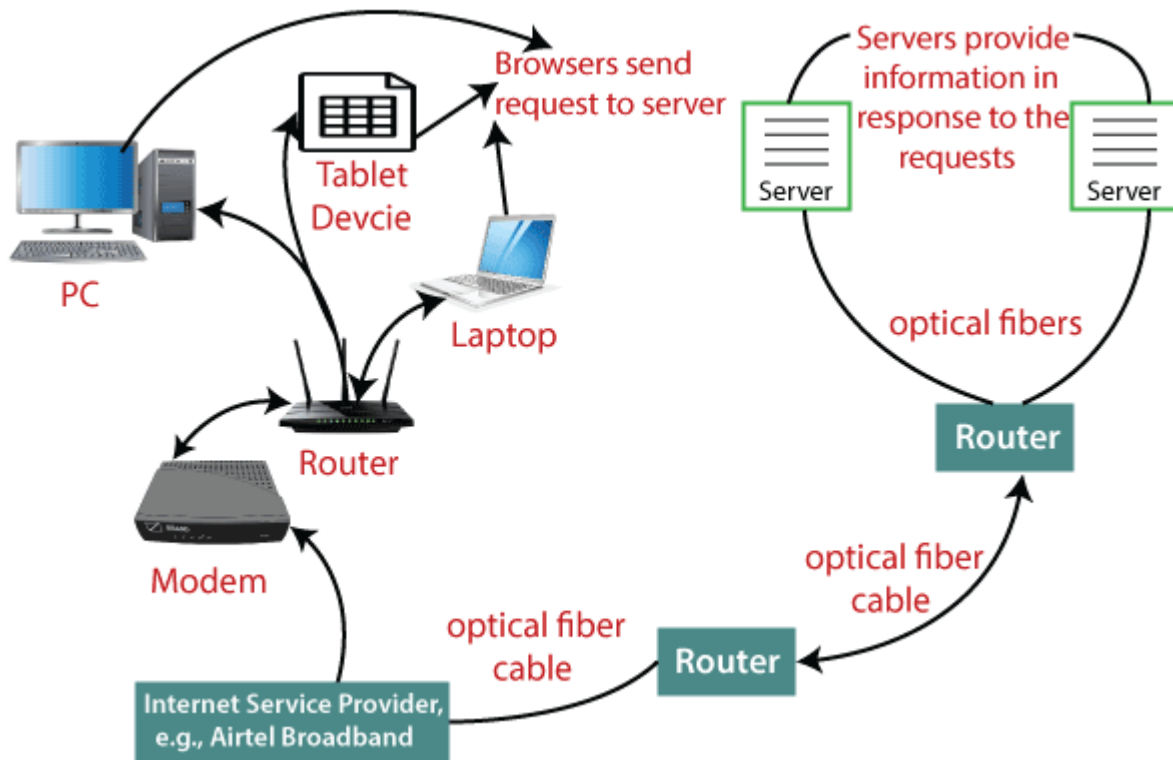
The internet works with the help of clients and servers. A device such as a laptop, which is connected to the internet is called a client, not a server as it is not directly connected to the internet. However, it is indirectly connected to the internet through an Internet Service Provider (ISP) and is identified by an IP address, which is a string of numbers. Just like you have an address for your home that uniquely identifies your home, an IP address acts as the shipping address of your device. The IP address is provided by your ISP, and you can see what IP address your ISP has given to your system.

A server is a large computer that stores websites. It also has an IP address. A place where a large number of servers are stored is called a data center. The server accepts requests send by the client through a browser over a network (internet) and responds accordingly.

To access the internet we need a domain name, which represents an IP address number, i.e., each IP address has been assigned a domain name. For example, youtube.com, facebook.com, paypal.com are used to represent the IP addresses. Domain names are created as it is difficult for a person to remember a long string of numbers. However, internet does not understand the domain name, it understands the IP address, so when you enter the domain name in the browser search bar, the internet has to get the IP addresses of this domain name from a huge phone book, which is known as DNS (Domain Name Server).

For example, if you have a person's name, you can find his phone number in a phone book by searching his name. The internet uses the DNS server in the same way to find the IP address of the domain name. DNS servers are managed by ISPs or similar organizations.

Now after understanding the basics, let us see how internet works?



When you turn on your computer and type a domain name in the browser search bar, your browser sends a request to the DNS server to get the corresponding IP address. After getting the IP address, the browser forwards the request to the respective server.

Once the server gets the request to provide information about a particular website, the data starts flowing. The data is transferred through the optical fiber cables in digital format or in the form of light pulses. As the servers are placed at distant places, the data may have to travel thousands of miles through optical fiber cable to reach your computer.

The optical fiber is connected to a router, which converts the light signals into electrical signals. These electrical signals are transmitted to your laptop using an Ethernet cable. Thus, you receive the desired information through the internet, which is actually a cable that connects you with the server.

Furthermore, if you are using wireless internet using wifi or mobile data, the signals from the optical cable are first sent to a cell tower and from where it reaches to your cell phone in the form of electromagnetic waves.

The internet is managed by ICANN (Internet Corporation for Assigned Names and Numbers) located in the USA. It manages IP addresses assignment, domain name registration, etc.

The data transfer is very fast on the internet. The moment you press enter you get the information from a server located thousands of miles away from you. The reason for this speed is that the data is sent in the binary form (0, 1), and these zeros and ones are divided into small pieces called packets, which can be sent at high speed.

Uses of the internet

Generally speaking, the Internet may be used to exchange information with people all over the world, communicate across great distances, and locate information or answers fast on almost any subject.

Here are some examples of specific uses for the Internet:

- Using social media and content sharing.
- Instant messaging, video conferencing, Internet Relay Chat (IRC), Internet telephony, and email are all examples of electronic communication. These all are used through the Internet.
- Access to online degree programs, courses, and workshops for education and self-improvement.
- Searching for jobs: To advertise available positions, submit job applications, and hire candidates identified on social networking sites like LinkedIn, both employers and applicants use the Internet.

Other examples include:

- Online dating
- Online gaming
- Research
- Reading electronic newspapers and magazines
- Online shopping, or e-commerce.
- Online discussion groups and forums

Difference between the World Wide Web and the Internet

The World Wide Web (also known as the Web) and the Internet are fundamentally dissimilar from one another because the Web is a collection of information that can be accessed using the Internet, whereas the Internet is a global network of networks that offers access to almost all types of information. In other words, the Web is a service that was added to the Internet's foundation.

The Web is the part of the Internet that gets the greatest traffic. One unique aspect of this is hypertext, a rapid cross-referencing method. The majority of websites feature text that highlights keywords or phrases by being a different color than the rest of the text. When a user selects one of these words or phrases, they will be sent to the chosen website or page. Buttons, graphics, and even particular areas of images are also utilized as hyperlinks.

On the Internet, there are billions of pages of information. The most popular web browsers are Google Chrome, Firefox, and Internet Explorer. A web browser is used to surf the internet or do online browsing. A certain Web site's look may vary slightly depending on the browser being used. A certain browser's later or more updated versions have the potential to render more complicated features like music files, sound, animation, and virtual reality.

Security and the Internet

Due to the volume of private and public information collected online, customers are at risk for security attacks and data breaches. Crackers and hackers have access to networks and systems, and they are able to steal personal data, such as login passwords or information on bank and credit card accounts. Among the steps that may be taken to protect online privacy are:

- You can install antivirus and antimalware on your system.
- Generating complex, unique passwords that are impossible to decipher by anyone.
- A virtual private network (VPN) can be used, or at least a private browsing mode like the Incognito window in Google Chrome.
- Only using HTTPS
- Keep private your all-social media accounts.
- Deactivate the autofill feature.
- Turn off the GPS of the device.

- Instead of just closing the tab or window, log out of accounts.
- Update cookies so that if a cookie is set, an alert is sent anytime.
- Spam emails should be avoided, and never open or download files from sources you are not aware of.
- Need to use caution when using hotspots or public Wi-Fi.

Furthermore, the "dark web" is an additional component of the Internet. Standard browsers do not allow users to access the dark web, which is hidden. It instead makes use of the Tor and I2P browsers, which let users maintain complete anonymity. While this anonymity can be a fantastic way to safeguard a user's security and freedom of speech online or for the government to conceal confidential information, the dark web also fosters an environment that makes cybercrime, the transfer of illicit commodities, and terrorism easier.

Social impact of the Internet

Both positive and negative effects of the Internet on society can be observed. On the one hand, some people claim that the Internet has raised the risk of withdrawal, social exclusion, alienation, and citing a rise in FOMO, or the fear of missing out, as evidence. On the other hand, some people also believe that the Internet has had the opposite impact on society, increasing sociability, civic participation, and the depth of connections.

The Internet has changed how society communicates and interacts, whether the effects are positive or negative on society. The increased focus on personal growth is one example of change and the fall in a community that is determined by space, job, and family. People increasingly now build social connections on the basis of their unique projects, values, as well as interests. In addition to offline and in person, communities are being created by like-minded people through the Internet and the abundance of online settings it provides and produces. Social networking sites like Facebook and LinkedIn are the preferred platforms for both businesses and individuals wishing to carry out various tasks and connect with others.

Internet Connection Protocols

Protocols are a set of guidelines that aid in regulating the operation of any specific organization or technology.

Three main categories of **Internet Connection Protocols** are discussed below:

- **TCP/IP Network Model:** The most popular protocols for linking networks are Transmission Control Protocol (TCP) and Internet Protocol (IP). Any communication is split up into a number of packets that are sent from source to destination.
- **File Transfer Protocol:** With the help of FTP (File Transfer Protocol), a user can transfer documents, text files, multimedia files, program files, etc., from one device to another.
- **Hypertext Transfer Protocol:** It is used to move a hypertext between two or more computers or other devices. Links can be made using HTML tags and can take the form of text or graphics.

History of the Internet

The forerunner of the Internet, the ARPANet, went live for the first time in **1969**. The TCP/IP, open networking protocol suite, was adopted by the ARPANet in 1983, and the National Science Foundation Network (NSFN) developed the network to link university computer science departments across the US in 1985.

When the hypertext transfer protocol (HTTP) was developed in 1989, it enabled different computer platforms to connect to the same Internet sites, which dramatically improved communications over the network. The Mosaic Web browser was developed in **1993**.

Over the years of its existence, the Internet has remained a constant growth and development. For instance, IPv6 was created to provide for a significant future rise in the number of IP addresses that could be used. In a related development, the Internet of Things (IoT) refers to the rapidly developing environment where nearly any entity or device can be given a unique identifier (UID) and the capability to communicate data automatically over the Internet.

Advantages of the Internet:

- **Instant Messaging:** You can send messages or communicate to anyone using internet, such as email, voice chat, video conferencing, etc.

- **Get directions:** Using GPS technology, you can get directions to almost every place in a city, country, etc. You can find restaurants, malls, or any other service near your location.
- **Online Shopping:** It allows you to shop online such as you can be clothes, shoes, book movie tickets, railway tickets, flight tickets, and more.
- **Pay Bills:** You can pay your bills online, such as electricity bills, gas bills, college fees, etc.
- **Online Banking:** It allows you to use internet banking in which you can check your balance, receive or transfer money, get a statement, request cheque-book, etc.
- **Online Selling:** You can sell your products or services online. It helps you reach more customers and thus increases your sales and profit.
- **Work from Home:** In case you need to work from home, you can do it using a system with internet access. Today, many companies allow their employees to work from home.
- **Entertainment:** You can listen to online music, watch videos or movies, play online games.
- **Cloud computing:** It enables you to connect your computers and internet-enabled devices to cloud services such as cloud storage, cloud computing, etc.
- **Career building:** You can search for jobs online on different job portals and send you CV through email if required.

Disadvantages of the Internet

- **Time wastage:** Although, Internet has a lot of advantages, it also contains some limitations. Time wasting is one of among them. It can decrease your productivity if you are spending too much time on the Internet using social media apps while doing nothing. Rather than squandering time, one should use that time to do something useful and even more productive.
- **Bad impacts on health:** You can get health related issues if you spend too much time online; your body needs outside activities, exercise, and many other things. If you look at the screen for a long time, it causes negative effects on the eyes.

- **Cyber Crimes:** These days, crimes including cyberbullying, spam, viruses, hacking, and data theft are increasing day by day. Cybercriminals can quickly break into your system, which store all of your private information.
- **Effects on children:** The constant watching of videos and playing games on the Internet by young children is bad for their social and overall personality development.
- **Bullying and spreading negativity:** Social media applications have provided a free tool to all those people who regularly attempt to spread negativity with really repulsive and humiliating comments and try to bully each other, which is wrong and does bad impact on society.

Different ways to Connect to the Internet

The various methods for connecting to the Internet are briefly discussed below:

- **Dial-Up:** Users must connect their phone line to a computer system in such connections in order to access the Internet connection. The user is unable to make or receive calls using the tier home phone service while connected.
- **Broadband:** Today's most popular high-speed internet connection, broadband is offered either by cable or phone companies.
- **Wireless Connection:** This category includes Mobile and Wi-Fi services providers. No matter where you are, you can connect to the Internet anywhere because connectivity is made possible by radio waves. Several instances of wireless connections are provided below:
 - **Wi-fi:** Without the use of cables, wi-fi or wireless fidelity, enables high-speed internet connectivity.
 - **Mobile Phones:** In modern times, all smartphones include an Internet connectivity option that can be availed using Internet packs and coupons. These don't require a wire or external connection as well.
 - **Satellite:** Satellites are utilized for wireless Internet connectivity in areas Where broadband connections is not available.
 - **Integrated Services Digital Network:** With the help of using telephone lines, ISDN enables users to send audio or video data.

Other things you can do on the Internet

The ability to communicate with anyone in the world virtually immediately is one of the best features of the Internet. With billions of users worldwide, email is one of the most established and widely used methods of online communication as well as information sharing with others. People can communicate with each other in a number of ways and create online communities with the help of using social media platforms.