

The internet concept is the idea of a global network of interconnected computers, servers, phones, and smart appliances that communicate with each other using the transmission control protocol (TCP) standard to enable a fast exchange of information and files, along with other types of services.

Some of the features of the internet are:

- It is a decentralized system that does not have a single authority or owner.
- It is a heterogeneous system that supports different types of hardware, software, and protocols.
- It is a scalable system that can accommodate the growth of users, devices, and data.
- It is a reliable system that can handle failures and errors without affecting the overall performance.
- It is an open system that allows anyone to access, create, and share information and resources.

Some of the services that the internet provides are:

- World Wide Web (WWW): This is the most popular service that allows users to access and view web pages that contain text, images, audio, video, and other multimedia content. Web pages are linked by hyperlinks and can be accessed using web browsers.
- Email: This is a service that allows users to send and receive electronic messages that can contain text, attachments, and other data. Email messages are delivered using protocols such as SMTP (Simple Mail Transfer Protocol) and IMAP (Internet Message Access Protocol).
- File Transfer Protocol (FTP): This is a service that allows users to upload and download files from remote servers or computers. FTP uses a client-server model and requires authentication to access the files.
- Voice over Internet Protocol (VoIP): This is a service that allows users to make and receive voice calls over the internet. VoIP uses protocols such as SIP (Session Initiation Protocol) and RTP (Real-time Transport Protocol) to transmit voice data in packets.
- Video Conferencing: This is a service that allows users to conduct live video meetings or chats over the internet. Video conferencing uses protocols such as H.323 and RTSP (Real Time Streaming Protocol) to stream video and audio data in real time.

Some of the tools that the internet offers are:

- Search Engines: These are tools that allow users to find information on the web by entering keywords or queries. Search engines use algorithms and databases to index and rank web pages based on their relevance and popularity. Some examples of search engines are Google, Bing, Yahoo, etc..
- Social Media: These are tools that allow users to create and share content, interact with others, and form online communities. Social media platforms use web-based applications and APIs (Application Programming Interfaces) to enable users to post, comment, like, follow, etc. Some examples of social media are Facebook, Twitter, Instagram, etc..
- Cloud Computing: These are tools that allow users to access and use computing resources over the internet without having to own or manage them. Cloud computing services provide on-demand access

to servers, storage, software, databases, etc. Some examples of cloud computing providers are Amazon Web Services, Microsoft Azure, Google Cloud Platform, etc..

- E-commerce: These are tools that allow users to buy and sell goods and services over the internet. E-commerce platforms use web-based applications and payment systems to enable online transactions. Some examples of e-commerce platforms are Amazon, eBay, Flipkart, etc..

## **Network-based information services for library**

Network-based information services for library--- are library services that use network technologies, such as the internet, to provide access to information resources and facilitate communication and collaboration among library users and staff. Network-based information services for library can include:

- Online Public Access Catalogues (OPACs): These are digital platforms or interfaces that allow users to search and browse the library's collection of books, journals, articles, and other materials. OPACs can also provide information on the availability, location, and status of the items, as well as allow users to reserve, renew, or request them.

- Digital Library Service: This is a service that provides access to digital resources, such as e-books, e-journals, databases, multimedia files, and more. Digital library service can also include features such as full-text search, metadata, annotations, bookmarks, etc. Digital library service can be either hosted by the library itself or accessed through external platforms or providers.

- Electronic Document Delivery Service: This is a service that allows users to request and receive documents or articles that are not available in the library's collection or online. Electronic document delivery service can use various methods, such as email, FTP, web download, etc., to deliver the documents in digital formats.

- Institutional Repository Service: This is a service that allows users to create, store, and share their own digital content, such as research papers, dissertations, presentations, etc. Institutional repository service can help users to preserve and disseminate their scholarly output, as well as increase their visibility and impact.

- Current Awareness Service (CAS): This is a service that provides users with regular updates on the latest developments and trends in their fields of interest. Current awareness service can use various sources, such as newsletters, RSS feeds, blogs, podcasts, etc., to deliver relevant and timely information to users.

- Audio-Visual Services: These are services that provide access to audio-visual resources, such as videos, podcasts, webinars, etc. Audio-visual services can also include features such as streaming, downloading, editing, etc. Audio-visual services can be used for various purposes, such as education, entertainment, research, etc..

- Online User Education: This is a service that provides users with training and guidance on how to use the library's resources and services effectively. Online user education can use various methods, such as tutorials, videos, webinars, quizzes, etc., to teach users the skills and techniques of information literacy.

- Readers Advisory and Online Reference Services: These are services that provide users with personalized recommendations and assistance on their information needs. Readers' advisory service can help users to find books or other materials that match their preferences and interests. Online

reference service can help users to answer questions or solve problems related to their information needs.

## **Internet Connectivity**

Connectivity is the ability to establish a communication link between two or more devices or networks. There are different types of connectivity that can be used to access the internet, such as dial-up, leased line, ISDN, DSL, etc. Here is a brief definition of each type:

- Dial-up: This is a type of connectivity that uses a telephone line and a modem to establish a connection to the internet. The modem converts the digital signals from the computer into analog signals that can be transmitted over the phone line, and vice versa. Dial-up is one of the oldest and slowest types of internet connectivity, with a maximum speed of 56 kbps. It also requires the user to dial a phone number to connect to the internet service provider (ISP), and disconnects when the phone line is used for other purposes.

- Leased line: This is a type of connectivity that uses a dedicated and permanent connection between two locations, such as a business and an ISP. A leased line provides a high-speed and reliable connection that does not depend on the traffic or distance. However, it is also very expensive and requires special equipment and installation. Leased lines can have different speeds, ranging from 64 kbps to 155 Mbps or more.

- ISDN: This stands for Integrated Services Digital Network, and it is a type of connectivity that uses digital transmission over existing telephone lines to provide voice, data, and video services. ISDN can offer higher speeds than dial-up, up to 128 kbps, and can support multiple devices and channels at the same time. However, it also requires special equipment and installation, and may not be available in all areas.

- DSL: This stands for Digital Subscriber Line, and it is a type of connectivity that uses high-frequency signals over existing telephone lines to provide broadband internet access. DSL can offer much higher speeds than dial-up or ISDN, up to 24 Mbps or more, depending on the distance and quality of the line. DSL also allows the user to use the phone and the internet simultaneously, without affecting the quality of either service. However, DSL may not be available in all areas, and may require special equipment and installation.

These are some of the common types of connectivity that can be used to access the internet. There are also other types, such as cable, satellite, wireless, etc., that have their own advantages and disadvantages. The best type of connectivity depends on various factors, such as availability, cost, speed, reliability, security, etc.

## Internet protocol and standards

Internet protocol is a set of rules that governs how data is transmitted and received over a network. It defines the format, structure, and addressing of data packets that are exchanged between different devices. Internet standards are specifications that describe how different internet protocols should work and interact with each other. Some of the common internet protocols and standards are:

- HTTP: Hypertext Transfer Protocol is a protocol that defines how web browsers and web servers communicate and exchange data over the internet. It uses TCP/IP as the underlying transport layer protocol. HTTP is the backbone of the World Wide Web (WWW) and enables us to access web pages, images, videos, and other resources on the web.

- SHTTP: Secure Hypertext Transfer Protocol is an extension of HTTP that adds encryption and authentication features to ensure secure and confidential communication between web browsers and web servers. It uses SSL (Secure Sockets Layer) or TLS (Transport Layer Security) protocols to encrypt the data before sending it over the network. SHTTP is not widely used as it requires modifications to both the web browser and the web server software.

- FTP: File Transfer Protocol is a protocol that allows us to transfer files between computers over a network. It uses TCP/IP as the underlying transport layer protocol and establishes two connections: a control connection for authentication and commands, and a data connection for transferring files. FTP can be used to upload or download files from a remote server, or to share files between different users.

- SMTP: Simple Mail Transfer Protocol is a protocol that defines how email messages are sent and received over the internet. It uses TCP/IP as the underlying transport layer protocol and works in conjunction with other protocols such as POP3 (Post Office Protocol 3) or IMAP (Internet Message Access Protocol) to store and retrieve email messages from a mail server. SMTP is what is used by email servers all over the globe to communicate with each other and deliver emails to the intended recipients.

- TCP/IP: Transmission Control Protocol/Internet Protocol is a family of communication protocols that are used to connect computer systems in a network. It consists of two main protocols: TCP (Transmission Control Protocol) and IP (Internet Protocol). TCP is responsible for ensuring reliable and ordered delivery of data packets over the network, while IP is responsible for addressing and routing the data packets to their destination. TCP/IP is the most widely used protocol suite on the internet and supports many other protocols such as HTTP, FTP, SMTP, etc.

- URI: Uniform Resource Identifier is a string of characters that identifies a resource on the internet or a local network. It consists of two parts: a scheme name (such as http, ftp, mailto, etc) and a scheme-specific part (such as a domain name, a path, a query, etc). A URI can be used to locate or access a resource using a specific protocol or method.

- URL: Uniform Resource Locator is a type of URI that specifies the location of a resource on the internet or a local network. It consists of three parts: a scheme name (such as http, ftp, etc), a host name (such as www.bing.com), and an optional path (such as /search?q=internet+protocol). A URL can be used to access a web page, an image, a video, or any other resource using a web browser..

Internet Protocol- HTTP

According to the web search results, the original HTTP was invented by Tim Berners-Lee and his team at CERN, along with HTML and the associated technology for a web server and a web browser. Tim Berners-Lee is an English computer scientist who is best known as the inventor of the World Wide Web. He proposed an information management system in 1989 and implemented the first successful communication between a HTTP client and server via the Internet in mid-November 1990. He also founded and directed the World Wide Web Consortium (W3C), which oversees the continued development of the Web.

HTTP is an application layer protocol that allows the exchange of hypertext documents and other resources on the Web. It has gone through many changes and improvements since its inception, such as HTTP/1.0, HTTP/1.1, HTTP/2, and HTTP/3. HTTP is the foundation of data communication for the Web, where hypertext documents include hyperlinks to other resources that the user can easily access by clicking or tapping.

How internet works define its history and development

The internet is a global network of connected devices and servers that allows people all over the world to communicate, access information, and share data. The history and development of the internet can be traced back to the 1960s, when the U.S. Department of Defense created the ARPANET (Advanced Research Projects Agency Network) to link computers at different universities and research institutions.

Over the next few decades, the ARPANET evolved and expanded, and new protocols and technologies were developed to facilitate communication and data exchange across the network. In the 1980s, the TCP/IP (Transmission Control Protocol/Internet Protocol) suite was developed, which established a standardized way for different types of devices to communicate over the internet. This paved the way for the development of the World Wide Web, which was created by Tim Berners-Lee in 1989 and became publicly available in 1991.

TCP/IP was developed in the 1970s and adopted as the protocol standard for ARPANET (the predecessor to the Internet) in 1983 by 2 DARPA scientists—Vint Cerf and Bob Kahn, persons most often called the fathers of the Internet.

The World Wide Web made it possible for people to access and share information and media across the internet using web browsers and hypertext links. This led to a surge in internet usage and the development of new technologies and services, such as search engines, social media platforms, and e-commerce websites.

Today, the internet is an integral part of modern society, with billions of people around the world using it for work, education, entertainment, and communication. The internet has also enabled the development of new technologies, such as cloud computing, artificial intelligence, and the Internet of Things (IoT), which have the potential to transform many aspects of our lives.

However, the internet also faces several challenges, such as issues of privacy, security, and access. There is ongoing debate and discussion about how to address these challenges and ensure that the internet remains a safe, open, and accessible resource for all

Internet Protocol, often referred to as IP, is like a set of rules that helps computers and devices communicate with each other over the internet. It's a bit like sending and receiving mail, but with data. IP addresses are like unique addresses for devices on the internet, making sure data gets to the right place. It's an important part of how the internet works!

some common internet protocols:

1. \*HTTP (Hypertext Transfer Protocol)\*: This is the protocol used for transferring web pages, images, and other resources on the World Wide Web.
2. \*HTTPS (Hypertext Transfer Protocol Secure)\*: It's a secure version of HTTP, providing encryption for secure data transfer, commonly used for online banking, shopping, and sensitive data.
3. \*FTP (File Transfer Protocol)\*: FTP is used for transferring files between computers on a network, often for website maintenance and sharing large files.
4. \*SMTP (Simple Mail Transfer Protocol)\*: SMTP is used for sending and relaying email messages between email servers.
5. \*IMAP (Internet Message Access Protocol)\*: IMAP is used for retrieving and syncing email messages between email clients and servers, allowing access to emails from multiple devices.
6. \*POP3 (Post Office Protocol version 3)\*: Similar to IMAP, POP3 is used for email retrieval, but it typically downloads emails to a single device and doesn't sync them across multiple devices.
7. \*TCP (Transmission Control Protocol)\*: TCP is responsible for ensuring that data is reliably transmitted from one device to another in a network.
8. \*UDP (User Datagram Protocol)\*: UDP is another protocol for transmitting data, but it's faster than TCP and used for applications where speed is more critical than reliability.
9. \*IP (Internet Protocol)\*: IP is responsible for routing data packets between devices on a network, ensuring they reach their intended destination.
10. \*DNS (Domain Name System)\*: DNS is responsible for translating human-friendly domain names (like example.com) into IP addresses that computers use to locate each other on the internet.
11. \*SSH (Secure Shell)\*: SSH is a secure protocol used for securely accessing and managing remote servers and devices.
12. \*SNMP (Simple Network Management Protocol)\*: SNMP is used for managing and monitoring network devices, such as routers and switches.

Connectivity: Dialup, Leased lines, ISDN, Digital subscriber lines Internet protocol and standards are the topics that describe the different ways of connecting to the internet, the rules and formats for data transmission, and the common agreements for network communication. Here is a brief overview of each topic:

- Connectivity: Dialup: Dialup is a type of internet connection that uses a telephone line and a modem to connect a computer to an internet service provider (ISP). A modem converts digital signals from the computer to analog signals that can be transmitted over the phone line, and vice versa. A dialup connection is initiated by dialing a phone number provided by the ISP. A dialup connection is usually slow (up to 56 kbps) and does not allow simultaneous use of the phone and the internet.

- Connectivity: Leased lines: Leased lines are dedicated network connections that provide high-speed and reliable internet access. Leased lines are rented from a telecommunication company or an ISP for a fixed monthly fee. Leased lines can provide different bandwidths, such as 64 kbps, 2 Mbps, 8 Mbps, 34 Mbps, etc. Leased lines are suitable for large organizations that need constant and secure internet connectivity.

- Connectivity: ISDN: ISDN (Integrated Services Digital Network) is a telecommunication technology that enables the transmission of digital data over standard phone lines. ISDN provides high-speed internet access (up to 128 kbps) and allows simultaneous use of voice, data, and video services. ISDN requires a special adapter or router to connect to the phone line and the computer.

- Connectivity: DSL: DSL (Digital Subscriber Line) is a technology that transmits digital data over copper telephone wires. DSL provides high-speed internet access (up to 24 Mbps) and allows simultaneous use of the phone and the internet. DSL requires a special modem or router to connect to the phone line and the computer.

- Internet protocol: Internet protocol (IP) is a set of rules and formats for data transmission over a network. IP defines how data packets are structured, addressed, routed, and delivered between computers on a network. IP is the main protocol used on the internet and other networks. IP is usually combined with other protocols, such as TCP (Transmission Control Protocol), to provide reliable and secure data communication.

- Internet standards: Internet standards are common agreements for network communication that are developed and maintained by various organizations, such as the Internet Engineering Task Force (IETF), the World Wide Web Consortium (W3C), etc. Internet standards specify how different protocols, applications, services, and devices should work together on the internet and other networks. Examples of internet standards are HTTP (Hypertext Transfer Protocol), HTML (Hypertext Markup Language), SMTP (Simple Mail Transfer Protocol), etc.

- Internet: Services: The internet offers a variety of services that enable users to access, create, share, or consume information and content. Some of the common services are:

- World Wide Web (WWW): The WWW is a system of interlinked hypertext documents and applications that are accessed through web browsers. The WWW uses the HTTP protocol to transfer data between web servers and clients.

- Email: Email is a service that allows users to send and receive electronic messages over the internet. Email uses the SMTP protocol to transfer messages between mail servers and clients.

- File Transfer Protocol (FTP): FTP is a service that allows users to upload and download files from remote servers over the internet. FTP uses the FTP protocol to transfer files between FTP servers and clients.

- Social Media: Social media is a service that allows users to create and share content, such as text, images, videos, etc., with other users over the internet. Social media platforms include Facebook, Twitter, Instagram, YouTube, etc.

- Internet: Tools: The internet provides various tools that help users to access, use, or manage the services on the internet. Some of the common tools are:

- Web Browser: A web browser is a software application that allows users to view and interact with web pages and applications on the WWW. Web browsers use the HTTP protocol to request and display web content from web servers.

- Email Client: An email client is a software application that allows users to send and receive email messages over the internet. Email clients use the SMTP protocol to communicate with mail servers.

- FTP Client: An FTP client is a software application that allows users to upload and download files from FTP servers over the internet. FTP clients use the FTP protocol to communicate with FTP servers.

- Web Service: A web service is a software application that provides a specific functionality or service over the internet. Web services use standardized protocols, such as SOAP or REST, to exchange data between web servers and clients.