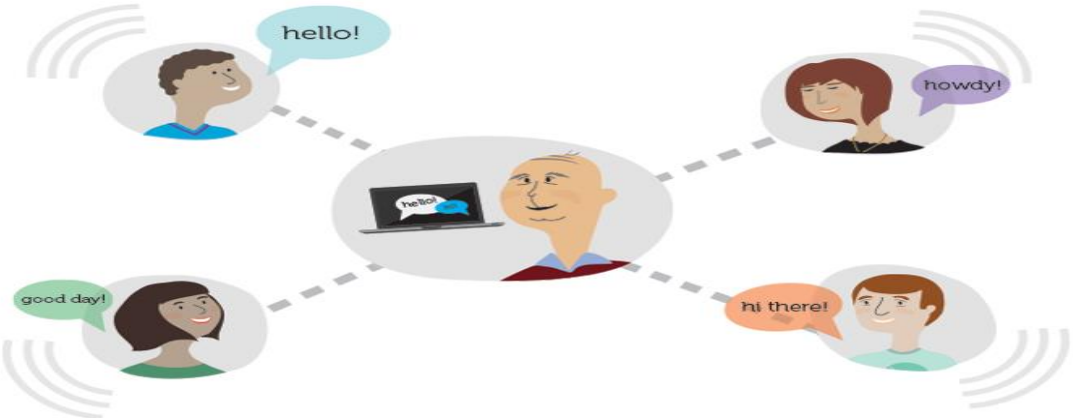
UNIT 1:

INTERNET

1.1 Internet:

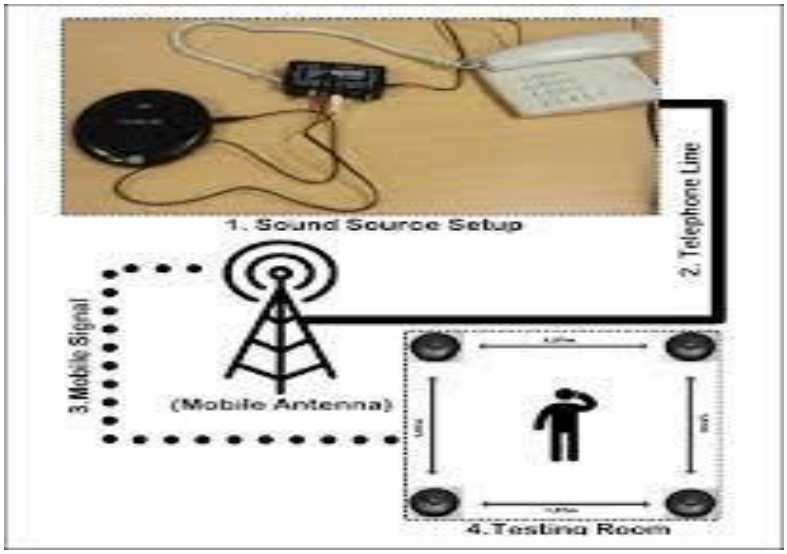
The Internet is a vast global network of interconnected computer networks that allows the exchange of information and resources. It originated from ARPANET, a research project by the United States Department of Defense in the late 1960s. The Internet's key components are routers, which direct data packets to their destinations, and protocols like TCP/IP, which ensure reliable data transmission. The World Wide Web (WWW) is a subset of the Internet that allows users to access and view web pages through web browsers.

1.2 Connecting to the Internet:



Various methods are used to connect to the Internet:

- **Telephone Connection:**

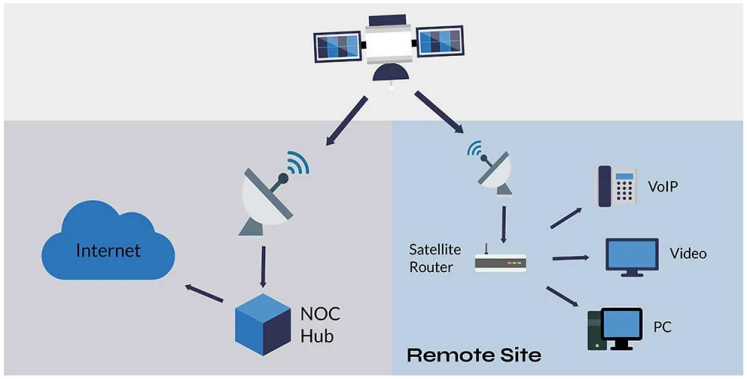


Dial-up modems use regular telephone lines to establish a connection to an Internet Service Provider (ISP). While slow and less common today, they were popular in the past.

- **Cable Connection:**

Cable modems utilize the same coaxial cables that deliver cable television to provide high-speed Internet access to homes and businesses.

- **Satellite Connection:**



Satellite Internet relies on communication satellites to beam Internet signals to a dish installed on the user's property. It is useful in remote areas where other connections may not be available.

1.3 Choosing an Internet Service Provider (ISP):

Selecting the right ISP is crucial for a satisfactory Internet experience. Factors to consider include connection type (e.g., DSL, cable, fiber), download and upload speeds, data limits, reliability, customer support, and pricing. Broadband connections, such as DSL, cable, and fiber, offer higher speeds and are more suitable for modern applications than narrowband connections like dial-up.

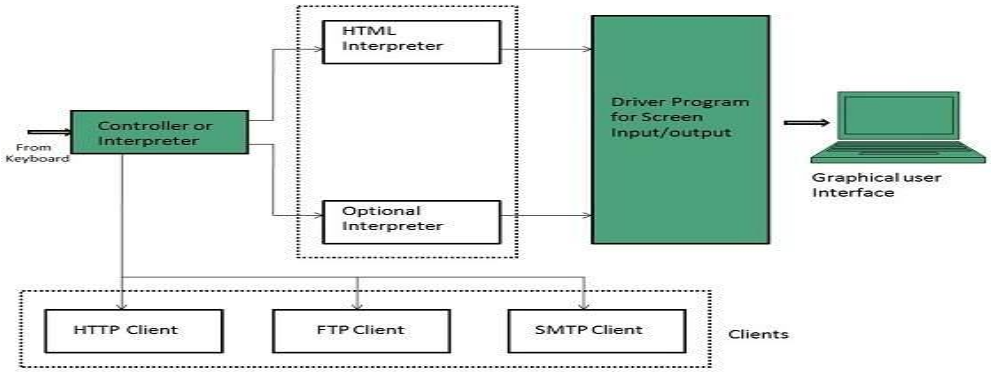
1.4 Introduction to Internet Services:

The Internet offers a plethora of services that enrich our online experiences:

- **Email:**

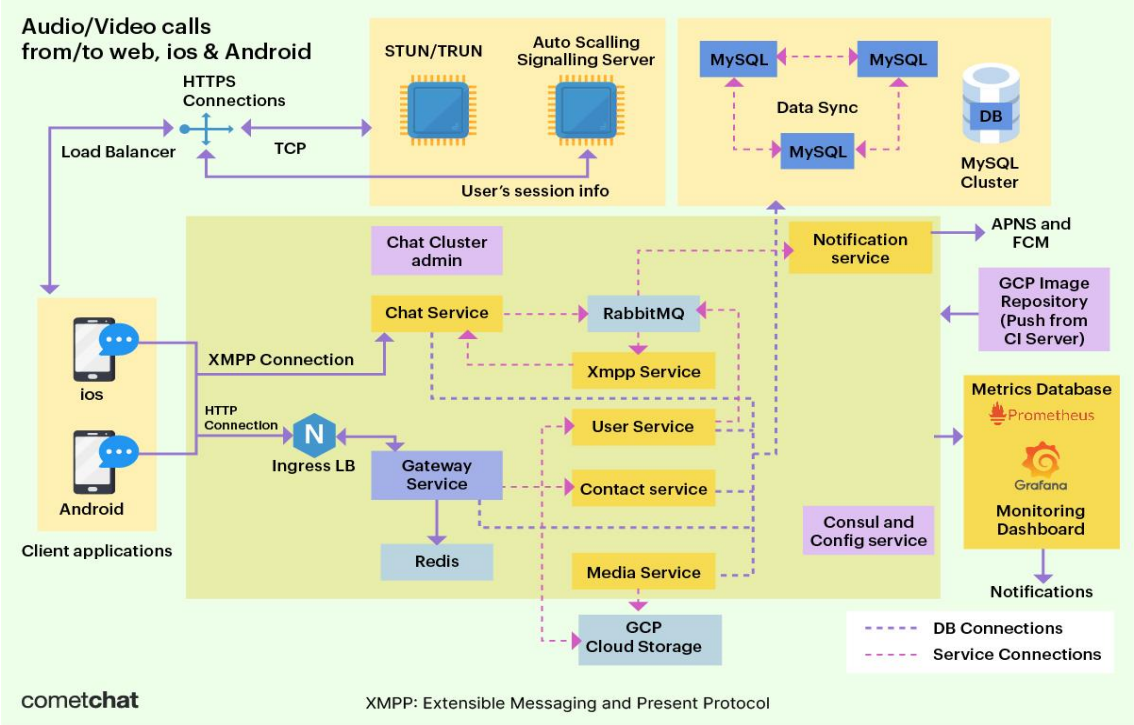
Electronic mail allows users to send and receive messages and attachments instantly.

- **Web Browsing:**



Users access websites using web browsers like Google Chrome, Mozilla Firefox, or Microsoft Edge, navigating through hyperlinks and URLs.

- **Instant Messaging and Chat Services:**

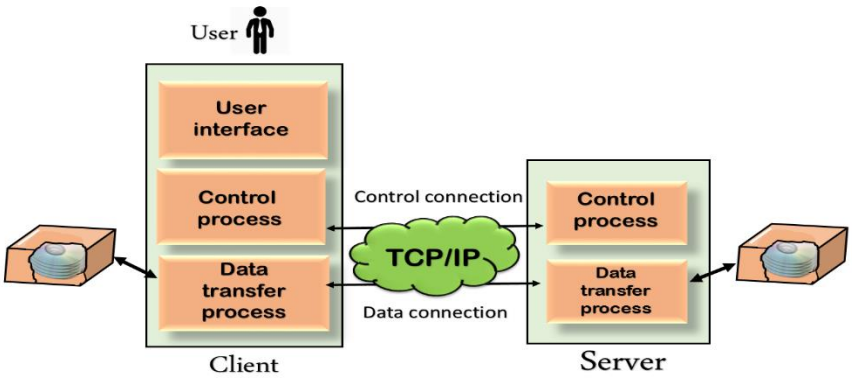


Real-time text communication platforms enable users to chat with friends, family, or colleagues instantly.

- **Online Forums and Social Media:**

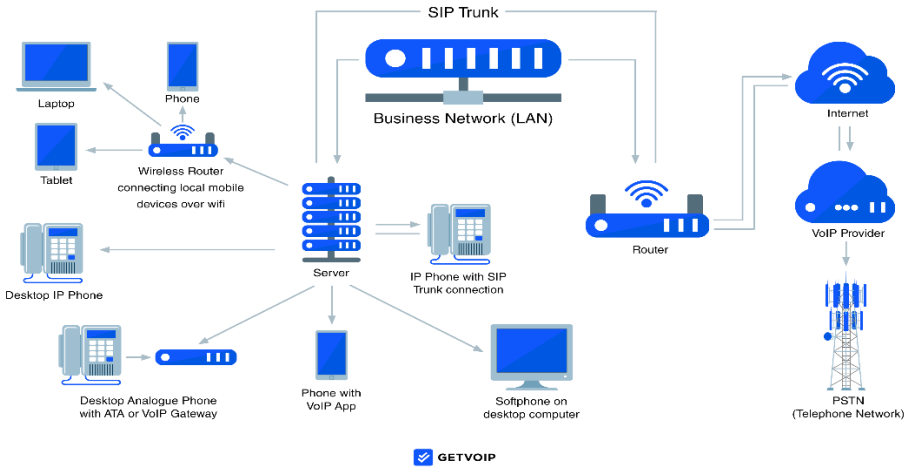
Platforms that facilitate discussions, interactions, and content sharing among users with common interests.

- **File Transfer Protocol (FTP):**



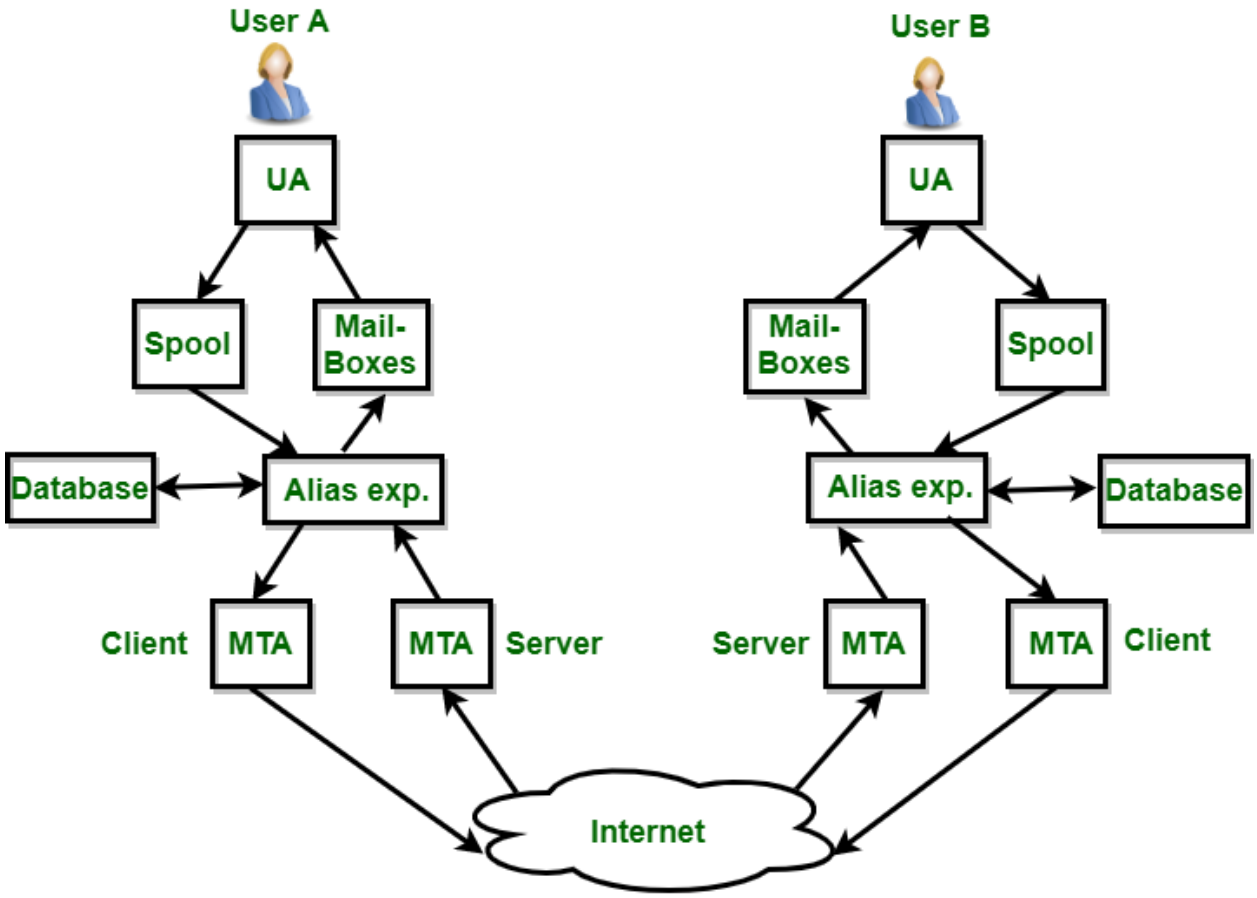
Used for transferring files between computers and servers, often employed in website maintenance and file sharing.

- **VoIP (Voice over Internet Protocol):**



Technology that allows voice communication over the Internet, enabling phone calls via the web.

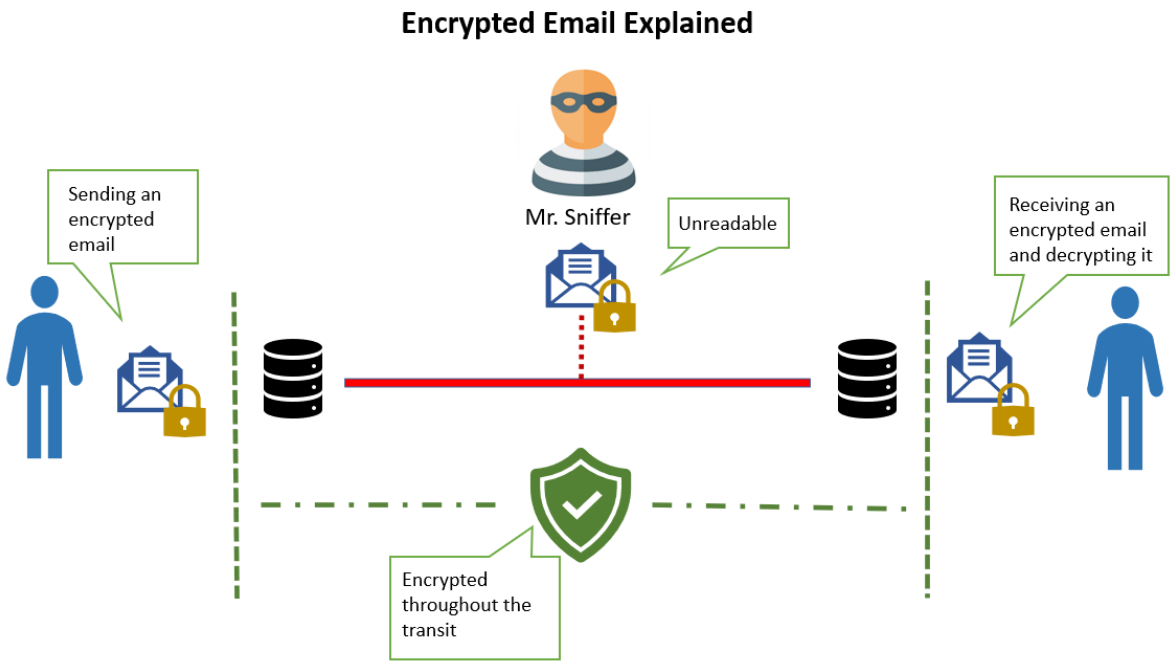
1.5 E-Mail Concepts:



Email operates using a sender-receiver model. The sender composes the email, specifying the recipient's email address, subject, and message content. The email is then sent through the email server using protocols like SMTP (Simple Mail Transfer Protocol). The recipient's email server processes the email, and the receiver can access it through a client like Outlook, Gmail, or

Thunderbird using protocols like POP3 (Post Office Protocol 3) or IMAP (Internet Message Access Protocol).

1.6 Sending and Receiving Secure E-Mail:



Securing email communications is essential to protect sensitive information from unauthorized access and ensure the integrity of the message. Encryption techniques, such as Public Key Infrastructure (PKI) and Secure Sockets Layer (SSL)/Transport Layer Security (TLS), are used to encrypt emails during transit. Digital signatures verify the authenticity and integrity of the sender's message.

1.7 Voice and Video Conferencing:

Voice over Internet Protocol (VoIP) technology converts analog audio signals into digital data packets, allowing voice communication over the Internet. Popular VoIP applications include Skype, WhatsApp, and Zoom. Video conferencing combines audio and video transmission, allowing face-to-face meetings and collaborations online.