

## NETWORK PROTOCOLS:

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### 1. HTTP (HyperText Transfer Protocol):

- Foundation for data communication on the web.
- Used to transfer hypertext files (like web pages) between web servers and browsers.
- Uses port 80.
- Key features: Stateless (doesn't remember past requests), Request-response model (client sends a request, server sends a response).

### 2. FTP (File Transfer Protocol):

- Designed for transferring files between computers over a network.
- Uses two channels: control channel (port 21) for commands and data channel (port 20) for file transfer.
- Allows uploading, downloading, deleting, renaming, and managing files on remote servers.

### 3. PPP (Point-to-Point Protocol):

- Widely used for establishing direct connections between two devices, often over dial-up modems or broadband connections.
- Commonly used by Internet Service Providers (ISPs) to connect customers to the internet.
- Encapsulates data packets for transmission over various physical networks.

### 4. SMTP (Simple Mail Transfer Protocol):

- Standard protocol for sending email messages between servers.
- Uses port 25.
- SMTP only handles sending emails, not receiving them (that's where POP3 and IMAP come in).

### 5. TCP/IP (Transmission Control Protocol/Internet Protocol):

- Foundational protocol suite for the internet.
- TCP provides reliable, ordered, and error-checked delivery of data packets.
- IP handles addressing and routing of packets across networks.
- Together, they form the backbone of internet communication.

### 6. POP3 (Post Office Protocol version 3):

- One of the two main protocols (along with IMAP) for receiving emails from a server.
- Uses port 110.
- Typically downloads emails from the server to the local device for offline access.

**IMAP (Internet Message Access Protocol):**

IMAP is an email retrieval protocol that enables a mail client to access messages stored on a mail server. Unlike POP3, IMAP allows users to view and manipulate messages without downloading them to the local device.

**7. HTTPS (HyperText Transfer Protocol Secure):**

- Secure version of HTTP, using SSL/TLS encryption to protect data transmission.
- Used for secure web browsing, online transactions, and other sensitive data exchanges.
- Uses port 443.

**8. TELNET:**

- Provides a text-based interface for remotely accessing and managing computers over a network.
- Uses port 23.
- Has largely been replaced by SSH (Secure Shell) due to security concerns.

**9. VoIP (Voice over Internet Protocol):**

- Group of technologies that enable voice calls over internet connections rather than traditional phone lines.
- Used for applications like internet phone calls, video conferencing, and instant messaging with voice features.
- Offers cost savings and flexibility compared to traditional telephony.