Transmission Control Protocol (TCP) – a connection-oriented communications protocol that facilitates the exchange

of messages between computing devices in a network. It is the most common protocol in networks that use the Internet Protocol (IP);

together they are sometimes referred to as TCP/IP.

The Transmission Control Protocol (TCP) is one of the main protocols of the Internet protocol suite. It originated in the initial

network implementation in which it complemented the Internet Protocol (IP). Therefore, the entire suite is commonly referred to as TCP/IP.

TCP provides reliable, ordered, and error-checked delivery of a stream of octets (bytes) between applications running on hosts communicating via an IP network.

Major internet applications such as the World Wide Web, email, remote administration, and file transfer rely on TCP, which is part of

the Transport Layer of the TCP/IP suite. SSL/TLS often runs on top of TCP.

TCP is connection-oriented, and a connection between client and server is established before data can be sent.

The server must be listening (passive open) for connection requests from clients before a connection is established.

Three-way handshake (active open), retransmission, and error-detection adds to reliability but lengthens latency.

Applications that do not require reliable data stream service may use the User Datagram Protocol (UDP), which provides a connectionless

datagram service that prioritizes time over reliability. TCP employs network congestion avoidance. However, there are vulnerabilities to

TCP including denial of service, connection hijacking, TCP veto, and reset attack.

In **UDP**, the client does not form a connection with the **server** like in TCP and instead just sends a datagram. Similarly, the **server** need not accept a connection and just waits for datagrams to arrive. Datagrams upon arrival contain the address of sender which the **server** uses to send data to the correct client