Introduction to Cyber Security

Course Incharge: **Yahya Batla**

Course Instructor: **Instructor_Name**

Topics Covered

Discuss TCP and UDP

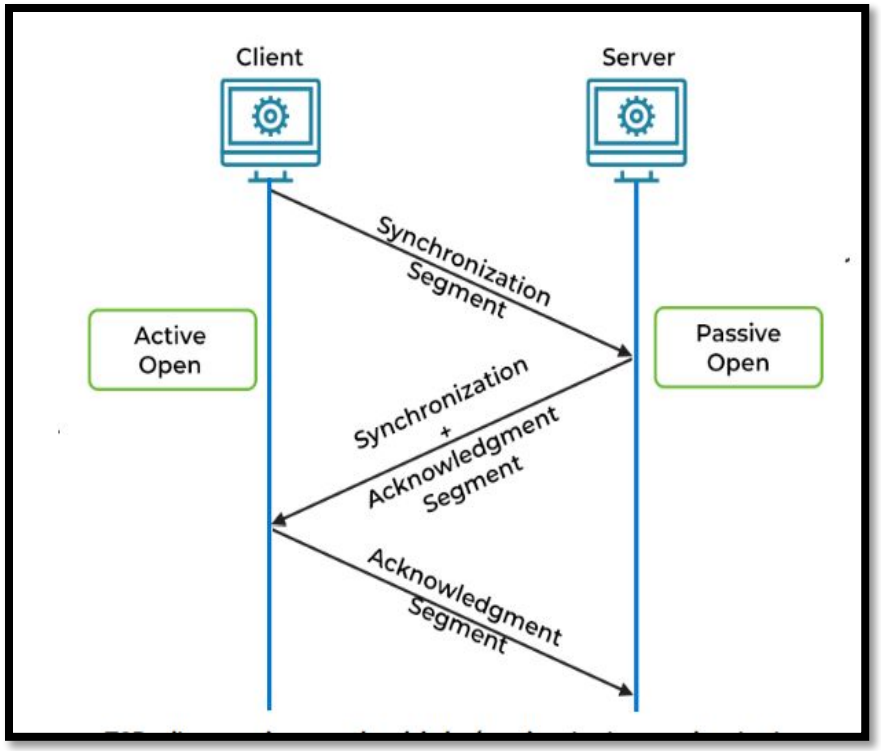
Discuss DNS , FTP , RDP , SSH and similar common protocols .

Discuss Wireless network

Define Proxy and VPN

TCP (Transmission Control Protocol) :

The transmission control protocol (TCP) is defined as a connection-oriented communication protocol that allows computing devices and applications to send data via a network and verify its delivery, forming one of the crucial pillars of the global internet.

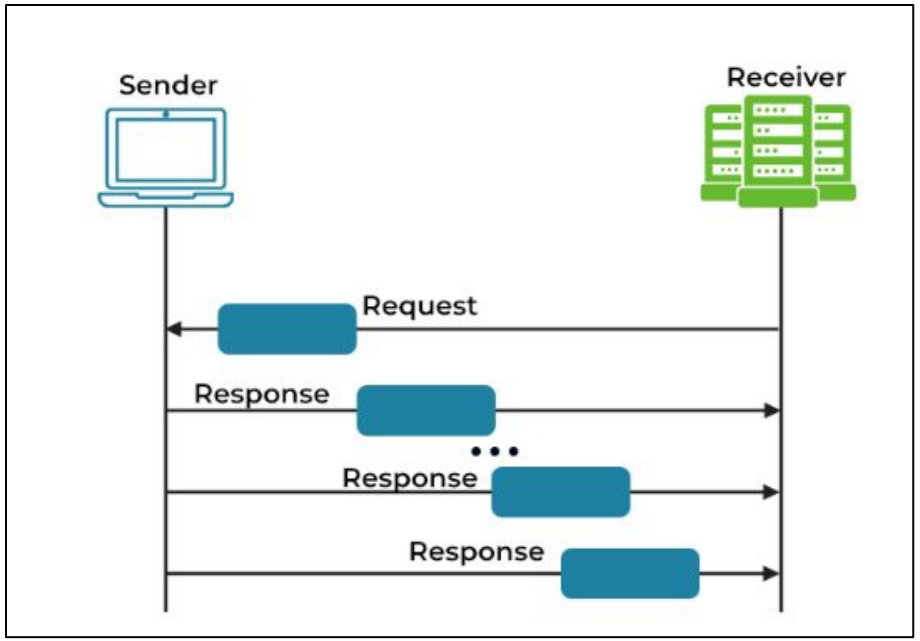


TCP relies on a three-way handshake (synchronization, synchronization acknowledgment, and final acknowledgment) :

Communication programs and computing devices utilize TCP for exchanging messages over a network. The task of this protocol is to carry packets across the Internet and ensure the successful delivery of messages and data across networks.

UDP (User Datagram Protocol)

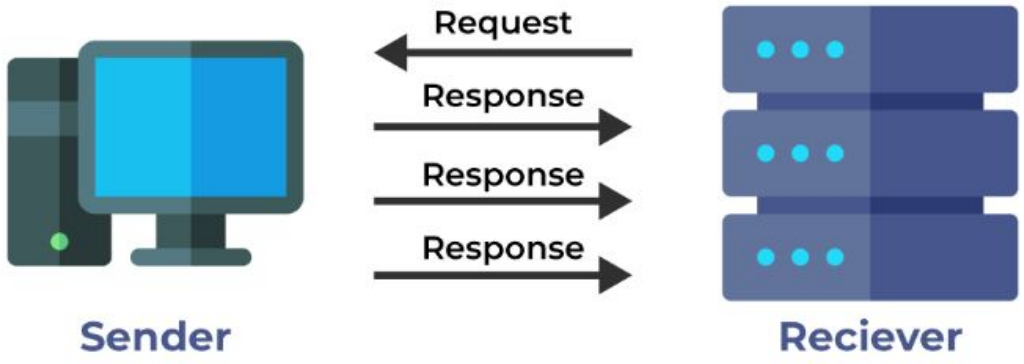
User datagram protocol (UDP) is a message-oriented communication protocol that allows computing devices and applications to send data via a network without verifying its delivery, which is best suited to real-time communication and broadcast systems.



UDP (User Datagram Protocol)

As with TCP, its purpose is to send and receive messages, so its functioning is similar to the transmission control protocol. What is distinctive about UDP is that it is not connection-based. In this case, “connectionless” refers to the fact that no connection is established before communication occurs.

The UDP protocol is not suitable for sending electronic mail, viewing a web page, or downloading a file. However, it is preferred mainly for real-time applications like broadcasting or multitasking network traffic.



Common network protocols :

Domain name system (DNS):

A Domain Name System (DNS) **port** 53 turns domain names into IP addresses, which allow browsers to get to websites and other internet resources. Every device on the internet has an IP address, which other devices can use to locate the device. Instead of memorizing a long list of IP addresses, people can simply enter the name of the website, and the DNS gets the IP address for them.

An example of a DNS is that which is provided by Google. The address of Google's primary DNS is 8.8.8.8. An example of a DNS is that which is provided by Google. The address of Google's primary DNS is 8.8.8.8.

Common network protocols :

FTP (File Transfer Protocol)

FTP connection needs two parties to establish and communicate on the network. To do that, users need to have permission by providing credentials to the FTP server. Some public FTP servers may not require credentials to access their files. The practice is common in a so-called anonymous FTP.

Following are the mentioned objective for FTP (File transfer Protocol)

- It provides the sharing of files.
- It is used to encourage the use of remote computers.
- It transfers the data more reliably and efficiently.

Common network protocols

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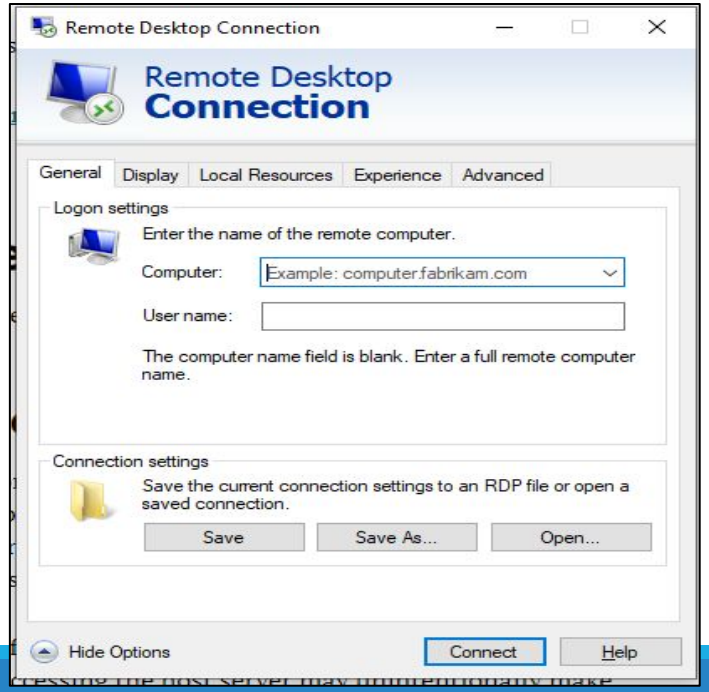
RDP (Remote Desktop Protocol)

The working principle of the RDP is quite simple and uncomplicated. Like other Remote Desktop software, RDP gives you remote control over another system. However, RDP is the most common protocol used for this purpose. The port use for **3389**



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Common network protocols :

The Secure Shell (SSH) port 22 and protocol is a method for securely sending commands to a computer over an unsecured network. SSH uses cryptography to authenticate and encrypt connections between devices. SSH also allows for tunneling, or port forwarding, which is when data packets are able to cross networks that they would not otherwise be able to cross. SSH is often used for controlling servers remotely, for managing infrastructure, and for transferring files.

SSH used for

Technically, SSH can transmit any arbitrary data over a network, and SSH tunneling can be set up for a myriad of purposes. However, the most common SSH use cases are:

- Remotely managing servers, infrastructure, and employee computers
- Securely transferring files (SSH is more secure than unencrypted protocols like FTP)

Wireless Network:

Wireless networks use radio waves to connect devices such as laptops to the Internet, the business network and applications. When laptops are connected to Wi-Fi hot spots in public places, the connection is established to that business's wireless network.

There are four main types of wireless networks:

- Wireless Local Area Network (LAN): Links two or more devices using a wireless distribution method, providing a connection through access points to the wider Internet.
- Wireless Metropolitan Area Networks (MAN): Connects several wireless LANs.
- Wireless Wide Area Network (WAN): Covers large areas such as neighboring towns and cities.
- Wireless Personal Area Network (PAN): Interconnects devices in a short span, generally within a person's reach.

VPN and Proxy

A VPN and a proxy are online services that hide your IP address by rerouting your internet traffic through a remote server. But a proxy works only with a single app or service, while a VPN secures all your internet traffic and encrypts it for extra security and privacy.

Like a proxy, a VPN will hide your IP address when you first connect to the server and replace it with the VPN provider's IP address. However, only a VPN will redirect your internet data through an encrypted tunnel, keeping your online activity private.

A proxy is suitable for internet browsing, but it won't give you the level of security and the advanced features a VPN offers.

THANK YOU