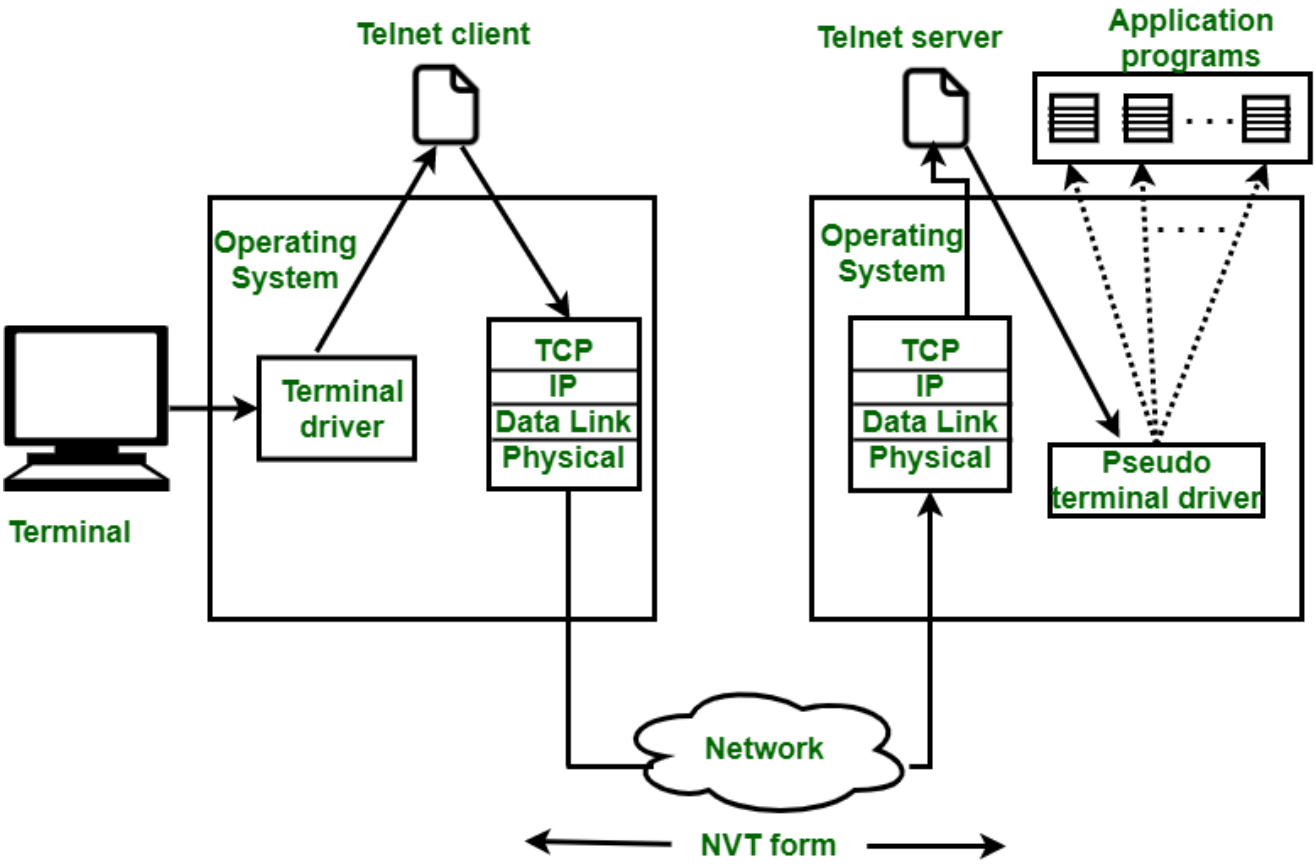
Telnet:

Telnet is a network protocol used to provide a bidirectional interactive text-oriented communication facility using a **virtual terminal connection**. It allows a user on one computer to log into another computer that is part of the same network. Telnet operates on port 23 by default.

Example:

```
telnet 192.168.1.1
```

This command attempts to establish a Telnet connection with the device at IP address 192.168.1.1.



Netstat:

Netstat (network statistics) is a command-line network utility tool used for monitoring network connections both incoming and outgoing, routing tables, interface statistics, masquerade connections, and multicast memberships.

Example:

```
netstat -an
```

This command displays all active connections and listening ports on the local machine.

ifconfig/ipconfig:

ifconfig (on Unix-like systems) and ipconfig (on Windows) are used to configure network interfaces and display their current configuration. They provide information such as IP addresses, netmasks, and other network-related parameters.

Example:

```
ifconfig eth0
```

This command displays the configuration details for the network interface eth0.

Ping:

Ping is a utility used to test the reachability of a host on an Internet Protocol (IP) network. It measures the round-trip time for messages sent from the originating host to a destination computer.

Example:

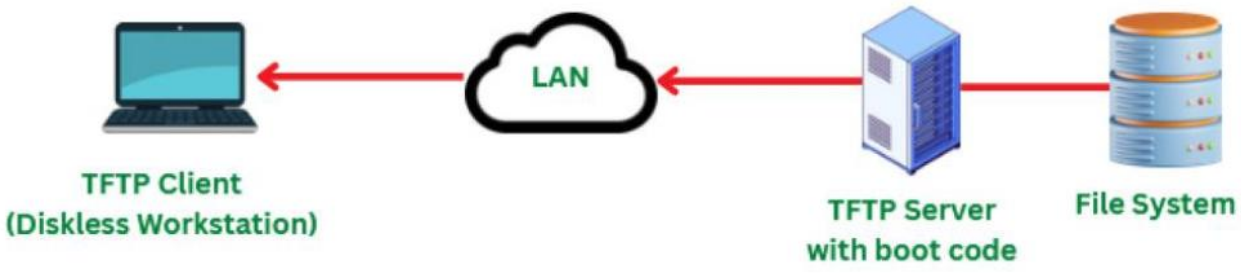
```
ping 8.8.8.8
```

This command sends ICMP echo request packets to the IP address 8.8.8.8 to check connectivity.

TFTP (Trivial File Transfer Protocol):

TFTP is a simplified version of FTP (File Transfer Protocol), typically used for transferring files between devices on a local network. It **operates on UDP port 69** and does not require user authentication.

TFTP **does not provide security features** therefore it is not used in communications that take place over the Internet. Therefore, it is used only for the systems that are set up on the local internet. TFTP requires less amount of memory.



Example:

```
tftp -i 192.168.1.10 GET filename.txt
```

This command downloads the file filename.txt from the TFTP server located at IP address 192.168.1.10.

Working of TFTP

- TFTP makes use of port number 69 as it uses User Datagram Protocol (UDP).
- When the connection is established successfully between client and server, the client makes a Read Request (RRQ) or
- Write Request(WRQ). If a client wants to only read the file it requests RRQ and if the client wants to write some data into a server then it requests for WRQ.
- Once the connection is established and a request is made communication of files takes place in the form of small packets. These packets are 512 bytes each.
- The server then communicates the packet back to the client and waits until it receives an acknowledgment from the client that the packet has been received.
- When the acknowledgment is received from the client side, the server again sends the next packet which is 512 bytes each.

- The same steps as mentioned above continue until the last packet is sent by the server to the client.

Remote Login:

Remote login refers to the ability to connect to and access a computer or network from a remote location. It allows users to interact with a system as if they were physically present at its location.

Example:

ssh username@hostname

This SSH command establishes a secure remote login session with the host specified by hostname, using the username username.

These network utilities and applications are fundamental tools for managing and troubleshooting network connectivity and configuration.