



**SNS COLLEGE OF TECHNOLOGY**  
**Coimbatore-35**  
**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with ‘A+’ Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **TELNET**

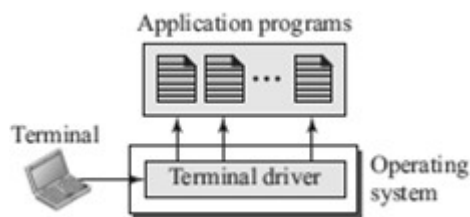
- TELNET is the original remote logging protocol, based on client-server program.
- Telnet provides a connection to the remote computer in such a way that a local terminal appears to be at the remote side.
- TELNET allows us to explain the issues and challenges related to the concept of remote logging.
- Network administrators often use TELNET for diagnostic and debugging purposes.
- TELNET requires a logging name and password.
- It is vulnerable to hacking because it sends all data including the password in plaintext (not encrypted).
- A hacker can eavesdrop and obtain the logging name and password. Because of this security issue, the use of TELNET has diminished.

## **TYPES OF TELNET LOGGING**

There are two types of TELNET logging:

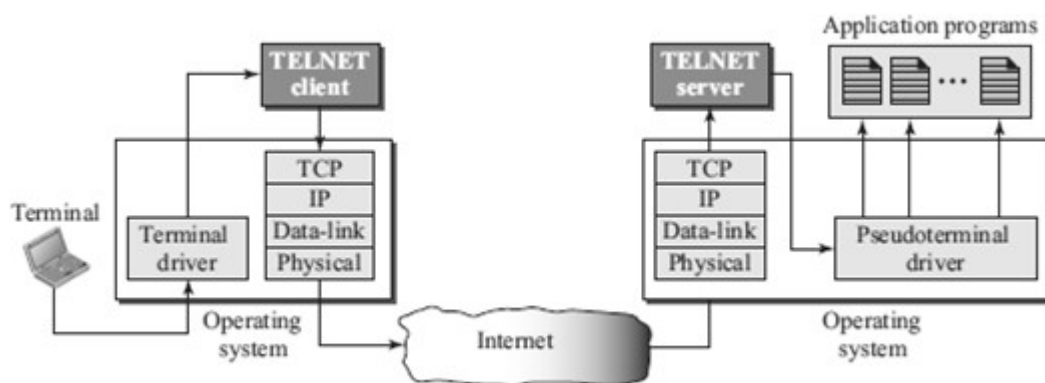
Local Logging and Remote Logging

## Local Login



- When a user logs into a local system, it is called local logging.
- As a user types at a terminal or at a workstation running a terminal emulator, the keystrokes are accepted by the terminal driver.
- The terminal driver passes the characters to the operating system.
- The operating system, in turn, interprets the combination of characters and invokes the desired application program or utility.

## Remote Logging



- When a user wants to access an application program or utility located on a remote machine, they perform remote logging.
- Remote Logging uses TELNET client and TELNET server programs.
- The user sends the keystrokes to the terminal driver where the local operating system accepts the characters but does not interpret them.
- The characters are sent to the TELNET client, which transforms the characters into a universal character set called Network Virtual Terminal (NVT) characters and delivers them to the local TCP/IP stack.
- The commands or text, in NVT form, travel through the Internet and arrive at the TCP/IP stack at the remote machine.
- The characters are delivered to the operating system and passed to the TELNET server, which changes the characters to the corresponding characters understandable by the remote computer.
- The characters cannot be passed directly to the operating system because the remote operating system is not designed to receive characters from a TELNET

server; it is designed to receive characters from a terminal driver.

- A piece of software called pseudoterminal driver, is added to this, which pretends that the characters are coming from a terminal.
- The operating system then passes the characters to the appropriate application program.

### TELENET OPTIONS

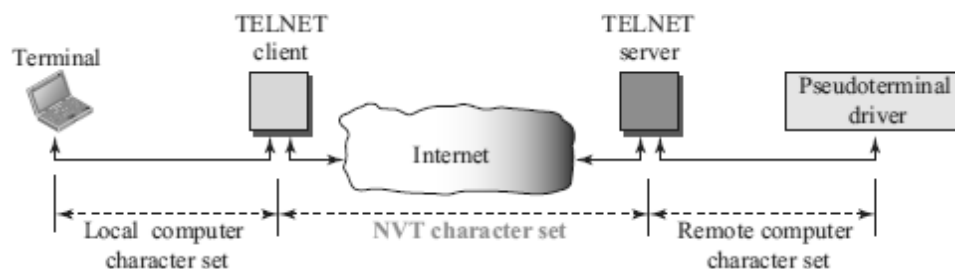
- TELNET lets the client and server negotiate options before or during the use of the service.
- Options are extra features available to a user with a more sophisticated terminal.
- Users with simpler terminals can use default features.

### TELENET COMMANDS

<i>Command</i>	<i>Meaning</i>	<i>Command</i>	<i>Meaning</i>
<b>open</b>	Connect to a remote computer	<b>set</b>	Set the operating parameters
<b>close</b>	Close the connection	<b>status</b>	Display the status information
<b>display</b>	Show the operating parameters	<b>send</b>	Send special characters
<b>mode</b>	Change to line or character mode	<b>quit</b>	Exit TELNET

### NETWORK VIRTUAL TERMINAL (NVT)

- The mechanism to access a remote computer is complex.
- We are dealing with heterogeneous systems.
- This is because every computer and its operating system accepts a special combination of characters as tokens.
- For example, the end-of-file token in a computer running the DOS operating system is Ctrl+z, while the UNIX operating system recognizes Ctrl+d.
- If we want to access any remote computer in the world, we must first know what type of computer we will be connected to, and we must also install the specific terminal emulator used by that computer.
- TELNET solves this problem by defining a universal interface called the Network Virtual Terminal (NVT) character set.
- Via this interface, the client TELNET translates characters (data or commands) that come from the local terminal into NVT form and delivers them to the network.
- The server TELNET, on the other hand, translates data and commands from NVT form into the form acceptable by the remote computer.



---

## **NVT Character Format**

- NVT uses two sets of characters, one for data and one for control.
- For data, NVT normally uses what is called NVT ASCII. This is an 8-bit character set in which the seven lowest order bits are the same as ASCII and the highest order bit is 0.
- To send control characters between computers , NVT uses an 8-bit character set in which the highest order bit is set to 1.