Aim ↦ To configure the router remotely using Telnet Protocol.

Objectives ↦

➢ To create the network using one router & two switches.
➢ To configure the router on a virtual terminal interface using telnet protocol.
➢ To verify the connectivity with PCs for configuring the router.

Apparatus ↦ Switch 2960, Router 2911, PC, connecting cables.

Theory ↦

The Telnet protocol is a critical tool for remotely accessing and configuring network devices like routers, operating over TCP port 23. It allows administrators to manage routers without physical access, although it lacks encryption, making it less secure than alternatives like Secure Shell (SSH). Despite this, Telnet remains valuable in controlled environments and for educational purposes.

In this experiment, the goal is to configure a router remotely using Telnet within a network comprising a router, two switches, and connected PCs. The router needs to be configured to allow Telnet connections, which involves assigning IP addresses to its interfaces and ensuring the necessary settings are in place for remote management.

Router Configuration Process:

a. **Network Setup:** Connect the router to the two switches, ensuring each PC is connected using straight cables for effective communication.
b. **Connectivity Verification:** The command ping 192.168.1.1 tests connectivity to the router's IP address, confirming device communication.
c. **Starting Telnet Session:** Once connectivity is established, initiate a Telnet session using telnet 192.168.1.1.
d. **Accessing Privileged EXEC Mode:** Enter en to switch to privileged EXEC mode for advanced commands.
e. **Entering Global Configuration Mode:** Type config t to access global configuration mode for modifying router settings.
f. **Configuring the Router's Hostname:** The command hostname Steve changes the router's name to "Steve" for easier identification.
g. **Interface Configuration:** Use interface gig0/0 and interface gig0/1 to configure the GigabitEthernet interfaces.
h. **Assigning IP Addresses:** The command ip add 192.168.1.1 255.255.255.0 assigns an IP address and subnet mask to the interface.

i. **Activating Interfaces:** Use no shutdown to enable the interface, making it operational.
j. **Configuring Virtual Terminal Lines:** Enter line vty 0 15 to set up virtual terminal lines for Telnet access.
k. **Setting Login Credentials:** Use login local and transport input telnet to enable local authentication for secure Telnet access.
l. **Saving the Configuration:** Finally, the command does write saves the configuration changes for persistence after a reboot.

This configuration enables the router to accept Telnet connections, demonstrating the effectiveness of remote management in network operations. Through this process, administrators can efficiently control routers from various locations, enhancing the flexibility and efficiency of network management.
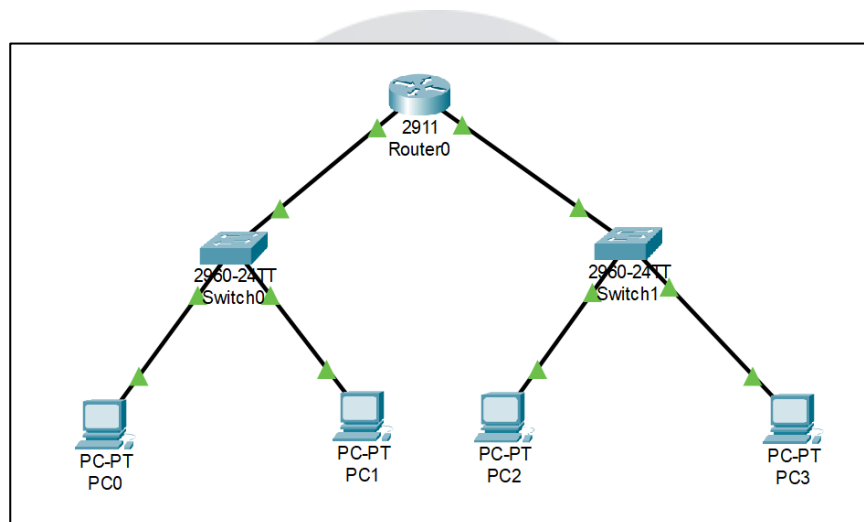
Simulation ↬

Fig. i) Router Configuration

```
Router>en                                                              C:\>ping 192.168.1.1
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.          Pinging 192.168.1.1 with 32 bytes of data:
Router(config)#interface gig0/0
Router(config-if)#ip add 10.10.1.1 255.0.0.0                           Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Router(config-if)#no shutdown                                          Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
                                                                       Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Router(config-if)#                                                     Reply from 192.168.1.1: bytes=32 time=6ms TTL=255
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
                                                                       Ping statistics for 192.168.1.1:
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up   Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
                                                                       Approximate round trip times in milli-seconds:
Router(config-if)#exit                                                     Minimum = 0ms, Maximum = 6ms, Average = 1ms
Router(config)#interface gig0/1
Router(config-if)#ip add 192.168.1.1 255.255.255.0                     C:\>telnet 192.168.1.1
Router(config-if)#no shutdown                                          Trying 192.168.1.1 ...Open

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up     User Access Verification

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up   Username: admin
                                                                       Password:
Router(config-if)#exit                                                 Router>en
Router(config)#exit                                                    Password:
Router#                                                                Router#config t
%SYS-5-CONFIG_I: Configured from console by console                    Enter configuration commands, one per line.  End with CNTL/Z.
                                                                       Router(config)#hostname Steve
Router#config t                                                        Steve(config)#do show run
Enter configuration commands, one per line.  End with CNTL/Z.          Building configuration...
Router(config)#username admin password cpt
Router(config)#enable password cpt                                     Current configuration : 843 bytes
Router(config)#line vty 0 15                                           !
Router(config-line)#login local                                        version 15.1
Router(config-line)#transport input telnet                            no service timestamps log datetime msec
Router(config-line)#exit                                               no service timestamps debug datetime msec
Router(config)#do wr                                                   no service password-encryption
Building configuration...                                              !
[OK]                                                                   hostname Steve
Router(config)#exit                                                    !
Router#                                                                !
%SYS-5-CONFIG_I: Configured from console by console                    !
exit                                                                   enable password cpt
                                                                       !
                                                                       !
                                                                       !
                                                                       !
                                                                       !
                                                                       !
                                                                       ip cef
                                                                       no ipv6 cef
                                                                       !
                                                                       !
                                                                       !
                                                                       username admin password 0 cpt
                                                                       !
                                                                       !
```

Fig. ii) Various Commands

Result ↪

> ➢ Successfully created the network using one router & two switches.
> ➢ Successfully configured the router on a virtual terminal interface using telnet protocol.
> ➢ Successfully verified the connectivity with PC's for configuring the router.

Conclusion ↪

This experiment effectively showcased the configuration of a Cisco 2911 router and a Cisco 2960 switch using Telnet in Packet Tracer, offering practical experience in IP addressing, VLAN setup, and remote access management.

Precautions ↪

- Use appropriate cables for connections to ensure reliable communication.
- Enter commands accurately to avoid configuration errors.
- Secure access with strong passwords and consider encryption.
- Regularly save the running configuration to prevent loss after a reboot.