

Lab 4: Telnet Configuration for Remote Access

Total Marks= 10

Objectives of this Lab:

The goal of this lab is to become familiar with the use of Telnet for remote access of the router in Packet Tracer.

Instructions:

- Read carefully before starting the lab.
- These exercises are to be done individually. **This lab carries 2.5% weightage.**
- You are supposed to provide the answers to the questions listed at the end of this document and upload the completed report to the Moodle.
- Avoid plagiarism by copying **from your peers.** Your submitted work should be written by yourself.
- Deadline for submission on Moodle is by 5pm Friday of week 4.
- You must submit a word document that provides answers to the questions given at the end.
Do not submit a Packet Tracer File.

Telnet:

Telnet is an application layer protocol that allows a network administrator to access and manage remote devices. A user on a client machine can use a software (also known as a Telnet client) to access a command-line interface of another, remote machine that is running a Telnet server program.

A network administrator can access the device by telnetting to the IP address or hostname of a remote device. The network administrator will then be presented with a virtual terminal that can interact with the remote host.

Routing Table:

Routers examine the destination IP address of a received packet and make routing decisions accordingly. To determine out which interface the packet will be sent, routers use **routing tables**. A routing table lists all networks for which routes are known. Each router's routing table is unique and stored in the RAM of the device.

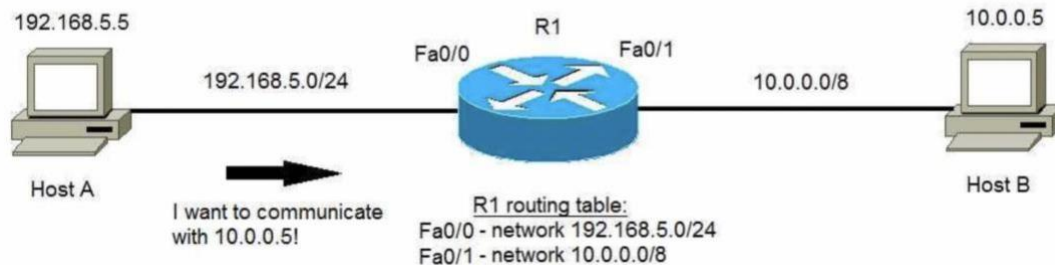
When a router receives a packet that needs to be forwarded to a host on another network, it examines its destination IP address and looks for the routing information stored in the routing table. Each entry in the routing table consists of the following entries:

- **the network and the subnet mask** – specify a range of IP addresses.
- **the remote router** – the IP address of the router used to reach that network.

Lab 4: Telnet Configuration for Remote Access

- **the outgoing interface** – the outgoing interface the packet should go out to reach the destination network.

Consider the following example:



In the example above we have a network of two computers and a router. Host A wants to communicate with Host B. Because hosts are on different subnets, Host A sends its packet to the default gateway (the router). The router receives the packet, examines the destination IP address, and looks up into its routing table to figure out which interface the packet will be sent out. The *show ip route* command can be used to show the routing table of the router:

```
HQ_Router#show ip route  
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP  
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area  
* - candidate default, U - per-user static route, o - ODR  
P - periodic downloaded static route  
  
Gateway of last resort is not set  
  
C 10.0.0.0/8 is directly connected, FastEthernet0/1  
C 192.168.5.0/24 is directly connected, FastEthernet0/0
```

This is the entry that will be used to route the packet:

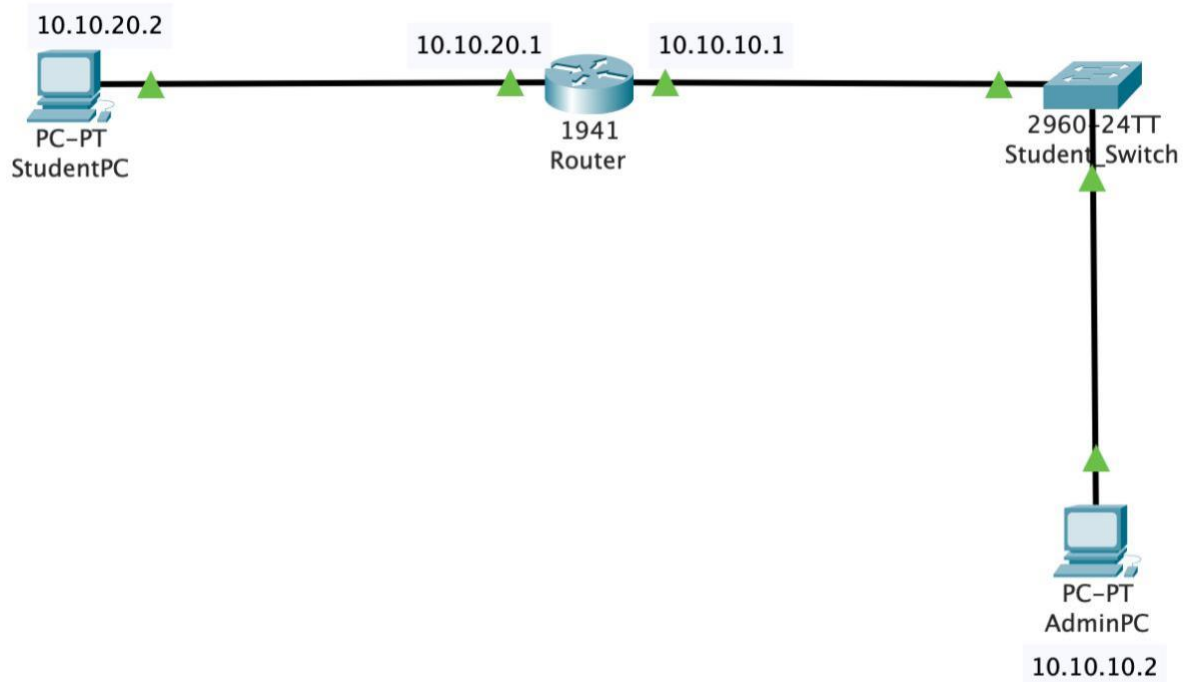
```
C 10.0.0.0/8 is directly connected, FastEthernet0/1
```

The line above specifies that each packet destined for the **10.0.0.0/8** network will be sent out the **Fa0/1** interface. Here is a description of each field:

- **C** – stands for **connected**. Each directly connected network is automatically added to the routing table.
- **10.0.0.0/8** – indicates the range of the IP addresses for which the route will be used, in this case, all IP addresses from the following range: **10.0.0.0 – 10.255.255.255**.
- **FastEthernet0/1** – indicates the interface the packet will be sent out, in order to reach the destination network.

Today's Lab:

In this lab, we will learn how to do the Telnet configuration on the router.



Create the network topology below in Packet Tracer.

Telnet Configuration

1. Assign the AdminPC a static IP address of 10.10.10.2 with subnet mask 255.255.255.0 and default gateway of 10.10.10.1. Assign the studentPC a static IP address 10.10.20.2 with subnet mask 255.255.255.0

We will configure Telnet on the Router so that as the network administrator (from AdminPC), you'll be able to access and manage the Router remotely.

2. Configure **enable password** on the router. If you fail to do this, you won't get past the executive mode of the router even after you establish a telnet connection to the router.

```
Router>enable
```

```
Router#config terminal
```

```
Router(config)#enable password admin
```

3. Configure gateway IP address on router interface

We assign the gateway IP addresses to the router's interfaces so that we can use telnet for remote access from the AdminPC using these address.

```
Router(config)#int Gig0/0
```

```
Router(config-if)#ip address 10.10.10.1 255.255.255.0
```

```
Router(config-if)#no shutdown
```

```
Router(config-if)#exit
```

```
Router(config)#int Gig0/1
```

```
Router(config-if)#ip address 10.10.20.1 255.255.255.0
```

```
Router(config-if)#no shutdown
```

```
Router(config-if)#exit
```

4. Configure a **Telnet password** for remote access:

This password is configured on **VTY** lines. VTY means Virtual Terminal. Before you can manage the router remotely via Telnet, you'll have to provide this password.

```
Router(config)#line vty 0 15
```

```
Router(config-line)#password cisco
```

```
Router(config-line)#login
```

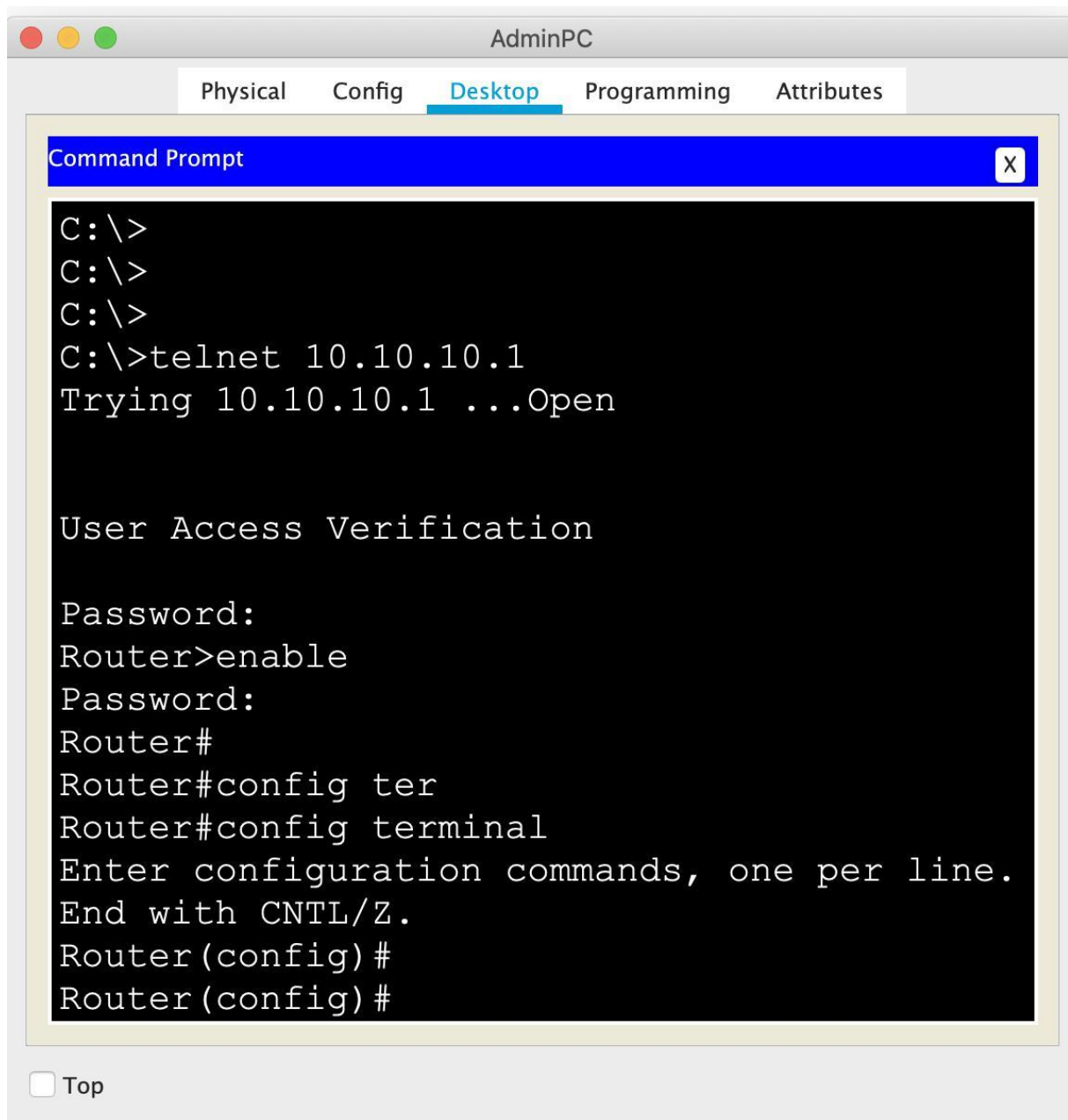
Telnet access to the router is allowed through VTY lines. We can establish up to 16 telnet connections to the router at the same time. That's what '**0 15**' means.

Next,

5. Test Telnet connectivity:

Go to command prompt of the AdminPC and type *telnet 10.10.10.1*

Hope you remember that 10.10.10.1 is the gateway IP address of the Router through which we can access it remotely.



```
AdminPC
Physical  Config  Desktop  Programming  Attributes

Command Prompt
C:\>
C:\>
C:\>
C:\>telnet 10.10.10.1
Trying 10.10.10.1 ...Open

User Access Verification

Password:
Router>enable
Password:
Router#
Router#config ter
Router#config terminal
Enter configuration commands, one per line.
End with CNTL/Z.
Router(config)#
Router(config)#
```

☐ Top

Lab 4: Telnet Configuration for Remote Access

- Now provide the Telnet password that you set in step 3. Mine is **cisco**. Notice that password characters **won't show up (no echo)** on the screen as you type them, but just type, then hit ENTER.

After you're authenticated, you will see the CLI of the remote router appear.

Now provide the enable password **admin** (or yours which you set in step 1) to enter the **privileged executive mode** of the router. You can then continue to configure your router the way you desire (but now, **remotely**)

Note that Telnet and enable passwords are different. **Enable password** authenticates you into privileged executive mode of the terminal device (router, for example), but you're using **Telnet Password** to allow you access the interface of the remote device after connecting to it. You can see that we used telnet password to access the CLI of the remote router.

- We can see the routing table information of the router with the command "show ip route" as shown in the figure below. We can see that router is directly connected with two networks as highlighted in the figure with the code "C". We can notice that the StudentPC is in another network (i.e, 10.10.20.0) as compared to the AdminPC (i.e, 10.10.10.0) but as the StudentPC is directly connected with the Router so if we ping 10.10.20.2 from AdminPC command prompt, it will be successful.

```
Router#show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
       area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       10.10.10.0/24 is directly connected, GigabitEthernet0/0
L       10.10.10.1/32 is directly connected, GigabitEthernet0/0
C       10.10.20.0/24 is directly connected, GigabitEthernet0/1
L       10.10.20.1/32 is directly connected, GigabitEthernet0/1
```

Answer the following Questions.

Question 1: Write the exact commands to configure the router's virtual terminal so that we can establish 4 remote connections at a time. **Set the VTY login password and enable password as your first name** and show the running configuration of the router. (Snapshot/s Required) [4 Marks]

Question 2: Add another PC (name it as AdminPC2) to the Student_Switch and show that the Telnet remote access for the router is successful from AdminPC2. (Snapshot/s Required) [2 Marks]

Question 3: Change the router hostname as your first name and display the routing information of the router. Also explain the entries of the routing table. (Snapshot Required) [4 Marks]