NIST College
Banpea
BScCSIT

Computer Network (CSC258)

LAB 5
Basic Router Configuration and Static Routing

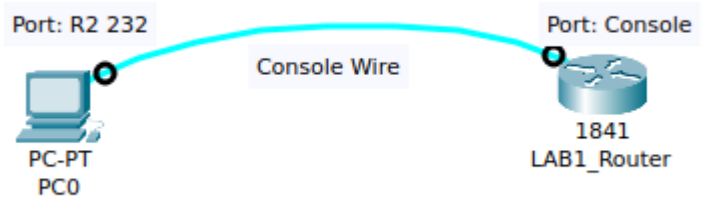
Objectives:

1. To understand basic commands for router configuration
2. To understand the static routing, its advantages and drawbacks

Theory:

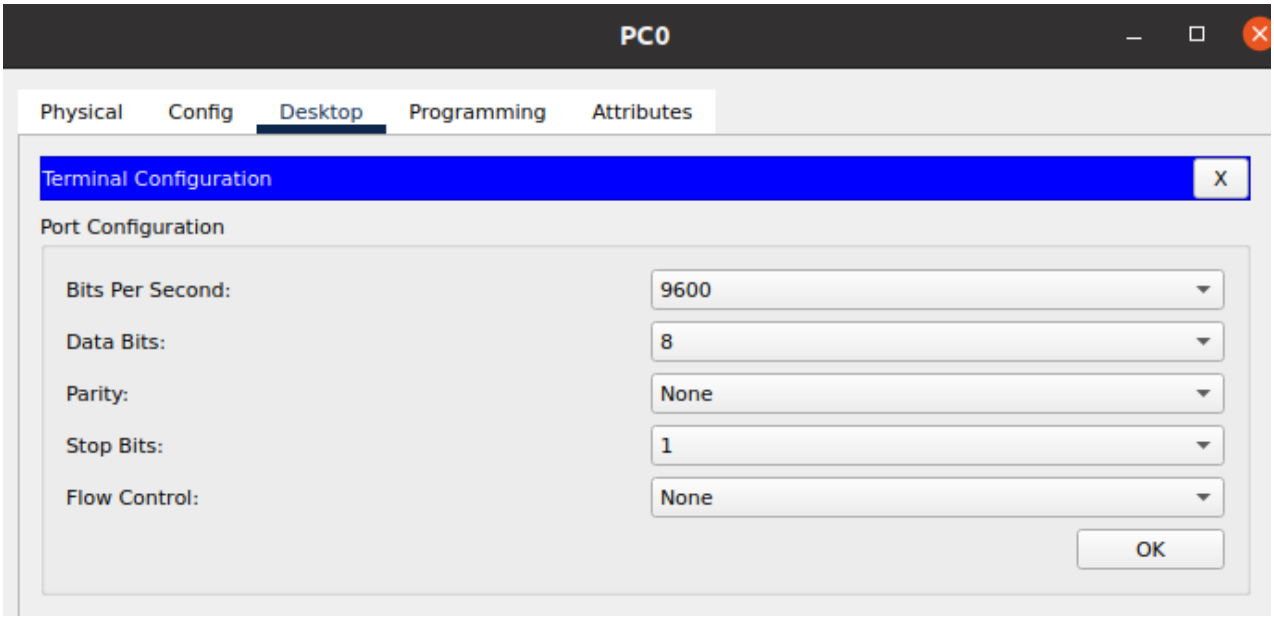
1. Router
2. Routing
3. Types of Routing
4. Static Routing
5. Pros and Cons of Stating Routing

Task: **Configure Router from Hyper Terminal**
Considering the following topology:

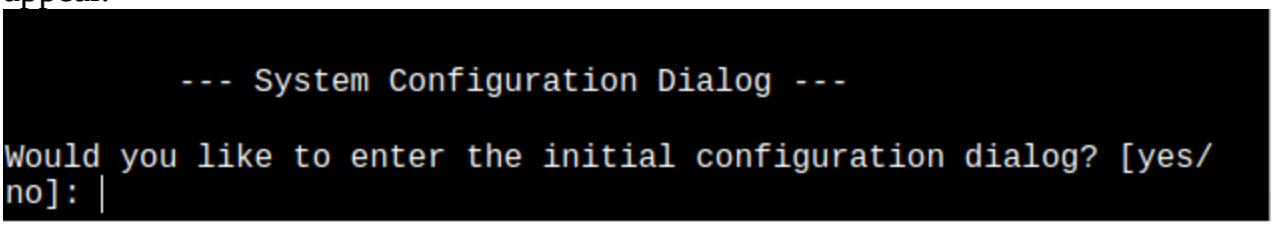


Configuring the *computer* terminal software
The terminal software in not correctly configured on the laptop. You have to change the settings to 9600 / 8 / None to connect to the router's console.

1. Click on PC0 → Desktop → Terminal. Following screen will be displayed. Click OK.



After following message will be displayed. Type no and Router> prompt will appear.



Configuring the router's name

Router>enable
Router#configure terminal
Router#(config)#hostname LAB1_Router
LAB1_Router(config)#

Configuring the enable password ans secret to "cisco"

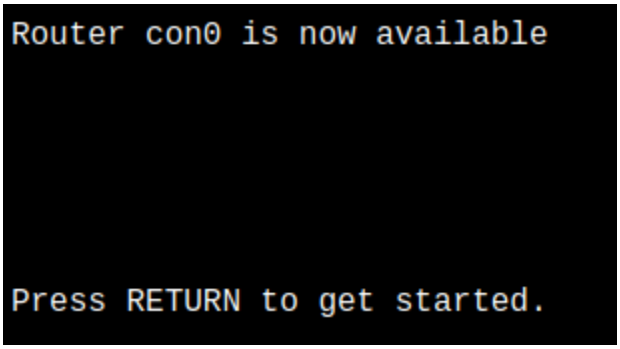
LAB1_Router(config)# enable password cisco
LAB1_Router(config)#enable secret cisco

Configuring the password encryption for this router

LAB1_Router(config)#service encryption password-encryption

Testing the password you have just set in the router's

LAB1_Router(config)#exit
LAB1_Router#logout



LAB1_Router>enable
Password:

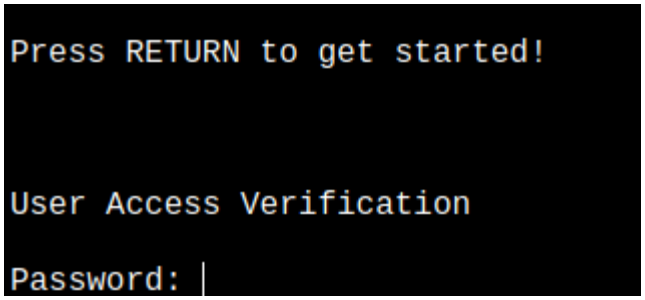
Now you enter the password (i.e. cisco)you have just set. Enable password required password to log in into privilege mode from user exec mode.

Configuring the console access

LAB1_Router#configure terminal
LAB1_Router(config)#line console 0
LAB1_Router(config-line)#password console
LAB1_Router(config-line)#login
LAB1_Router(config-line)#logging synchronous
LAB1_Router(config-line)#exec-timeout 1 30
LAB1_Router(config-line)#end
LAB1_Router#

Verifying the console access

Close the current terminal and open new terminal of a router. Following prompt will be display and you enter the password set to console port (here we have set console password as “console”.)



Setting up password for Telnet

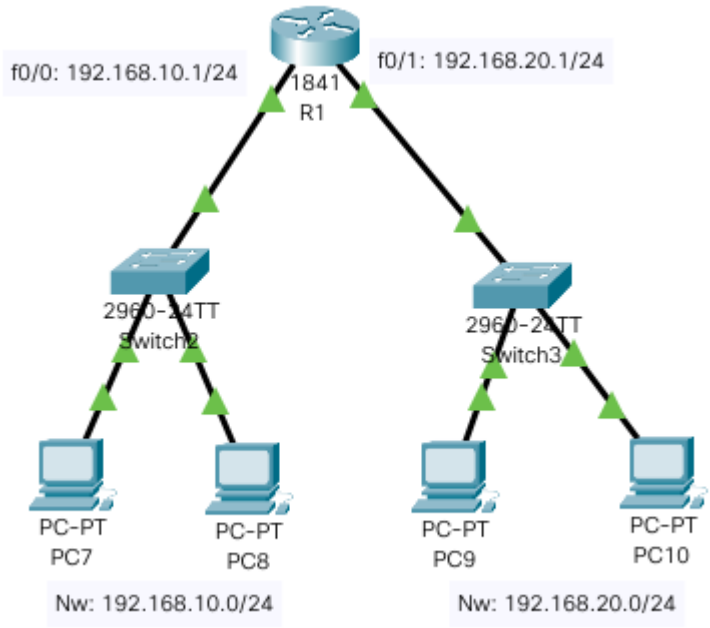
As part of the TCP/IP protocol suite, Telnet is a virtual terminal protocol that allows you to make connections to remote devices, gather information, and run programs.

After your routers and switches are configured, you can use the Telnet program to reconfigure and/or check up on them without using a console cable.

You run the Telnet program by typing telnet from any command prompt (Windows or Cisco), but you need to have VTY passwords set on the IOS devices for this to work.
For example: If an IP of router interface is 192.168.20.1, the from command prompt of any host or any switch, to log in that router remotely, do
C:\>telnet 192.168.10.1

Or from Switch

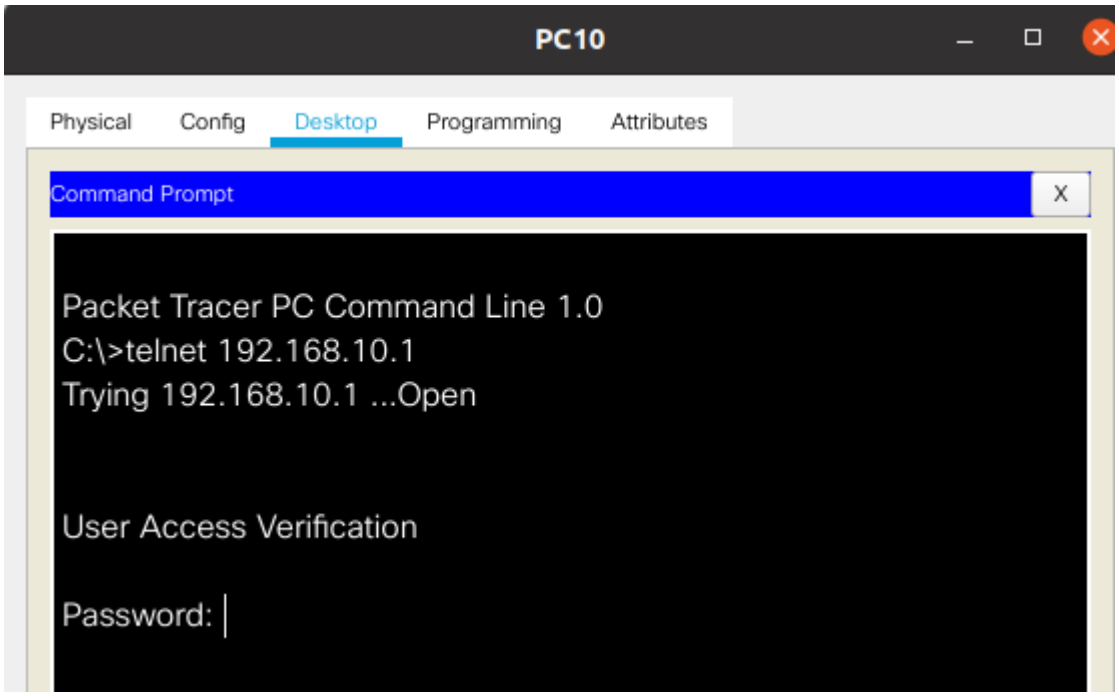
Switch#telnet 192.168.10.1



Task:
Assign IP to router interfaces and hosts connected to the switches. Then setup telnet password for router as :

```
Router>enable
Router#configure terminal
Router(config)#line vty 0 4
Router(config)-line)#password telnet
Router(config)-line)#login
Router(config)-line)#exit
Router#show running-config
```

To access router through telent, open command prompt and type telent 192.168.10.1 after which password is prompted for authentication.



Setting Up Secure Shell (SSH)

Instead of Telenet, you can use Secure Shell, which creates a more secure session than the Telnet applications that uses an unencrypted data stream. Secure shell (SHH) uses encryption keys to send data so that your username and password are not sent in the clear.
Here are the steps to setting up SSH:

1. Set you hostname

```
Router(config)#hostname Todd
```

2. Set the domain name—both the hostname and domain name are required for the encryption keys to be generated:
   Todd(config)#ip domain-name Lammle.com

3. Set the username to allow SSH client access:
   Todd(config)#username Todd password Lammle

4. Generate the encryption keys for securing the session:
   Todd(config)#crypto key generate rsa
   The name for the keys will be: Todd.Lammle.com
   Choose the size of the key modulus in the range of 360 to
   4096 for your General Purpose Keys. Choosing a key modulus
   Greater than 512 may take a few minutes.

   How many bits in the modulus [512]: 1024
   % Generating 1024 bit RSA keys, keys will be non-exportable...
   [OK] (elapsed time was 6 seconds)

5. Enable SSH version 2 on the router—not mandatory, but strongly suggested
   Todd(config)#ip ssh version 2

6. Connect to the VTY lines of the switch:
   Todd(config)#line vty 0 4
7. Configure your access protocols:
   Todd(config-line)#transport input ?
   All All protocols
   none No protocols
   ssh TCP/IP SSH protocol
   telnet TCP/IP Telnet protocol

Beware of this next line, and make sure you never use it in production because it's a horrendous security risk:

   Todd(config-line)#transport input all

   I recommend using the next line to secure your VTY lines with SSH:

   Todd(config-line)#transport input ssh ?
   Telnet TCP/IP Telnet protocol
   <cr>

Todd(config-line)#transport input ssh

To access router using ssh:
C:\>ssh 192.168.10.1

To manually encrypt you password:
Router(config)#service password-encrpytion
Router(config)#exit
Router#show run

Viewing, Saving and Erasing Configurations

You can manually save the file from DRAM, which is usually just called RAM, to NVRAM by using the copy running-config startup-config command. You can use the shortcut copy run start as well:

Before copying:
Router#show startup-config

Q. What output do you see?

Router#copy running-config starup-config
Router#show startup-config

Q. What output do you see?

Router#show running-config

Q. Are the outputs of above two commands same?

To delete startup-config
Router#erase startup-config
Router#show start
Router#reload

Now if you reload or power the router down after using the erase startup-config command, you'll be offered setup mode because there's no configuration saved in NVRAM. You can press Ctrl+C to exit setup mode at any time, but the reload command can only be used from privileged mode.