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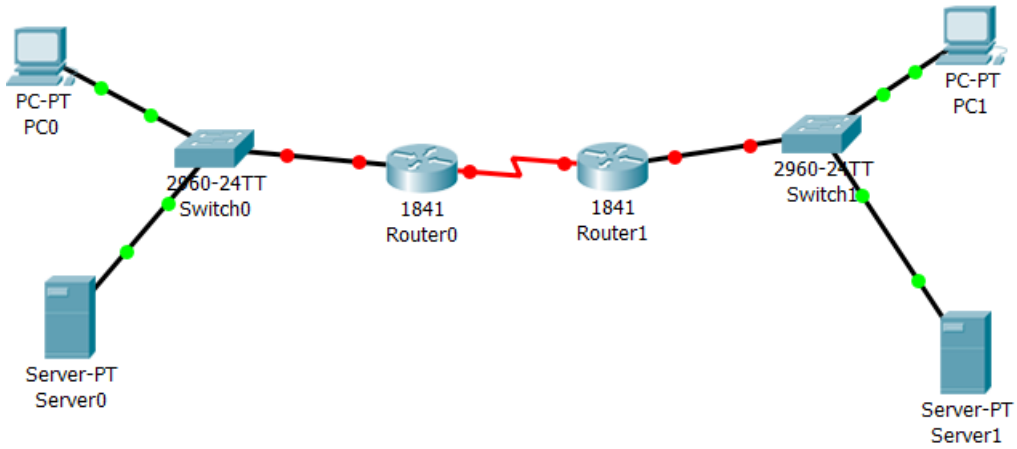
Reference Manual 1

Experiment No 6

Aim

Perform an initial configuration of a Cisco Catalyst 2960 switch.



Preparation

In this activity, you will configure these settings on the customer Cisco Catalyst 2960 switch:

Host name Console password vty password Privileged EXEC mode password Privileged EXEC mode

Step 1: Configure the switch host name.
a. From the Customer PC, use a console cable and terminal emulation software to connect to the console
of the customer Cisco Catalyst 2960 switch.
b. Set the host name on the switch to CustomerSwitch using these commands.
Switch>enable
Switch#configure terminal
Switch(config)#hostname CustomerSwitch

Step 2: Configure the privileged mode password and secret.
a. From global configuration mode, configure the password as cisco.
CustomerSwitch(config)#enable password cisco
b. From global configuration mode, configure the secret as cisco123.
CustomerSwitch(config)#enable secret cisco123

Step 3: Configure the console password.
a. From global configuration mode, switch to configuration mode to configure the console line.
CustomerSwitch(config)#line console 0

b. From line configuration mode, set the password to cisco and require the password to be entered at login.
CustomerSwitch(config-line)#password cisco
CustomerSwitch(config-line)#login
CustomerSwitch(config-line)#exit

Step 4: Configure the vty password.
a. From global configuration mode, switch to the configuration mode for the vty lines 0 through 15.
CustomerSwitch(config)#line vty 0 15
b. From line configuration mode, set password to cisco & require the password to be enter at login.
CustomerSwitch(config-line)#password cisco
CustomerSwitch(config-line)#login
CustomerSwitch(config-line)#exit

Step 5: Configure an IP address on interface VLAN1.
From global configuration mode, switch to interface configuration mode for VLAN1, and assign the IP address
192.168.1.5 with the subnet mask of 255.255.255.0.
CustomerSwitch(config)#interface vlan 1
CustomerSwitch(config-if)#ip address 192.168.1.5 255.255.255.0
CustomerSwitch(config-if)#no shutdown
CustomerSwitch(config-if)#exit

Step 6: Configure the default gateway.
a. From global configuration mode, assign the default gateway to 192.168.1.1.
CustomerSwitch(config)#ip default-gateway 192.168.1.1
b. Click the Check Results button at the bottom of this instruction window to check your work.

Step 7: Verify the configuration.
The Customer Switch should now be able to ping the ISP Server at 209.165.201.10. The first one or two pings
may fail while ARP converges.
CustomerSwitch(config)#end
CustomerSwitch#ping 209.165.201.10
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 209.165.201.10, timeout is 2 seconds:
..!!!
Success rate is 60 percent (3/5), round-trip min/avg/max = 181/189/197 ms
CustomerSwitch#

Reflection
a. What is the significance of assigning the IP address to the VLAN1 interface instead of any of the Fast Ethernet interfaces?
a. In layer 2:
To configure vlan interface for remote management. i.e, we need ip address to manage a switch remotely.

In layer 3:
Especially In layer 3 switches and routers with switch modules. In both cases we dont have a switch connected to a router with a link which is configured with sub interfaces for each vlan.This sub-interface ip address is the default gateway for each vlan, the situation now is that we have a single device having layer 3 capabilities so we are not able to configure sub-interfaces for each vlan. So

we have to configure an ip interface for each vlan to be the default gateway for the clients in these vlans.

b. What command is necessary to enforce password authentication on the console and vty lines?
Router(config-line)#logi

c. How many gigabit ports are available on the Cisco Catalyst 2960 switch that you used in the activity?
The Cisco Catalyst 2960 has eight 10/100 ports with one 10/100/1000 PoE input port.

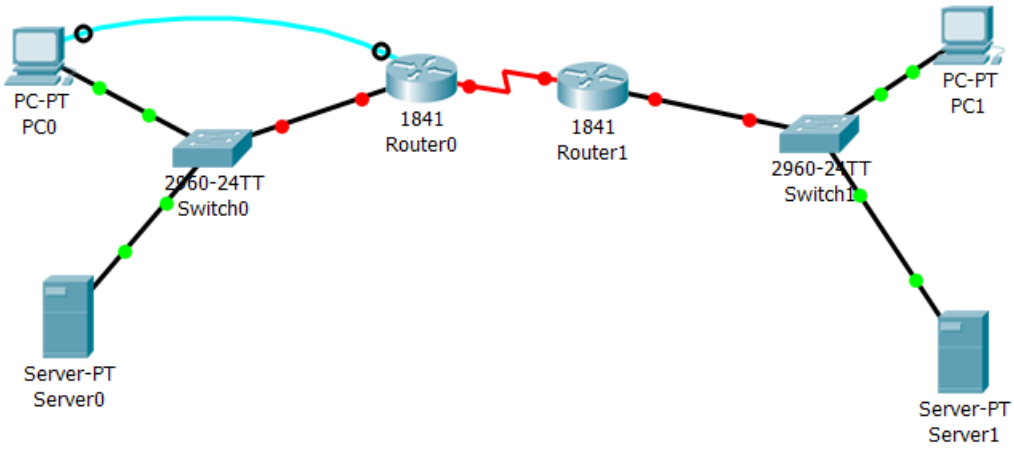
Conclusion

Initial configuration of a Cisco Catalyst 2960 switch was performed successfully.

Experiment No 7

Aim

Performing an Initial Router Configuration.



Preparation

In this activity, you will use the Cisco IOS CLI to apply an initial configuration to a router, including host
name, passwords, a message-of-the-day (MOTD) banner, and other basic settings.

Step 1: Configure the router host name.
a. On Customer PC, use the terminal emulation software to connect to the console of the customer Cisco
1841 ISR.

Set the host name on the router to CustomerRouter by using these commands.

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

Step 2: Configure the privileged mode and secret passwords.
a. In global configuration mode, set the password to cisco.
CustomerRouter(config)#enable password cisco
Set an encrypted privileged password to cisco123 using the secret command.
CustomerRouter(config)#enable secret cisco123

Step 3: Configure the console password.
a. In global configuration mode, switch to line configuration mode to specify the console line.
CustomerRouter(config)#line console 0

Set the password to cisco123, require that the password be entered at login, and then exit line configuration mode.

CustomerRouter(config-line)#password cisco123
CustomerRouter(config-line)#login

CustomerRouter(config-line)#exit
CustomerRouter(config)#

Step 4: Configure the vty password to allow Telnet access to the router.
a. In global configuration mode, switch to line configuration mode to specify the vty lines.
CustomerRouter(config)#line vty 0 4

Set the password to cisco123, require that the password be entered at login, exit line configuration mode, and then
exit the configuration session.

CustomerRouter(config-line)#password cisco123
CustomerRouter(config-line)#login
CustomerRouter(config-line)#exit
CustomerRouter(config)#

Step 5: Configure password encryption, a MOTD banner, and turn off domain server lookup.
a. Currently, the line passwords and the enable password are shown in clear text when you show the running configuration. Verify this now by entering the show running-config command.
To avoid the security risk of someone looking over your shoulder and reading the passwords, encrypt
all clear text passwords.
CustomerRouter(config)#service password-encryption
Use the show running-config command again to verify that the passwords are encrypted.
To provide a warning when someone attempts to log in to the router, configure a MOTD banner.
CustomerRouter(config)#banner motd $Authorized Access Only!$
Test the banner and passwords. Log out of the router by typing the exit command twice. The banner displays before
the prompt for a password. Enter the password to log back into the router.
You may have noticed that when you enter a command incorrectly at the user or privileged EXEC prompt, the router
pauses while trying to locate an IP address for the mistyped word you entered. For example, this output shows what
happens when the enable command is mistyped.
CustomerRouter>emable
Translating "emable"...domain server (255.255.255.255)
To prevent this from happening, use the following command to stop all DNS lookups from the router
CLI.
CustomerRouter(config)#no ip domain-lookup
Save the running configuration to the startup configuration.
CustomerRouter(config)#end
CustomerRouter#copy run start
Step 6: Verify the configuration.
a. Log out of your terminal session with the Cisco 1841 customer router.
b. Log in to the Cisco 1841 Customer Router. Enter the console password when prompted.
c. Navigate to privileged EXEC mode. Enter the privileged EXEC password when prompted.
d. Click the Check Results button at the bottom of this instruction window to check your work.

Reflection
Which Cisco IOS CLI commands did you use most?

Configure terminal-Moves user from privileged mode to global configuration mode 10/100/1000 PoE input port.
How can you make the customer router passwords more secure?
Look at your boot image using the show version command from your normal operating mode (Full Cisco IOS image) to see whether the boot image supports the enable secret command. If it does, remove enable password. If the boot image does not support enable secret, note the following caveats:

- Setting an enable password might be unnecessary if you have physical security so that no one can reload the device to the boot image.
- If someone has physical access to the device, he can easily subvert the device security without needing to access the boot image.
- If you set the enable password to the same as the enable secret, you have made the enable secret as prone to attack as the enable password.
- If you set enable password to a different value because the boot image doesn't support enable secret, your router administrators must remember a new password that is used infrequently on ROMs that don't support the enable secret command. By having a separate enable password, administrators may not remember the password when they are forcing downtime for a software upgrade, which is the only reason to log in to boot mode.

Conclusion

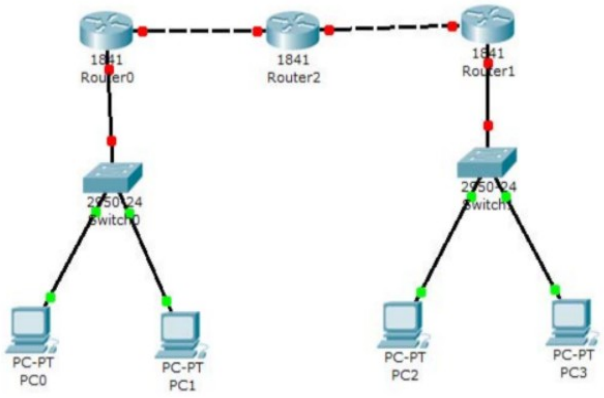
Initial router configuration was performed successfully.

Reference Manual 2

Experiment No 6

Aim

Configure a Network topology using packet tracer software.



Procedure

To implement this practical following network topology is required to be configured using the commands learned in previous practical. After configuring the given network a packet should be ping from any one machine to another.

Router0 Configuration Command :.....
Continue with configuration dialog? [yes/no]: no
Press RETURN to get started!
Router>
Router>Enable
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname router0
router0(config)#interface fastethernet 0/0
router0(config-if)#ip address 192.168.1.1 255.255.255.0
router0(config-if)#description router0 fastethernet 0/0
router0(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
router0(config-if)#exit
router0(config)#interface fastethernet 0/1
router0(config-if)#description router0 fastethernet 0/1
router0(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
router0(config-if)#exit

```
router0(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
router0#show running-config
Building configuration...

Current configuration : 437 bytes
!
version 12.4
no service password-encryption
!
hostname router0
!
!
!
!
!
ip ssh version 1
!
!
interface FastEthernet0/0
description router0 fastethernet 0/0
ip address 192.168.1.1 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet0/1
description router0 fastethernet 0/1
no ip address
duplex auto
speed auto
!
interface Vlan1
no ip address
shutdown
!
ip classless
!
!
!
!
!
line con 0
line vty 0 4
login
!
!
end
router0#
router0#
router0#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
```

[OK]
router0#

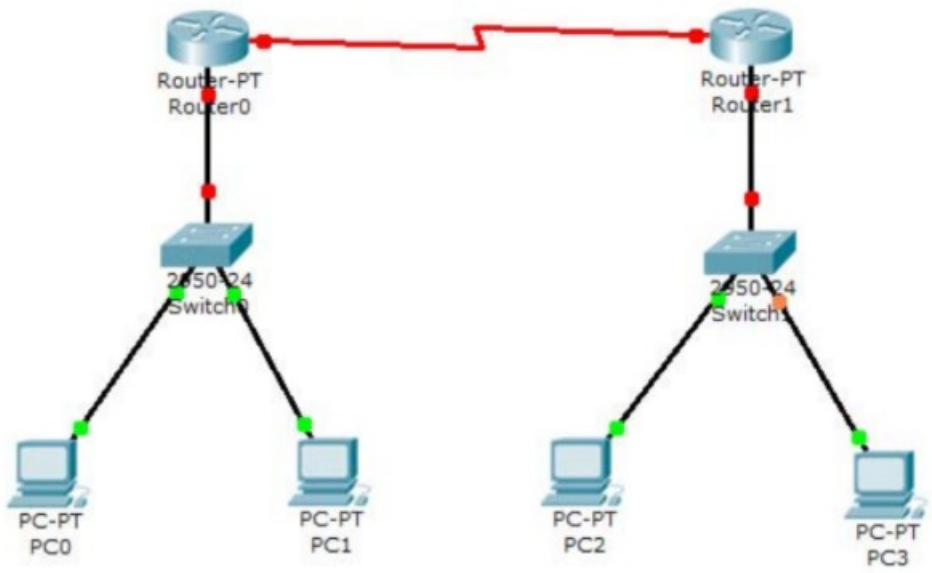
Conclusion

Network topology using packet tracer software was configured successfully.

Experiment No 7

Aim

Configure a Network topology using packet tracer software.



Procedure

To implement this practical following network topology is required to be configured using the commands learned in previous practical. After configuring the given network a packet should be ping from any one machine to
another.

Router0 Configuration Command.....
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.0.254 255.255.255.0
Router(config-if)#no shutdown
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Router(config-if)#exit
Router(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0

```
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#exit
Router(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
Router#wr
Building configuration...
[OK]
Router#show running-config
Building configuration...
Current configuration : 542 bytes
!
version 12.2
no service password-encryption
!
hostname Router
!
!
!
!
!
ip ssh version 1
!
!
interface FastEthernet0/0
ip address 192.168.0.254 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet1/0
no ip address
duplex auto
speed auto
shutdown
!
interface Serial2/0
ip address 192.168.1.1 255.255.255.0
!
interface Serial3/0
no ip address
shutdown
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
ip classless
```

```
!
!
!
!
!
line con 0
line vty 0 4
login
!
!
end

Router#
Router1 Configuration Command.....
Continue with configuration dialog? [yes/no]: no

Press RETURN to get started!

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial2/0
Router(config-if)#ip address 192.168.1.2 255.255.255.0
Router(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial2/0, changed state to up
Router(config-if)#exit
Router(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 192.168.2.254 255.255.255.0
Router(config-if)#no shutdown
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to
up
Router(config-if)#exit
Router(config)#exit
%SYS-5-CONFIG_I: Configured from console by console
Router#wr
Building configuration...
[OK]
Router#
Router#show running-config
Building configuration...
Current configuration : 542 bytes
!
```

```
version 12.2
no service password-encryption
!
hostname Router
!
!
!
!
!
ip ssh version 1
!
!
interface FastEthernet0/0
ip address 192.168.2.254 255.255.255.0
duplex auto
speed auto
!
interface FastEthernet1/0
no ip address
duplex auto
speed auto
shutdown
!
interface Serial2/0
ip address 192.168.1.2 255.255.255.0
!
interface Serial3/0
no ip address
shutdown
!
interface FastEthernet4/0
no ip address
shutdown
!
interface FastEthernet5/0
no ip address
shutdown
!
ip classless
!
!
!
!
!
line con 0
line vty 0 4
login
!
!
end

Router#
```

IP ROUTE Command.....
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.2.2
Router(config)#exit
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 192.168.2.0/24 is directly connected, FastEthernet0/0
C 192.168.1.2/24 is directly connected, Serial2/0
S 192.168.2.0/24 [1/0] via 192.168.1.2
Router#
IP ROUTE Command.....
Router>enable
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
S 192.168.0.0/24 [1/0] via 192.168.1.1
C 192.168.0.0/24 is directly connected, FastEthernet0/0
C 192.168.1.1/24 is directly connected, Serial2/0
Router#

Conclusion

Network topology using packet tracer software was configured successfully.