**CCNA ASSIGNMENT**

**MUSFIRA RAUF**

**QUESTION#01 Cisco Router and Switch Initial Configuration**

1) **Configure Router 1 with the hostname ‘R1’**

Router>enable

Router# configure terminal

Router(config) # hostname R1

R1 (config)#

**2) Configure router2 with hostname R2**

Router>enable

Router# configure terminal

Router(config)# hostname R2

R2#

**3)** **Configure Switch 1 with the hostname ‘SW1’**

Switct> enable

Switch# configure terminal

Switch(config)# hostname SW1

SW1#

**4) Configure the IP address on R1 according to the topology diagram**

R1 (config)# interface gigabitethernet 0/0

R1(config-if)# ip address 10.10.10.1 255.255.255.0

R1(config-if)# no shutdown

**5) Configure the IP address on R2 according to the topology diagram**

R2(config)# interface gigabitethernet 0/0

R2 (config-if)# ip address 10.10.10.2 255.255.255.0

R2(config-if)# no shutdown

**6) Give SW1 the management IP address 10.10.10.10/24**

SW1(config)#interface vlan1

SW1(config-if)# ip address 10.10.10.10 255.255.255.0

SW1(config-if) #no shutdown

**7) The switch should have connectivity to other IP subnets via R2**

SW1(config)# ip default-gateway 10.10.10.2

**8) Verify the switch can ping its default gateway.**

SW1# ping 10.10.10.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.10.10.2, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/0 ms

SW1#

**9) Enter suitable descriptions on the interfaces connecting the devices**

R1(config)# interface gigabitethernet 0/0

R1(config-if)# description link to SW1

R1(config-if)#

R2(config)# interface gigabitethernet 0/0

R2(config-if)# description link to SW1

R2(config-if)#

SW1(config)#interface fastethernet 0/1

SW1(config-if)# description link to R1

SW1(config-if)# interface fastethernet 0/2

SW1(config-if)# description link to R2

SW1(config-if)#

**10) On SW1, verify that speed and duplex are automatically negotiated to 100 Mbps full**

**duplex on the link to R1.**

SW1#show interface f0/1

FastEthernet0/1 is up, line protocol is up (connected)

Hardware is Lance, address is 0050.0f9d.8101 (bia 0050.0f9d.8101)

Description: link to R1

BW 100000 Kbit, DLY 1000 usec,

reliability 255/255, txload 1/255, rxload 1/255

Encapsulation ARPA, loopback not set

Keepalive set (10 sec)

Full-duplex, 100Mb/s

**11) Manually configure full duplex and FastEthernet speed on the link to R2**

SW1(config)# interface f0/2

SW1(config-if)#speed 100

SW1(config-if)#duplex full

R2(config)# interface gigabitethernet 0/0

R2(config-if)# speed 100

R2(config-if)# duplex full

**12) What version of IOS is the switch running?**

SW1# show version

SW1#show version

Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX,

RELEASE SOFTWARE (fc1)

**13) Verify the directly attached Cisco neighbors using Cisco Discovery Protocol**

SW1# show cdp neighbors

Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge

S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

Device ID Local Intrfce Holdtme Capability Platform Port ID

R1 Fas 0/1 142 R C2900 Gig 0/0

R2 Fas 0/2 126 R C2900 Gig 0/0

SW1#

**14) Prevent R1 from discovering information about Switch 1 via CDP**

SW1(config)#interface fastethernet 0/1

SW1(config-if)#no cdp enable

SW1(config-if)#

**15) Flush the CDP cache on R1 by entering the ‘no cdp run’ then ‘cdp run’ commands in global configuration mode**

R1(config)#no cdp run

R1(config)#cdp run

R1(config)#

**16) Verify that R1 cannot see SW1 via CDP**

R1#show cdp neighbors

Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge

S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone

Device ID Local Intrfce Holdtme Capability Platform Port ID

R1#

**17) Verify the status of the switch port connected to R2 with the show ip interface brief command. It should show status and protocol up/up.**

SW1#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/1 unassigned YES manual up up

Vlan1 10.10.10.10 YES manual up up

FastEthernet0/2 unassigned YES manual up up

SW1#

**18) Shut down the interface connected to R2 and issue a show ip interface brief command again. The status and protocol should show administratively down/down.**

SW1(config)#interface fastethernet 0/2

SW1(config-if)#shutdown

SW1(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to

down

SW1#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/1 unassigned YES manual up up

FastEthernet0/2 unassigned YES manual administratively down down

Vlan1 10.10.10.10 YES manual up up

**19) Bring the interface up again. Verify the speed and duplex setting.**

SW1(config)#interface fastethernet 0/2

SW1(config-if)#no shutdown

SW1(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to

up

SW1#show interface f0/2

FastEthernet0/2 is up, line protocol is up (connected)

Hardware is Lance, address is 0050.0f9d.8102 (bia 0050.0f9d.8102)

Description: link to R2

BW 100000 Kbit, DLY 1000 usec,

reliability 255/255, txload 1/255, rxload 1/255

Encapsulation ARPA, loopback not set

Keepalive set (10 sec)

Full-duplex, 100Mb/s

**20) Set the duplex to half on Switch 1. Leave the settings as they are on R2.**

SW1(config)#interface f0/2

SW1(config-if)#duplex half

SW1(config-if)#

%LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to

down

**21) Verify the state of the interface.**

SW1#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/1 unassigned YES manual up up

FastEthernet0/2 unassigned YES manual down down

The interface is down/down. It will not forward traffic.

**22) Set the duplex back to full duplex.**

SW1(config)#interface f0/2

SW1(config-if)#duplex full

SW1(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to

up

**23) Set the speed to 10 Mbps.**

SW1(config-if)#int f0/2

SW1(config-if)#speed 10

SW1(config-if)#

%LINK-3-UPDOWN: Interface FastEthernet0/2, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to

down

**24) Check if the interface is still operational.**

SW1#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/1 unassigned YES manual up up

FastEthernet0/2 unassigned YES manual down down

Vlan1 10.10.10.10 YES manual up up

The interface state is down/down

**25) Check if the interface is operational on R2. What is the status of the interface?**

R2#show ip interface brief

Interface IP-Address OK? Method Status Protocol

GigabitEthernet0/0 10.10.10.2 YES manual up down

The interface status is up/down on R2.

**QUESTION 02: Observe Static Routing With 3 Routers with CLI**

**Step 1**

Router 0

Router#config terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#interface f0/0

Router(config-if)#ip add 192.168.10.1 255.255.255.0

Router(config-if)#no shutdown

Router(config-if)#

%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)#int serial 0/0/0

Router(config-if)#ip add 10.0.0.2 255.0.0.0

Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down

Router(config-if)#

Router 1

Router(config-if)#ip add 192.168.11.1 255.255.255.0

Router(config-if)#no shutdown

Router(config-if)#

%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)#int s 0/0/0

Router(config-if)#ip add 10.0.0.3 255.0.0.0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

Router(config-if)#int s 0/0/1

Router(config-if)#ip add 11.0.0.2 255.0.0.0

Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down

Router(config-if)#

Router 2

Router#config terminal

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#int f0/0

Router(config-if)#ip add 192.168.12.1 255.255.255.0

Router(config-if)#no shutdown

Router(config-if)#

%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)#int s 0/0/0

Router(config-if)#ip add 11.0.0.3 255.0.0.0

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

**Step 2**

Router 2

Router(config)#ip route 192.168.11.0 255.255.255.0 11.0.0.2

Router(config)#ip route 192.168.10.0 255.255.255.0 11.0.0.2

Router(config)#ip route 10.0.0.0 255.0.0.0 11.0.0.2

Router(config)#ex

Router#

%SYS-5-CONFIG\_I: Configured from console by console

Router1

Router(config)#ip route 192.168.10.0 255.255.255.0 10.0.0.2

Router(config)#ip route 192.168.12.0 255.255.255.0 11.0.0.3

Router(config)#ex

Router#

%SYS-5-CONFIG\_I: Configured from console by console

Router 0

Router(config)#ip route 192.168.11.0 255.255.255.0 10.0.0.3

Router(config)#ip route 192.168.12.0 255.255.255.0 10.0.0.3

Router(config)#ip route 11.0.0.0 255.0.0.0 10.0.0.3

Router(config)#ex

Router#

%SYS-5-CONFIG\_I: Configured from console by console

**QUESTION 03 DHCP CONFIGURATION**

Cisco DHCP Client

**1) You have not acquired a static public IP address from the Internet service provider. Configure the outside interface FastEthernet 0/0 on R1 to receive its IP address using DHCP. The Service Provider is already configured and you have no access to it.**

Router(config)#interface f0/0

Router(config-if)#ip address dhcp

Router(config-if)#no shutdown

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

2) **Verify that R1 received its public IP address via DHCP (you may need to wait a few minutes for the address to be assigned).**

Router#show ip interface brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 unassigned YES DHCP up down

FastEthernet0/1 unassigned YES unset administratively down down

FastEthernet1/0 unassigned YES unset administratively down down

FastEthernet1/1 unassigned YES unset administratively down down

Vlan1 unassigned YES unset administratively down down

Router#

3) **What is the IP address of R1’s DHCP server?**

R1#show dhcp lease

Temp IP addr: 0.0.0.0 for peer on Interface: FastEthernet0/0

Temp sub net mask: 0.0.0.0

DHCP Lease server: 0.0.0.0 , state:

DHCP Transaction id:

Lease: 0 secs, Renewal: 0 secs, Rebind: 0 secs

Temp default-gateway addr: 0.0.0.0

Next timer fires after: 00:00:00

Retry count: 0 Client-ID:cisco-000A.416E.6001-Fa0/0

Client-ID hex dump: 636973636F2D303030412E343136452E

63030312D4661302F30

Hostname: R1

**CISCO DHCP SERVER**

4) **Enable the DHCP service on R1 so it gives out IP addresses to the PCs in the 10.10.10.0/24 subnet. Leave IP addresses 10.10.10.1 – 10 free to be assigned to servers and printers. 10.10.20.10 is the DNS server.**

R1(config)#ip dhcp excluded 10.10.10.1 10.10.10.10

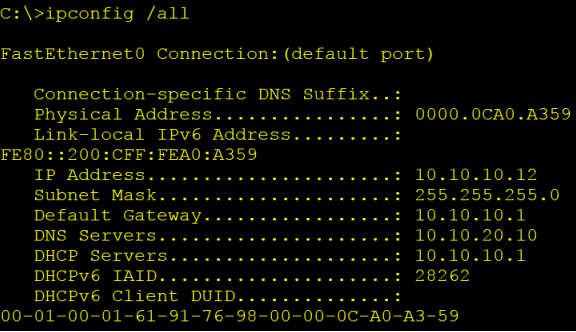
R1(config)#ip dhcp pool flackbox

R1(dhcp-config)#network 10.10.10.0 255.255.255.0

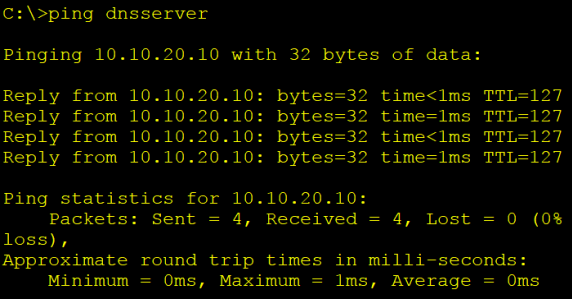
R1(dhcp-config)#default-router 10.10.10.1

R1(dhcp-config)#dns-server 10.10.20.10

5) **Verify the clients received their IP information via DHCP.**



6**) Verify the clients can ping the DNS server by its hostname ‘DNSserver’ (it might take some time for DNS to resolve the hostname).**



7) **On R1, verify both clients received an IP address via DHCP.**

R1#show ip dhcp binding

IP address Client-ID/ Lease expiration Type

Hardware address

8) **Cleanup – remove the DHCP server configuration on R1. You will use an external DHCP server instead in the next section.**

R1(config)#no ip dhcp excluded-address 10.10.10.1 10.10.10.10

R1(config)#no ip dhcp pool flackbox

9**) Enter the command ‘ipconfig /release’ on the PCs to release their IP addresses**.

C:\>ipconfig /release

IP Address......................: 0.0.0.0

Subnet Mask.....................: 0.0.0.0

Default Gateway.................: 0.0.0.0

DNS Server......................: 0.0.0.0

10) **Enter the command ‘ipconfig /renew’ on the PCs and verify they can no longer obtain an IP address via DHCP.**

C:\>ipconfig /renew

DHCP request failed.

**EXTERNAL DHCP SERVER**

11) **The server at 10.10.20.10 has been configured as a DHCP server with a scope of IP addresses for the 10.10.10.0/24 subnet, but the PCs there are not receiving IP addresses. Why is this?**

DHCP requests use broadcast traffic. R1 is not forwarding the requests on to the DHCP

server as routers do not forward broadcast traffic by default.

12) **Configure the network to allow the PCs to receive their IP addresses from the DHCP server.**

R1(config)#interface f0/1

R1(config-if)#ip helper-address 10.10.20.10

13) **Verify the clients received their IP information ion via DHCP**.

