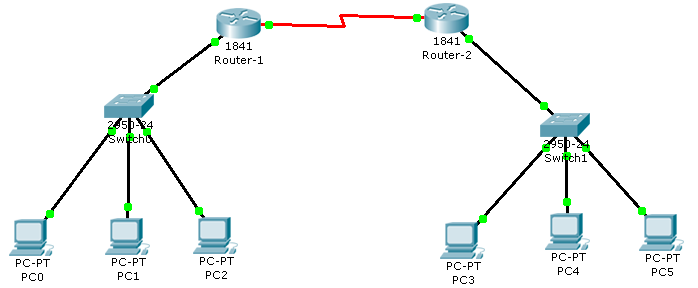
LAB # 4

Assignment of IPv4 address at Router’s Interfaces

**OBJECTIVE:**

To learn how to assign IPv4 address at router’s interfaces

**Topology Diagram:**

****

**Addressing Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet Mask | Def. Gateway |
| Router-1 | Fa0/0 | 192.168.1.1 | 255.255.255.0 | N/A |
| S0/0/0 | 192.168.2.1 | 255.255.255.0 | N/A |
| Router-2 | Fa0/0 | 192.168.3.1 | 255.255.255.0 | N/A |
| S0/0/0 | 192.168.2.2 | 255.255.255.0 | N/A |
| PC0 | N/A | 192.168.1.10 | 255.255.255.0 | 192.168.1.1 |
| PC1 | N/A | 192.168.1.11 | 255.255.255.0 | 192.168.1.1 |
| PC2 | N/A | 192.168.1.12 | 255.255.255.0 | 192.168.1.1 |
| PC3 | N/A | 192.168.3.10 | 255.255.255.0 | 192.168.3.1 |
| PC4 | N/A | 192.168.3.11 | 255.255.255.0 | 192.168.3.1 |
| PC5 | N/A | 192.168.3.12 | 255.255.255.0 | 192.168.3.1 |

**Scenario**

In this lab activity, you will create a network that is similar to the one shown in the Topology Diagram. Begin by cabling the network as shown in the Topology Diagram. You will then perform the initial router configuration required for connectivity. Use the IP addresses that are provided in the Topology Diagram to apply an addressing scheme to the network devices. When the network configuration is complete, examine the routing tables to verify that the network is operating properly.

**Task 1: Design and Cable a Network.**

Design and cable a network that is similar to the one in the Topology Diagram by using a Cisco Packet Tracer. In this network you will be required a router 1841. Be sure to use the appropriate type of Ethernet cable to connect from host to switch, switch to router and router to router. 1841 router don’t have serial interface ports by default so you will be required to install by manually these ports. The following steps are required for installing a Serial Interface on 1841 router.

**Step-1:** Click on Router 1841

**Step-2:** Press the button Power Off

**Step-3:** You will see different Modules select the WIC-2T module which is called the 2-port asynchronous/synchronous serial network module.

**Steps-4:** Drag this module to empty slots of Router 1841

**Step-5:** Press the Power On button

When you will press the button power on you will see the router will boot again from the initial stage. To verify serial port attachment with the 1841 router write the following command on the CLI mode of the router.

Router# show ip interface brief

Router#sh ip int brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 unassigned YES unset administratively down down

FastEthernet0/1 unassigned YES unset administratively down down

**Serial0/0/0 unassigned YES unset administratively down down**

**Serial0/0/1 unassigned YES unset administratively down down**

Vlan1 unassigned YES unset administratively down down

The above output is showing that the serial interface ports have attached successfully on router 1841.

**Task-2: Perform Basic Configuration on Router-1**

**Step-1** Enter a Privileged EXEC mode.

Router> enable

Router#

**Step-2** Enter global configuration mode.

Router#config t

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

Router(config)#

**Step-3:** Configure the hostname as Router1

Enter the command hostname Router1

Router(config)#hostname Router1

Router1(config)#

**Step-4:** Configure EXEC Mode Password.

**Step-5:** Configure a message-of-the-day banner.

Router1(config)#ban

Router1(config)#banner motd &

Enter TEXT message. End with the character '&'.

!!!!!!!!!!!!AUTHORIZED ACCESS ONLY !!!!!!!!!!!

&

Router1(config)#

**Step-6:** Configure the console password on the router.

Use cisco as the password. When you are finished, exit from line configuration mode.

**Step-7:** Configure the Fast Ethernet0/0 interface.

Router1(config)#int

Router1(config)#interface fas

Router1(config)#interface fastEthernet 0/0

Router1(config-if)#ip address 192.168.1.1 255.255.255.0

Router1(config-if)#no shutdown

**Step-8:** Configure the Serial0/0/0 interface.

Router1(config)#int

Router1(config)#interface ser

Router1(config)#interface serial 0/0/0

Router1(config-if)#ip add

Router1(config-if)#ip address 192.168.2.1 255.255.255.0

Router1(config-if)#clock rate 64000

Router1(config-if)#no shutdown

Router1(config-if)#

**Note:** The interface will not be activated until the serial interface on Router2 is configured and activated.

**Step-9:** Return to privilege EXEC mode.

Use the end command to return to privilege EXEC mode.

Router1(config-if)#end

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

Router1#

**Step-10:** Save the Router1 configuration

Save the Router1 Configuration using the copy running-config startup-config command.

Router1#copy run

Router1#copy running-config sta

Router1#copy running-config startup-config

Destination filename [startup-config]?

Building configuration...

[OK]

Router1#

**Task-3: Perform Basic Configuration on Router-2**

**Step-1:** For Router2, repeat steps 1 through 6 from Task-2

**Step-2:** Configure the Serial 0/0/0 interface.

Configure the Serial 0/0/0 interface with the IP address 192.168.2.2/24

Router2(config)#int

Router2(config)#interface ser

Router2(config)#interface serial 0/0/0

Router2(config-if)#ip add

Router2(config-if)#ip address 192.168.2.2 255.255.255.0

Router2(config-if)#no shutdown

**Step-3:** Configure the FastEthernet0/0 interface

Configure the FastEthernet0/0 interface with the ip address 192.168.3.1/24

Router2(config)#int

Router2(config)#interface fa

Router2(config)#interface fastEthernet 0/0

Router2(config-if)#ip adde4

Router2(config-if)#ip adde

Router2(config-if)#ip add

Router2(config-if)#ip address 192.168.3.1 255.255.255.0

Router2(config-if)#no shutdown

**Step-4:** Return to Privilege EXEC Mode.

Use the end command to return to privilege EXEC mode.

Router2(config-if)#end

Router2#

**Step-5:** Save the Router2 configuration

Router2#cop

Router2#copy run

Router2#copy running-config sta

Router2#copy running-config startup-config

Destination filename [startup-config]?

Building configuration...

[OK]

Router2#

**Task-4: Configure IP Addressing on the Host PCs**

**Step-1:** Configure the host PC0.

Configure the host PC0 that is attached to Router1 via switch 0 with an ip address 192.168.1.10/24 and a default gateway of 192.168.1.1.

**Step-2:** Configure the host PC1.

Configure the host PC1 that is attached to Router1 via switch 0 with an ip address 192.168.1.11/24 and a default gateway of 192.168.1.1.

**Step-3:** Configure the host PC2.

Configure the host PC2 that is attached to Router1 via switch 0 with an ip address 192.168.1.12/24 and a default gateway of 192.168.1.1.

**Step-4:** Configure the host PC3.

Configure the host PC3 that is attached to Router2 via switch 1 with an ip address 192.168.3.10/24 and a default gateway of 192.168.3.1.

**Step-5:** Configure the host PC4.

Configure the host PC4 that is attached to Router2 via switch 1 with an ip address 192.168.3.11/24 and a default gateway of 192.168.3.1.

**Step-6:** Configure the host PC3.

Configure the host PC3 that is attached to Router2 via switch 1 with an ip address 192.168.3.12/24 and a default gateway of 192.168.3.1.

**Task-5: Verify and Test the Configuration**

**Step-1:** Verify the routing tables have the following routes using the show ip route command.

The show ip route command shows the router’s routing table. After implementing this command you will see the two routes between Router1 and Router2. Both routes are designated with a **C.** These are the directly connected networks that were activated when you configured the interfaces on each router.

Router1#sh 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**  192.168.1.0/24 is directly connected, FastEthernet0/0

**C**  192.168.2.0/24 is directly connected, Serial0/0/0

Router1#

----------------------------------------------------------------------------------------------------------------

Router2#sh 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, Serial0/0/0

**C**  192.168.3.0/24 is directly connected, FastEthernet0/0

Router2#

**Step-2:** Verify interface configurations.

Another common problem is router interfaces that are not configured correctly or not activated. Use the show ip interface brief command to quickly verify the configuration of each router’s interfaces. Your output should look similar to the following.

Router1#sh ip int brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.1.1 YES manual up **up**

FastEthernet0/1 unassigned YES unset administratively down down

Serial0/0/0 192.168.2.1 YES manual up **up**

Serial0/0/1 unassigned YES unset administratively down down

Vlan1 unassigned YES unset administratively down down

--------------------------------------------------------------------------------------------------------

Router2#sh ip int br

Router2#sh ip int brief

Interface IP-Address OK? Method Status Protocol

FastEthernet0/0 192.168.3.1 YES manual up **up**

FastEthernet0/1 unassigned YES unset administratively down down

Serial0/0/0 192.168.2.2 YES manual up **up**

Serial0/0/1 unassigned YES unset administratively down down

Vlan1 unassigned YES unset administratively down down

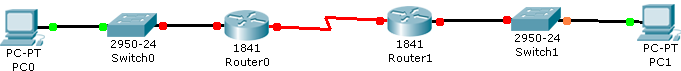
Router2#

**Step-3:** Test connectivity by pinging from each host to the default gateway that has been configured for the host.

**Step-4:** Test connectivity between Router1 and Router2.

**Assignment:**

**Topology Diagram**



**Addressing Table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet Mask | Def. Gateway |
| Router-1 | Fa0/0 | 192.168.1.1 | 255.255.255.0 | N/A |
| S0/0/0 | 192.168.2.1 | 255.255.255.0 | N/A |
| Router-2 | Fa0/0 | 192.168.3.1 | 255.255.255.0 | N/A |
| S0/0/0 | 192.168.2.2 | 255.255.255.0 | N/A |
| PC0 | N/A | 192.168.1.10 | 255.255.255.0 | 192.168.1.1 |
| PC1 | N/A | 192.168.3.10 | 255.255.255.0 | 192.168.3.1 |

**Required Tasks:**

1. Cable a network according to the Topology Diagram
2. Erase the Start-up Configuration and reload a router to the default state.
3. Perform basic configuration task on a router
4. Configure and Activate Ethernet interface
5. Test and Verify configurations
6. Show the output of show running, show ip int brief and show ip route commands in task 3, task4 and task5.