EIGRP and OSPF Redistribution

(Ip Address allocation using a DHCP server)

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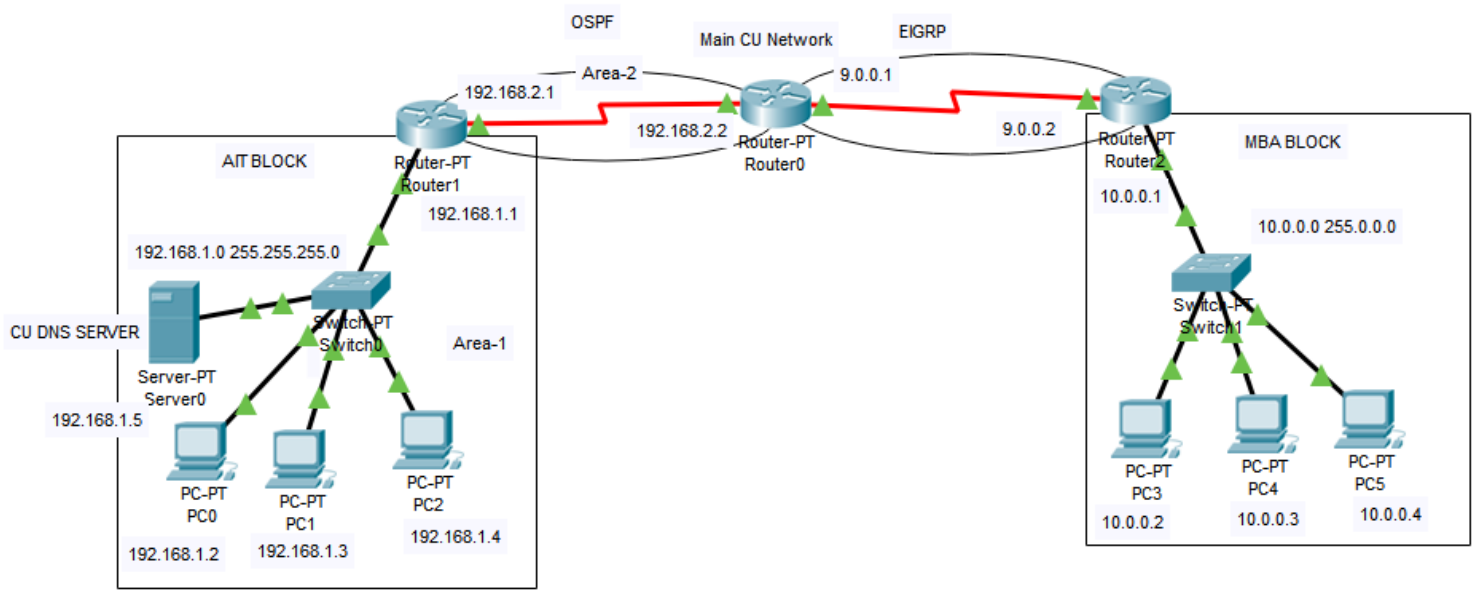
Steps

- Open a new file in Cisco Packet Tracer..
- Connect the devices as shown in figure.



- Router-0 is the main router for the network which will do redistribution of OSPF and EIGRP. It will also serve as the main DHCP IP address allocator router.

- **Router-1 IP Configuration**

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa 0/0
Router(config-if)#ip add 192.168.1.1 255.255.255.0
Router(config-if)#no shut

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 se 2/0
Router(config-if)#ip add 192.168.2.1 255.255.255.0
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
Router(config-if)#exi
Router(config)#
```

- **Router-0 IP Configuration**

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int se 2/0
Router(config-if)#ip add 192.168.2.2 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#int
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed
state to up

                    ^
% Invalid input detected at '^' marker.

Router(config-if)#int se 3/0
Router(config-if)#ip add 9.0.0.1 255.0.0.0
Router(config-if)#no shut
```

- **Router-2 IP Configuration**

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int se 2/0
Router(config-if)#ip add 9.0.0.2 255.0.0.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial2/0, changed state to up

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed
state to up

Router(config-if)#int fa 0/0
Router(config-if)#ip add 10.0.0.1 255.0.0.0
Router(config-if)#no shut
```

- **Router-1 OSPF:**

```
Router(config)#router ospf 1
Router(config-router)#network 192.168.1.0 0.255.255.255 area 1
Router(config-router)#network 192.168.2.0 0.255.255.255 area 2
Router(config-router)#exi
Router(config)#
```

- **Router-0 OSPF:**

```
Router(config)#router ospf 1
Router(config-router)#network 192.168.2.0 0.255.255.255 area 2
Router(config-router)#
00:27:53: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.2.1 on Serial2/0
from LOADING to FULL, Loading Done
```

- **Router-0 EIGRP:**

```
Router(config)#router eigrp 1
Router(config-router)#network 9.0.0.0 255.0.0.0
Router(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 9.0.0.2 (Serial3/0) is up:
new adjacency
```

- **Router-2 EIGRP:**

```
Router(config)#
Router(config)#router eigrp 1
Router(config-router)#network 10.0.0.0 255.0.0.0
Router(config-router)#network 9.0.0.0 255.0.0.0
Router(config-router)#exi
```

- **Redistribution of OSPF at Router-0 (Main Router):**

```
Router(config)#router eigrp 1
Router(config-router)#redistribute ospf 1 metric 1 1 1 1 1
Router(config-router)#exi
Router(config)#
```

- **Redistribution of EIGRP at Router-0 (Main Router):**

```
Router(config)#router ospf 1
Router(config-router)#redistribute eigrp 1
```

- **Testing the Topology by checking ip route:**

```
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    9.0.0.0/8 is directly connected, Serial3/0
D    10.0.0.0/8 [90/20514560] via 9.0.0.2, 00:06:55, Serial3/0
O    192.168.1.0/24 [110/65] via 192.168.2.1, 00:09:13, Serial2/0
C    192.168.2.0/24 is directly connected, Serial2/0

Router#
```

- **Adding Router-0 as Relay in CSE and MBA to use it as DHCP allocator:**
- **(Router-1)**

```
Router(config)#int fa 0/0
Router(config-if)#ip helper
Router(config-if)#ip helper-address 192.168.2.2
Router(config-if)#exi
Router(config)#
```

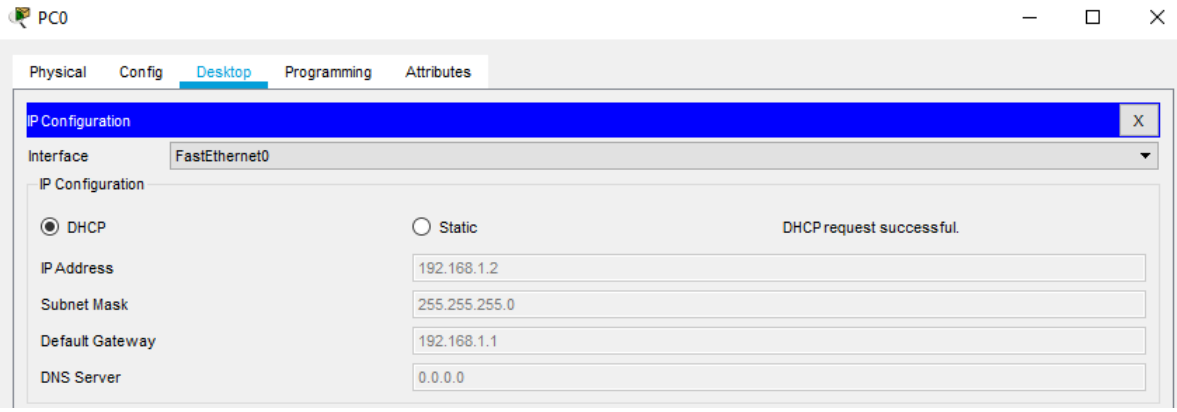
- **(Router-2)**

```
Router(config)#int fa 0/0
Router(config-if)#ip helper
Router(config-if)#ip helper-address 9.0.0.1
Router(config-if)#exi
Router(config)#
```

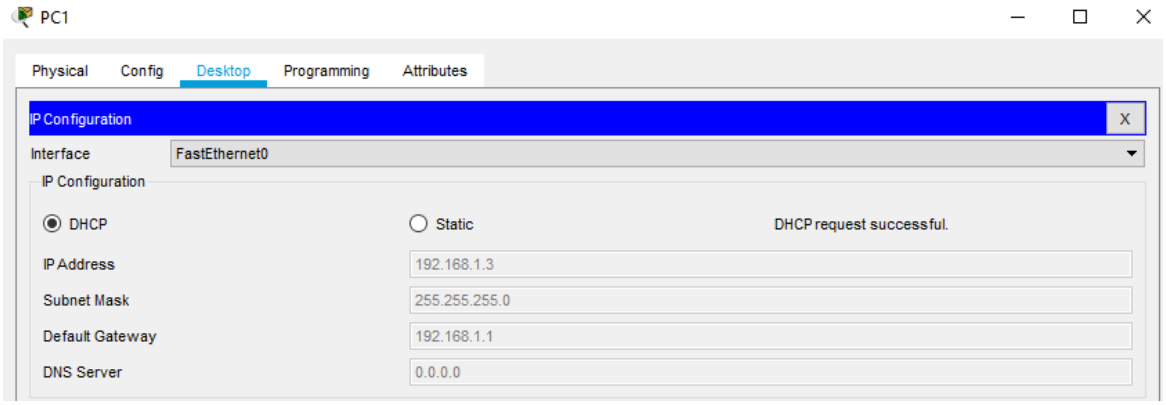
- **Creating DHCP Pools in Router-0:**

```
Router(config)#ip dhcp pool cse
Router(dhcp-config)#network 192.168.1.0 255.255.255.0
Router(dhcp-config)#defa
Router(dhcp-config)#default-router 192.168.1.1
Router(dhcp-config)#exi
Router(config)#ip dhcp pool mba
Router(dhcp-config)#network 10.0.0.0 255.0.0.0
Router(dhcp-config)#defa
Router(dhcp-config)#default-router 10.0.0.1
Router(dhcp-config)#exi
Router(config)#
```

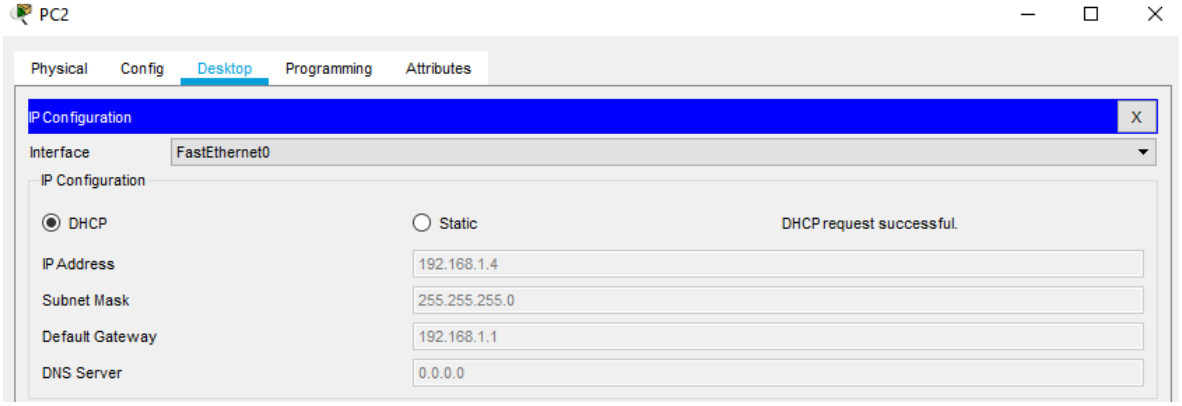
- **PC-0 DHCP IP Allocation:**



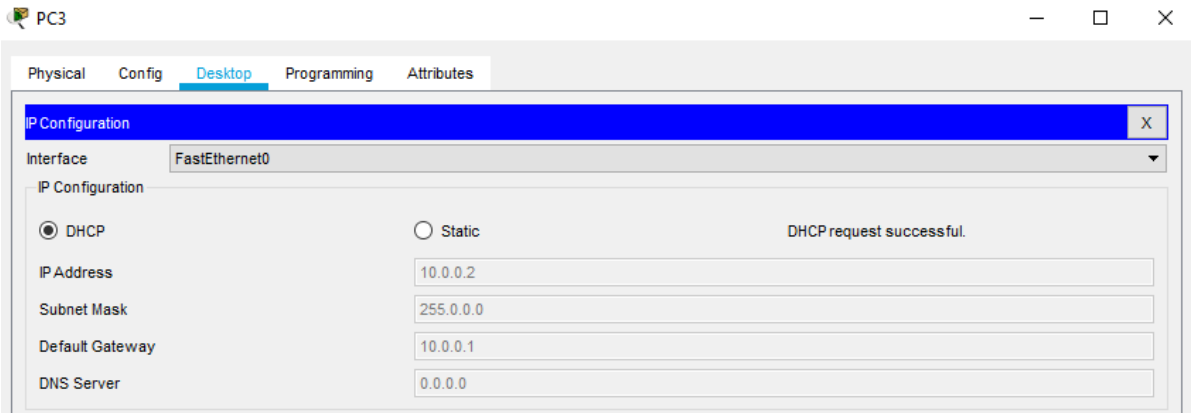
- **PC-1 DHCP IP Allocation:**



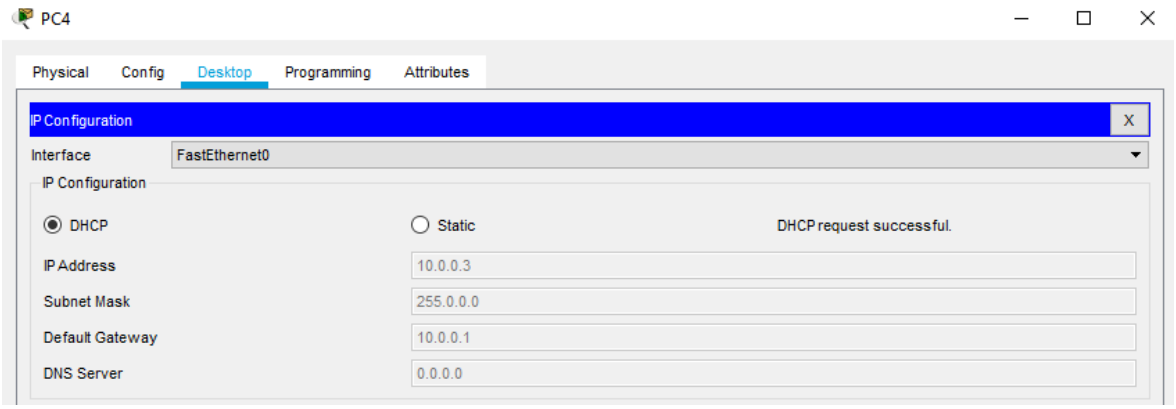
- **PC-2 DHCP IP Allocation:**



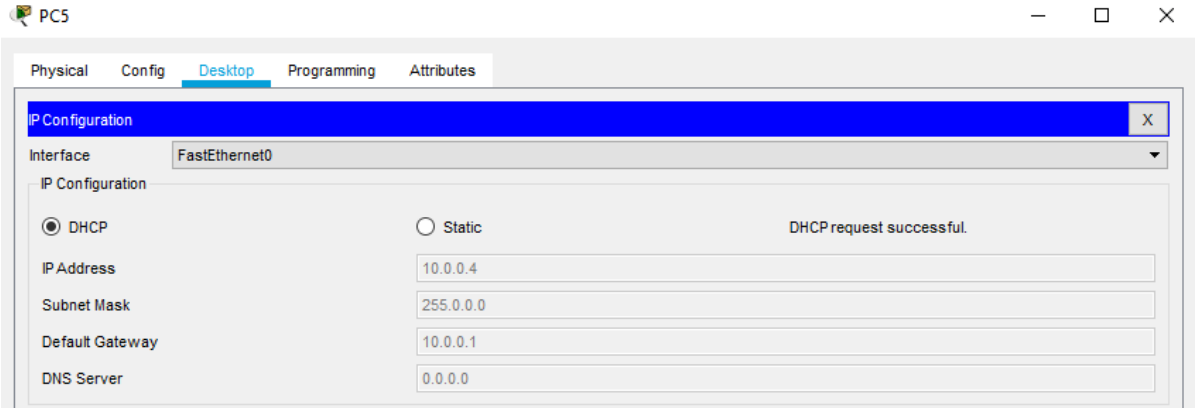
- **PC-3 DHCP IP Allocation:**



- **PC-4 DHCP IP Allocation:**

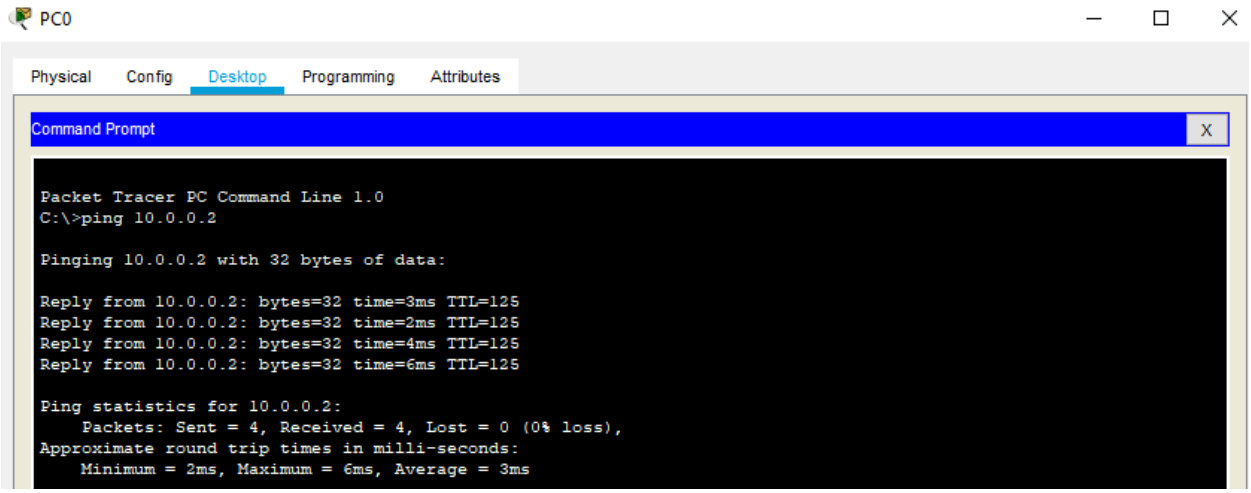


- **PC-5 DHCP IP Allocation:**

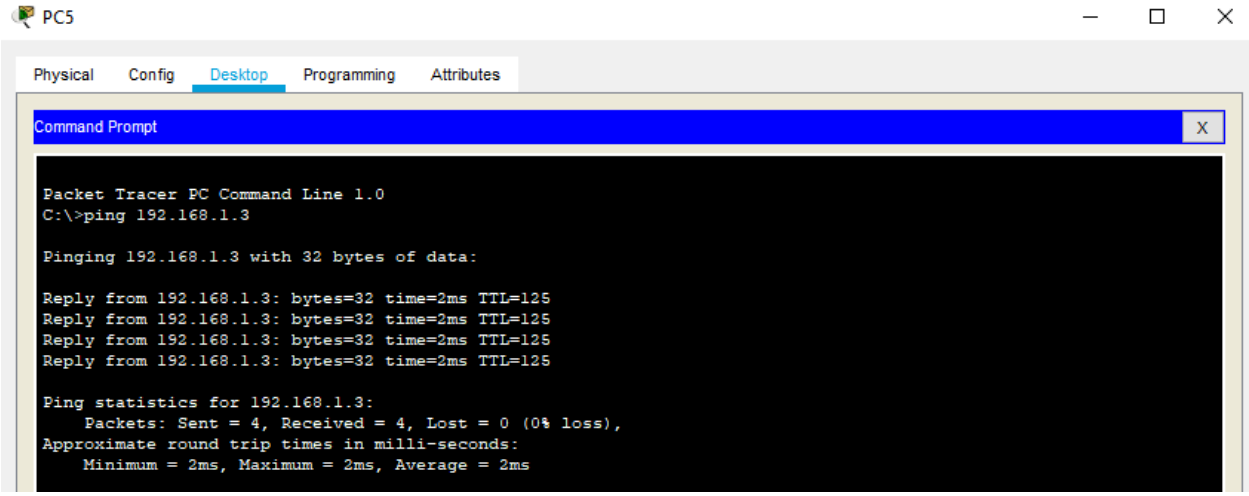


(Working Correctly)

- **Testing by Pinging from AIT CSE to AIT MBA:**

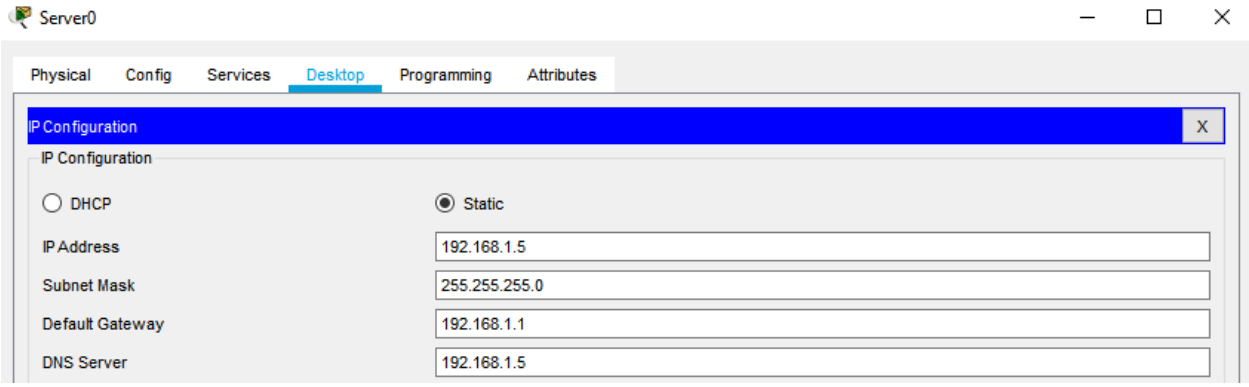


- **Testing by Pinging from AIT MBA to AIT CSE:**

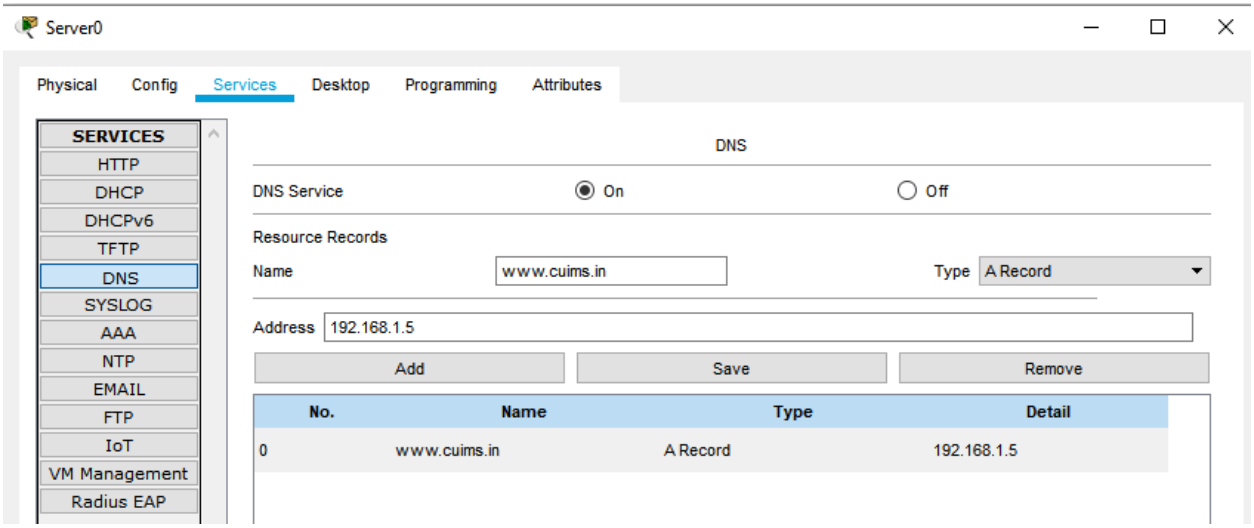


(Working Correctly)

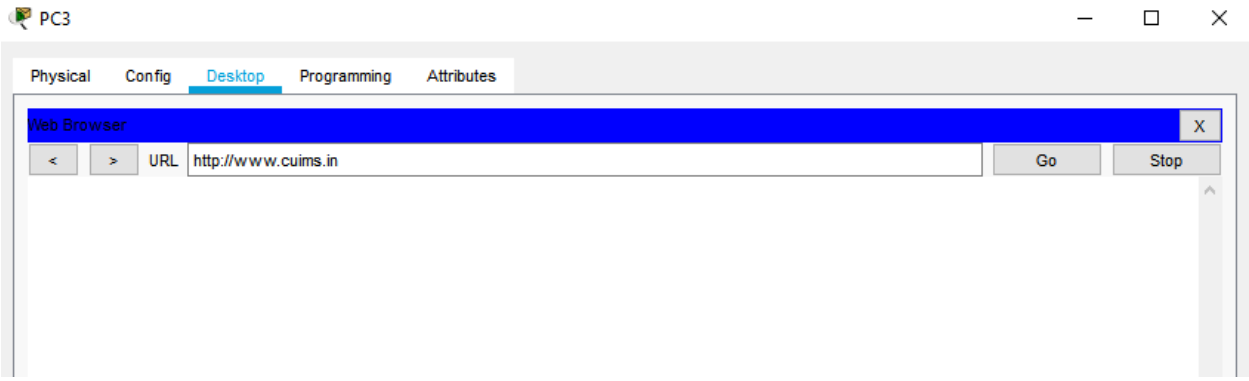
- **Adding DNS Server (Setting DNS Server IP Address):**



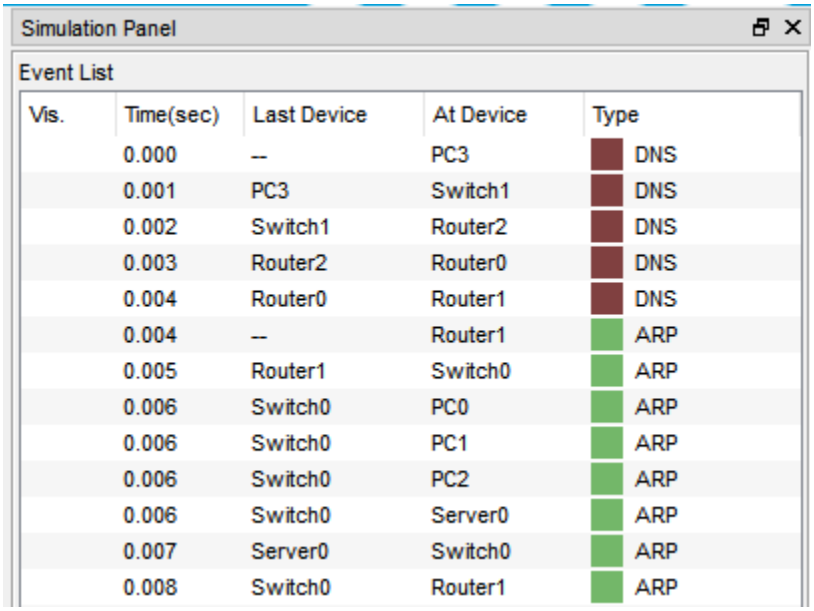
- **Starting DNS Service:**



- **Testing DNS from PC by Entering URL:**



- **Checking Simulation Panel:**



Vis.	Time(sec)	Last Device	At Device	Type
	0.000	--	PC3	DNS
	0.001	PC3	Switch1	DNS
	0.002	Switch1	Router2	DNS
	0.003	Router2	Router0	DNS
	0.004	Router0	Router1	DNS
	0.004	--	Router1	ARP
	0.005	Router1	Switch0	ARP
	0.006	Switch0	PC0	ARP
	0.006	Switch0	PC1	ARP
	0.006	Switch0	PC2	ARP
	0.006	Switch0	Server0	ARP
	0.007	Server0	Switch0	ARP
	0.008	Switch0	Router1	ARP

(Working Correctly)