

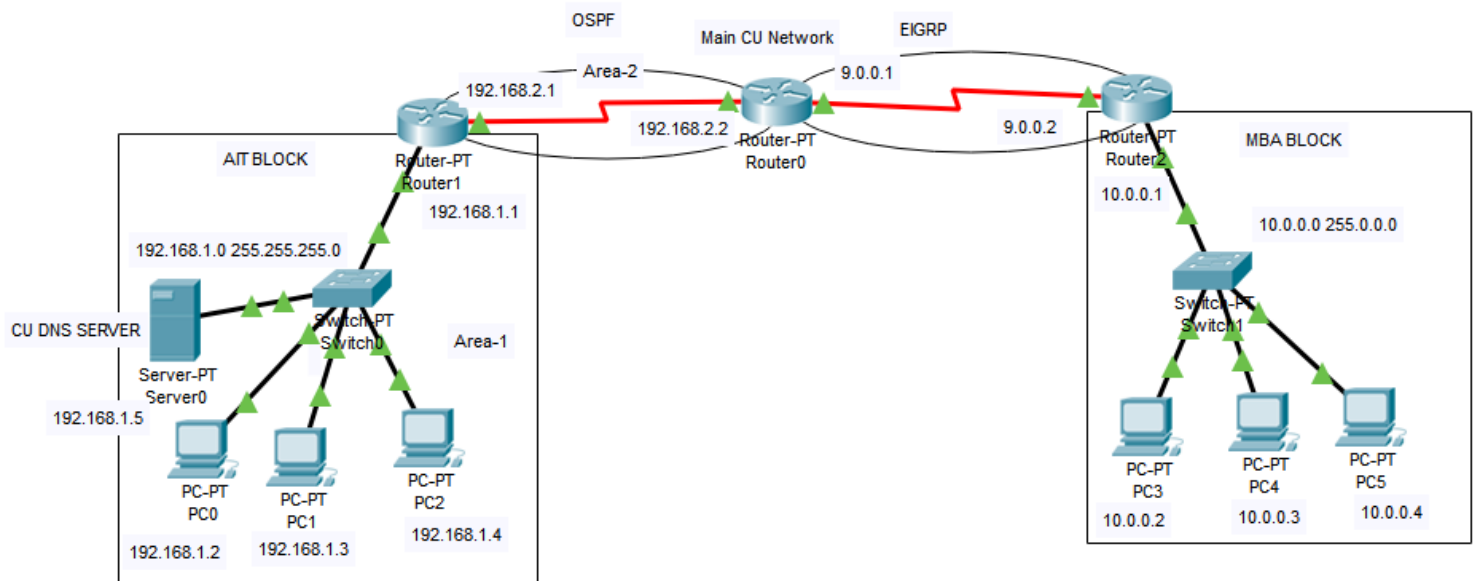
EIGRP and OSPF Redistribution

(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)#
```

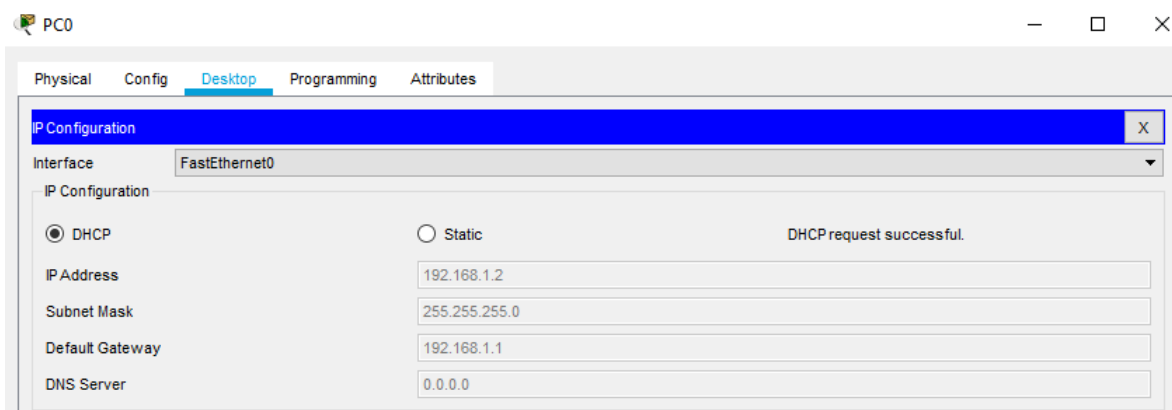
- (Router-2)

```
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:**

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IP Address 192.168.1.3

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

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

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

IP Address 192.168.1.4

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

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

PC3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☒ DHCP ☐ Static DHCP request successful.

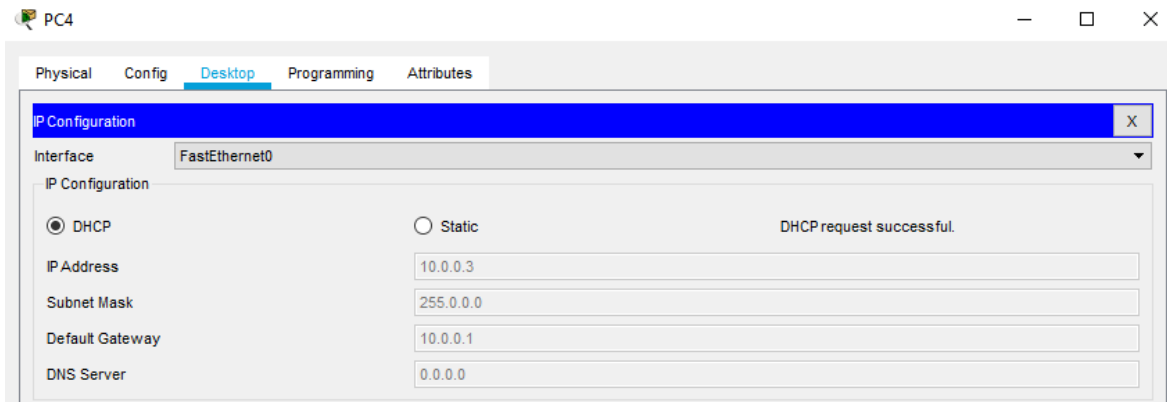
IP Address 10.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 10.0.0.1

DNS Server 0.0.0.0

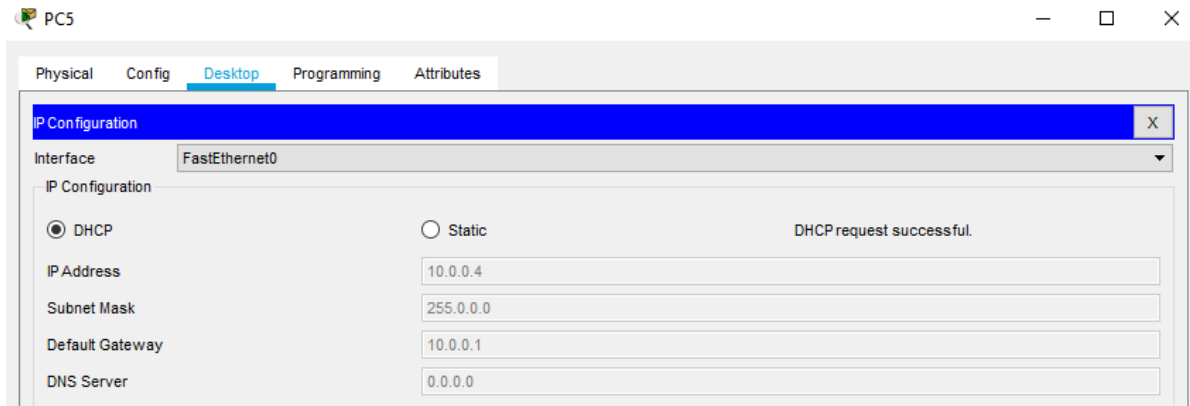
- **PC-4 DHCP IP Allocation:**



The screenshot shows the configuration window for PC4. The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The 'DHCP request successful.' message is displayed. The IP Address is 10.0.0.3, Subnet Mask is 255.0.0.0, Default Gateway is 10.0.0.1, and DNS Server is 0.0.0.0.

Interface	IP Configuration
FastEthernet0	<p><input checked="" type="radio"/> DHCP <input type="radio"/> Static DHCP request successful.</p> <p>IP Address: 10.0.0.3</p> <p>Subnet Mask: 255.0.0.0</p> <p>Default Gateway: 10.0.0.1</p> <p>DNS Server: 0.0.0.0</p>

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

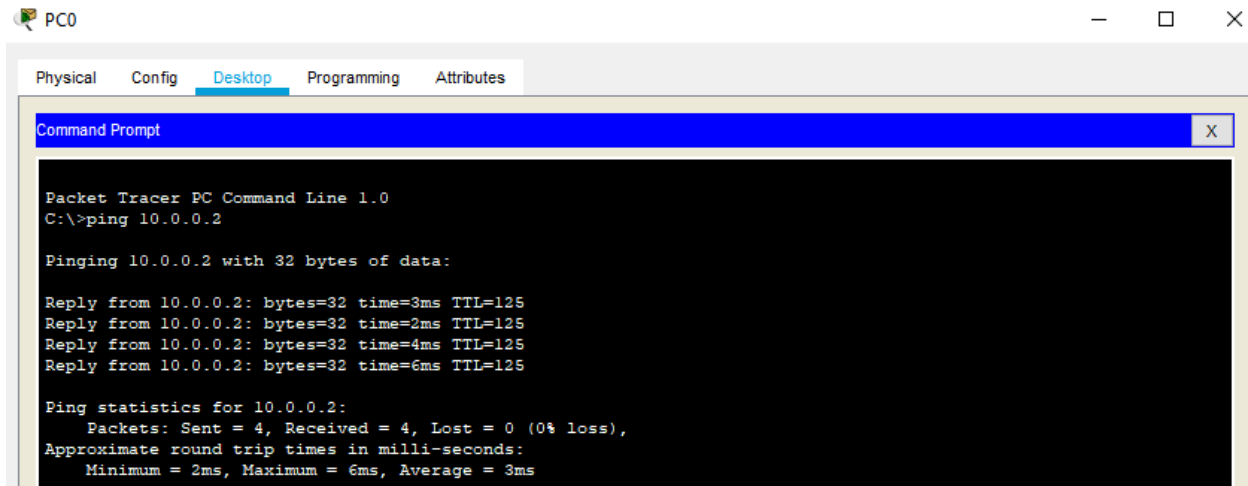


The screenshot shows the configuration window for PC5. The 'Desktop' tab is selected. The 'IP Configuration' section is expanded, showing the 'FastEthernet0' interface. The 'DHCP' radio button is selected, and the 'Static' radio button is unselected. The 'DHCP request successful.' message is displayed. The IP Address is 10.0.0.4, Subnet Mask is 255.0.0.0, Default Gateway is 10.0.0.1, and DNS Server is 0.0.0.0.

Interface	IP Configuration
FastEthernet0	<p><input checked="" type="radio"/> DHCP <input type="radio"/> Static DHCP request successful.</p> <p>IP Address: 10.0.0.4</p> <p>Subnet Mask: 255.0.0.0</p> <p>Default Gateway: 10.0.0.1</p> <p>DNS Server: 0.0.0.0</p>

(Working Correctly)

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



The screenshot shows a Packet Tracer PC window for PC0. The 'Desktop' tab is active, displaying a Command Prompt window. The command prompt shows the execution of the 'ping 10.0.0.2' command. The output indicates that the ping was successful, with four replies received from 10.0.0.2. The statistics show 4 packets sent, 4 received, and 0% loss. The approximate round trip times are: Minimum = 2ms, Maximum = 6ms, Average = 3ms.

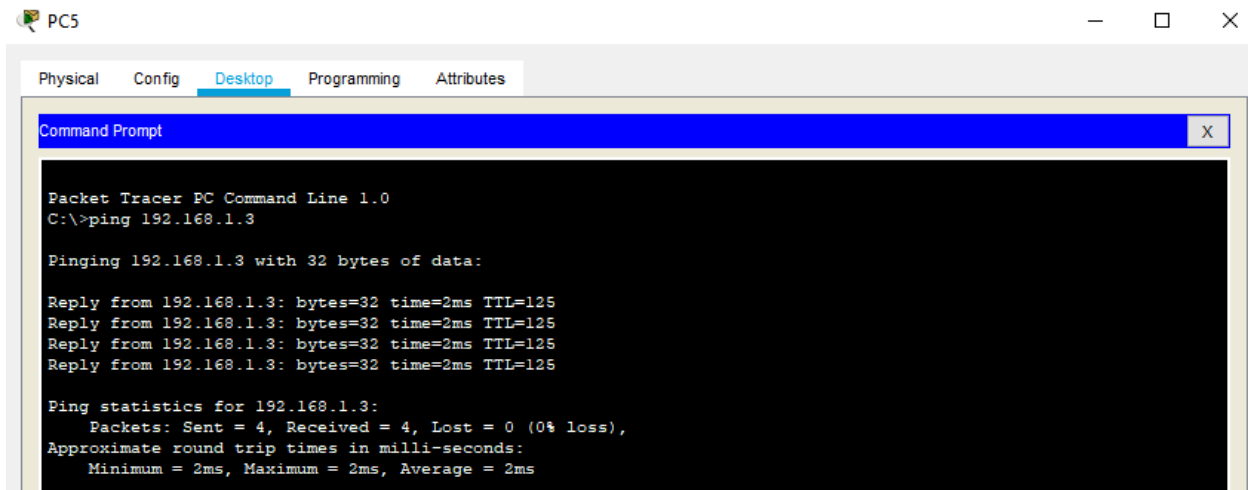
```
Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time=3ms TTL=125
Reply from 10.0.0.2: bytes=32 time=2ms TTL=125
Reply from 10.0.0.2: bytes=32 time=4ms TTL=125
Reply from 10.0.0.2: bytes=32 time=6ms TTL=125

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 6ms, Average = 3ms
```

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



The screenshot shows a Packet Tracer PC window for PC5. The 'Desktop' tab is active, displaying a Command Prompt window. The command prompt shows the execution of the 'ping 192.168.1.3' command. The output indicates that the ping was successful, with four replies received from 192.168.1.3. The statistics show 4 packets sent, 4 received, and 0% loss. The approximate round trip times are: Minimum = 2ms, Maximum = 2ms, Average = 2ms.

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time=2ms TTL=125
Reply from 192.168.1.3: bytes=32 time=2ms TTL=125
Reply from 192.168.1.3: bytes=32 time=2ms TTL=125
Reply from 192.168.1.3: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 2ms, Average = 2ms
```

(Working Correctly)

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

Server0

Physical Config Services **Desktop** Programming Attributes

IP Configuration [X]

IP Configuration

☐ DHCP ☒ Static

IP Address: 192.168.1.5

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 192.168.1.5

- **Starting DNS Service:**

Server0

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS**
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DNS

DNS Service: ☒ On ☐ Off

Resource Records

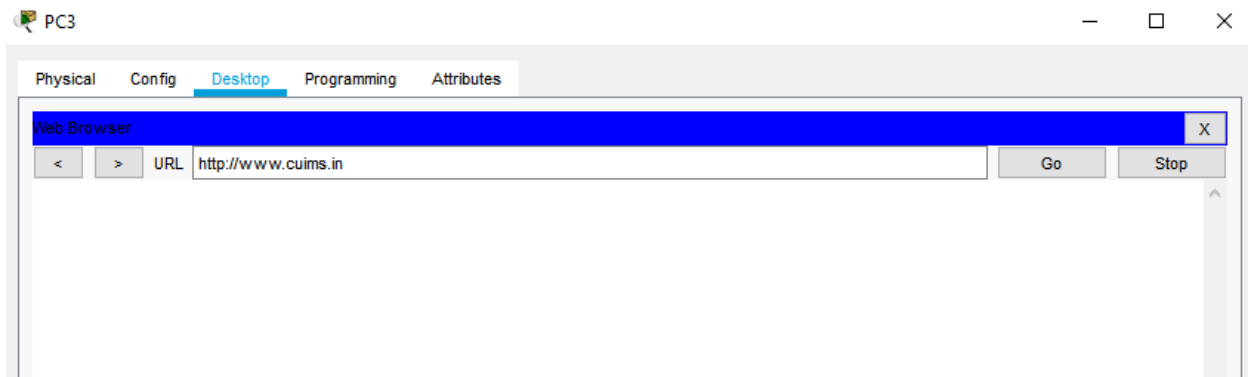
Name: www.cuims.in Type: A Record

Address: 192.168.1.5

Add Save Remove

No.	Name	Type	Detail
0	www.cuims.in	A Record	192.168.1.5

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



- **Checking Simulation Panel:**

Event List				
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)