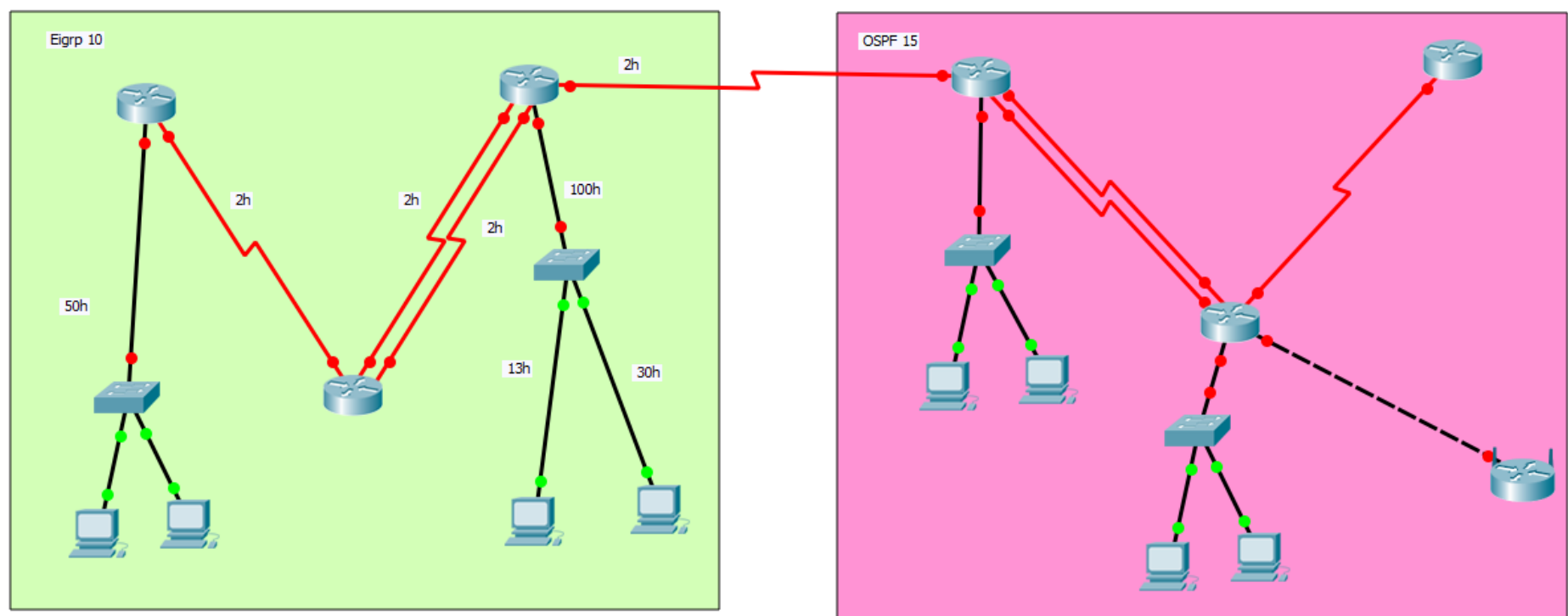# Assignment – 1

NAME: Syed Muzzamil Waseem

SID: 11067

CID: 109138

Instructions (READ AND FOLLOW INSTRUCTIONS CAREFULLY):

- **In case of CHEATING, COPIED material or any unfair means would result in ZERO marks.**
- Mention your name and ID above and write solution in this file and then submit in word or PDF format.
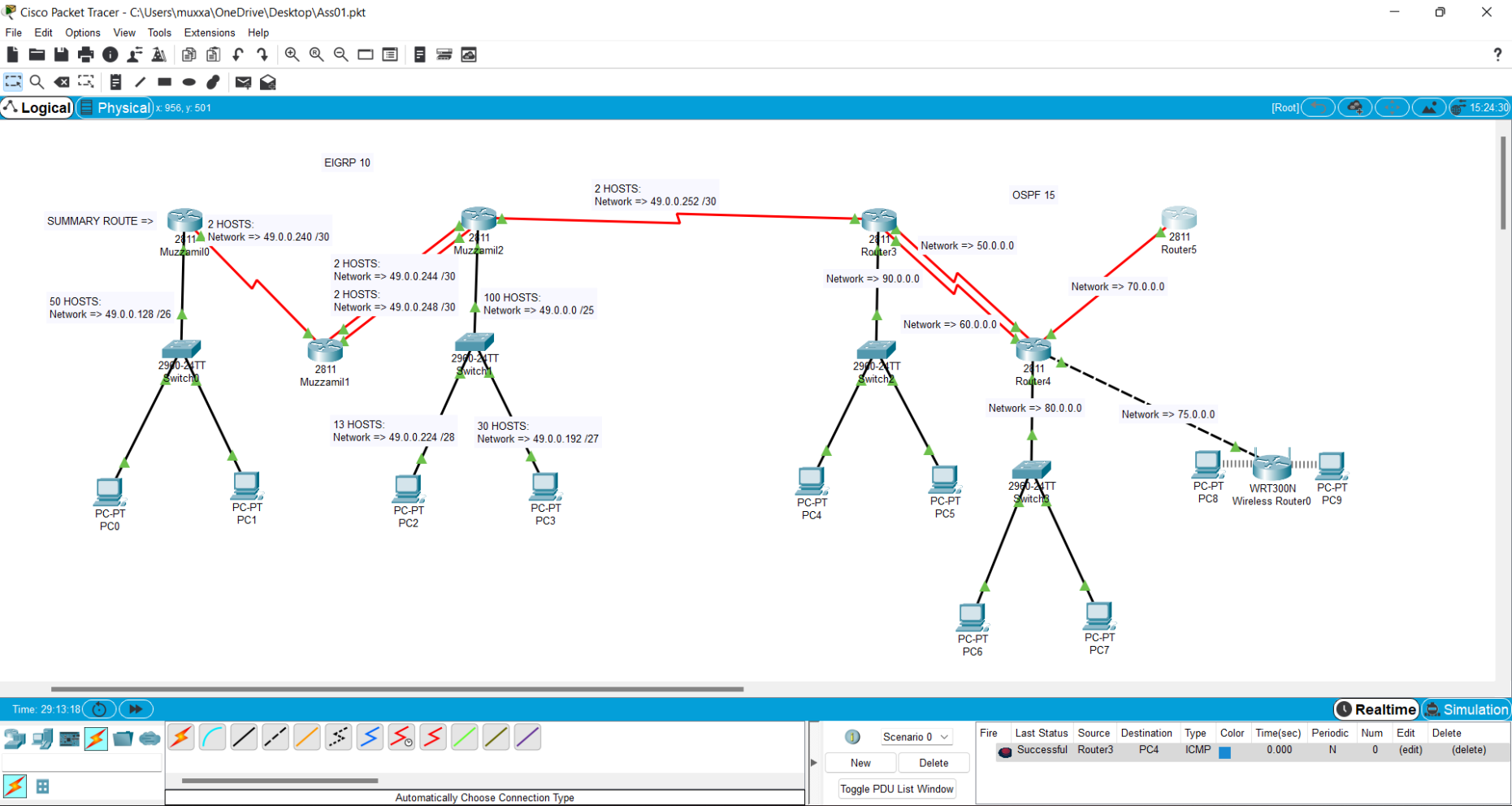- Late submission will result in mark deduction

Instructions (for Topology Configuration)

- Change all router hostname with your name
- Use major network which is assigned to you only
- Configure Eigrp on left side.
- Configure the Eigrp part using VLSM.
- Configure DHCP on Wireless Router
- While configuring Eigrp configure summarize route.
- Configure floating routes where necessary.
- All routers should communicate with each other.
- All end devices should communicate within their respective areas
- Submit screenshot of topology with network labels
- Submit screenshots of routing table of all routers
- Submit screenshot of DHCP

If anyone failed to follow any instruction I will deduct 1 marks for each instruction.

[Solution]

TOPOLOGY WITH NETWORK LABELS:

EIGRP CONFIGURATION:

SUMMARY ROUTE:

FLOATING ROUTES:

Muzzamil1 — IOS Command Line Interface

```
Press RETURN to get started.

Muzzamil_11067>en
Muzzamil_11067#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Muzzamil_11067(config)#ip route 49.0.0.0 255.255.255.128
49.0.0.246 15
Muzzamil_11067(config)#ip route 49.0.0.252 255.255.255.252
49.0.0.246 15
Muzzamil_11067(config)#exit
Muzzamil_11067#
%SYS-5-CONFIG_I: Configured from console by console
```

Muzzamil2 — IOS Command Line Interface

```
Muzzamil_11067>en
Muzzamil_11067#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Muzzamil_11067(config)#ip route 49.0.0.240 255.255.255.252
79.0.0.245
Muzzamil_11067(config)#no ip route 49.0.0.240 255.255.255.252
79.0.0.245
Muzzamil_11067(config)#ip route 49.0.0.240 255.255.255.252
79.0.0.245 15
Muzzamil_11067(config)#ip route 49.0.0.128 255.255.255.252
79.0.0.245 15
Muzzamil_11067(config)#no ip route 49.0.0.128 255.255.255.252
79.0.0.245 15
Muzzamil_11067(config)#no ip route 49.0.0.128 255.255.255.192
79.0.0.245 15
%No matching route to delete
Muzzamil_11067(config)#ip route 49.0.0.128 255.255.255.192
79.0.0.245 15
Muzzamil_11067(config)#exit
Muzzamil_11067#
%SYS-5-CONFIG_I: Configured from console by console
```

TESTING COMMUNICATION WITH ROUTERS AND END DEVICES:

ROUTING TABLES:

Muzzamil1 — CLI (IOS Command Line Interface)

```
49.0.0.246 IS
Muzzamil_11067(config)#exit
Muzzamil_11067#
%SYS-5-CONFIG_I: Configured from console by console

Muzzamil_11067#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

     49.0.0.0/8 is variably subnetted, 6 subnets, 3 masks
S       49.0.0.0/25 [15/0] via 49.0.0.246
D       49.0.0.128/26 [90/2172416] via 49.0.0.241, 02:51:52,
Serial0/3/0
C       49.0.0.240/30 is directly connected, Serial0/3/0
C       49.0.0.244/30 is directly connected, Serial0/3/1
C       49.0.0.248/30 is directly connected, Serial0/2/0
S       49.0.0.252/30 [15/0] via 49.0.0.246

Muzzamil_11067#
```

Muzzamil2 — CLI (IOS Command Line Interface)

```
Muzzamil_11067#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

     49.0.0.0/8 is variably subnetted, 6 subnets, 3 masks
C       49.0.0.0/25 is directly connected, FastEthernet0/0
D       49.0.0.128/26 [90/2684416] via 49.0.0.249, 02:52:21,
Serial0/3/1
                     [90/2684416] via 49.0.0.245, 02:52:21,
Serial0/3/0
D       49.0.0.240/30 [90/2681856] via 49.0.0.245, 02:52:21,
Serial0/3/0
                     [90/2681856] via 49.0.0.249, 02:52:21,
Serial0/3/1
C       49.0.0.244/30 is directly connected, Serial0/3/0
C       49.0.0.248/30 is directly connected, Serial0/3/1
C       49.0.0.252/30 is directly connected, Serial0/2/0

Muzzamil_11067#
```

Muzzamil0 — CLI (IOS Command Line Interface)

```
Muzzamil_11067#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

     49.0.0.0/8 is variably subnetted, 7 subnets, 4 masks
S       49.0.0.0/24 [1/0] via 49.0.0.242
                    [1/0] via 49.0.0.128
D       49.0.0.0/25 [90/2684416] via 49.0.0.242, 02:51:24,
Serial0/3/0
C       49.0.0.128/26 is directly connected, FastEthernet0/0
C       49.0.0.240/30 is directly connected, Serial0/3/0
D       49.0.0.244/30 [90/2681856] via 49.0.0.242, 02:51:24,
Serial0/3/0
D       49.0.0.248/30 [90/2681856] via 49.0.0.242, 02:51:24,
Serial0/3/0
D       49.0.0.252/30 [90/3193856] via 49.0.0.242, 02:51:24,
Serial0/3/0

Muzzamil_11067#
```

Router3 — CLI (IOS Command Line Interface)

```
Muzzamil_11067#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

     49.0.0.0/30 is subnetted, 1 subnets
C       49.0.0.252 is directly connected, Serial0/3/0
C    50.0.0.0/8 is directly connected, Serial0/3/1
C    60.0.0.0/8 is directly connected, Serial0/2/0
O    70.0.0.0/8 [110/128] via 50.0.0.2, 01:25:52, Serial0/3/1
O    80.0.0.0/8 [110/65] via 50.0.0.2, 01:25:41, Serial0/3/1
C    90.0.0.0/8 is directly connected, FastEthernet0/0

Muzzamil_11067#
```

Router5 — CLI (IOS Command Line Interface)

```
Muzzamil_11067>en
Muzzamil_11067#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

O    50.0.0.0/8 [110/128] via 70.0.0.1, 01:23:51, Serial0/3/0
O    60.0.0.0/8 [110/128] via 70.0.0.1, 01:23:51, Serial0/3/0
C    70.0.0.0/8 is directly connected, Serial0/3/0
O    80.0.0.0/8 [110/65] via 70.0.0.1, 01:23:51, Serial0/3/0
O    90.0.0.0/8 [110/129] via 70.0.0.1, 01:23:51, Serial0/3/0

Muzzamil_11067#
```

Router4 — CLI (IOS Command Line Interface)

```
Muzzamil_11067>en
Muzzamil_11067#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    50.0.0.0/8 is directly connected, Serial0/3/0
C    60.0.0.0/8 is directly connected, Serial0/3/1
C    70.0.0.0/8 is directly connected, Serial0/2/0
C    75.0.0.0/8 is directly connected, FastEthernet0/1
C    80.0.0.0/8 is directly connected, FastEthernet0/0
O    90.0.0.0/8 [110/65] via 50.0.0.1, 01:26:06, Serial0/3/0

Muzzamil_11067#
```

OSPF CONFIGURATION:

Router3 — CLI (IOS Command Line Interface)

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname Muzzamil_11067
Muzzamil_11067(config)#router ospf 15
Muzzamil_11067(config-router)#net 50.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#net 60.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#net 90.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#exit
Muzzamil_11067(config)#
03:43:10: %OSPF-5-ADJCHG: Process 15, Nbr 80.0.0.1 on Serial0/3/1
from LOADING to FULL, Loading Done

03:43:19: %OSPF-5-ADJCHG: Process 15, Nbr 80.0.0.1 on Serial0/2/0
from LOADING to FULL, Loading Done

Muzzamil_11067(config)#exit
Muzzamil_11067#
%SYS-5-CONFIG_I: Configured from console by console

Muzzamil_11067#
```

Router4 — CLI (IOS Command Line Interface)

```
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname Muzzamil_11067
Muzzamil_11067(config)#
Muzzamil_11067(config)#router ospf 15
Muzzamil_11067(config-router)#net 50.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#net 60.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#
03:43:10: %OSPF-5-ADJCHG: Process 15, Nbr 90.0.0.1 on Serial0/3/0
from LOADING to FULL, Loading Done

03:43:19: %OSPF-5-ADJCHG: Process 15, Nbr 90.0.0.1 on Serial0/3/1
from LOADING to FULL, Loading Done

Muzzamil_11067(config-router)#net 70.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#net 80.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#exit
Muzzamil_11067(config)#
03:45:51: %OSPF-5-ADJCHG: Process 15, Nbr 70.0.0.2 on Serial0/2/0
from LOADING to FULL, Loading Done

Muzzamil_11067(config)#exit
Muzzamil_11067#
%SYS-5-CONFIG_I: Configured from console by console

Muzzamil_11067#
```

Router5 — CLI (IOS Command Line Interface)

```
Router>
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname Muzzamil_11067
Muzzamil_11067(config)#
Muzzamil_11067(config)#router ospf 15
Muzzamil_11067(config-router)#net 70.0.0.0 255.0.0.0
% Incomplete command.
Muzzamil_11067(config-router)#net 70.0.0.0 255.0.0.0 area 0
Muzzamil_11067(config-router)#ex
03:45:51: %OSPF-5-ADJCHG: Process 15, Nbr 80.0.0.1 on Serial0/3/0
from LOADING to FULL, Loading Done

Muzzamil_11067(config)#exit
Muzzamil_11067#
%SYS-5-CONFIG_I: Configured from console by console

Muzzamil_11067#
```

DHCP CONFIGURATION AND CHECK ITS CONNECTIVITY WITH END DEVICES:

Router4 — IOS Command Line Interface

```
Muzzamil_11067(config)#ip dhcp pool Muzzamil
Muzzamil_11067(dhcp-config)#network 75.0.0.0 255.0.0.0
Muzzamil_11067(dhcp-config)#%DHCPD-4-PING_CONFLICT: DHCP address
conflict:  server pinged 75.0.0.1.

Muzzamil_11067(dhcp-config)#network 75.0.0.0 255.0.0.0
Muzzamil_11067(dhcp-config)#default-router 75.0.0.1
Muzzamil_11067(dhcp-config)#exit
Muzzamil_11067(config)#exit
Muzzamil_11067#
%SYS-5-CONFIG_I: Configured from console by console
```

Wireless Router0 — Internet Settings

IP Configuration
- ● DHCP
- ○ Static
- ○ PPPoE

UserName	
Password	
IP Address	75.0.0.2
Subnet Mask	255.0.0.0
Default Gateway	75.0.0.1

PC8 — IP Configuration

Interface: Wireless0

IP Configuration
- ● DHCP   ○ Static   DHCP request successful.

IP Address	76.0.0.101
Subnet Mask	255.0.0.0
Default Gateway	76.0.0.1
DNS Server	0.0.0.0

IPv6 Configuration
- ● DHCP   ○ Auto Config   ○ Static   DHCPv6 request failed.

IPv6 Address	/
Link Local Address	FE80::2D0:BAFF:FEC5:8C32
IPv6 Gateway	
IPv6 DNS Server	

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PC9 — IP Configuration

Interface: Wireless0

IP Configuration
- ● DHCP   ○ Static   DHCP request successful.

IP Address	76.0.0.102
Subnet Mask	255.0.0.0
Default Gateway	76.0.0.1
DNS Server	0.0.0.0

IPv6 Configuration
- ● DHCP   ○ Auto Config   ○ Static   DHCPv6 request failed.

IPv6 Address	/
Link Local Address	FE80::2D0:FFFF:FE05:D974
IPv6 Gateway	
IPv6 DNS Server	

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