

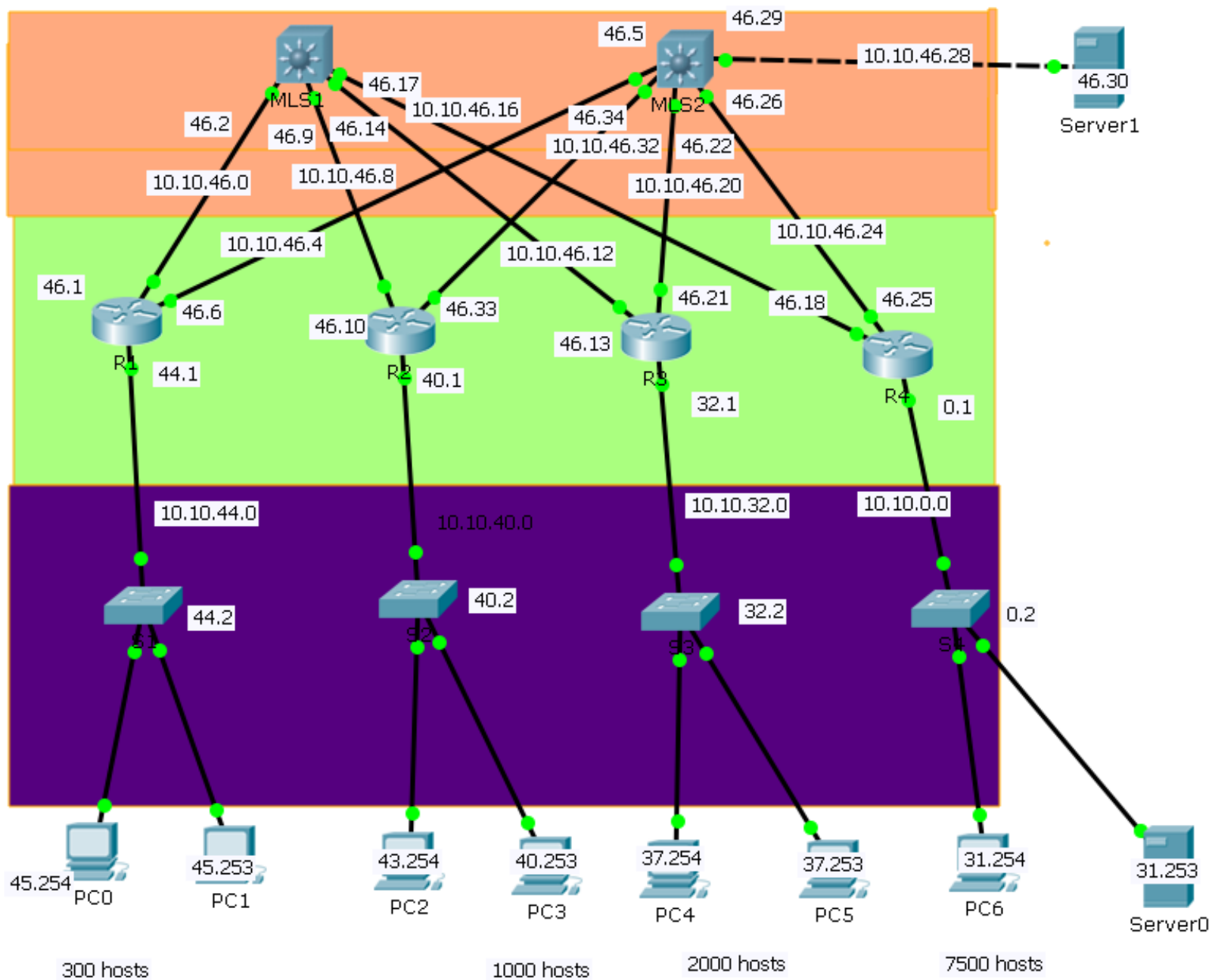
# Session 5-2

IP addressing example

Network II

# Network design – IP Addressing

- Identify customer requirements
  - Campus network
  - Number of users
  - Number of subnets



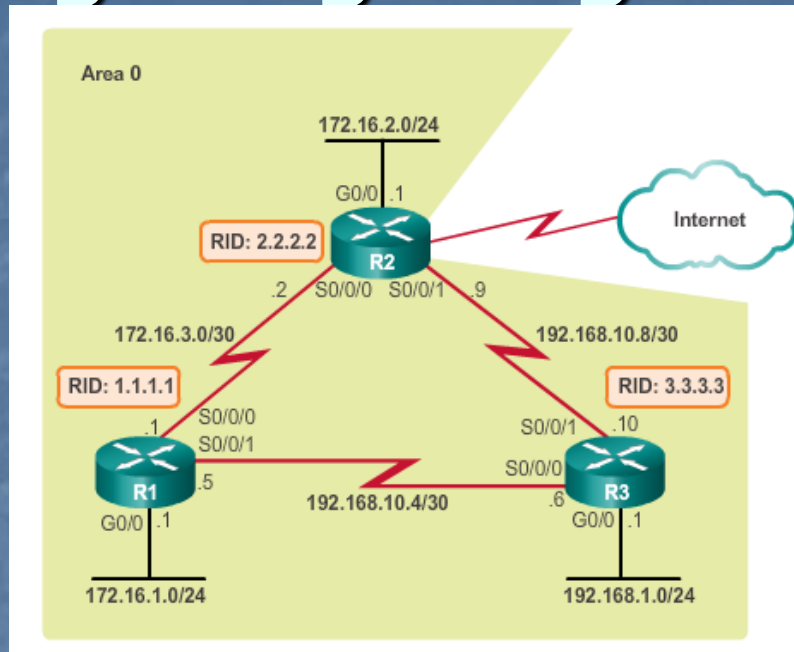
# Addressing table

Device	interface	IP address	Subnet mask	Default Gateway
MLS1	G0/1	10.10.46.17	255.255.255.252	N/A
	G0/2	10.10.46.14	255.255.255.252	N/A
	F0/1	10.10.46.2	255.255.255.252	N/A
	F0/2	10.10.46.9	255.255.255.252	N/A
MLS2	G0/1	10.10.46.29	255.255.255.252	N/A
	G0/2	10.10.46.26	255.255.255.252	N/A
	F0/1	10.10.46.5	255.255.255.252	N/A
	F0/2	10.10.46.34	255.255.255.252	N/A
	F0/3	10.10.46.22	255.255.255.252	N/A
R1	G0/0	10.10.46.1	255.255.255.252	N/A
	G0/1	10.10.46.6	255.255.255.252	N/A
	G0/2	10.10.44.1	255.255.254.0	N/A
R2	G0/0	10.10.46.10	255.255.255.252	N/A
	G0/1	10.10.46.33	255.255.255.252	N/A
	G0/2	10.10.40.1	255.255.252.0	N/A
R3	G0/0	10.10.46.21	255.255.255.252	N/A
	G0/1	10.10.46.13	255.255.255.252	N/A
	G0/2	10.10.32.1	255.255.248.0	N/A
R4	G0/0	10.10.0.1	255.255.224.0	N/A
	G0/1	10.10.46.25	255.255.255.252	N/A
	G0/2	10.10.46.18	255.255.255.252	N/A

# Configuration

- Router interfaces – IP address
- Bandwidth 1000000 (kilobit)
- Router protocol – OSPF 10
- Auto-cost reference-bandwidth 1000 (kilobit)
- Network per Router – Wildcard and area id
- Multilayer switches – no switchport per interface
  - IP routing command for multilayer switches
  - Router ospf 10 - command
  - Router-id – 32bit
  - Network with wildcard and area ID
- Passive-interfaces g0/0
- \* default-inf originate

# Configuring Single-Area OSPF



```
R1(config)# interface GigabitEthernet0/0
R1(config-if)# bandwidth 1000000
R1(config-if)# exit
R1(config)# router ospf 10
R1(config-router)# router-id 1.1.1.1
R1(config-router)# auto-cost reference-bandwidth 1000
% OSPF: Reference bandwidth is changed.
Please ensure reference bandwidth is consistent
across all routers.
R1(config-router)# network 172.16.1.0 0.0.0.255 area 0
R1(config-router)# network 172.16.3.0 0.0.0.3 area 0
R1(config-router)# network 192.168.10.4 0.0.0.3 area 0
R1(config-router)#
R1(config-router)# passive-interface g0/0
R1(config-router)#
```

```
R2(config)# interface GigabitEthernet0/0
R2(config-if)# bandwidth 1000000
R2(config-if)# exit
R2(config)# router ospf 10
R2(config-router)# router-id 2.2.2.2
R2(config-router)# auto-cost reference-bandwidth 1000
% OSPF: Reference bandwidth is changed.
Please ensure reference bandwidth is consistent
across all routers.
R2(config-router)# network 172.16.2.1 0.0.0.0 area 0
R2(config-router)# network 172.16.3.2 0.0.0.0 area 0
R2(config-router)# network 192.168.10.9 0.0.0.0 area 0
R2(config-router)#
R2(config-router)# passive-interface g0/0
R2(config-router)#
```

# OSPF Modifications

- Hello interval in seconds
  - Int s0/0
  - Ip ospf hello-interval 5
- Dead time interval in seconds
  - Int s0/0
  - Ip ospf dead-interval 20

# Verification

- Show ip ospf neighbor
- show ip protocols
- Show ip ospf
- Show ip ospf interface serial0/0/0
- Show ip ospf int brief



# Demo – Multilayer switch



DEMO SWITCH

Multilayer Switch0