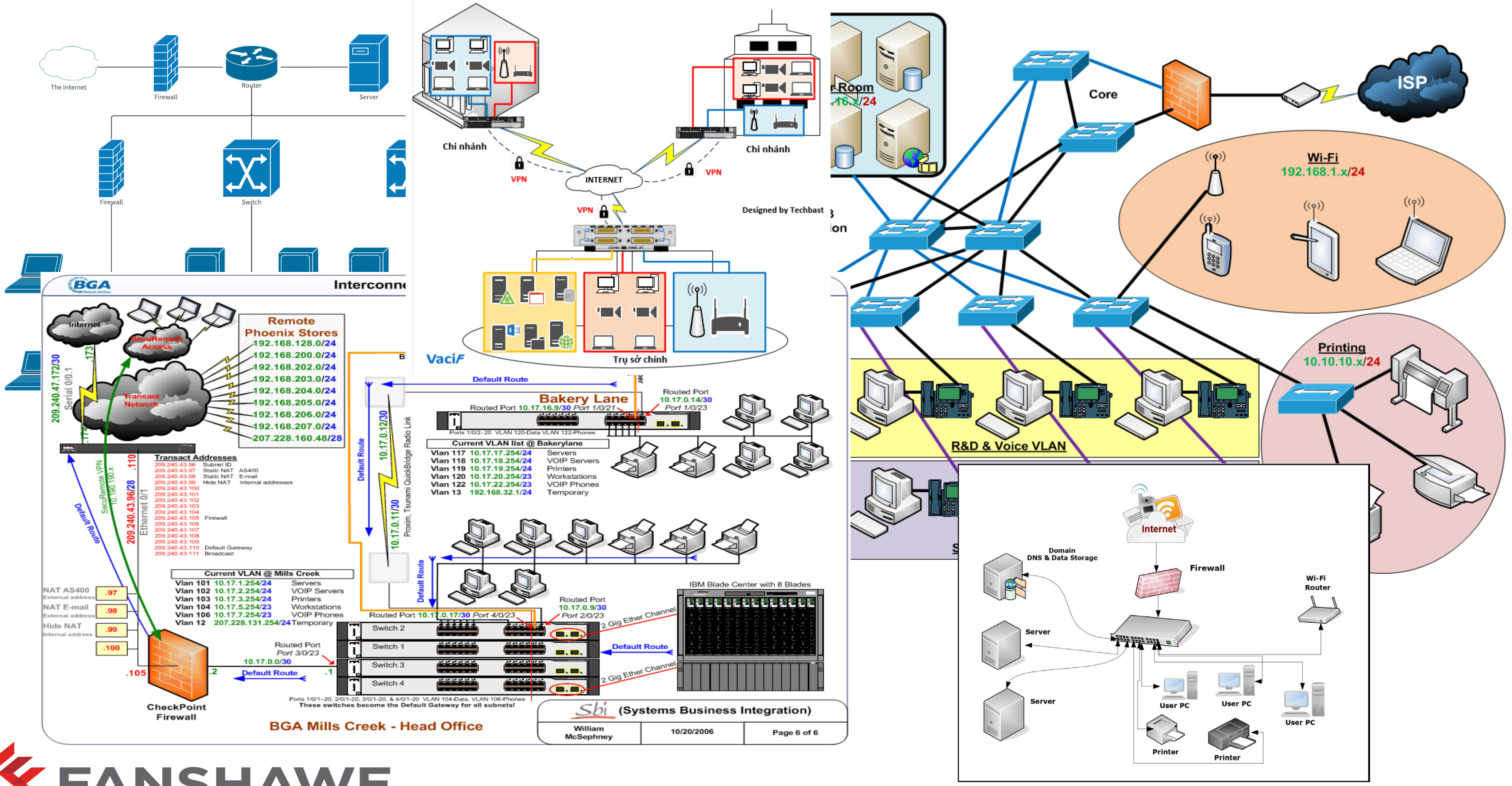
Static Routing



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INFO-6047 Switching and Routing

ISM1 - Information Security Management (ISM1-ITY-20189) **Detailed Weekly Content**

Week	Date of Lecture or Tests, 7:00 – 9:00 PM EST	Lecture/Test	Reading	Lab Time INFO-6047-01 Wednesday 5:00 – 8:00 PM EST INFO-6047-02 Tuesday 5:00 – 8:00 PM EST	Grade
Week 01	Monday, January 02, 2023	College-Wide Orientation			
Week 02	Monday, January 09, 2023	Introduction	N/A	Lab 01 - Basics of PT	3.0%
Week 03	Monday, January 16, 2023	Basics of Routing	Chapter 01 & 02 *(Introduction to Networking, Network Media Copper)*	Lab 02 - Intro to Routing	3.0%
Week 04	Monday, January 23, 2023	Basics of Switching	Chapter 03 & 04 *(Network Media Fiber Network Media Wireless)*	Lab 03 - Intro to Switching	3.0%
Week 05	Monday, January 30, 2023	VLANs	Chapter 05 *(Data Encoding & Transmission)*	Lab 04 - VLANs	3.0%
Week 06	Monday, February 06, 2023	Routing	Chapter 06 *(Network OS & Communications)*	Lab 05 - Routing	3.0%
Week 07	Monday, February 13, 2023	Mid-Term Test		Mid-Term (Test 1)	32.0%
Study Break	Monday, February 20, 2023	Study Break - No Class This Week			
Week 08	Monday, February 27, 2023	Inter-VLAN Routing	Chapter 10 *(TCP/IP Fundamentals)*	Lab 06 - Inter VLAN Routing	3.0%
Week 09	Monday, March 06, 2023	Static Routing	Chapter 11 *(Subnetting)*	Lab 07 - Static & Default Routs	3.0%
Week 10	Monday, March 13, 2023	Dynamic Routing - RIP	Chapter 12 *(Additional Transmission Modalities)*	Lab 08 - RIP Protocol	3.0%
Week 11	Monday, March 20, 2023	Dynamic Routing - OSPF	Chapter 14 *(RA & LD Communications)*	Lab 09 - OSPF Protocol	3.0%
Week 12	Monday, March 27, 2023	Access Control Lists	Chapter 15 *(Network Security)*	Lab 10 - ACLs	3.0%
Week 13	Monday, April 03, 2023	DHCP	Chapter 16 *Maintaining the Network)*	Lab 11 - DHCP	3.0%
Week 14	Monday, April 10, 2023	NAT	Chapter 17 *(Troubleshooting Fundamentals of a Network)*	Lab 12 - NAT	3.0%
Week 15	Monday, April 17, 2023	Final Test		Final Test (Test 2)	32%

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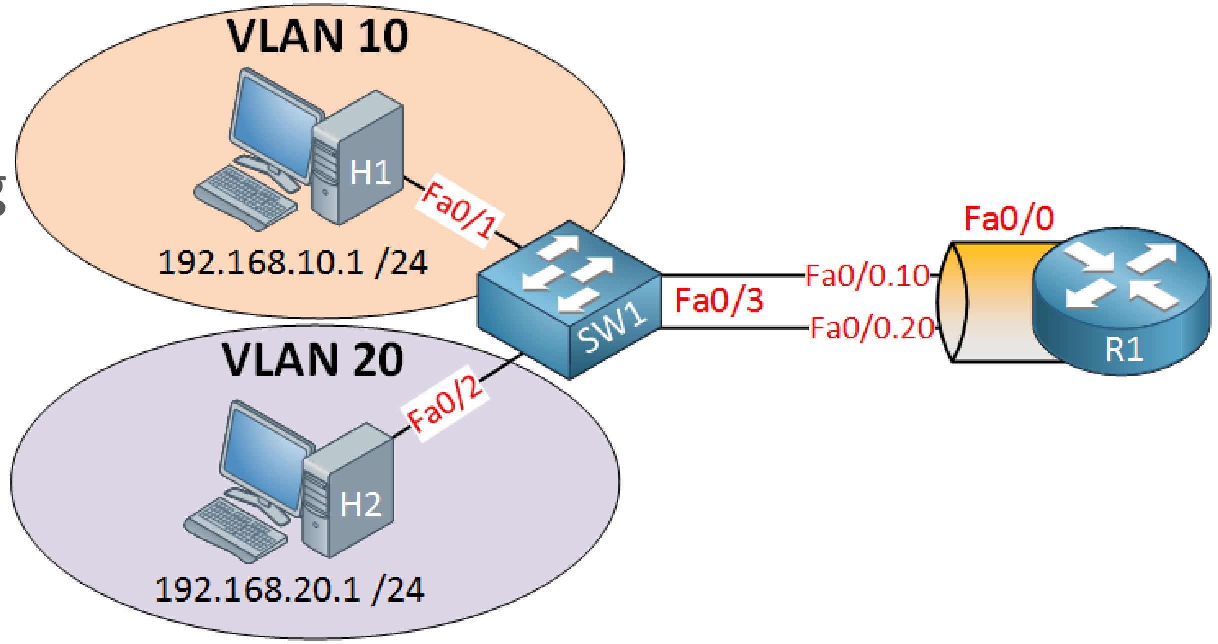
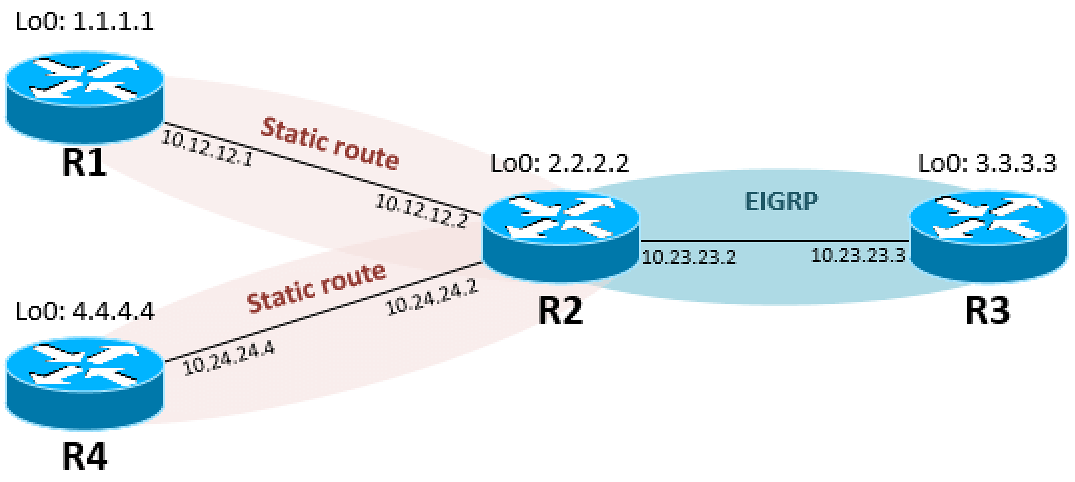
Review - Lecture 06 – Inter VLAN Routing

- Inter-VLAN Routing
  - What is Inter-VLAN routing
  - Legacy Inter-VLAN Routing
  - Router on a Stick
  - Layer 3 Switches
  - Troubleshoot Inter-VLAN Routing
  - Troubleshooting general tools



Summary - Static Routing

- IPv4
  - Static Routes
  - Default Static Routes
- IPv6
  - Static Routes
  - Link-Local
  - Default Static Routes
- Troubleshoot a Missing Route
- Floating Static Route
- VLSM - CIDR
  - IP Addressing
  - Static Route Summarization
  - Route Summarization
  - Summarize IPv6 Addresses
- Lab



Static Routes

- Reach Remote Networks
  - A router acquires routes in two primary ways:
    - Through **dynamic** routing Remote routes are automatically learned using a dynamic routing protocol (RIP, IGRP, EIGRP, OSPF, ISIS, BGP….)
    - Through **static routing** Remote networks are manually entered into the route table using static routes
      - a network administrator can enter the routes directly
  - A network administrator might define a static route to:
    - **Control the path** that a datagram follows
    - **Decrease the amount of traffic** exchanged between routers - updates are not sent between routers
    - **Improve network security** - the route can be limited to one predefined path
    - **Improve the efficiency** of the network - does not have to make calculations to build the route table, which speeds up its performance
    - **Define a default route**

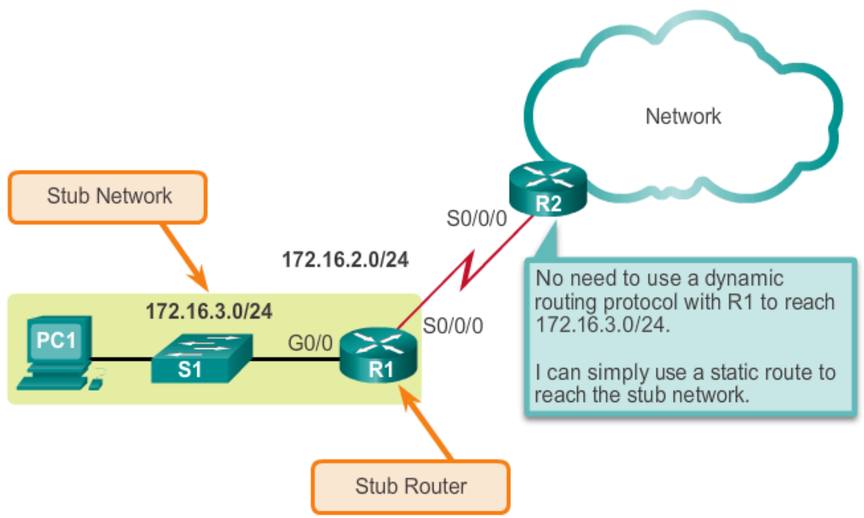
Static Routes

- Static routing has the following disadvantages:
  - Initial configuration and maintenance is **time-consuming**.
  - Configuration is **error-prone**, especially in large networks.
  - Administrator **intervention** is required to maintain changing route information.
  - Does **not scale well** with growing networks; maintenance becomes cumbersome.
  - Requires complete **knowledge of the whole network** for proper implementation.
- Static routing has three primary uses:
  - Providing ease of routing table maintenance in smaller networks that are not expected to grow significantly.
  - Routing to and from stub networks. A stub network is a network accessed by a single route, and the router has no other neighbors.
  - Using a single default route to represent a path to any network that does not have a more specific match with another route in the routing table. Default routes are used to send traffic to any destination beyond the next upstream router.

Static Routes (continued)

- Applications
  - Static Routes are often used to:
    - Connect to a specific network.
    - Provide a **Gateway of Last Resort** (IPv4) for a stub network.
    - Reduce the number of routes advertised by summarizing several contiguous networks as one static route.
    - Create a backup route in case a primary route link fails.

Connecting to a Stub Network



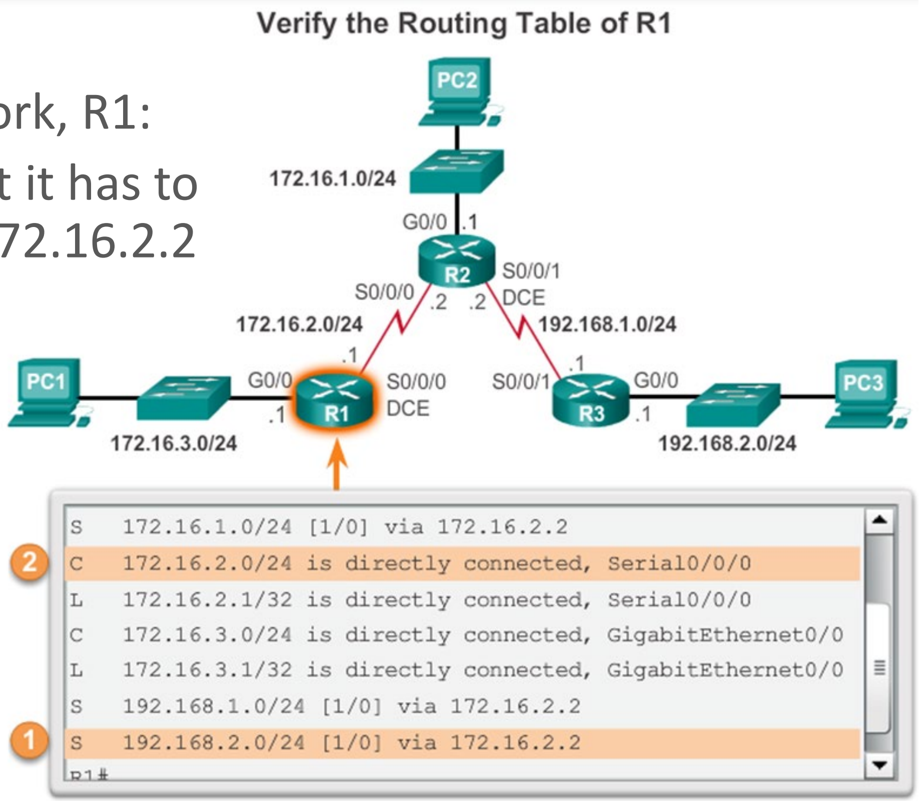

```
Router(config)#ip route network-address subnet-mask
{ip-address | exit-intf}
```

Parameter	Description
network-address	Destination network address of the remote network to be added to the routing table.
subnet-mask	• Subnet mask of the remote network to be added to the routing table. • The subnet mask can be modified to summarize a group of networks.
ip-address	• Commonly referred to as the next-hop router's IP address. • Typically used when connecting to a broadcast media (i.e., Ethernet). • Commonly creates a recursive lookup.
exit-intf	• Use the outgoing interface to forward packets to the destination network. • Also referred to as a directly attached static route. • Typically used when connecting in a point-to-point configuration.

Static Routes (continued)

- Next-Hop Options
  - The next hop can be identified by an IP address, exit interface, or both. How the destination is specified creates one of the three following route types:
    - **Next-hop route** - Only the next-hop IP address is specified.
    - **Directly connected static route** - Only the router exit interface is specified.
    - **Fully specified static route** - The next-hop IP address and exit interface are specified.

- When a packet is destined for the 192.168.2.0/24 network, R1:
  - Looks for a match in the routing table and finds that it has to forward the packets to the next-hop IPv4 address 172.16.2.2
  - R1 must now determine how to reach 172.16.2.2; therefore it searches a second time for a 172.16.2.2 match - called recursive lookup



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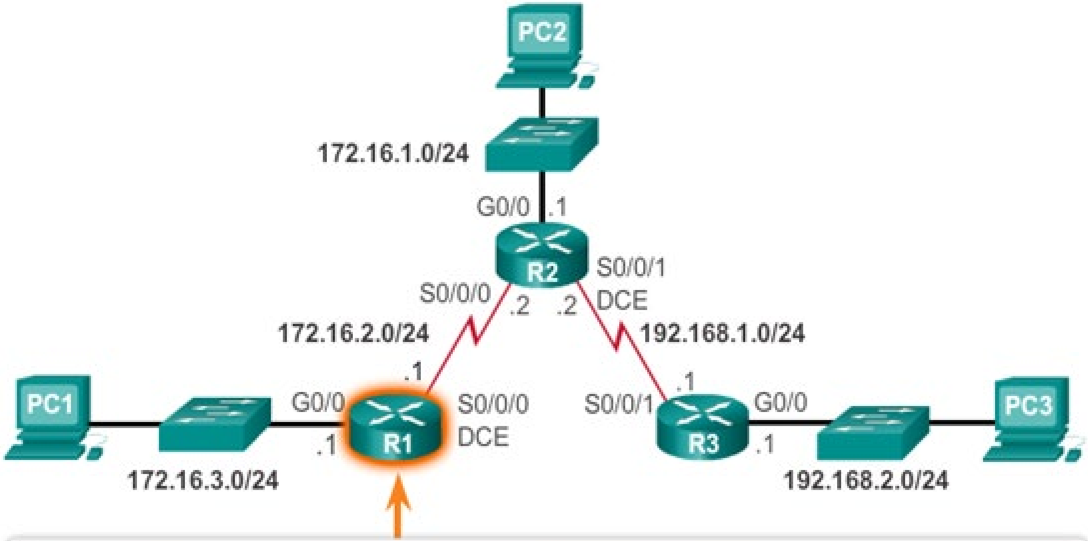
Static Routes (continued)

- Directly Connected Static Route

Configure Directly Attached Static Routes on R1




```
R1(config)#ip route 172.16.1.0 255.255.255.0 s0/0/0
R1(config)#ip route 192.168.1.0 255.255.255.0 s0/0/0
R1(config)#ip route 192.168.2.0 255.255.255.0 s0/0/0
R1(config)#
```

- Uses the exit interface
- Prior to CEF this method was used to avoid recursive lookup problem
- Allows the routing table to resolve the exit interface in a single search
- Although the routing table entry indicates “directly connected” the administrative distance still 1

```
S        172.16.1.0/24 is directly connected, Serial0/0/0
C        172.16.2.0/24 is directly connected, Serial0/0/0
L        172.16.2.1/32 is directly connected, Serial0/0/0
C        172.16.3.0/24 is directly connected, GigabitEthernet0/0
L        172.16.3.1/32 is directly connected, GigabitEthernet0/0
S     192.168.1.0/24 is directly connected, Serial0/0/0
S     192.168.2.0/24 is directly connected, Serial0/0/0
R1#
```

Static Routes (continued)

- Fully Specified Static Route
  - Both the output interface and the next-hop IP address are specified
  - This is another type of static route that is used in older IOSs, prior to CEF
  - Used when the output interface is a multi-access interface and it is necessary to explicitly identify the next hop

Network Address / Subnet Mask / Exit-Inter / Next-Hop address

  - **R1(config)# ip route 192.168.2.0 255.255.255.0 s0/0/0 172.16.2.2**

```
Router(config)#ip route network-address subnet-mask
{ip-address | exit-intf}
```

Parameter	Description
network-address	Destination network address of the remote network to be added to the routing table.
subnet-mask	• Subnet mask of the remote network to be added to the routing table. • The subnet mask can be modified to summarize a group of networks.
ip-address	• Commonly referred to as the next-hop router's IP address. • Typically used when connecting to a broadcast media (i.e., Ethernet). • Commonly creates a recursive lookup.
exit-intf	• Use the outgoing interface to forward packets to the destination network. • Also referred to as a directly attached static route. • Typically used when connecting in a point-to-point configuration.

Static Routes (continued)

- Verify a Static Route
  - Along with **ping** and **traceroute**,
    Useful commands to verify static routes include:
    - **show ip route**
    - **show ip route static**
    - **show ip route** network

Default Static Routes

- Default Static Routes
  - A route that matches all packets
  - The router sends all IP packets that it does not have a match in the route table
  - A static route with 0.0.0.0/0 as the destination IPv4 address
  - Cisco calls this "**the gateway of last resort**"

Network Address / Subnet Mask / Next-Hop address / Exit-Inter

- **R1(config)# ip route 0.0.0.0 0.0.0.0 172.16.2.2** s0/0/0

```
Router(config)#ip route 0.0.0.0 0.0.0.0 {ip-address | exit-intf}
```

Parameter	Description
0.0.0.0	Matches any network address.
0.0.0.0	Matches any subnet mask.
ip-address	• Commonly referred to as the next-hop router's IP address. • Typically used when connecting to a broadcast media (i.e., Ethernet). • Commonly creates a recursive lookup.
exit-intf	• Use the outgoing interface to forward packets to the destination network. • Also referred to as a directly attached static route. • Typically used when connecting in a point-to-point configuration.

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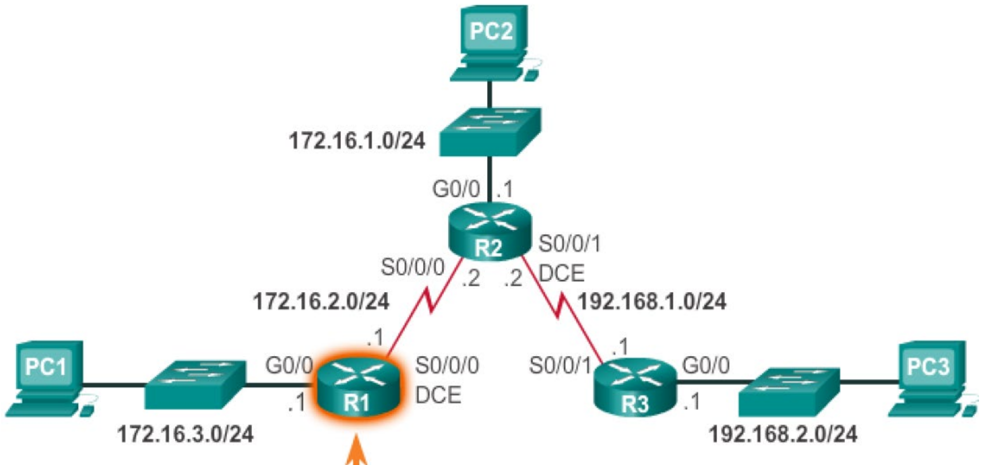
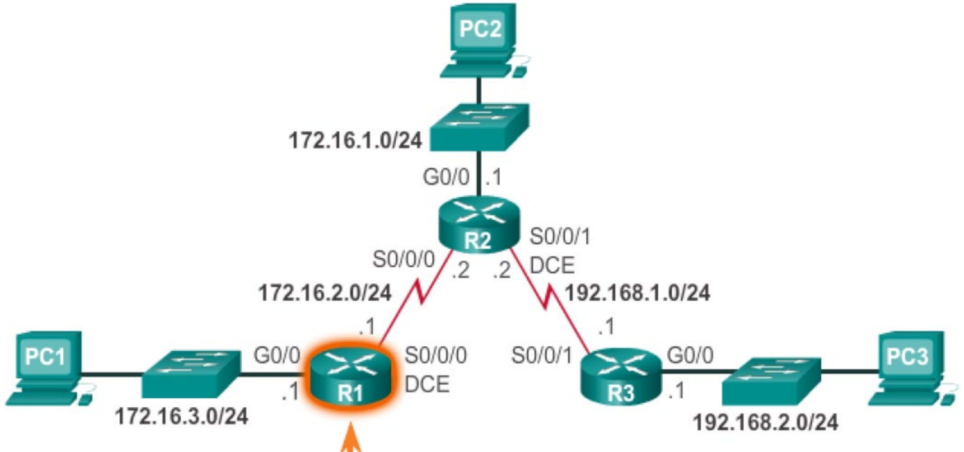
Default Static Routes (continued)

Configuring a Default Static Route




```
R1(config)# ip route 0.0.0.0 0.0.0.0 172.16.2.2
R1(config)#
```

Verifying the Routing Table of R1




```
R1#show ip route static
Codes: L - local, C - connected, S - static, R - RIP,
       M - mobile, B - BGP, D - EIGRP,
       * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route,
       H - NHRP, l - LISP, + - replicated route,
       % - next hop override

Gateway of last resort is 172.16.2.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 172.16.2.2
R1#
```

IPv6 Static Routes

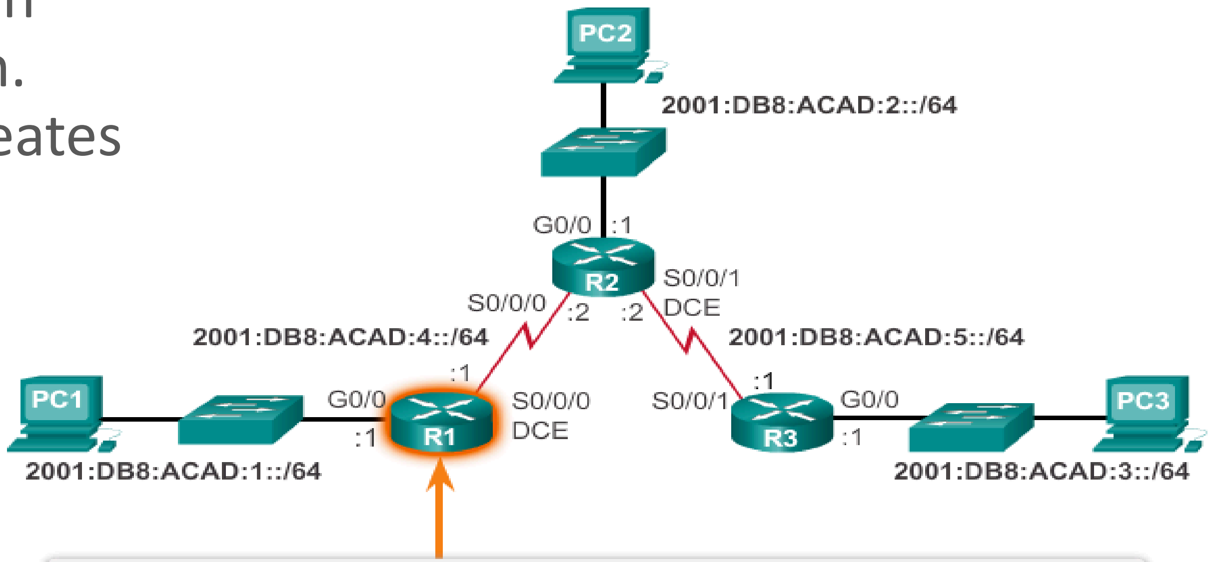
- Most of parameters are identical to the IPv4 version of the command. IPv6 static routes can also be implemented as:
  - Standard IPv6 static route
  - Default IPv6 static route
  - Summary IPv6 static route
  - Floating IPv6 static route

```
Router(config)#ipv6 route ipv6-prefix/ipv6-mask
{ipv6-address | exit-intf}
```

IPv6 Static Routes (continued)

- Next-Hop Options
  - The next hop can be identified by an IPv6 address, exit interface, or both. How the destination is specified creates one of three route types:
  - **Next-hop IPv6 route** - Only the next-hop IPv6 address is specified
  - **Directly connected static IPv6 route** – Only the router exit interface is specified
  - **Fully specified static IPv6 route** - The next-hop IPv6 address and exit interface are specified

Configure Next-hop Static IPv6 Routes



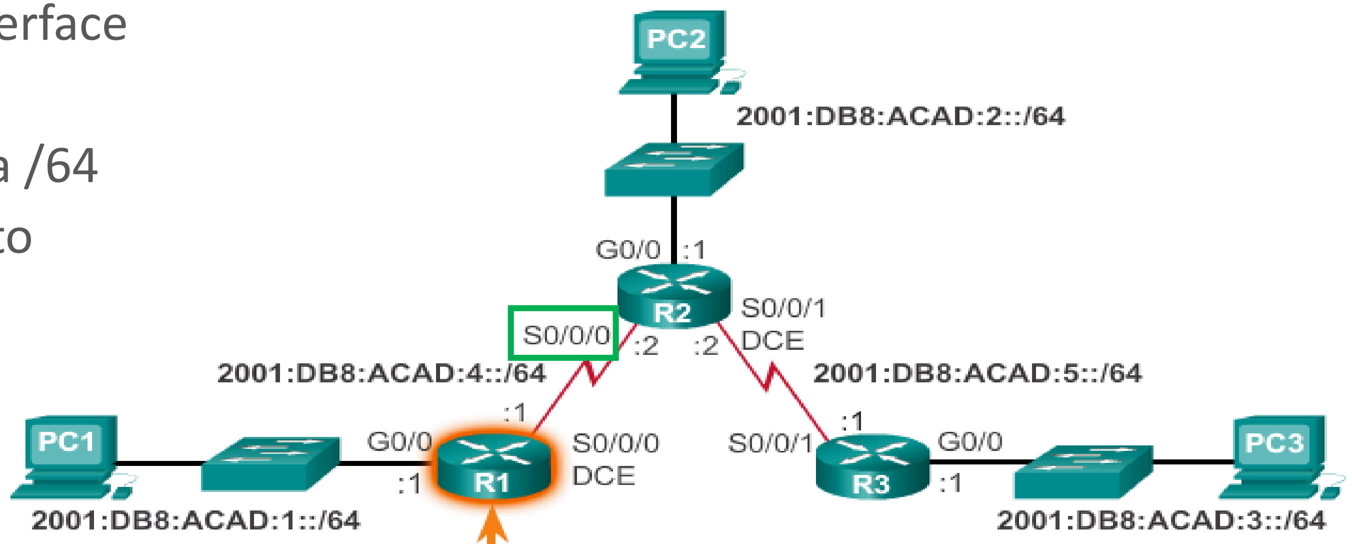

```
R1(config)#ipv6 route 2001:DB8:ACAD:2::/64 2001:DB8:ACAD:4::2
R1(config)#ipv6 route 2001:DB8:ACAD:5::/64 2001:DB8:ACAD:4::2
R1(config)#ipv6 route 2001:DB8:ACAD:3::/64 2001:DB8:ACAD:4::2
R1(config)#
```

IPv6 Static Routes (continued)

- Directly Connected Static IPv6 Route
  - Do you see a problem?
  - Directly connected using an exit-interface
  - In this case a /64
  - How many hosts is represented by a /64
  - How long will it take for the router to search for a usable address

  - Yes, this is a valid route entry but more than likely will time-out

Configure Directly Connected Static IPv6 Routes on R1




```
R1(config)#ipv6 route 2001:DB8:ACAD:2::/64 s0/0/0
R1(config)#ipv6 route 2001:DB8:ACAD:5::/64 s0/0/0
R1(config)#ipv6 route 2001:DB8:ACAD:3::/64 s0/0/0
R1(config)#
R1#
```

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IPv6 Static Routes (continued)

- Link-local Static IPv6 Route
  - New in IPv6 Link-Local
  - IPv6 interfaces can have multiple addresses
  - Link-Local addresses are unique within a LAN
  - Link-Local addresses are used for routing within a LAN


```
R1(config)# ipv6 route 2001:db8:acad:2::/64 fe80::2
% Interface has to be specified for a link-local nexthop
R1(config)# ipv6 route 2001:db8:acad:2::/64 s0/0/0 fe80::2
R1(config)#
```

- Fully Specified Static IPv6 Route
  - Yes, as in IPv4 you can use a fully specified route with both an exit-interface and an IP address

IPv6 Static Routes (continued)

- Verify IPv6 Static Routes New in IPv6 Link-Local
  - Along with **ping** and **traceroute**,
    useful commands to verify static routes include:
    - **show ipv6 route**
    - **show ipv6 route static**
    - **show ipv6 route** network

IPv6 Default Static Routes

- Default Static Routes
  - A route that matches all packets
  - The router sends all IP packets that it does not have a match in the route table
  - A static route with ::/0 as the destination IPv6 address

Network Address / CIDR / Next-Hop address / Exit-Inter

- **R1(config)# ip route :: / 0 2001:DB8:ACAD:4::2 s0/0/0**

```
Router(config)#ipv6 route ::/0 {ipv6-address | exit-intf}
```

Parameter	Description
::/0	Matches any IPv6 prefix regardless of IPv6 mask.
ip-address	• Commonly referred to as the next-hop router's IPv6 address. • Typically used when connecting to a broadcast media (i.e., Ethernet). • Commonly creates a recursive lookup.
exit-intf	• Use the outgoing interface to forward packets to the destination network. • Also referred to as a directly attached static route. • Typically used when connecting in a point-to-point configuration.

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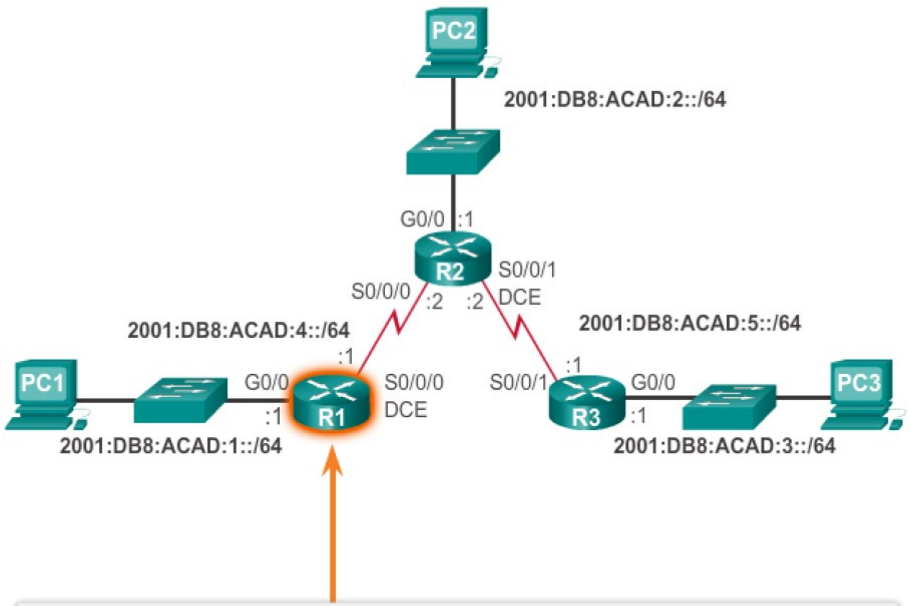
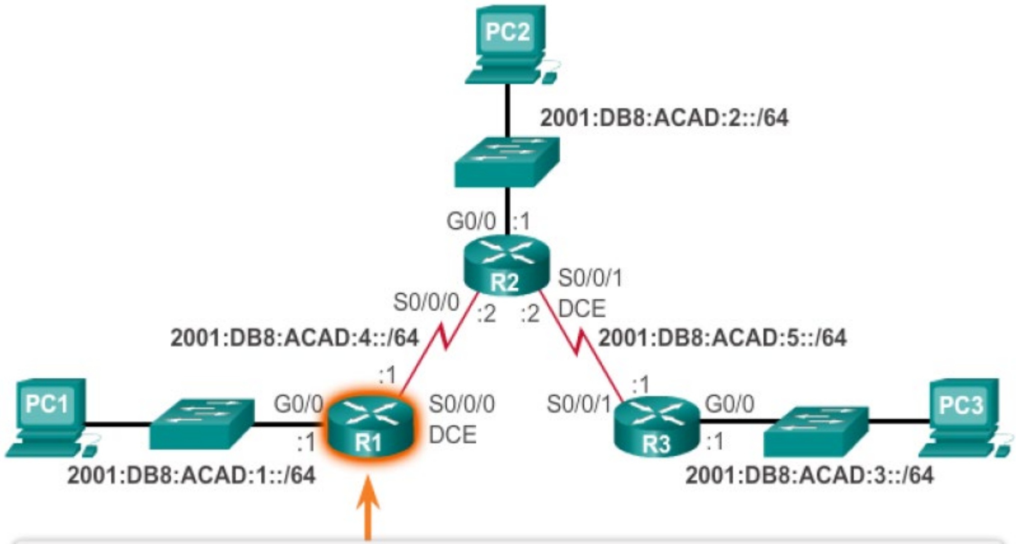
IPv6 Default Static Routes (continued)

Configuring a Default Static IPv6 Route




```
R1(config)# ipv6 route ::/0 2001:DB8:ACAD:4::2
R1(config)#
```

Verifying the Routing Table of R1



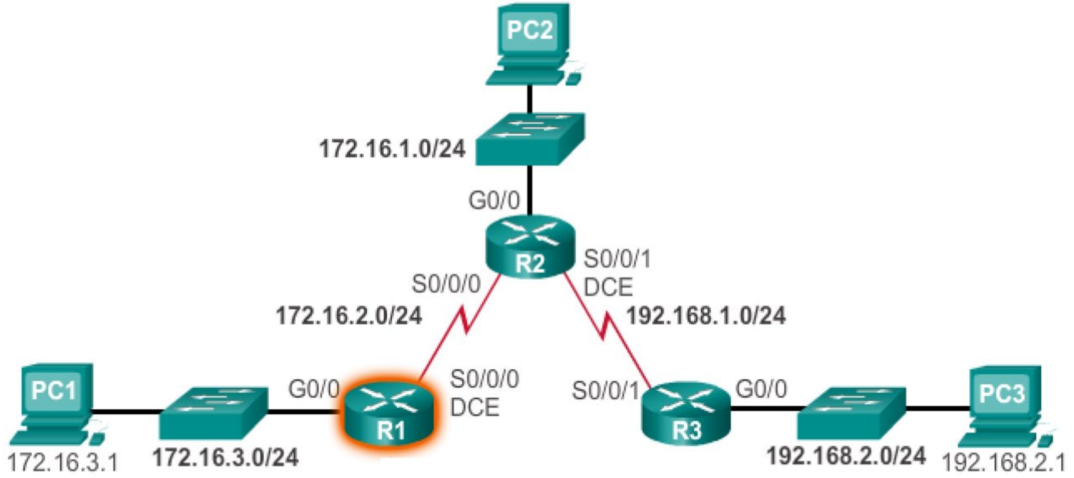

```
R1#show ipv6 route static
IPv6 Routing Table - default - 6 entries
Codes: C - Connected, L - Local, S - Static,
       D - EIGRP, EX - EIGRP external
       ND - ND Default, NDp - ND Prefix,
       DCE - Destination, NDr - Redirect
       O - OSPF Intra, OI - OSPF Inter, OE1 - OSPF ext 1,
       OE2 - OSPF ext 2
       ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
S   ::/0 [1/0]
      via 2001:DB8:ACAD:4::2
R1#
```

Troubleshoot a Missing Route

- Common IOS troubleshooting commands include:
  - **ping**
  - **traceroute**
  - IPv4
    - **show ip route**
    - **show ip interface brief**
  - IPv6
    - **show ipv6 route**
    - **show ipv6 interface brief**
  - **show cdp neighbors detail**

- Solve a Connectivity Problem
  - Finding a missing (or misconfigured) route is a relatively straightforward process, if the right tools are used in a methodical manner.
  - Use the **ping** command to confirm the destination can't be reached.
  - A **traceroute** would also reveal what is the closest router (or hop) that fails to respond as expected. In this case, the router would then send an Internet Control Message Protocol (ICMP) destination unreachable message back to the source.
  - The next step is to investigate the routing table. Look for missing or misconfigured routes.
  - Incorrect static routes are a common cause of routing problems.

Troubleshoot a Missing Route




```
R1# ping 192.168.2.1 source g0/0
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.2.1, timeout is 2 seconds:
Packet sent with a source address of 172.16.3.1
.....
Success rate is 0 percent (0/5)
R1#
```

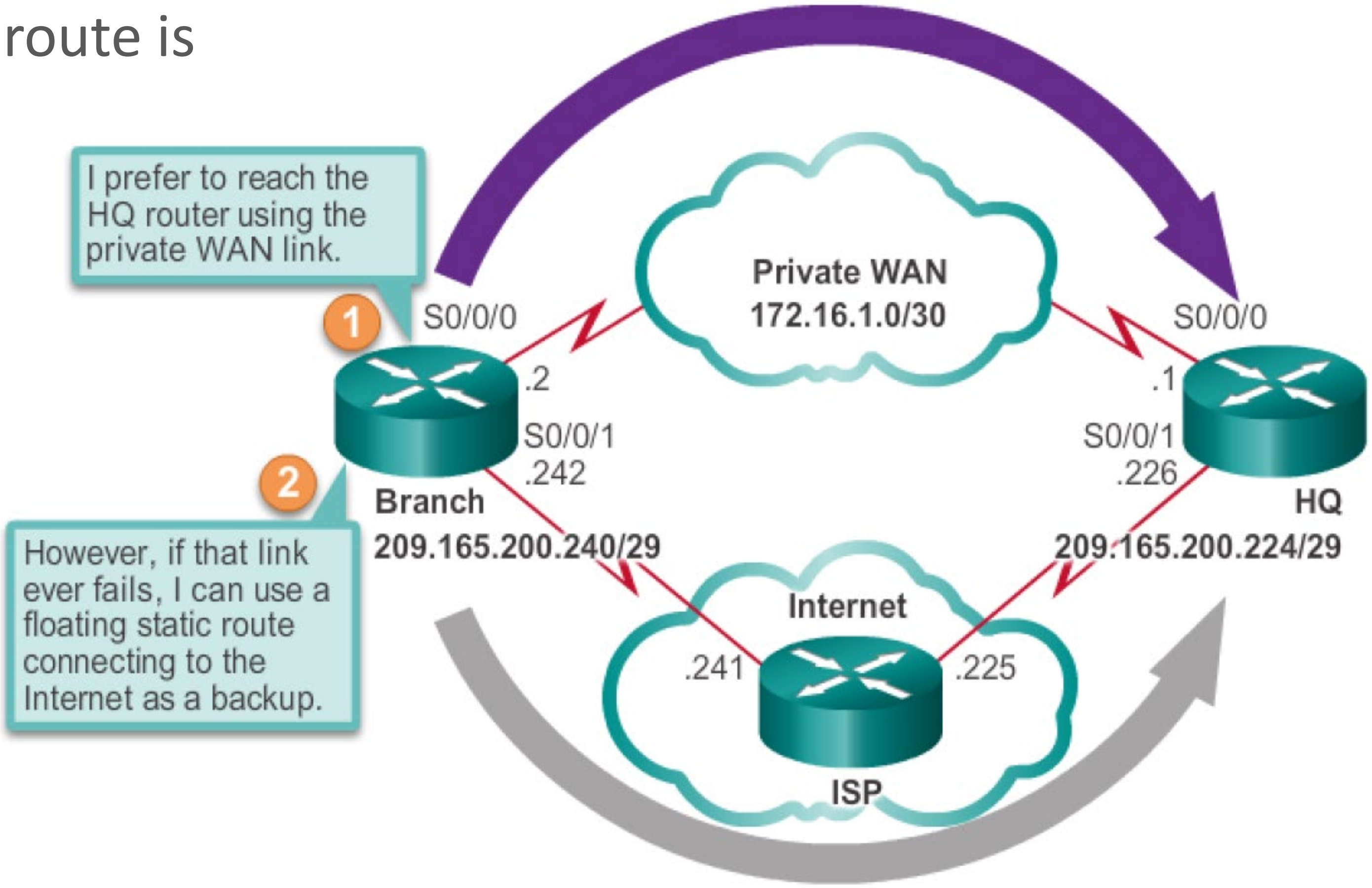
- The user at PC1 reports that he cannot access resources on the R3LAN.
  - This can be confirmed by pinging the LAN interface of R3 using the LAN interface of R1 as the source. The results show that there is no connectivity between these LANs.
  - A traceroute would reveal that R2 is not responding as expected.
  - For some reason, R2 forwards the traceroute back to R1. R1 returns it to R2.
  - This loop would continue until the time to live (TTL) value decrements to zero, in which case, the router would then send an Internet Control Message Protocol (ICMP) destination unreachable message to R1.
  - The next step is to investigate the routing table of R2, because it is the router displaying a strange forwarding pattern.
  - The routing table would reveal that the 192.168.2.0/24 network is configured incorrectly.
  - A static route to the 192.168.2.0/24 network has been configured using the next-hop address 172.16.2.1.
  - Using the configured next-hop address, packets destined for the 192.168.2.0/24 network are sent back to R1.
  - Based on the topology, the 192.168.2.0/24 network is connected to R3, not R1. Therefore, the static route to the 192.168.2.0/24 network on R2 must use next-hop 192.168.1.1, not 172.16.2.1.

Floating Static Route

- Floating static routes are static routes that have an administrative distance greater than the administrative distance of another static route or dynamic routes:
  - The administrative distance of a static route can be increased to make the route less desirable than that of another static route or a route learned through a dynamic routing protocol.
  - In this way, the static route “floats” and is not used when the route with the better administrative distance is active.
  - However, if the preferred route is lost, the floating static route can take over, and traffic can be sent through this alternate route.

Floating Static Route (continued)

- Floating static routes are static routes that are used to provide a backup path to a primary static or dynamic route, in the event of a link failure.
- Only used when the primary route is not available
- Configured with a higher administrative distance than the primary route
- If the preferred route is lost, the floating static route can take over, and traffic can be sent through this alternate route

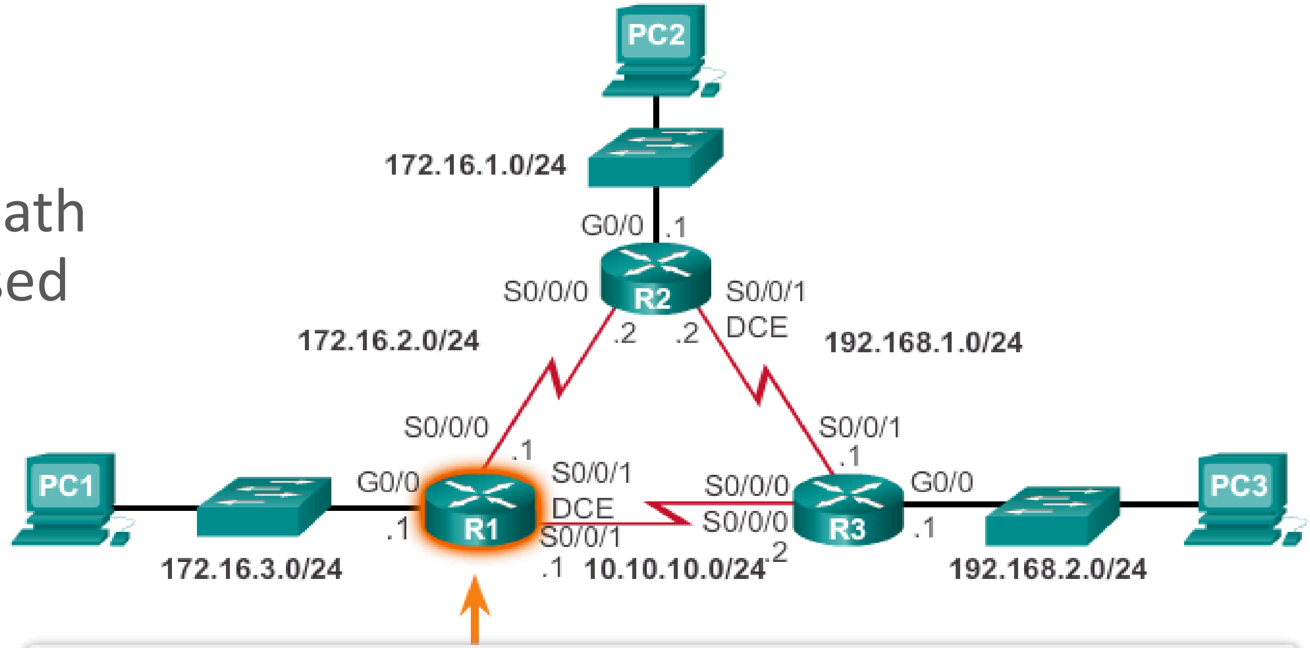


Floating Static Route (continued)

- By adding in a **Metric** we change the administrative distance and manually control the **best path** to the end point

- Lower the metric the better the path or at least the path that will be used first

Configuring a Floating Static Route to R3




```
R1(config)# ip route 0.0.0.0 0.0.0.0 172.16.2.2
R1(config)# ip route 0.0.0.0 0.0.0.0 10.10.10.2 5
R1(config)#
```

Metric

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Floating Static Route (continued)

- To test a floating static route:
  - Use a **show ip route** command to verify that the routing table is using the default static route.
  - Use a **traceroute** command to follow the traffic flow out the primary route.
  - Disconnect the primary link or shutdown the primary exit interface.
  - Use a **show ip route** command to verify that the routing table is using the floating static route.
  - Use a **traceroute** command to follow the traffic flow out the backup route.

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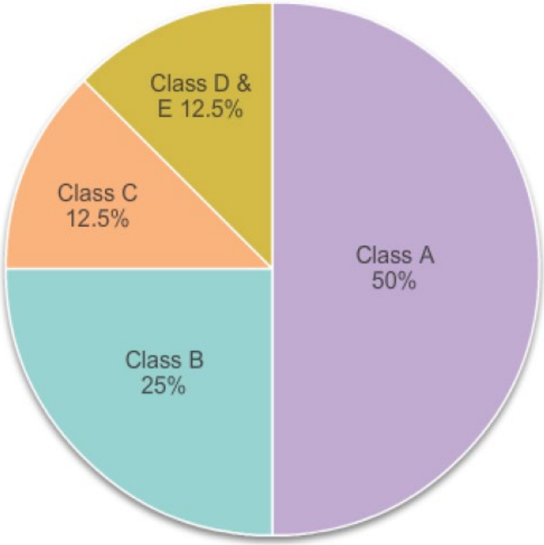
IP Addressing

Classfull IP Address Allocation = Inefficient

Class A (1 - 126)
\# of possible networks: 126
\# of Hosts/Net: 16,777,214
Max. # Hosts: 2,113,928,964

Class B (128 – 191)
\# of possible networks: 16,384
\# of Hosts/Net: 65,534
Max. # Hosts: 1,073,709,056

Class C (192 – 223)
\# of possible networks: 2,097,152
\# of Hosts/Net: 254
Max. # Hosts: 532,676,608

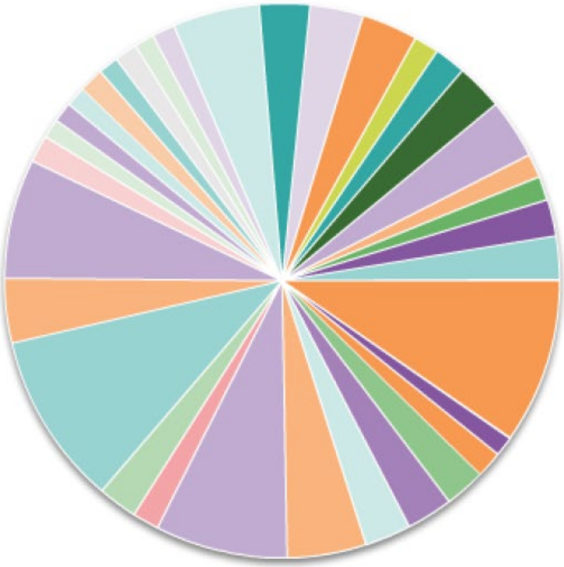


CIDR = Efficient

Class A (1 – 126)
\# of possible networks: 126
\# of Hosts/Net: 16,777,214
Max. # Hosts: 16,777,214

Class B (128 – 191)
\# of possible networks: 16,384
\# of Hosts/Net: 65,534
Max. # Hosts: 1,073,709,056

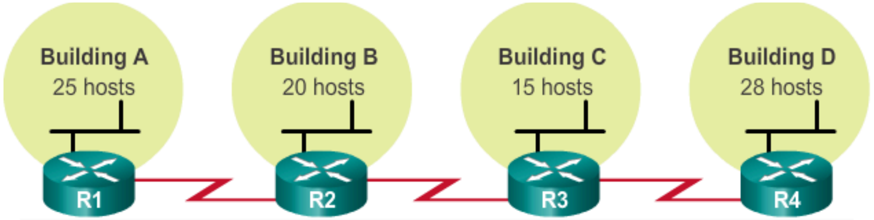
Class C (192 – 223)
\# of possible networks: 2,097,152
\# of Hosts/Net: 254
Max. # Hosts: 532,676,608



IP Addressing (continued)

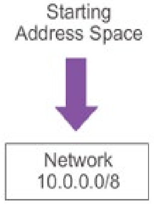
Subnetting Subnet 10.2.5.0/24 to 10.2.5.0 /27
Subnet 10.2.5.224/27 to 10.2.5.224 /30

- **VLSM & CIDR**
  - **Classless Inter Domain Routing (CIDR)**
  - **Variable Length Subnet Mask (VLSM)**
- VLSM allows the use of different masks for each subnet:
  - After a network address is subnetted, those subnets can be further subnetted.
  - VLSM is simply subnetting a subnet. VLSM can be thought of as sub-subnetting.
  - Individual host addresses are assigned from the addresses of "sub-subnets".
  - Again if you do not understand this (VLSM – CIDR) Please watch the video in the "Other Resources" section of FOL



	/27 Network	Hosts
Bldg A	.0	.1 - .30
Bldg B	.32	.33 - .62
Bldg C	.64	.65 - .94
Bldg D	.96	.97 - .126
Unused	.128	.129 - .158
Unused	.160	.161 - .190
Unused	.192	.193 - .222
	.224	.225 - .254

	/30 Network	Hosts
WAN R1–R2	.224	.225 - .226
WAN R2–R3	.228	.229 - .230
WAN R3–R4	.232	.233 - .234



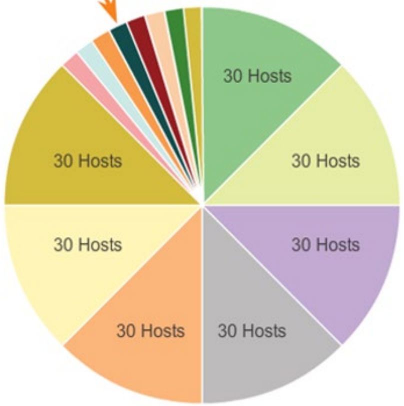
1st Round of Subnets
Subnets
10.0.0.0/16
10.1.0.0/16
10.2.0.0/16
10.3.0.0/16
10.4.0.0/16
10.5.0.0/16
.
.
.
10.255.0.0/16

256 Subnets

Subnets of the Subnet
Sub-Subnets
10.2.0.0/24
10.2.1.0/24
10.2.2.0/24
10.2.3.0/24
10.2.4.0/24
10.2.5.0/24
.
.
.
10.2.255.0/24

256 Subnets

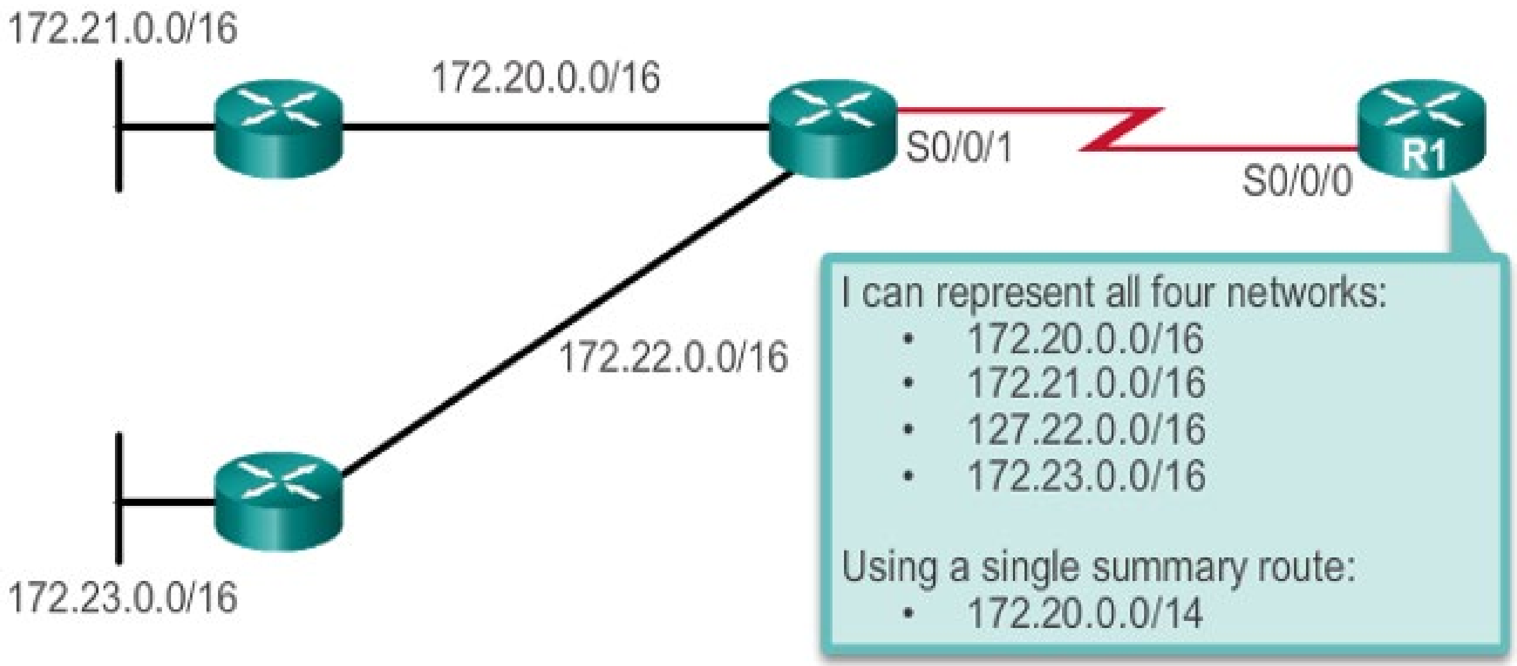
One subnet was further divided to create 8 smaller subnets of 4 hosts each



FANSHAWE

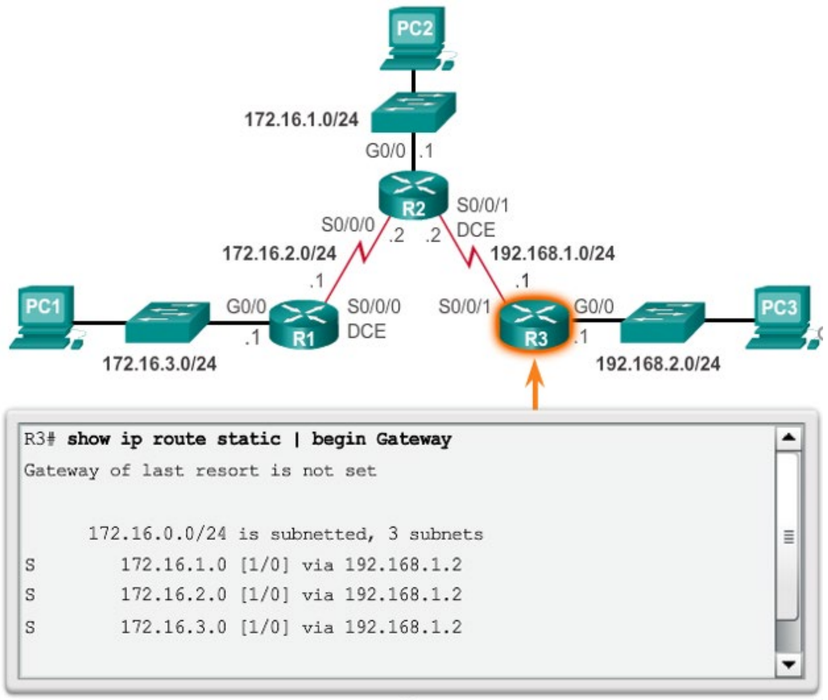
Static Route Summarization

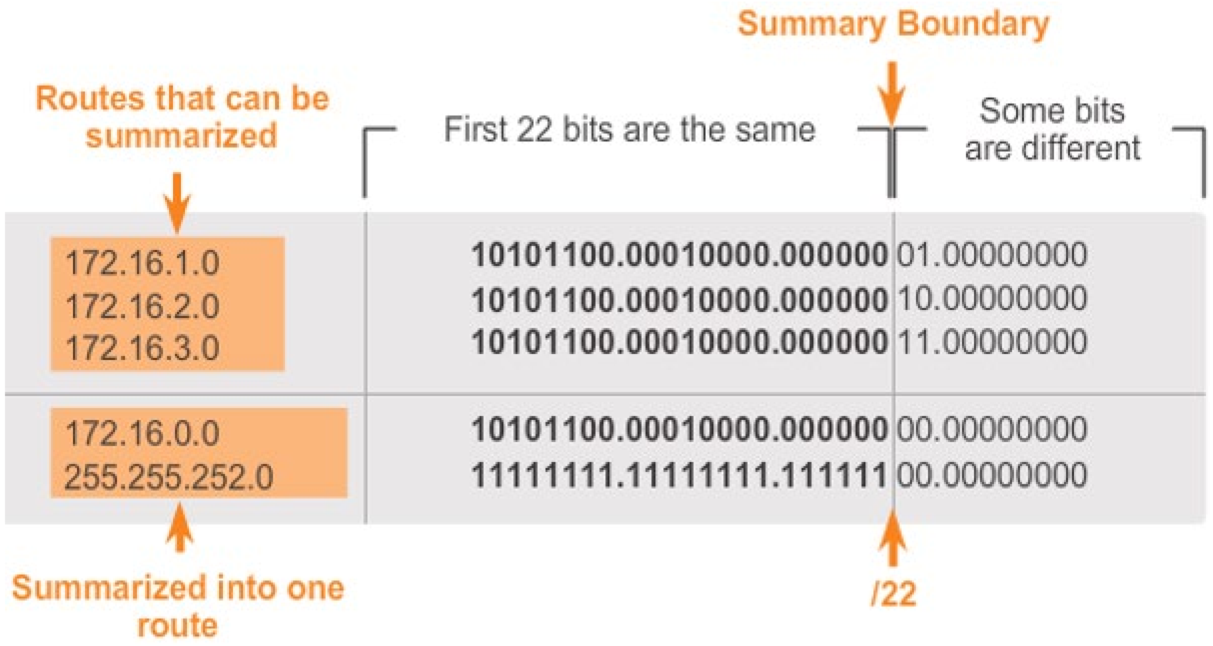
- Multiple static routes can be summarized into a single route
  - To reduce the number of route table entries
  - The destination networks are contiguous
  - The multiple static routes must use the same exit interface or next hop address



Route Summarization

- Route summarization, also known as route aggregation, is the process of advertising a contiguous set of addresses as a single address with a less-specific, shorter subnet mask:
  - CIDR is a form of route summarization and is synonymous with the term supernetting.
  - CIDR ignores the limitation of classful boundaries, and allows summarization with masks that are smaller than that of the default classful mask.
  - This type of summarization helps reduce the number of entries in routing updates and lowers the number of entries in local routing tables.





Summarize IPv6 Addresses

- Summarizing IPv6 addresses is actually similar to the summarization of IPv4 addresses
- It just requires a few extra steps
- There are seven steps to summarize IPv6 networks into a single IPv6 prefix:

Step 1. List the network addresses (prefixes) and identify the part where the addresses differ

Step 2. Expand the IPv6 if it is abbreviated

Step 3. Convert the differing section from hex to binary

Step 4. Count the number of far-left matching bits to determine the prefix-length for the summary route

Step 5. Copy the matching bits and then add zero bits to determine the summarized network address (prefix)

Step 6. Convert the binary section back to hex.

Step 7. Append the prefix of the summary route

Summarize IPv6 Addresses (continued)

Step 1. List the network addresses (prefixes) and identify the part where the addresses differ

```
2001:0DB8:ACAD:1::/64
2001:0DB8:ACAD:2::/64
2001:0DB8:ACAD:3::/64
2001:0DB8:ACAD:4::/64
```

Step 2. Expand the IPv6 if it is abbreviated

```
2001:0DB8:ACAD:0001::/64
2001:0DB8:ACAD:0002::/64
2001:0DB8:ACAD:0003::/64
2001:0DB8:ACAD:0004::/64
```

Step 3. Convert the differing section from hex to binary

```
2001:0DB8:ACAD:0000000000000001::/64
2001:0DB8:ACAD:0000000000000010::/64
2001:0DB8:ACAD:0000000000000011::/64
2001:0DB8:ACAD:0000000000000100::/64
```

Summarize IPv6 Addresses (continued)

- Step 4. Count the number of far left matching bits

```
2001:0DB8:ACAD:0000000000000001::/64
2001:0DB8:ACAD:0000000000000010::/64
2001:0DB8:ACAD:0000000000000011::/64
2001:0DB8:ACAD:0000000000000100::/64
16 bits | 16 bits | 16 bits | 13 bits
16 + 16 + 16 + 13 = /61
```

- Step 5. Add zero bits to determine the summarized network address

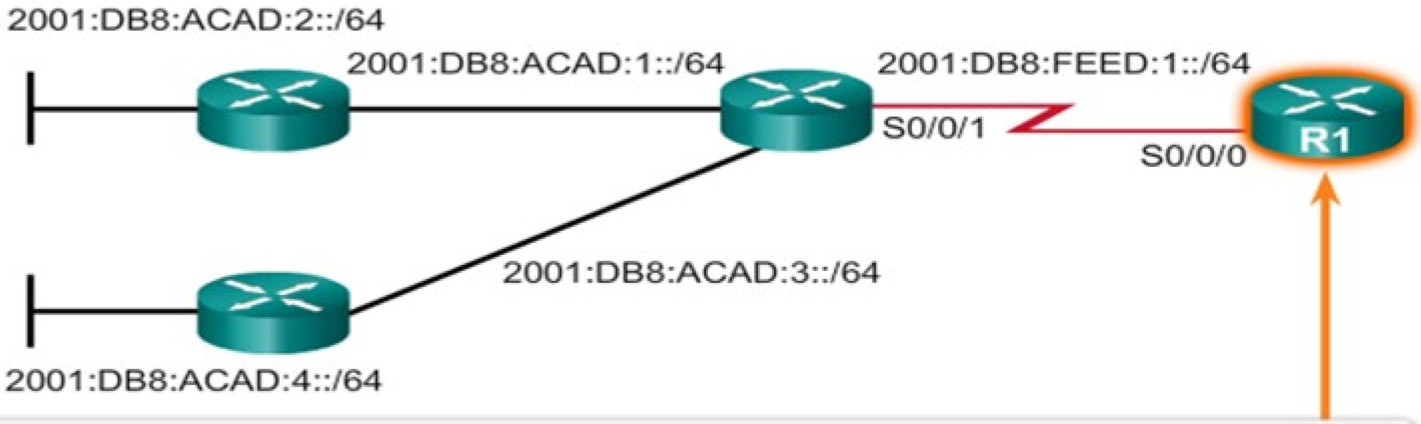
```
2001:0DB8:ACAD:0000000000000000::/64
2001:0DB8:ACAD:0000000000000000::/64
2001:0DB8:ACAD:0000000000000000::/64
2001:0DB8:ACAD:0000000000000000::/64
```

- Step 6. Convert the binary section back to hex

```
2001:0DB8:ACAD:0000000000000000::/64
2001:0DB8:ACAD:0000000000000000::/64
2001:0DB8:ACAD:0000000000000000::/64
2001:0DB8:ACAD:0000000000000000::/64
2001:0DB8:ACAD:0000::
```

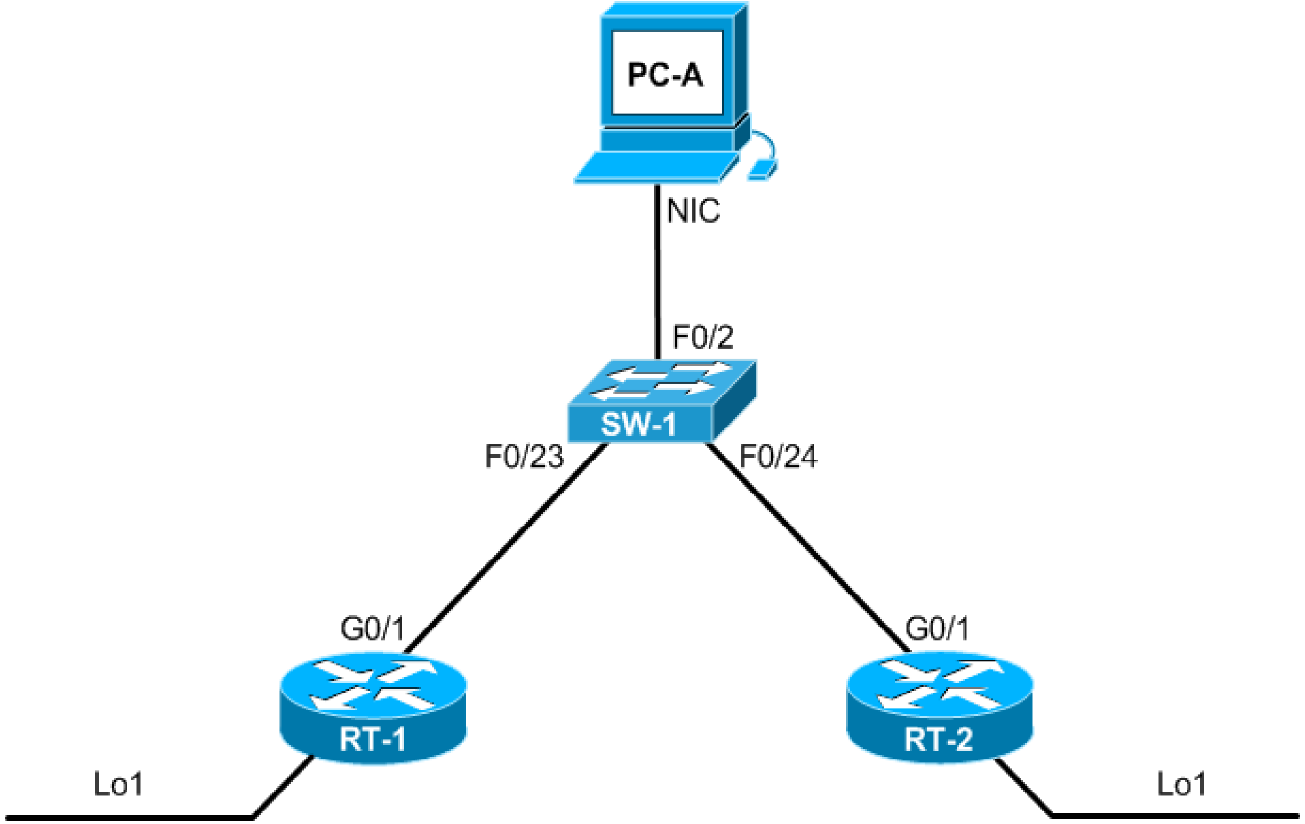
Summarize IPv6 Addresses (continued)

- Step 7. Append the prefix of the summary route




```
R1(config)# no ipv6 route 2001:DB8:ACAD:1::/64 2001:db8:feed:1::2
R1(config)# no ipv6 route 2001:DB8:ACAD:2::/64 2001:db8:feed:1::2
R1(config)# no ipv6 route 2001:DB8:ACAD:3::/64 2001:db8:feed:1::2
R1(config)# no ipv6 route 2001:DB8:ACAD:4::/64 2001:db8:feed:1::2
R1(config)#
R1(config)#
R1(config)# ipv6 route 2001:DB8:ACAD::/61 2001:db8:feed:1::2
R1(config)#
```

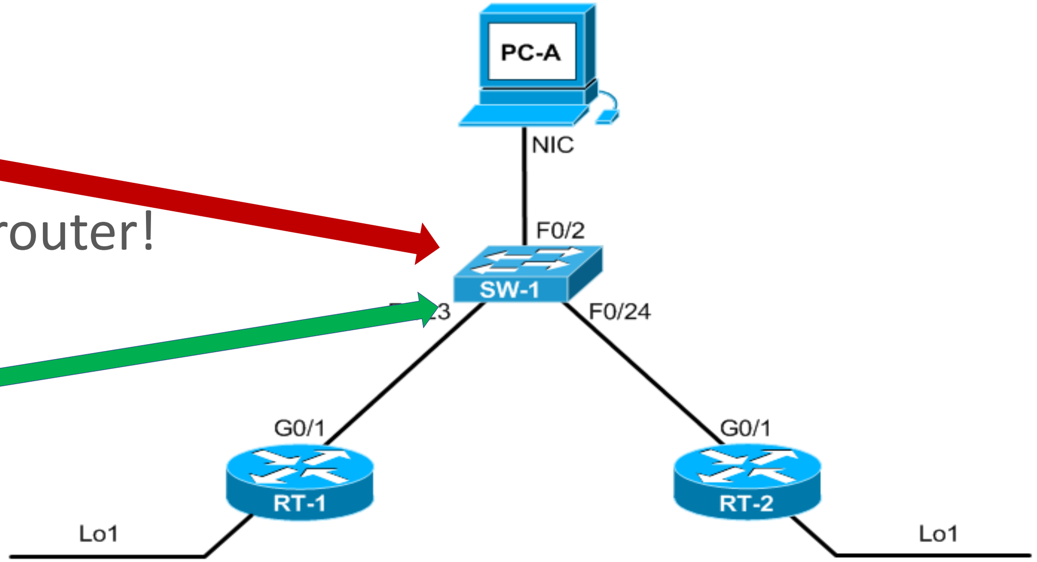
Lab



Two router needed per student. Hence only 3 students per row/pod

Lab (continued)

- Three routers needed for this lab….
  Hold on this is not a router???
- This week we will be using a Layer 3 switch as a router!
- Week3/Lab 3, we talked about SDM ….
- Well to use a Layer 3 switch as router with IPv6 we need to adjust the SDM to get things to work correctly.



- Please go back to lecture 3 / week 3 / lab 3 and re-familiarize yourself with SDM, before you come to your lab. Your going to need it this week!
- I know there was nothing in lab 3 to compel you to play with SDM, so I know most of you didn't even try.
- Recording of results is a combination of saving to the **PDF** and **PPTx** files this week

QUESTIONS

?