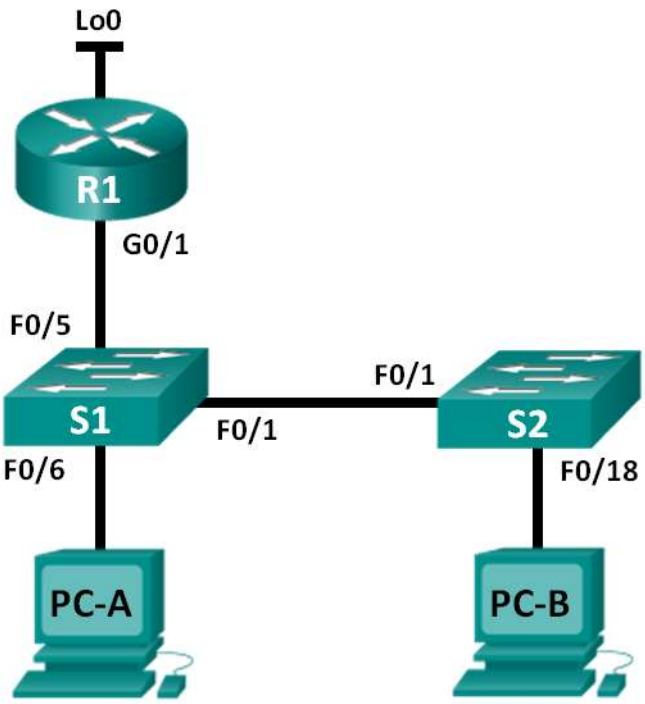
Lab – Configuring Basic DHCPv4 on a Switch (Instructor Version)

Instructor Note: Red font color or Gray highlights indicate text that appears in the instructor copy only.

Topology



Addressing Table

Device	Interface	IP Address	Subnet Mask
R1	G0/1	192.168.1.10	255.255.255.0
	Lo0	209.165.200.225	255.255.255.224
S1	VLAN 1	192.168.1.1	255.255.255.0
	VLAN 2	192.168.2.1	255.255.255.0

Objectives

Part 1: Build the Network and Configure Basic Device Settings

Part 2: Change the SDM Preference

- Set the SDM preference to lanbase-routing on S1.

Part 3: Configure DHCPv4

- Configure DHCPv4 for VLAN 1.
- Verify DHCPv4 and connectivity.

Part 4: Configure DHCP for Multiple VLANs

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- Assign ports to VLAN 2.
- Configure DHCPv4 for VLAN 2.
- Verify DHCPv4 and connectivity.

Part 5: Enable IP Routing

- Enable IP routing on the switch.
- Create static routes.

Background / Scenario

A Cisco 2960 switch can function as a DHCPv4 server. The Cisco DHCPv4 server assigns and manages IPv4 addresses from identified address pools that are associated with specific VLANs and switch virtual interfaces (SVIs). The Cisco 2960 switch can also function as a Layer 3 device and route between VLANs and a limited number of static routes. In this lab, you will configure DHCPv4 for both single and multiple VLANs on a Cisco 2960 switch, enable routing on the switch to allow for communication between VLANs, and add static routes to allow for communication between all hosts.

Note: This lab provides minimal assistance with the actual commands necessary to configure DHCP. However, the required commands are provided in Appendix A. Test your knowledge by trying to configure the devices without referring to the appendix.

Note: The routers used with CCNA hands-on labs are Cisco 1941 Integrated Services Routers (ISRs) with Cisco IOS Release 15.2(4)M3 (universalk9 image). The switches used are Cisco Catalyst 2960s with Cisco IOS Release 15.0(2) (lanbasek9 image). Other routers, switches and Cisco IOS versions can be used. Depending on the model and Cisco IOS version, the commands available and output produced might vary from what is shown in the labs. Refer to the Router Interface Summary Table at the end of this lab for the correct interface identifiers.

Note: Make sure that the router and switches have been erased and have no startup configurations. If you are unsure, contact your instructor.

Instructor Note: Refer to the Instructor Lab Manual for the procedures to initialize and reload devices.

Required Resources

- 1 Router (Cisco 1941 with Cisco IOS Release 15.2(4)M3 universal image or comparable)
- 2 Switches (Cisco 2960 with Cisco IOS Release 15.0(2) lanbasek9 image or comparable)
- 2 PCs (Windows 7, Vista, or XP with terminal emulation program, such as Tera Term)
- Console cables to configure the Cisco IOS devices via the console ports
- Ethernet cables as shown in the topology

Part 1: Build the Network and Configure Basic Device Settings

Step 1: Cable the network as shown in the topology.

Step 2: Initialize and reload the router and switches.

Step 3: Configure basic setting on devices.

a. Assign device names as shown in the topology.

b. Disable DNS lookup.

c. Assign **class** as the enable password and assign **cisco** as the console and vty passwords.

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d. Configure the IP addresses on R1 G0/1 and Lo0 interfaces, according to the Addressing Table.

e. Configure the IP addresses on S1 VLAN 1 and VLAN 2 interfaces, according to the Addressing Table.

f. Save the running configuration to the startup configuration file.

Part 2: Change the SDM Preference

The Cisco Switch Database Manager (SDM) provides multiple templates for the Cisco 2960 switch. The templates can be enabled to support specific roles depending on how the switch is used in the network. In this lab, the sdm lanbase-routing template is enabled to allow the switch to route between VLANs and to support static routing.

Step 1: Display the SDM preference on S1.

On S1, issue the **show sdm prefer** command in privileged EXEC mode. If the template has not been changed from the factory default, it should still be the **default** template. The **default** template does not support static routing. If IPv6 addressing has been enabled, the template will be **dual-ipv4-and-ipv6 default**.

```
S1# show sdm prefer
The current template is "default" template.
The selected template optimizes the resources in
the switch to support this level of features for
0 routed interfaces and 255 VLANs.

  number of unicast mac addresses:                  8K
  number of IPv4 IGMP groups:                       0.25K
  number of IPv4/MAC qos aces:                      0.125k
  number of IPv4/MAC security aces:                 0.375k

S1# show sdm prefer
 The current template is "dual-ipv4-and-ipv6 default" template.
 The selected template optimizes the resources in
 the switch to support this level of features for
 0 routed interfaces and 255 VLANs.

  number of unicast mac addresses:                  4K
  number of IPv4 IGMP groups + multicast routes:    0.25K
  number of IPv4 unicast routes:                    0
  number of IPv6 multicast groups:                  0.375k
  number of directly-connected IPv6 addresses:      0
  number of indirect IPv6 unicast routes:           0
  number of IPv4 policy based routing aces:         0
  number of IPv4/MAC qos aces:                      0.125k
  number of IPv4/MAC security aces:                 0.375k
  number of IPv6 policy based routing aces:         0
  number of IPv6 qos aces:                          0.625k
  number of IPv6 security aces:                     125

S1# show sdm prefer
The current template is "lanbase-routing" template.
 The selected template optimizes the resources in
```

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```
 the switch to support this level of features for
 0 routed interfaces and 255 VLANs.

  number of unicast mac addresses:                  4K
  number of IPv4 IGMP groups + multicast routes:    0.25K
  number of IPv4 unicast routes:                    0.75K
    number of directly-connected IPv4 hosts:        0.75K
    number of indirect IPv4 routes:                 16
  number of IPv6 multicast groups:                  0.375k
  number of directly-connected IPv6 addresses:      0.75K
    number of indirect IPv6 unicast routes:         16
  number of IPv4 policy based routing aces:         0
  number of IPv4/MAC qos aces:                      0.125k
  number of IPv4/MAC security aces:                 0.375k
  number of IPv6 policy based routing aces:         0
  number of IPv6 qos aces:                          0.375k
  number of IPv6 security aces:                     127
```

What is the current template?

_____

Answers will vary. “default” or “dual-ipv4-and-ipv6 default” or “lanbase-routing”.

Step 2: Change the SDM Preference on S1.

a. Set the SDM preference to **lanbase-routing**. (If lanbase-routing is the current template, please proceed to Part 3.) From global configuration mode, issue the **sdm prefer lanbase-routing** command.

```
S1(config)# sdm prefer lanbase-routing
Changes to the running SDM preferences have been stored, but cannot take effect
until the next reload.
Use 'show sdm prefer' to see what SDM preference is currently active.
S1# show sdm prefer
 The current template is "default" template.
 The selected template optimizes the resources in
 the switch to support this level of features for
 0 routed interfaces and 255 VLANs.

  number of unicast mac addresses:                  8K
  number of IPv4 IGMP groups:                       0.25K
  number of IPv4/MAC qos aces:                      0.125k
  number of IPv4/MAC security aces:                 0.375k

 On next reload, template will be "lanbase-routing" template.
```

Which template will be available after reload? _____ lanbase-routing

b. The switch must be reloaded for the template to be enabled.

```
S1# reload

System configuration has been modified. Save? [yes/no]: no
Proceed with reload? [confirm]
```

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Note: The new template will be used after reboot even if the running configuration has not been saved. To save the running configuration, answer **yes** to save the modified system configuration.

Step 3: Verify that lanbase-routing template is loaded.

Issue the **show sdm prefer** command to verify that the lanbase-routing template has been loaded on S1.

```
S1# show sdm prefer
 The current template is "lanbase-routing" template.
 The selected template optimizes the resources in
 the switch to support this level of features for
 0 routed interfaces and 255 VLANs.

  number of unicast mac addresses:                  4K
  number of IPv4 IGMP groups + multicast routes:    0.25K
  number of IPv4 unicast routes:                    0.75K
    number of directly-connected IPv4 hosts:        0.75K
    number of indirect IPv4 routes:                 16
  number of IPv6 multicast groups:                  0.375k
  number of directly-connected IPv6 addresses:      0.75K
    number of indirect IPv6 unicast routes:         16
  number of IPv4 policy based routing aces:         0
  number of IPv4/MAC qos aces:                      0.125k
  number of IPv4/MAC security aces:                 0.375k
  number of IPv6 policy based routing aces:         0
  number of IPv6 qos aces:                          0.375k
  number of IPv6 security aces:                     127
```

Part 3: Configure DHCPv4

In Part 3, you will configure DHCPv4 for VLAN 1, check IP settings on host computers to validate DHCP functionality, and verify connectivity for all devices in VLAN 1.

Step 1: Configure DHCP for VLAN 1.

a. Exclude the first 10 valid host addresses from network 192.168.1.0/24. Write the command you used in the space provided.

_____

```
S1(config)# ip dhcp excluded-address 192.168.1.1 192.168.1.10
```

b. Create a DHCP pool named **DHCP1**. Write the command you used in the space provided.

_____

```
S1(config)# ip dhcp pool DHCP1
```

c. Assign the network 192.168.1.0/24 for available addresses. Write the command you used in the space provided.

_____

```
S1(dhcp-config)# network 192.168.1.0 255.255.255.0
```

d. Assign the default gateway as 192.168.1.1. Write the command you used in the space provided.

_____

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```
S1(dhcp-config)# default-router 192.168.1.1
```

e. Assign the DNS server as 192.168.1.9. Write the command you used in the space provided.

_____

```
S1(dhcp-config)# dns-server 192.168.1.9
```

f. Assign a lease time of 3 days. Write the command you used in the space provided.

_____

```
S1(dhcp-config)# lease 3
```

g. Save the running configuration to the startup configuration file.

Step 2: Verify DHCP and connectivity.

a. On PC-A and PC-B, open the command prompt and issue the **ipconfig** command. If IP information is not present, or if it is incomplete, issue the **ipconfig /release** command, followed by the **ipconfig /renew** command.

For PC-A, list the following:

IP Address: _____ 192.168.1.11

Subnet Mask: _____ 255.255.255.0

Default Gateway: _____ 192.168.1.1

For PC-B, list the following:

IP Address: _____ 192.168.1.12

Subnet Mask: _____ 255.255.255.0

Default Gateway: _____ 192.168.1.1

b. Test connectivity by pinging from PC-A to the default gateway, PC-B, and R1.

From PC-A, is it possible to ping the VLAN 1 default gateway? _____ Yes

From PC-A, is it possible to ping PC-B? _____ Yes

From PC-A, is it possible to ping R1 G0/1? _____ Yes

If the answer is no to any of these questions, troubleshoot the configurations and correct the error.

Part 4: Configure DHCPv4 for Multiple VLANs

In Part 4, you will assign PC-A to a port accessing VLAN 2, configure DHCPv4 for VLAN 2, renew the IP configuration of PC-A to validate DHCPv4, and verify connectivity within the VLAN.

Step 1: Assign a port to VLAN 2.

Place port F0/6 into VLAN 2. Write the command you used in the space provided.

_____

_____

```
S1(config)# interface f0/6
S1(config-if)# switchport access vlan 2
```

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Step 2: Configure DHCPv4 for VLAN 2

a. Exclude the first 10 valid host addresses from network 192.168.2.0. Write the command you used in the space provided.

_____

```
S1(config)# ip dhcp excluded-address 192.168.2.1 192.168.2.10
```

b. Create a DHCP pool named **DHCP2**. Write the command you used in the space provided.

_____

```
S1(config)# ip dhcp pool DHCP2
```

c. Assign the network 192.168.2.0/24 for available addresses. Write the command you used in the space provided.

_____

```
S1(dhcp-config)# network 192.168.2.0 255.255.255.0
```

d. Assign the default gateway as 192.168.2.1. Write the command you used in the space provided.

_____

```
S1(dhcp-config)# default-router 192.168.2.1
```

e. Assign the DNS server as 192.168.2.9. Write the command you used in the space provided.

_____

```
S1(dhcp-config)# dns-server 192.168.2.9
```

f. Assign a lease time of 3 days. Write the command you used in the space provided.

_____

```
S1(dhcp-config)# lease 3
```

g. Save the running configuration to the startup configuration file.

Step 3: Verify DHCPv4 and connectivity.

a. On PC-A, open the command prompt and issue the **ipconfig /release** command, followed by **ipconfig /renew** command.

For PC-A, list the following:

IP Address: _____ 192.168.2.11

Subnet Mask: _____ 255.255.255.0

Default Gateway: _____ 192.168.2.1

b. Test connectivity by pinging from PC-A to the VLAN 2 default gateway and PC-B.

From PC-A, is it possible to ping the default gateway? _____ Yes

From PC-A, is it possible to ping PC-B? _____ No

Were these pings successful? Why?

_____

_____

Because the default gateway is in the same network as PC-A, PC-A can ping the default gateway. PC-B is in a different network; therefore, the ping from PC-A is not successful.

c. Issue the **show ip route** command on S1.

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```
S1# show ip route
Default gateway is not set

Host              Gateway           Last Use    Total Uses  Interface
ICMP redirect cache is empty
```

What was the result of this command?

_____

_____

No default gateway has been set and no routing table is present on the switch.

Part 5: Enable IP Routing

In Part 5, you will enable IP routing on the switch, which will allow for inter-VLAN communication. For all networks to communicate, static routes on S1 and R1 must be implemented.

Step 1: Enable IP routing on S1.

a. From global configuration mode, use the **ip routing** command to enable routing on S1.

```
S1(config)# ip routing
```

b. Verify inter-VLAN connectivity.

From PC-A, is it possible to ping PC-B? _____ Yes

What function is the switch performing?

_____

The switch is routing between VLANs.

c. View the routing table information for S1.

```
S1# show ip route
Codes: L - local, C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, Vlan1
L        192.168.1.1/32 is directly connected, Vlan1
      192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.2.0/24 is directly connected, Vlan2
L        192.168.2.1/32 is directly connected, Vlan2
```

What route information is contained in the output of this command?

_____

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The switch exhibits a routing table showing VLANs as directly connected networks 192.168.1.0/24 and 192.168.2.0/24.

d. View the routing table information for R1.

```
R1# show ip route
Codes: L - local, C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, GigabitEthernet0/1
L        192.168.1.10/32 is directly connected, GigabitEthernet0/1
      209.165.200.0/27 is variably subnetted, 2 subnets, 2 masks
C        209.165.200.0/27 is directly connected, Loopback0
L        209.165.200.225/32 is directly connected, Loopback0
```

What route information is contained in the output of this command?

The router output shows directly connected networks of 192.168.1.0 and to 209.165.200.224 but has no entry for the 192.168.2.0 network.

e. From PC-A, is it possible to ping R1? _____ No

From PC-A, is it possible to ping Lo0? _____ No

Consider the routing table of the two devices, what must be added to communicate between all networks?

In order for communication to occur between all networks, routes must be added to the routing tables.

Step 2: Assign static routes.

Enabling IP routing allows the switch to route between VLANs assigned on the switch. For all VLANs to communicate with the router, static routes must be added to the routing table of both the switch and the router.

a. On S1, create a default static route to R1. Write the command you used in the space provided.

```
S1(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.10
```

b. On R1, create a static route to VLAN 2. Write the command you used in the space provided.

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```
R1(config)# ip route 192.168.2.0 255.255.255.0 g0/1
```

c. View the routing table information for S1.

```
S1# show ip route
Codes: L - local, C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is 192.168.1.10 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 192.168.1.10
      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, Vlan1
L        192.168.1.1/32 is directly connected, Vlan1
      192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.2.0/24 is directly connected, Vlan2
L        192.168.2.1/32 is directly connected, Vlan2
```

How is the default static route represented?

Gateway of last resort is 192.168.1.10 to network 0.0.0.0

d. View the routing table information for R1.

```
R1# show ip route
Codes: L - local, C - connected, S - static, 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
       i - IS-IS, su - IS-IS summary, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.1.0/24 is directly connected, GigabitEthernet0/1
L        192.168.1.10/32 is directly connected, GigabitEthernet0/1
S     192.168.2.0/24 is directly connected, GigabitEthernet0/1
      209.165.200.0/24 is variably subnetted, 2 subnets, 2 masks
C        209.165.200.0/27 is directly connected, Loopback0
L        209.165.200.225/32 is directly connected, Loopback0
```

How is the static route represented?

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S 192.168.2.0/24 is directly connected, GigabitEthernet0/1

e. From PC-A, is it possible to ping R1? _____ Yes

From PC-A, is it possible to ping Lo0? _____ Yes

Reflection

1. In configuring DHCPv4, why would you exclude the static addresses prior to setting up the DHCPv4 pool?

_____

_____

If the static addresses were excluded after the DHCPv4 pool was created, a window of time exists where the excluded addresses could be given out dynamically to hosts.

2. If multiple DHCPv4 pools are present, how does the switch assign the IP information to hosts?

_____

The switch will assign IP configurations based on the VLAN assignment of the port to which the host is connected.

3. Besides switching, what functions can the Cisco 2960 switch perform?

_____

The switch can function as a DHCP server and can perform static and inter-VLAN routing.

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Router Interface Summary Table

Router Interface Summary				
Router Model	**Ethernet Interface #1**	**Ethernet Interface #2**	**Serial Interface #1**	**Serial Interface #2**
1800	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
1900	Gigabit Ethernet 0/0 (G0/0)	Gigabit Ethernet 0/1 (G0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
2801	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/1/0 (S0/1/0)	Serial 0/1/1 (S0/1/1)
2811	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
2900	Gigabit Ethernet 0/0 (G0/0)	Gigabit Ethernet 0/1 (G0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)

Note: To find out how the router is configured, look at the interfaces to identify the type of router and how many interfaces the router has. There is no way to effectively list all the combinations of configurations for each router class. This table includes identifiers for the possible combinations of Ethernet and Serial interfaces in the device. The table does not include any other type of interface, even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in Cisco IOS commands to represent the interface.

Appendix A: Configuration Commands

Configure DHCPv4

```
S1(config)# ip dhcp excluded-address 192.168.1.1 192.168.1.10
S1(config)# ip dhcp pool DHCP1
S1(dhcp-config)# network 192.168.1.0 255.255.255.0
S1(dhcp-config)# default-router 192.168.1.1
S1(dhcp-config)# dns-server 192.168.1.9
S1(dhcp-config)# lease 3
```

Configure DHCPv4 for Multiple VLANs

```
S1(config)# interface f0/6
S1(config-if)# switchport access vlan 2
S1(config)# ip dhcp excluded-address 192.168.2.1 192.168.2.10
S1(config)# ip dhcp pool DHCP2
S1(dhcp-config)# network 192.168.2.0 255.255.255.0
S1(dhcp-config)# default-router 192.168.2.1
S1(dhcp-config)# dns-server 192.168.2.9
S1(dhcp-config)# lease 3
```

Enable IP Routing

```
S1(config)# ip routing
S1(config)# ip route 0.0.0.0 0.0.0.0 192.168.1.10
R1(config)# ip route 192.168.2.0 255.255.255.0 g0/1
```

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Device Configs

Router R1

```
R1#show run
Building configuration...

Current configuration : 1489 bytes
!
version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R1
!
boot-start-marker
boot-end-marker
!
!
enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2
!
no aaa new-model
memory-size iomem 15
!
!
!
!
!
!
!
no ip domain lookup
ip cef
no ipv6 cef
multilink bundle-name authenticated
!
!
interface Loopback0
 ip address 209.165.200.225 255.255.255.0
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
```

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```
interface GigabitEthernet0/1
 ip address 192.168.1.10 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0/0
 no ip address
 shutdown
 clock rate 2000000
!
interface Serial0/0/1
 no ip address
 shutdown
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
ip route 192.168.2.0 255.255.255.0 GigabitEthernet0/1
!
!
!
!
control-plane
!
!
!
line con 0
 password cisco
 login
line aux 0
line 2
 no activation-character
 no exec
 transport preferred none
 transport input all
 transport output pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 password cisco
 login
 transport input all
!
scheduler allocate 20000 1000
!
end
```

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Switch S1

```
S1#show run
Building configuration...

Current configuration : 3636 bytes
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname S1
!
boot-start-marker
boot-end-marker
!
enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2
!
no aaa new-model
system mtu routing 1500
ip routing
ip dhcp excluded-address 192.168.1.1 192.168.1.10
ip dhcp excluded-address 192.168.2.1 192.168.2.10
!
ip dhcp pool DHCP1
 network 192.168.1.0 255.255.255.0
 default-router 192.168.1.1
 dns-server 192.168.1.9
 lease 3
!
ip dhcp pool DHCP2
 network 192.168.2.0 255.255.255.0
 default-router 192.168.2.1
 dns-server 192.168.2.9
 lease 3
!
!
no ip domain-lookup
!
!
crypto pki trustpoint TP-self-signed-2531409152
 enrollment selfsigned
 subject-name cn=IOS-Self-Signed-Certificate-2531409152
 revocation-check none
 rsakeypair TP-self-signed-2531409152
!
!
crypto pki certificate chain TP-self-signed-2531409152
```

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```
 certificate self-signed 01
  3082022B 30820194 A0030201 02020101 300D0609 2A864886 F70D0101 05050030
  31312F30 2D060355 04031326 494F532D 53656C66 2D536967 6E65642D 43657274
  69666963 6174652D 32353331 34303931 3532301E 170D3933 30333031 30303030
  35365A17 0D323030 31303130 30303030 305A3031 312F302D 06035504 03132649
  4F532D53 656C662D 5369676E 65642D43 65727469 66696361 74652D32 35333134
  30393135 3230819F 300D0609 2A864886 F70D0101 01050003 818D0030 81890281
  8100CA1B 27DE634E CF9FE284 C86127EF 41E7A52F 0A82FA2B 7C5448B7 184EA1AB
  C22510E1 38A742BC D9F416FD 93A52DC6 BA77A928 B317DA75 1B3E2C66 C2D9061B
  806132D9 E3189012 467C7A2C DCAC3EF4 4C419338 790AA98B C7A81D73 8621536C
  4A90659E 267BA2E3 36F801A4 F06BEC65 386A40DA 255D9790 F9412706 9E73A660
  45230203 010001A3 53305130 0F060355 1D130101 FF040530 030101FF 301F0603
  551D2304 18301680 14A7356A D364AE65 E1E9D42F 9B059B27 B69BB9C6 FD301D06
  03551D0E 04160414 A7356AD3 64AE65E1 E9D42F9B 059B27B6 9BB9C6FD 300D0609
  2A864886 F70D0101 05050003 8181002A D78919E7 0D75567C EF60036C 6C4B051A
  2ABC5B9C DA1C1E48 AF33C405 5C64E074 B954C5B5 D825BE61 7340C695 03049797
  D869E516 3936D0EC C871F140 66A1DEB2 BA57AB0D D2AB2706 17674B3A 7423C276
  B96CFB88 DE98A86E 7B539B68 7DEE53BB ED16BFA0 A89A5CA4 79F15F49 59DDF6E5
  E716514A 5CFC7522 8E76778E 029E8F
       quit
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
vlan internal allocation policy ascending
!
!
!
!
!
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
 switchport access vlan 2
!
interface FastEthernet0/7
```

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```
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 ip address 192.168.1.1 255.255.255.0
!
interface Vlan2
 ip address 192.168.2.1 255.255.255.0
!
ip http server
ip http secure-server
ip route 0.0.0.0 0.0.0.0 192.168.1.10
!
```

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```
!
!
line con 0
 password cisco
 login
line vty 0 4
 password cisco
 login
line vty 5 15
 password cisco
 login
!
end
```

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