Lab - Implement DHCPv4 (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 | Default Gateway |
| --- | --- | --- | --- | --- |
| R1 | G0/0/0 | 10.0.0.1 | 255.255.255.252 | N/A |
| R1 | G0/0/1 | N/A | N/A | N/A |
| R1 | G0/0/1.100 | 192.168.1.1 | 255.255.255.192 | N/A |
| R1 | G0/0/1.200 | 192.168.1.65 | 255.255.255.224 | N/A |
| R1 | G0/0/1.1000 | N/A | N/A | N/A |
| R2 | G0/0/0 | 10.0.0.2 | 255.255.255.252 | N/A |
| R2 | G0/0/1 | 192.168.1.97 | 255.255.255.240 | N/A |
| S1 | VLAN 200 | 192.168.1.66 | 255.255.255.224 | 192.168.1.65 |
| S2 | VLAN 1 | 192.168.1.98 | 255.255.255.240 | 192.168.1.97 |
| PC-A | NIC | DHCP | DHCP | DHCP |
| PC-B | NIC | DHCP | DHCP | DHCP |

# VLAN Table

| VLAN | Name | Interface Assigned |
| --- | --- | --- |
| 1 | N/A | S2: F0/18 |
| 100 | Clients | S1: F0/6 |
| 200 | Management | S1: VLAN 200 |
| 999 | Parking\_Lot | S1: F0/1-4, F0/7-24, G0/1-2 |
| 1000 | Native | N/A |

# Objectives

Part 1: Build the Network and Configure Basic Device Settings

Part 2: Configure and verify two DHCPv4 Servers on R1

Part 3: Configure and verify a DHCP Relay on R2

# Background / Scenario

The Dynamic Host Configuration Protocol (DHCP) is a network protocol that lets network administrators manage and automate the assignment of IP addresses. Without DHCP for IPv4, the administrator must manually assign and configure IP addresses, preferred DNS servers, and default gateways. As the network grows in size, this becomes an administrative problem when devices are moved from one internal network to another.

In this scenario, the company has grown in size, and the network administrators can no longer assign IP addresses to devices manually. Your job is to configure the R1 router to assign IPv4 addresses on two different subnets.

**Note**: The routers used with CCNA hands-on labs are Cisco 4221 with Cisco IOS XE Release 16.9.4 (universalk9 image). The switches used in the labs are Cisco Catalyst 2960s with Cisco IOS Release 15.2(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 the output produced might vary from what is shown in the labs. Refer to the Router Interface Summary Table at the end of the lab for the correct interface identifiers.

**Note**: Ensure that the routers 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

* 2 Routers (Cisco 4221 with Cisco IOS XE Release 16.9.4 universal image or comparable)
* 2 Switches (Cisco 2960 with Cisco IOS Release 15.2(2) lanbasek9 image or comparable)
* 2 PCs (Windows with a 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

# Instructions

## Build the Network and Configure Basic Device Settings

In Part 1, you will set up the network topology and configure basic settings on the PC hosts and switches.

### Establish an addressing scheme

Subnet the network 192.168.1.0/24 to meet the following requirements:

* + - 1. One subnet, “Subnet A”, supporting 58 hosts (the client VLAN at R1).

Subnet A:

Type your answers here.

192.168.1.0/26 (.1 -.63)

Record the first IP address in the Addressing Table for R1 G0/0/1.100.

* + - 1. One subnet, “Subnet B”, supporting 28 hosts (the management VLAN at R1).

Subnet B:

Type your answers here.

192.168.1.64/27 (.65-.95)

Record the first IP address in the Addressing Table for R1 G0/0/1.200. Record the second IP address in the Address Table for S1 VLAN 200 and enter the associated default gateway.

* + - 1. One subnet, “Subnet C”, supporting 12 hosts (the client network at R2).

Subnet C:

Type your answers here.

192.168.1.96/28 (.97-.111)

Record the first IP address in the Addressing Table for R2 G0/0/1. Record the second IP address in the Address Table for S2 VLAN 1 and enter the associated default gateway.

### Cable the network as shown in the topology.

Attach the devices as shown in the topology diagram, and cable as necessary.

### Configure basic settings for each router.

* + - 1. Assign a device name to the router.

Open configuration window

router(config)# **hostname R1**

* + - 1. Disable DNS lookup to prevent the router from attempting to translate incorrectly entered commands as though they were host names.

R1(config)# **no ip domain lookup**

* + - 1. Assign **class** as the privileged EXEC encrypted password.

R1(config)# **enable secret class**

* + - 1. Assign **cisco** as the console password and enable login.

R1(config)# **line console 0**

R1(config-line)# **password cisco**

R1(config-line)# **login**

* + - 1. Assign **cisco** as the VTY password and enable login.

R1(config)# **line vty 0 4**

R1(config-line)# **password cisco**

R1(config-line)# **login**

* + - 1. Encrypt the plaintext passwords.

R1(config)# **service password-encryption**

* + - 1. Create a banner that warns anyone accessing the device that unauthorized access is prohibited.

R1(config)# **banner motd $ Authorized Users Only! $**

* + - 1. Save the running configuration to the startup configuration file.

R1# **copy running-config startup-config**

* + - 1. Set the clock on the router to today’s time and date.

R1# **clock set 15:30:00 27 Aug 2019**

**Note**: Use the question mark (**?**) to help with the correct sequence of parameters needed to execute this command.

### Configure Inter-VLAN Routing on R1

* + - 1. Activate interface G0/0/1 on the router.

R1(config)# **interface g0/0/1**

R1(config-if)# **no shutdown**

R1(config-if)# **exit**

* + - 1. Configure sub-interfaces for each VLAN as required by the IP addressing table. All sub-interfaces use 802.1Q encapsulation and are assigned the first usable address from the IP address pool you have calculated. Ensure the sub-interface for the native VLAN does not have an IP address assigned. Include a description for each sub-interface.

R1(config)# **interface g0/0/1.100**

R1(config-subif)# **description Client Network**

R1(config-subif)# **encapsulation dot1q 100**

R1(config-subif)# **ip address 192.168.1.1 255.255.255.192**

R1(config-subif)# **interface g0/0/1.200**

R1(config-subif)# **encapsulation dot1q 200**

R1(config-subif)# **description Management Network**

R1(config-subif)# **ip address 192.168.1.65 255.255.255.224**

R1(config-subif)# **interface g0/0/1.1000**

R1(config-subif)# **encapsulation dot1q 1000 native**

R1(config-subif)# **description Native VLAN**

* + - 1. Verify the sub-interfaces are operational.

R1# **show ip interface brief**

Interface IP-Address OK? Method Status Protocol

GigabitEthernet0/0/0 unassigned YES unset administratively down down

GigabitEthernet0/0/1 unassigned YES unset up up

Gi0/0/1.100 192.168.1.1 YES manual up up

Gi0/0/1.200 192.168.1.65 YES manual up up

Gi0/0/1.1000 unassigned YES unset up up

### Configure G0/0/1 on R2, then G0/0/0 and static routing for both routers

* + - 1. Configure G0/0/1 on R2 with the first IP address of Subnet C you calculated earlier.

R2(config)# **interface g0/0/1**

R2(config-if)# **ip address 192.168.1.97 255.255.255.240**

R2(config-if)# **no shutdown**

R2(config-if)# **exit**

* + - 1. Configure interface G0/0/0 for each router based on the IP Addressing table above.

R1(config)# **interface g0/0/0**

R1(config-if)# **ip address 10.0.0.1 255.255.255.252**

R1(config-if)# **no shutdown**

R2(config)# **interface g0/0/0**

R2(config-if)# **ip address 10.0.0.2 255.255.255.252**

R2(config-if)# **no shutdown**

* + - 1. Configure a default route on each router pointed to the IP address of G0/0/0 on the other router.

R1(config)# **ip route 0.0.0.0 0.0.0.0 10.0.0.2**

R2(config)# **ip route 0.0.0.0 0.0.0.0 10.0.0.1**

* + - 1. Verify static routing is working by pinging R2’s G0/0/1 address from R1.

R1# **ping 192.168.1.97**

* + - 1. Save the running configuration to the startup configuration file.

R1# **copy running-config startup-config**

Close configuration window

### Configure basic settings for each switch.

* + - 1. Assign a device name to the switch.

Open configuration window

switch(config)# **hostname S1**

* + - 1. Disable DNS lookup to prevent the router from attempting to translate incorrectly entered commands as though they were host names.

S1(config)# **no ip domain-lookup**

* + - 1. Assign **class** as the privileged EXEC encrypted password.

S1(config)# **enable secret class**

* + - 1. Assign **cisco** as the console password and enable login.

S1(config)# **line console 0**

S1(config-line)# **password cisco**

S1(config-line)# **login**

* + - 1. Assign **cisco** as the VTY password and enable login.

S1(config)# **line vty 0 4**

S1(config-line)# **password cisco**

S1(config-line)# **login**

* + - 1. Encrypt the plaintext passwords.

S1(config)# **service password-encryption**

* + - 1. Create a banner that warns anyone accessing the device that unauthorized access is prohibited.

S1(config)# **banner motd $ Authorized Users Only! $**

* + - 1. Save the running configuration to the startup configuration file.

S1(config)# **exit**

S1# **copy running-config startup-config**

* + - 1. Set the clock on the switch to today’s time and date.

S1# **clock set 15:30:00 27 Aug 2019**

**Note**: Use the question mark (**?**) to help with the correct sequence of parameters needed to execute this command.

* + - 1. Copy the running configuration to the startup configuration.

### Create VLANs on S1.

**Note**: S2 is only configured with basic settings.

* + - 1. Create and name the required VLANs on switch 1 from the table above.

S1(config)# **vlan 100**

S1(config-vlan)# **name Clients**

S1(config-vlan)# **vlan 200**

S1(config-vlan)# **name Management**

S1(config-vlan)# **vlan 999**

S1(config-vlan)# **name Parking\_Lot**

S1(config-vlan)# **vlan 1000**

S1(config-vlan)# **name Native**

S1(config-vlan)# **exit**

* + - 1. Configure and activate the management interface on S1 (VLAN 200) using the second IP address from the subnet calculated earlier. Additionally, set the default gateway on S1.

S1(config)# **interface vlan 200**

S1(config-if)# **ip address 192.168.1.66 255.255.255.224**

S1(config-if)# **no shutdown**

S1(config-if)# **exit**

S1(config)# **ip default-gateway 192.168.1.65**

* + - 1. Configure and activate the management interface on S2 (VLAN 1) using the second IP address from the subnet calculated earlier. Additionally, set the default gateway on S2

S2(config)# **interface vlan 1**

S2(config-if)# **ip address 192.168.1.98 255.255.255.240**

S2(config-if)# **no shutdown**

S2(config-if)# **exit**

S2(config)# **ip default-gateway 192.168.1.97**

* + - 1. Assign all unused ports on S1 to the Parking\_Lot VLAN, configure them for static access mode, and administratively deactivate them. On S2, administratively deactivate all the unused ports.

**Note**: The interface range command is helpful to accomplish this task with as few commands as necessary.

S1(config)# **interface range f0/1 - 4, f0/7 - 24, g0/1 - 2**

S1(config-if-range)# **switchport mode access**

S1(config-if-range)# **switchport access vlan 999**

S1(config-if-range)# **shutdown**

S1(config-if-range)# **exit**

Close configuration window

Open configuration window

S2(config)# **interface range f0/1 - 4, f0/6 - 17, f0/19 - 24, g0/1 - 2**

S2(config-if-range)# **switchport mode access**

S2(config-if-range)# **shutdown**

S2(config-if-range)# **exit**

Close configuration window

### Assign VLANs to the correct switch interfaces.

* + - 1. Assign used ports to the appropriate VLAN (specified in the VLAN table above) and configure them for static access mode.

Open configuration window

S1(config)# **interface f0/6**

S1(config-if)# **switchport mode access**

S1(config-if)# **switchport access vlan 100**

* + - 1. Verify that the VLANs are assigned to the correct interfaces.

S1# **show vlan brief**

VLAN Name Status Ports

---- -------------------------------- --------- -------------------------------

1 default active Fa0/5

100 Clients active Fa0/6

200 Management active

999 Parking\_Lot active Fa0/1, Fa0/2, Fa0/3, Fa0/4

Fa0/7, Fa0/8, Fa0/9, Fa0/10

Fa0/11, Fa0/12, Fa0/13, Fa0/14

Fa0/15, Fa0/16, Fa0/17, Fa0/18

Fa0/19, Fa0/20, Fa0/21, Fa0/22

Fa0/23, Fa0/24, Gi0/1, Gi0/2

1000 Native active

1002 fddi-default act/unsup

1003 token-ring-default act/unsup

1004 fddinet-default act/unsup

1005 trnet-default act/unsup

#### Question:

Why is interface F0/5 listed under VLAN 1?

Type your answers here.

Port 5 is in the default VLAN and has not been configured as an 802.1Q trunk.

### Manually configure S1’s interface F0/5 as an 802.1Q trunk.

* + - 1. Change the switchport mode on the interface to force trunking.

S1(config)# **interface f0/5**

S1(config-if)# **switchport mode trunk**

* + - 1. As a part of the trunk configuration, set the native VLAN to 1000.

S1(config-if-range)# **switchport trunk native vlan 1000**

* + - 1. As another part of trunk configuration, specify that VLANs 100, 200, and 1000 are allowed to cross the trunk.

S1(config-if-range)# **switchport trunk allowed vlan 100,200,1000**

* + - 1. Save the running configuration to the startup configuration file.

S1(config)# **exit**

S1# **copy running-config startup-config**

* + - 1. Verify trunking status.

S1# **show interfaces trunk**

Port Mode Encapsulation Status Native vlan

Fa0/5 on 802.1q trunking 1000

Port Vlans allowed on trunk

Fa0/5 100,200,1000

Port Vlans allowed and active in management domain

Fa0/5 100,200,1000

Port Vlans in spanning tree forwarding state and not pruned

Fa0/5 100,200,1000

#### Question:

At this point, what IP address would the PC’s have if they were connected to the network using DHCP?

Type your answers here.

They would self-configure with an Automatic Private IP Address (APIPA) address in the 169.254.x.x range.

Close configuration window

## Configure and verify two DHCPv4 Servers on R1

In Part 2, you will configure and verify a DHCPv4 Server on R1. The DHCPv4 server will service two subnets, Subnet A and Subnet C.

### Configure R1 with DHCPv4 pools for the two supported subnets. Only the DHCP Pool for subnet A is given below

* + - 1. Exclude the first five useable addresses from each address pool.

Open configuration window

R1(config)# **ip dhcp excluded-address 192.168.1.1 192.168.1.5**

* + - 1. Create the DHCP pool (Use a unique name for each pool).

R1(config)# **ip dhcp pool R1\_Client\_LAN**

* + - 1. Specify the network that this DHCP server is supporting.

R1(dhcp-config)# **network 192.168.1.0 255.255.255.192**

* + - 1. Configure the domain name as ccna-lab.com

R1(dhcp-config)# **domain-name ccna-lab.com**

* + - 1. Configure the appropriate default gateway for each DHCP pool.

R1(dhcp-config)# **default-router 192.168.1.1**

* + - 1. Configure the lease time for 2 days 12 hours and 30 minutes.

R1(dhcp-config)# **lease 2 12 30**

* + - 1. Next, configure the second DHCPv4 Pool using the pool name R2\_Client\_LAN and the calculated network, default-router and use the same domain name and lease time from the previous DHCP pool.

R1(config)# **ip dhcp excluded-address 192.168.1.97 192.168.1.101**

R1(config)# **ip dhcp pool R2\_Client\_LAN**

R1(dhcp-config)# **network 192.168.1.96 255.255.255.240**

R1(dhcp-config)# **default-router 192.168.1.97**

R1(dhcp-config)# **domain-name ccna-lab.com**

R1(dhcp-config)# **lease 2 12 30**

### Save your configuration

Save the running configuration to the startup configuration file.

R1# **copy running-config startup-config**

Close configuration window

### Verify the DHCPv4 Server configuration

* + - 1. Issue the command **show ip dhcp pool** to examine the pool details.
      2. Issue the command **show ip dhcp bindings** to examine established DHCP address assignments.
      3. Issue the command **show ip dhcp server** **statistics** to examine DHCP messages.

### Attempt to acquire an IP address from DHCP on PC-A

* + - 1. Open a command prompt on PC-A and issue the command **ipconfig /renew**.
      2. Once the renewal process is complete, issue the command **ipconfig** to view the new IP information.
      3. Test connectivity by pinging R1’s G0/0/1 interface IP address.

## Configure and verify a DHCP Relay on R2

In Part 3, you will configure R2 to relay DHCP requests from the local area network on interface G0/0/1 to the DHCP server (R1).

### Configure R2 as a DHCP relay agent for the LAN on G0/0/1

* + - 1. Configure the **ip helper-address** command on G0/0/1 specifying R1’s G0/0/0 IP address.

Open configuration window

R2(config)# **interface g0/0/1**

R2(config-if)# **ip helper-address 10.0.0.1**

* + - 1. Save your configuration.

R2(config-if)# **exit**

R2# **copy running-configuration startup-configuration**

Close configuration window

### Attempt to acquire an IP address from DHCP on PC-B

* + - 1. Open a command prompt on PC-B and issue the command **ipconfig /renew**.
      2. Once the renewal process is complete, issue the command **ipconfig** to view the new IP information.
      3. Test connectivity by pinging R1’s G0/0/1 interface IP address.
      4. Issue the **show ip dhcp binding** on R1 to verify DHCP bindings.
      5. Issue the **show ip dhcp server statistics** on R1 and R2 to verify DHCP messages.

End of document

# Device Configs - Final

# Switch S1

S1# **show run**

Building configuration...

Current configuration : 3194 bytes

!

version 15.2

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

!

hostname S1

!

boot-start-marker

boot-end-marker

!

enable secret 5 $1$b/Df$nDTHDMqOPLb0hgz.shRjH.

!

no aaa new-model

system mtu routing 1500

!

!

no ip domain-lookup

!

!

spanning-tree mode rapid-pvst

spanning-tree extend system-id

!

vlan internal allocation policy ascending

!

!

interface FastEthernet0/1

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/2

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/3

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/4

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/5

switchport trunk allowed vlan 100,200,1000

switchport trunk native vlan 1000

switchport mode trunk

!

interface FastEthernet0/6

switchport access vlan 100

switchport mode access

!

interface FastEthernet0/7

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/8

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/9

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/10

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/11

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/12

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/13

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/14

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/15

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/16

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/17

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/18

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/19

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/20

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/21

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/22

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/23

switchport access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/24

switchport access vlan 999

switchport mode access

shutdown

!

interface GigabitEthernet0/1

switchport access vlan 999

switchport mode access

shutdown

!

interface GigabitEthernet0/2

switchport access vlan 999

switchport mode access

shutdown

!

interface Vlan1

no ip address

shutdown

!

interface Vlan200

ip address 192.168.1.66 255.255.255.224

ip default-gateway 192.168.1.65

!

ip http server

ip http secure-server

!

banner motd ^C Authorized Users Only! ^C

!

line con 0

password 7 060506324F41

login

line vty 0 4

password 7 060506324F41

login

line vty 5 15

login

!

vlan 100

name Clients

vlan 200

name Management

vlan 999

name Parking\_Lot

vlan 1000

name Native

exit

!

end

# Switch S2

S2# **show run**

Building configuration...

Current configuration : 2323 bytes

!

version 15.2

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

!

hostname S2

!

boot-start-marker

boot-end-marker

!

enable secret 5 $1$86v.$3mG1aMq7hcn2P0ZDNa2o5.

!

no aaa new-model

system mtu routing 1500

!

!

no ip domain-lookup

!

!

spanning-tree mode rapid-pvst

spanning-tree extend system-id

!

vlan internal allocation policy ascending

!

!

interface FastEthernet0/1

switchport mode access

shutdown

!

interface FastEthernet0/2

switchport mode access

shutdown

!

interface FastEthernet0/3

switchport mode access

shutdown

!

interface FastEthernet0/4

switchport mode access

shutdown

!

interface FastEthernet0/5

!

interface FastEthernet0/6

switchport mode access

shutdown

!

interface FastEthernet0/7

switchport mode access

shutdown

!

interface FastEthernet0/8

switchport mode access

shutdown

!

interface FastEthernet0/9

switchport mode access

shutdown

!

interface FastEthernet0/10

switchport mode access

shutdown

!

interface FastEthernet0/11

switchport mode access

shutdown

!

interface FastEthernet0/12

switchport mode access

shutdown

!

interface FastEthernet0/13

switchport mode access

shutdown

!

interface FastEthernet0/14

switchport mode access

shutdown

!

interface FastEthernet0/15

switchport mode access

shutdown

!

interface FastEthernet0/16

switchport mode access

shutdown

!

interface FastEthernet0/17

switchport mode access

shutdown

!

interface FastEthernet0/18

!

interface FastEthernet0/19

switchport mode access

shutdown

!

interface FastEthernet0/20

switchport mode access

shutdown

!

interface FastEthernet0/21

switchport mode access

shutdown

!

interface FastEthernet0/22

switchport mode access

shutdown

!

interface FastEthernet0/23

switchport mode access

shutdown

!

interface FastEthernet0/24

switchport mode access

shutdown

!

interface GigabitEthernet0/1

switchport mode access

shutdown

!

interface GigabitEthernet0/2

switchport mode access

shutdown

!

interface Vlan1

ip address 192.168.1.98 255.255.255.240

!

ip default-gateway 192.168.1.97

ip http server

ip http secure-server

!

banner motd ^C Authorized Users Only! ^C

!

line con 0

password 7 045802150C2E

login

line vty 0 4

password 7 045802150C2E

login

line vty 5 15

login

!

end

# Router R1

R1# **show run**

Building configuration...

Current configuration : 2225 bytes

!

version 16.9

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

no platform punt-keepalive disable-kernel-core

!

hostname R1

!

boot-start-marker

boot-end-marker

!

!

vrf definition Mgmt-intf

!

address-family ipv4

exit-address-family

!

address-family ipv6

exit-address-family

!

enable secret 5 $1$lzpq$ribRztM6WUv/dsnQ7x24a/

!

no aaa new-model

!

!

no ip domain lookup

ip dhcp excluded-address 192.168.1.1 192.168.1.5

ip dhcp excluded-address 192.168.1.97 192.168.1.101

!

ip dhcp pool R1\_Client\_LAN

network 192.168.1.0 255.255.255.192

domain-name ccna-lab.com

default-router 192.168.1.1

lease 2 12 30

!

ip dhcp pool R2\_Client\_LAN

network 192.168.1.96 255.255.255.240

default-router 192.168.1.97

domain-name ccna-lab.com

lease 2 12 30

!

!

subscriber templating

!

multilink bundle-name authenticated

!

spanning-tree extend system-id

!

!

redundancy

mode none

!

!

interface GigabitEthernet0/0/0

ip address 10.0.0.1 255.255.255.252

negotiation auto

!

interface GigabitEthernet0/0/1

no ip address

negotiation auto

!

interface GigabitEthernet0/0/1.100

description Connected to Client Network

encapsulation dot1Q 100

ip address 192.168.1.1 255.255.255.192

!

interface GigabitEthernet0/0/1.200

description Connected to Management Network

encapsulation dot1Q 200

ip address 192.168.1.65 255.255.255.224

!

interface GigabitEthernet0/0/1.1000

description Connected to Native VLAN

encapsulation dot1Q 1000 native

!

interface Serial0/1/0

!

interface Serial0/1/1

!

interface GigabitEthernet0

vrf forwarding Mgmt-intf

no ip address

shutdown

negotiation auto

!

ip forward-protocol nd

no ip http server

no ip http secure-server

ip tftp source-interface GigabitEthernet0

ip route 0.0.0.0 0.0.0.0 10.0.0.2

!

!

control-plane

!

banner motd ^C Authorized Users Only! ^C

!

line con 0

password 7 01100F175804

login

stopbits 1

line aux 0

stopbits 1

line vty 0 4

password 7 02050D480809

login

!

end

# Router R2

R2# **show run**

Building configuration...

Current configuration : 1501 bytes

!

version 16.9

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

no platform punt-keepalive disable-kernel-core

!

hostname R2

!

boot-start-marker

boot-end-marker

!

!

vrf definition Mgmt-intf

!

address-family ipv4

exit-address-family

!

address-family ipv6

exit-address-family

!

enable secret 5 $1$swCy$LDg9k0nMAN5Cxn9EcPNSx1

!

no aaa new-model

!

no ip domain lookup

!

!

subscriber templating

!

multilink bundle-name authenticated

!

spanning-tree extend system-id

!

!

redundancy

mode none

!

!

interface GigabitEthernet0/0/0

ip address 10.0.0.2 255.255.255.252

negotiation auto

!

interface GigabitEthernet0/0/1

ip address 192.168.1.97 255.255.255.240

ip helper-address 10.0.0.1

negotiation auto

!

interface Serial0/1/0

!

interface Serial0/1/1

!

interface GigabitEthernet0

vrf forwarding Mgmt-intf

no ip address

shutdown

negotiation auto

!

ip forward-protocol nd

no ip http server

no ip http secure-server

ip tftp source-interface GigabitEthernet0

ip route 0.0.0.0 0.0.0.0 10.0.0.1

!

!

control-plane

!

banner motd ^C Authorized Users Only! ^C

!

line con 0

password 7 05080F1C2243

login

stopbits 1

line aux 0

stopbits 1

line vty 0 4

password 7 104D000A0618

login

!

end