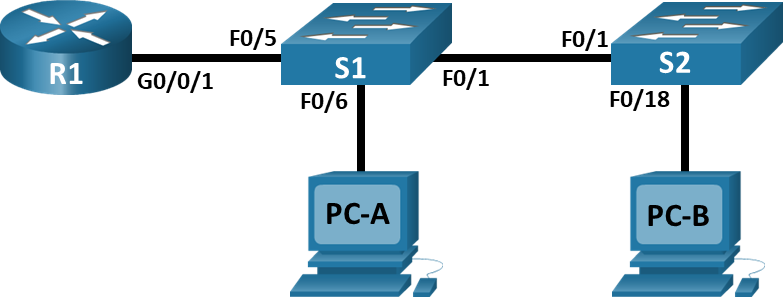
Lab - Configure Router-on-a-Stick Inter-VLAN Routing **(Instructor Version)**

**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 | G0/0/1.3 | 192.168.3.1 | 255.255.255.0 | N/A |
| *R1* | G0/0/1.4 | 192.168.4.1 | 255.255.255.0 | *N/A* |
| *R1* | G0/0/1.8 | N/A | N/A | *N/A* |
| S1 | VLAN 3 | 192.168.3.11 | 255.255.255.0 | 192.168.3.1 |
| S2 | VLAN 3 | 192.168.3.12 | 255.255.255.0 | 192.168.3.1 |
| PC-A | NIC | 192.168.3.3 | 255.255.255.0 | 192.168.3.1 |
| PC-B | NIC | 192.168.4.3 | 255.255.255.0 | 192.168.4.1 |

# VLAN Table

| **VLAN** | **Name** | **Interface Assigned** |
| --- | --- | --- |
| 3 | Management | S1: VLAN 3  S2: VLAN 3  S1: F0/6 |
| 4 | Operations | S2: F0/18 |
| 7 | ParkingLot | S1: F0/2-4, F0/7-24, G0/1-2  S2: F0/2-17, F0/19-24, G0/1-2 |
| 8 | Native | N/A |

# Objectives

**Part 1: Build the Network and Configure Basic Device Settings**

**Part 2: Create VLANs and Assign Switch Ports**

**Part 3: Configure an 802.1Q Trunk between the Switches**

**Part 4: Configure Inter-VLAN Routing on the Router**

**Part 5: Verify Inter-VLAN Routing is working**

# Background / Scenario

Modern switches use virtual local-area networks (VLANs) to provide segmentation services traditionally provided by routers in LAN configurations. VLANs address scalability, security, and network management. In general, VLANs make it easier to design a network to support the goals of an organization. Communication between VLANs requires a device operating at Layer 3 of the OSI model. Routers in VLAN topologies provide additional security and traffic flow management.

VLAN trunks are used to span VLANs across multiple devices. Trunks allow the traffic from multiple VLANS to travel over a single link, while keeping the VLAN identification and segmentation intact. A particular kind of inter-VLAN routing, called “Router-On-A-Stick”, uses a trunk from the router to the switch to enable all VLANs to pass to the router.

In this lab, you will create VLANs on both switches in the topology, assign VLANs to switch access ports, verify that VLANs are working as expected, create VLAN trunks between the two switches and between S1 and R1, and configure Inter-VLAN routing on R1 to allow hosts in different VLANs to communicate, regardless of which subnet the host resides.

**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

* 1 Router (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.

### 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 the router.

*Open configuration window*

* + - 1. Console into the router and enable privileged EXEC mode.

router> **enable**

* + - 1. Enter configuration mode.

router# **config terminal**

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

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(config)# **exit**

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

* + - 1. Set the clock on the router.

R1# **clock set 15:30:00 19 September 2019**

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

*Close configuration window*

### Configure basic settings for each switch.

*Open configuration window*

* + - 1. Console into the switch and enable privileged EXEC mode.

switch> **enable**

* + - 1. Enter configuration mode.

switch# **config terminal**

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

switch(config)# **hostname S1**

switch(config)# **hostname S2**

* + - 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**

S2(config)# **no ip domain-lookup**

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

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

S2(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**

S2(config)# line **console 0**

S2(config-line)# **password cisco**

S2(config-line)# **login**

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

S1(config)# **line vty 0 15**

S1(config-line)# **password cisc**o

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

S2(config)# **line vty 0 15**

S2(config-line)# **password cisco**

S2(config-line)# **login**

* + - 1. Encrypt the plaintext passwords.

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

S2(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! $**

S2(config)# **banner motd $ Authorized Users Only! $**

* + - 1. Set the clock on the switch.

S1# **clock set 15:30:00 19 September 2019**

S2# **clock set 15:30:00 19 September 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.

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

S2# **copy running-config startup-config**

*Close configuration window*

### Configure PC hosts.

Refer to the Addressing Table for PC host address information.

## Create VLANs and Assign Switch Ports

In Part 2, you will create VLANs, as specified in the table above, on both switches. You will then assign the VLANs to the appropriate interface. The **show vlan** command is used to verify your configuration settings. Complete the following tasks on each switch.

### Create VLANs on both switches.

*Open configuration window*

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

S1(config)# vlan 3

S1(config-vlan)# name Management

S1(config-vlan)# vlan 4

S1(config-vlan)# name Operations

S1(config-vlan)# vlan 7

S1(config-vlan)# name ParkingLot

S1(config-vlan)# vlan 8

S1(config-vlan)# name Native

S2(config)# vlan 3

S2(config-vlan)# name Management

S2(config-vlan)# vlan 4

S2(config-vlan)# name Operations

S2(config-vlan)# vlan 7

S2(config-vlan)# name ParkingLot

S1(config-vlan)# vlan 8

S1(config-vlan)# name Native

* + - 1. Configure the management interface and default gateway on each switch using the IP address information in the Addressing Table.

S1(config)# interface vlan 3

S1(config-if)# ip address 192.168.3.11 255.255.255.0

S1(config-if)# no shutdown

S1(config-if)# exit

S1(config)# ip default-gateway 192.168.3.1

S2(config)# interface vlan 3

S2(config-if)# ip address 192.168.3.12 255.255.255.0

S2(config-if)# no shutdown

S2(config-if)# exit

S2(config)# ip default-gateway 192.168.3.1

* + - 1. Assign all unused ports on both switches to the ParkingLot VLAN, configure them for static access mode, and administratively deactivate them.

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

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

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

S1(config-if-range)# switchport access vlan 7

S1(config-if-range)# shutdown

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

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

S2(config-if-range)# switchport access vlan 7

S2(config-if-range)# shutdown

### 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. Be sure to do this on both switches

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

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

S1(config-if)# **switchport access vlan 3**

S2(config)# **interface f0/18**

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

S2(config-if)# **switchport access vlan 4**

* + - 1. Issue the **show vlan** **brief** command and verify that the VLANs are assigned to the correct interfaces.

S1# **show vlan brief**

VLAN Name Status Ports

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

1 default active Fa0/1, Fa0/5

3 Management active Fa0/6

4 Operations active

7 ParkingLot active 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

8 Native active

<output omitted>

S2# **show vlan brief**

VLAN Name Status Ports

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

1 default active Fa0/1

3 Management active

4 Operations active Fa0/18

7 ParkingLot active Fa0/2, Fa0/3, Fa0/4, Fa0/5

Fa0/6, Fa0/7, Fa0/8, Fa0/9

Fa0/10, Fa0/11, Fa0/12, Fa0/13

Fa0/14, Fa0/15, Fa0/16, Fa0/17

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

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

8 Native active

<output omitted>

*Close configuration window*

## Configure an 802.1Q Trunk Between the Switches

In Part 3, you will manually configure interface F0/1 as a trunk.

### Manually configure trunk interface F0/1.

*Open configuration window*

* + - 1. Change the switchport mode on interface F0/1 to force trunking. Make sure to do this on both switches.

S1(config)# **interface f0/1**

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

S2(config)# **interface f0/1**

S2(config-if)# **switchport mode trunk**

* + - 1. As a part of the trunk configuration, set the native VLAN to 8 on both switches. You may see error messages temporarily while the two interfaces are configured for different native VLANs.

S1(config-if)# **switchport trunk native vlan 8**

S2(config-if)# **switchport trunk native vlan 8**

* + - 1. As another part of trunk configuration, specify that VLANs 3, 4, and 8 are only allowed to cross the trunk.

S1(config-if)# **switchport trunk allowed vlan 3,4,8**

S2(config-if)# **switchport trunk allowed vlan 3,4,8**

* + - 1. Issue the **show interfaces trunk** command to verify trunking ports, the Native VLAN and allowed VLANs across the trunk.

S1# **show interfaces trunk**

Port Mode Encapsulation Status Native vlan

Fa0/3 on 802.1q trunking 8

Port Vlans allowed on trunk

Fa0/3 3-4,8

Port Vlans allowed and active in management domain

Fa0/3 3-4,8

Port Vlans in spanning tree forwarding state and not pruned

Fa0/3 3-4,8

S2#show interfaces trunk

Port Mode Encapsulation Status Native vlan

Fa0/1 on 802.1q trunking 8

Port Vlans allowed on trunk

Fa0/1 3-4,8

Port Vlans allowed and active in management domain

Fa0/1 3-4,8

Port Vlans in spanning tree forwarding state and not pruned

Fa0/1 3-4,8

### Manually configure S1’s trunk interface F0/5

* + - 1. Configure the F0/5 on S1 with the same trunk parameters as F0/1. This is the trunk to the router.

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

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

S1(config-if)# **switchport trunk native vlan 8**

S1(config-if)# **switchport trunk allowed vlan 3,4,8**

* + - 1. Save the running configuration to the startup configuration file on S1 and S2.

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

S2# **copy running-config startup-config**

* + - 1. Issue the **show interfaces trunk** command to verify trunking.

#### Question:

Why does F0/5 not appear in the list of trunks?

***Type your answers here.***

**S1 port 5 will not be displayed because the GigabitEthernet 0/0/1 interface status on the router is administratively down.**

*Close configuration window*

## Configure Inter-VLAN Routing on the Router

*Open configuration window*

* + - 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 specified in the IP addressing table. All sub-interfaces use 802.1Q encapsulation. 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 g0/0/1.3**

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

R1(config-subif)# **encapsulation dot1q 3**

R1(config-subif)# **ip address 192.168.3.1 255.255.255.0**

R1(config-subif)# **interface g0/0/1.4**

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

R1(config-subif)# **encapsulation dot1q 4**

R1(config-subif)# **ip address 192.168.4.1 255.255.255.0**

R1(config-subif)# **interface g0/0/1.8**

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

R1(config-subif)# **encapsulation dot1q 8 native**

* + - 1. Use the show ip interface brief command to verify the sub-interfaces are operational.

R1# **show ip interface brief**

Interface IP-Address OK? Method Status Protocol

GigabitEthernet0/0/0 unassigned YES unset up up

GigabitEthernet0/0/1 unassigned YES unset up up

GigabitEthernet0/0/1.3 192.168.3.1 YES manual up up

GigabitEthernet0/0/1.4 192.168.4.1 YES manual up up

GigabitEthernet0/0/1.8 unassigned YES unset up up

<output omitted>

*Close configuration window*

## Verify Inter-VLAN Routing is Working

### Complete the following tests from PC-A. All should be successful.

**Note**: You may have to disable the PC firewall for pings to be successful.

* + - 1. Ping from PC-A to its default gateway.
      2. Ping from PC-A to PC-B
      3. Ping from PC-A to S2

### Complete the following test from PC-B.

From the command prompt on PC-B, issue the tracert command to the address of PC-A.

#### Question:

What intermediate IP addresses are shown in the results?

***Type your answers here.***

**The tracert output shows two entries in the results. The first hop is G0/0/1.4 on the R1 interface address, which is the Gateway address for PC-B. The second hop is PC-A’s address.**

# Router Interface Summary Table

| **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) |
| 4221 | Gigabit Ethernet 0/0/0 (G0/0/0) | Gigabit Ethernet 0/0/1 (G0/0/1) | Serial 0/1/0 (S0/1/0) | Serial 0/1/1 (S0/1/1) |
| 4300 | Gigabit Ethernet 0/0/0 (G0/0/0) | Gigabit Ethernet 0/0/1 (G0/0/1) | Serial 0/1/0 (S0/1/0) | Serial 0/1/1 (S0/1/1) |

**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.

*End of Document*

# Device Configs - Final

# Switch S1

S1# show run

Building configuration...

Current configuration : 3128 bytes

!

! Last configuration change at 21:13:27 UTC Thu Sep 19 2019

!

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 $1$mjNn$IB.7cD5jpb2CpFN72u.w81

!

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 trunk allowed vlan 3,4,8

switchport trunk native vlan 8

switchport mode trunk

!

interface FastEthernet0/2

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/3

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/4

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/5

switchport trunk allowed vlan 3,4,8

switchport trunk native vlan 8

switchport mode trunk

!

interface FastEthernet0/6

switchport access vlan 3

switchport mode access

!

interface FastEthernet0/7

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/8

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/9

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/10

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/11

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/12

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/13

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/14

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/15

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/16

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/17

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/18

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/19

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/20

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/21

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/22

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/23

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/24

switchport access vlan 7

switchport mode access

shutdown

!

interface GigabitEthernet0/1

switchport access vlan 7

switchport mode access

shutdown

!

interface GigabitEthernet0/2

switchport access vlan 7

switchport mode access

shutdown

!

interface Vlan1

no ip address

shutdown

!

interface Vlan3

ip address 192.168.3.11 255.255.255.0

!

ip default-gateway 192.168.3.1

ip http server

ip http secure-server

!

banner motd ^C Authorized Users Only! ^C

!

line con 0

password 7 104D000A0618

login

line vty 0 4

password 7 104D000A0618

login

line vty 5 15

password 7 104D000A0618

login

!

end

# Switch S2

S2# show run

Building configuration...

Current configuration : 3096 bytes

!

! Last configuration change at 21:14:03 UTC Thu Sep 19 2019

!

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 $1$xNwL$Yvok3XJfU3OAjd91Jl6m2.

!

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 trunk allowed vlan 3,4,8

switchport trunk native vlan 8

switchport mode trunk

!

interface FastEthernet0/2

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/3

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/4

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/5

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/6

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/7

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/8

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/9

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/10

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/11

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/12

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/13

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/14

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/15

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/16

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/17

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/18

switchport access vlan 4

switchport mode access

!

interface FastEthernet0/19

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/20

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/21

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/22

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/23

switchport access vlan 7

switchport mode access

shutdown

!

interface FastEthernet0/24

switchport access vlan 7

switchport mode access

shutdown

!

interface GigabitEthernet0/1

switchport access vlan 7

switchport mode access

shutdown

!

interface GigabitEthernet0/2

switchport access vlan 7

switchport mode access

shutdown

!

interface Vlan1

no ip address

shutdown

!

interface Vlan3

ip address 192.168.3.12 255.255.255.0

!

ip default-gateway 192.168.3.1

ip http server

ip http secure-server

!

banner motd ^C Authorized Users Only! ^C

!

line con 0

password 7 01100F175804

login

line vty 0 4

password 7 01100F175804

login

line vty 5 15

password 7 01100F175804

login

!

end

# Router R1

R1# show run

Building configuration...

Current configuration : 1940 bytes

!

version 16.9

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

platform qfp utilization monitor load 80

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 $1$o5iu$mWblQ/HSFMXl8z3PGLI../

!

no aaa new-model

!

no ip domain lookup

!

login on-success log

!

subscriber templating

!

multilink bundle-name authenticated

!

license boot level appxk9

license boot level securityk9

no license smart enable

diagnostic bootup level minimal

!

spanning-tree extend system-id

!

redundancy

mode none

!

interface GigabitEthernet0/0/0

no ip address

negotiation auto

!

interface GigabitEthernet0/0/1

no ip address

negotiation auto

!

interface GigabitEthernet0/0/1.3

description Management Network

encapsulation dot1Q 3

ip address 192.168.3.1 255.255.255.0

!

interface GigabitEthernet0/0/1.4

description Operations Network

encapsulation dot1Q 4

ip address 192.168.4.1 255.255.255.0

!

interface GigabitEthernet0/0/1.8

description Native VLAN

encapsulation dot1Q 8 native

!

interface Serial0/1/0

no ip address

!

interface Serial0/1/1

no ip address

!

interface GigabitEthernet0

vrf forwarding Mgmt-intf

no ip address

negotiation auto

!

ip forward-protocol nd

no ip http server

ip http secure-server

!

control-plane

!

banner motd ^C Authorized Users Only! ^C

!

line con 0

password 7 01100F175804

login

transport input none

stopbits 1

line aux 0

stopbits 1

line vty 0 4

password 7 070C285F4D06

login

!

end