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## LAB-6

**IN SWITCH MODE-** Construct a VLAN network where communication between the same VLAN should be possible and different VLANs should not be possible.

### Initial Switch Setup

#### Step 1: Check the Current Mode

The current operating mode of the switch was verified using the show version command

```
COM20 - PuTTY
R2-G4-S1(config)#show version
Copyright (c) Ruckus Networks, Inc. All rights reserved.
UNIT 1: compiled on Jun  9 2023 at 06:37:44 labeled as SPR08095k
(33554432 bytes) from Secondary SPR08095k.bin (UFI)
SW: Version 08.0.95kT213
Compressed Secondary Boot Code size = 786944, Version:10.1.26T225 (mnz10126)
Compiled on Tue Nov 29 12:43:26 2022

HW: Stackable ICX7150-C12-POE
=====
UNIT 1: SL 1: ICX7150-C12-2X1G POE 12-port Management Module
Serial #:FEK3809VOK4
Software Package: ICX7150_L3_SOFT_PACKAGE
Current License: 2X10GR
P-ASIC 0: type B160, rev 11 Chip BCM56160_B0
=====
UNIT 1: SL 2: ICX7150-2X1GC 2-port 2G Module
=====
UNIT 1: SL 3: ICX7150-2X10GF 2-port 20G Module
=====
1000 MHz ARM processor ARMv7 88 MHz bus
8 MB boot flash memory
2 GB code flash memory
1 GB DRAM
STACKID 1 system uptime is 55 minute(s) 55 second(s)
The system started at 07:56:06 GMT+00 Fri Jun 09 2023
The system : started-warm start   reloaded-by "reload"

R2-G4-S1(config)#exit
R2-G4-S1#boot system flash primary
Are you sure? (enter 'y' or 'n'): y
Running Config data has been changed. Do you want to continue
the reload without saving the running config? (enter 'y' or 'n'): Error: Enter y/N or Y/N for confirmation
y
R2-G4-S1#Unmounting the External USB
Copying Mmon Log files to flash..
Done
Copying PoE Log files to flash..
Done
Copying SZ log files to flash..
Done
[ 3720.740349] (BroadSoftlockup): sim_softwatchdog thread is detached on core=0
Stopping File Manager daemon...
Stopping File Manager daemon
/ack_dhcp_sncoop.db -> /fast_iron/
/ack_dhcpv6_sncoop.db -> /fast_iron/
Stopping health monitor daemon...
Stopping health monitor daemon
Stopping poe daemon...
```

```
COM17 - PuTTY
R2-G4-S2#show version
Copyright (c) Ruckus Networks, Inc. All rights reserved.
UNIT 1: compiled on Jun  9 2023 at 06:37:44 labeled as SPR08095k
(33554432 bytes) from Secondary SPR08095k.bin (UFI)
SW: Version 08.0.95kT213
Compressed Secondary Boot Code size = 786944, Version:10.1.26T225 (mnz10126)
Compiled on Tue Nov 29 12:43:26 2022

HW: Stackable ICX7150-C12-POE
=====
UNIT 1: SL 1: ICX7150-C12-2X1G POE 12-port Management Module
Serial #:FEK3809VOK4
Software Package: ICX7150_L3_SOFT_PACKAGE
Current License: 2X10GR
P-ASIC 0: type B160, rev 11 Chip BCM56160_B0
=====
UNIT 1: SL 2: ICX7150-2X1GC 2-port 2G Module
=====
UNIT 1: SL 3: ICX7150-2X10GF 2-port 20G Module
=====
1000 MHz ARM processor ARMv7 88 MHz bus
8 MB boot flash memory
```

The output indicated that the switch was running on the **secondary image (SPR08095k)**, which represents **Layer 3 (router mode)**.

## Step 2: Change to Switch Mode

The system was changed to **Layer 2 (switch mode)** by executing the `boot system flash primary` command followed by `reload`.

After the reboot, the `show version` command confirmed that the switch was now running on the **primary image (SPS08095k)**, indicating **Layer 2 mode**.

```
COM20 - PuTTY

R2-G4-S1(config)#show version
Copyright (c) Ruckus Networks, Inc. All rights reserved.
UNIT 1: compiled on Jun  9 2023 at 06:37:44 labeled as SPR08095k
(33554432 bytes) from Secondary SPR08095k.bin (UFI)
SW: Version 08.0.95kT213
Compressed Secondary Boot Code size = 786944, Version:10.1.26T225 (mnz10126)
Compiled on Tue Nov 29 12:43:26 2022

HW: Stackable ICX7150-C12-POE
=====
UNIT 1: SL 1: ICX7150-C12-2X1G POE 12-port Management Module
Serial #:FEK3809V0K1
Software Package: ICX7150_L3_SOFT_PACKAGE
Current License: 2X10GR
P-ASIC 0: type B160, rev 11 Chip BCM56160_B0
=====
UNIT 1: SL 2: ICX7150-2X1GC 2-port 2G Module
=====
UNIT 1: SL 3: ICX7150-2X10GF 2-port 20G Module
=====
1000 MHz ARM processor ARMv7 88 MHz bus
8 MB boot flash memory
2 GB code flash memory
1 GB DRAM
STACKID 1 system uptime is 55 minute(s) 55 second(s)
The system started at 07:56:06 GMT+00 Fri Jun 09 2023

The system : started=warm start   reloaded=by "reload"

R2-G4-S1(config)#exit
R2-G4-S1#boot system flash primary
Are you sure? (enter 'y' or 'n'): y
Running Config data has been changed. Do you want to continue
the reload without saving the running config? (enter 'y' or 'n'): Error: Enter y/n or Y/N for confirmation
y
R2-G4-S1#Unmounting the External USB
Copying Rmon Log files to flash..
Done
Copying PoE Log files to flash..
Done
Copying S2 log files to flash..
Done
[ 3720.740349] [BrCdSoftlockup]: sim_softwatchdog thread is detached on core=0
Stopping File Manager daemon...
Stopped File Manager daemon
/icx_dhcp_snoop.db -> /fast_iron/
/icx_dhcpv6_snoop.db -> /fast_iron/
Stopping health monitor daemon...
Stopped health monitor daemon
Stopping poe daemon...
```

```
COM20 - PuTTY
Going to sleep forever...
Successfully notified stack role 'none' to hmond

PS 1, Internal Power supply detected.
PS 1, Internal Power supply is up.
OK: Stack unit 1 PS 1, Internal Power supply with 124000 mwa capacity is up

Press Enter key to login
System initialization completed...console going online.
Copyright (c) Ruckus Networks, Inc. All rights reserved.
UNIT 1: compiled on Jun 9 2023 at 06:14:36 labeled as SPS08095k
(31457280 Bytes) from Primary SPS08095k.bin (UPX)
SW: Version 08.0.95KT211
Compressed Primary Boot Code size = 786944, Version:10.1.26T225 (mmz10126)
Compiled on Tue Nov 29 12:43:26 2022

HW: Stackable ICX7150-C12-POE
=====
UNIT 1: SL 1: ICX7150-C12-2X1G POE 12-port Management Module
Serial #:FEK3809VOK1
Software Package: BASE_SOFT_PACKAGE
Current License: 2X1G/GR
P-ASIC 0: type B160, rev 11 Chip BCM56160_B0
=====
UNIT 1: SL 2: ICX7150-2X1G 2-port 2G Module
=====
UNIT 1: SL 3: ICX7150-2X1G 2-port 20G Module
=====
1000 MHz ARM processor ARMv7 98 MHz bus
8 MB boot flash memory
2 GB code flash memory
1 GB DRAM
STACKID 1 system uptime is 14 second(s)
The system started at 08:58:30 GMT+00 Fri Jun 09 2023
The system : started=warm start reloaded=by "reload"

Press Enter key to login
In szAgent_save_initial_runningConfigTimestamp(), 1686301120.47348594
Creating certificate, please wait...
SSL Client Certificate is successfully created

User Access Verification
27°C
Mostly cloudy
```

## Step 3: Clear Previous Configuration

Existing VLANs were cleared to start with a clean configuration.

```
Configuration filename: None
Image filename: None
DNS Server: N/A
IP MTU: 1500
R2-G4-S1(config)#ip address 192.168.100.41
Incomplete command.
R2-G4-S1(config)#ip address 192.168.100.41 255.255.255.0
R2-G4-S1(config)#show ip

Switch IP address: 192.168.100.41
Subnet mask: 255.255.255.0

Default router address: None
TFTP server address: None
Configuration filename: None
Image filename: None
DNS Server: N/A
IP MTU: 1500
R2-G4-S1(config)#write memory
Flash Memory Write (8192 bytes per dot)
.
Write startup-config done.
Copy Done
R2-G4-S1(Config)#show vlan
Total PORT-VLAN entries: 3
Maximum PORT-VLAN entries: 1024
Legend: [Stk=Stack-Id, S=Slot]
PORT-VLAN 1, Name DEFAULT-VLAN, Priority level0, On
Untagged Ports: (U1/M1) 5 6 7 8
Untagged Ports: (U1/M2) 1 2
Untagged Ports: (U1/M3) 1 2
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
PORT-VLAN 10, Name VLAN10, Priority level0, On
Untagged Ports: (U1/M1) 1 2 3 4
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
PORT-VLAN 20, Name VLAN20, Priority level0, On
Untagged Ports: (U1/M1) 9 10 11 12
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
R2-G4-S1(config)#no vlan 10
R2-G4-S1(config)#no vlan 20
R2-G4-S1(config)#
```

## Step 4: Create VLANs and Assign Ports

Two VLANs were created to separate the network into logical segments for intra-VLAN communication.

**VLAN 10:** Ports 1/1/1 to 1/1/4 (untagged)

**VLAN 20:** Ports 1/1/8 to 1/1/12 (untagged)

```
R2-G4-S1(config)#vlan 10
R2-G4-S1(config-vlan-10)#untagged ethernet 1/1/1 to 1/1/4
Added untagged port(s) ethe 1/1/1 to 1/1/4 to port-vlan 10.
R2-G4-S1(config-vlan-10)#exit vlan 20
Invalid input -> vlan 20
Type ? for a list
R2-G4-S1(config-vlan-10)#exit
R2-G4-S1(config)#vlan 20
R2-G4-S1(config-vlan-20)#untagged ethernet 1/1/8 to 1/1/12
Added untagged port(s) ethe 1/1/8 to 1/1/12 to port-vlan 20.
R2-G4-S1(config-vlan-20)#exit
R2-G4-S1(config)#vlan 10
R2-G4-S1(config-vlan-10)#tagged eth 1/2/1 to 1/2/2
Added tagged port(s) ethe 1/2/1 to 1/2/2 to port-vlan 10.
R2-G4-S1(config-vlan-10)#exit
R2-G4-S1(config)#vlan 20
R2-G4-S1(config-vlan-20)#tagged eth 1/2/1 to 1/2/2
Added tagged port(s) ethe 1/2/1 to 1/2/2 to port-vlan 20.
R2-G4-S1(config-vlan-20)#exit
R2-G4-S1(config)#vlan 10
R2-G4-S1(config-vlan-10)#
```

## Step 5: Save Configuration

The configuration was saved using the command: write memory

This ensures the VLAN settings remain after a reboot.

```
Configuration filename: None
Image filename: None
DNS Server: N/A
IP MTU: 1500
R2-G4-S1(config)#ip address 192.168.100.41
R2-G4-S1(config)#ip address 192.168.100.41 255.255.255.0
R2-G4-S1(config)#show ip
Switch IP address: 192.168.100.41
Subnet mask: 255.255.255.0
Default router address: None
TFTP server address: None
Configuration filename: None
Image filename: None
DNS Server: N/A
IP MTU: 1500
R2-G4-S1(config)#write memory
Flash Memory Write (8192 bytes per dot)
Write startup-config done.
Copy Done.
R2-G4-S1(config)#show vlan
Total PORT-VLAN entries: 3
Maximum PORT-VLAN entries: 1024
Legend: [Stk-Stack-Id, S-Slot]
PORT-VLAN 1, Name DEFAULT-VLAN, Priority level0, On
Untagged Ports: (U1/M1) 5 6 7 8
Untagged Ports: (U1/M2) 1 2
Untagged Ports: (U1/M3) 1 2
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
PORT-VLAN 10, Name VLAN10, Priority level0, On
Untagged Ports: (U1/M1) 1 2 3 4
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
PORT-VLAN 20, Name VLAN20, Priority level0, On
Untagged Ports: (U1/M1) 9 10 11 12
Tagged Ports: None
Mac-Vlan Ports: None
Monitoring: Disabled
R2-G4-S1(config)#no vlan 10
R2-G4-S1(config)#no vlan 20
R2-G4-S1(config)#
```

## Pinging the devices

```
C:\Users\RVU>ping 192.168.100.46

Pinging 192.168.100.46 with 32 bytes of data:
Reply from 192.168.100.47: Destination host unreachable.
Request timed out.
Reply from 192.168.100.46: bytes=32 time=1ms TTL=128
Reply from 192.168.100.46: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.100.46:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

[illegible]

```

Added untagged port(s) ethe 1/1/1 to 1/1/1 to port-vlan 10.
R2-G4-S2(config-vlan-10)#exit
R2-G4-S2(config)#vlan 20
R2-G4-S2(config-vlan-20)#untagged eth 1/1/5 to 1/1/8
Added untagged port(s) ethe 1/1/5 to 1/1/8 to port-vlan 20.
R2-G4-S2(config-vlan-20)#exit
R2-G4-S2(config)#vlan 10
R2-G4-S2(config-vlan-10)#vlan 20
R2-G4-S2(config-vlan-20)#exit
R2-G4-S2(config)#vlan 10
R2-G4-S2(config-vlan-10)#tagged eth 1/2/1 to 1/2/2
Added tagged port(s) ethe 1/2/1 to 1/2/2 to port-vlan 10.
R2-G4-S2(config-vlan-10)#exit
R2-G4-S2(config-vlan-20)#vlan 20
R2-G4-S2(config-vlan-20)#tagged eth 1/2/1 to 1/2/2
Added tagged port(s) ethe 1/2/1 to 1/2/2 to port-vlan 20.
R2-G4-S2(config-vlan-20)#exit
R2-G4-S2(config)#vlan 10
R2-G4-S2(config-vlan-10)#

```

```
C:\Users\R\U>ping 192.168.100.46

Pinging 192.168.100.46 with 32 bytes of data:
Reply from 192.168.100.46: bytes=32 time<1ms TTL=128
Reply from 192.168.100.46: bytes=32 time<1ms TTL=128
Reply from 192.168.100.46: bytes=32 time<1ms TTL=128
Reply from 192.168.100.46: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.100.46:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\R\U>
```

A Layer 2 switch forwards traffic within the same VLAN based on MAC addresses, but it can't route traffic between different VLANs. To enable inter-VLAN routing, you'd need a Layer 3 switch or a router

