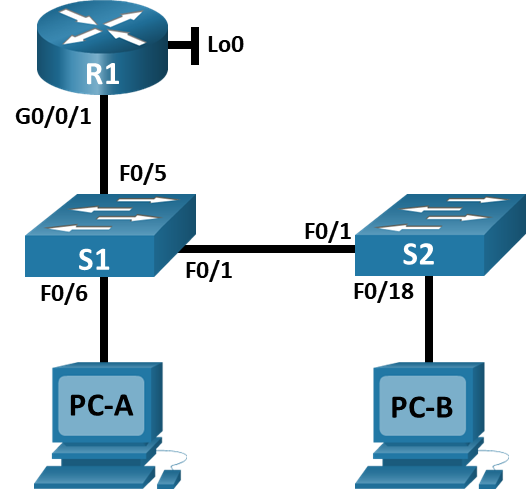
Lab - Switch Security Configuration

# Topology



# Addressing Table

| Device | Interface / VLAN | IP Address | Subnet Mask |
| --- | --- | --- | --- |
| R1 | G0/0/1 | 192.168.10.1 | 255.255.255.0 |
| R1 | Loopback 0 | 10.10.1.1 | 255.255.255.0 |
| S1 | VLAN 10 | 192.168.10.201 | 255.255.255.0 |
| S2 | VLAN 10 | 192.168.10.202 | 255.255.255.0 |
| PC – A | NIC | DHCP | 255.255.255.0 |
| PC – B | NIC | DHCP | 255.255.255.0 |

# Objectives

Part 1: Configure the Network Devices.

* Cable the network.
* Configure R1.
* Configure and verify basic switch settings.

Part 2: Configure VLANs on Switches.

* Configure VLAN 10.
* Configure the SVI for VLAN 10.
* Configure VLAN 333 with the name Native on S1 and S2.
* Configure VLAN 999 with the name ParkingLot on S1 and S2.

Part 3: Configure Switch Security.

* Implement 802.1Q trunking.
* Configure access ports.
* Secure and disable unused switchports.
* Document and implement port security features.
* Implement DHCP snooping security.
* Implement PortFast and BPDU guard.
* Verify end-to-end-connectivity.

# Background / Scenario

This is a comprehensive lab to review previously covered Layer 2 security features.

**Note**: The routers used with CCNA hands-on labs are Cisco 4221 with Cisco IOS XE Release 16.9.3 (universalk9 image). The switches used in the labs 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 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**: Make sure that the switches have been erased and have no startup configurations. If you are unsure, contact your lecturer.

**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 16.9.3 universal image or comparable)
* 2 Switches (Cisco 2960 with Cisco IOS Release 15.0(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

## Configure the Network Devices.

### Cable the network.

1. Cable the network as shown in the topology.
2. Initialize the devices.

### Configure R1.

* + - 1. Load the following configuration script on R1.

Open configuration window

enable

configure terminal

hostname R1

no ip domain lookup

ip dhcp excluded-address 192.168.10.1 192.168.10.9

ip dhcp excluded-address 192.168.10.201 192.168.10.202

!

ip dhcp pool Students

network 192.168.10.0 255.255.255.0

default-router 192.168.10.1

domain-name CCNA2.Lab-11.6.1

!

interface Loopback0

ip address 10.10.1.1 255.255.255.0

!

interface GigabitEthernet0/0/1

description Link to S1 Port 5

ip dhcp relay information trusted

ip address 192.168.10.1 255.255.255.0

no shutdown

!

line con 0

logging synchronous

exec-timeout 0 0

* + - 1. Verify the running-configuration on R1 using the following command:

R1# **show ip interface brief**

Interface IP-Address OK? Method Status Protocol

GigabitEthernet0/0/0 unassigned YES unset down down

GigabitEthernet0/0/1 192.168.10.1 YES manual up up

Loopback0 10.10.1.1 YES manual up up

1. Verify IP addressing and interfaces are in an up / up state (troubleshoot as necessary).

Close configuration window

### Configure and verify basic switch settings.

* + - 1. Configure the hostname for switches S1 and S2.

Open configuration window

Switch# config t

Switch(config)# hostname S1

Open configuration window

Switch# config t

Switch(config)# hostname S2

* + - 1. Prevent unwanted DNS lookups on both switches.

S1(config)# no ip domain-lookup

S2(config)# no ip domain-lookup

* + - 1. Configure interface descriptions for the ports that are in use in S1 and S2.

S1(config)# interface f0/1

S1(config-if)# description Link to S2

S1(config-if)# interface f0/5

S1(config-if)# description Link to R1

S1(config-if)# interface f0/6

S1(config-if)# description Link to PC-A

S2(config)# interface f0/1

S2(config-if)# description Link to S1

S2(config-if)# interface f0/18

S2(config-if)# description Link to PC-B

* + - 1. Set the default-gateway for the Management VLAN to 192.168.10.1 on both switches.

S1(config)# ip default-gateway 192.168.10.1

S2(config)# ip default-gateway 192.168.10.1

## Configure VLANs on Switches.

### Configure VLAN 10.

Add VLAN 10 to S1 and S2 and name the VLAN **Management.**

S1(config)# vlan 10

S1(config-vlan)# name Management

S2(config)# vlan 10

S2(config-vlan)# name Management

### Configure the SVI for VLAN 10.

Configure the IP address according to the Addressing Table for SVI for VLAN 10 on S1 and S2. Enable the SVI interfaces and provide a description for the interface.

S1(config)# interface vlan 10

S1(config-if)# ip address 192.168.10.201 255.255.255.0

S1(config-if)# description Management SVI

S1(config-if)# no shutdown

S2(config)# interface vlan 10

S2(config-if)# ip address 192.168.10.202 255.255.255.0

2S1(config-if)# description Management SVI

S2(config-if)# no shutdown

### Configure VLAN 333 with the name Native on S1 and S2.

S1(config)# vlan 333

S1(config-vlan)# name Native

S2(config)# vlan 333

S2(config-vlan)# name Native

### Configure VLAN 999 with the name ParkingLot on S1 and S2.

S1(config-vlan)# vlan 999

S1(config-vlan)# name ParkingLot

S2(config-vlan)# vlan 999

S2(config-vlan)# name ParkingLot

## Configure Switch Security.

### Implement 802.1Q trunking.

* + - 1. On both switches, configure trunking on F0/1 to use VLAN 333 as the native VLAN.

S1(config)# interface f0/1

S1(config-if)# switchport mode trunk

S1(config-if)# switchport trunk native vlan 333

S2(config)# interface f0/1

S2(config-if)# switchport mode trunk

S2(config-if)# switchport trunk native vlan 333

* + - 1. Verify that trunking is configured on both switches.

S1# **show interface trunk**

Port Mode Encapsulation Status Native vlan

Fa0/1 on 802.1q trunking 333

Port Vlans allowed on trunk

Fa0/1 1-4094

Port Vlans allowed and active in management domain

Fa0/1 1,10,333,999

Port Vlans in spanning tree forwarding state and not pruned

Fa0/1 1,10,333,999

S2# **show interface trunk**

Port Mode Encapsulation Status Native vlan

Fa0/1 on 802.1q trunking 333

Port Vlans allowed on trunk

Fa0/1 1-4094

Port Vlans allowed and active in management domain

Fa0/1 1,10,333,999

Port Vlans in spanning tree forwarding state and not pruned

Fa0/1 1,10,333,999

* + - 1. Disable DTP negotiation on F0/1 on S1 and S2.

S1(config)# interface f0/1

S1(config-if)# switchport nonegotiate

S2(config)# interface f0/1

S2(config-if)# switchport nonegotiate

* + - 1. Verify with the **show interfaces** command.

S1# **show interfaces f0/1 switchport | include Negotiation**

Negotiation of Trunking: Off

S2# **show interfaces f0/1 switchport | include Negotiation**

Negotiation of Trunking: Off

### Configure access ports.

* + - 1. On S1, configure F0/5 and F0/6 as access ports that are associated with VLAN 10.

S1(config)# interface range f0/5 – 6

S1(config-if)# switchport mode access

S1(config-if)# switchport access vlan 10

* + - 1. On S2, configure F0/18 as an access port that is associated with VLAN 10.

S2(config)# interface f0/18

S2(config-if)# switchport mode access

S2(config-if)# switchport access vlan 10

### Secure and disable unused switchports.

* + - 1. On S1 and S2, move the unused ports from VLAN 1 to VLAN 999 and disable the unused ports.

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 999

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 999

S2(config-if-range)# shutdown

* + - 1. Verify that unused ports are disabled and associated with VLAN 999 by issuing the **show** command.

S1# **show interfaces status**

Port Name Status Vlan Duplex Speed Type

Fa0/1 Link to S2 connected trunk a-full a-100 10/100BaseTX

Fa0/2 disabled 999 auto auto 10/100BaseTX

Fa0/3 disabled 999 auto auto 10/100BaseTX

Fa0/4 disabled 999 auto auto 10/100BaseTX

Fa0/5 Link to R1 connected 10 a-full a-100 10/100BaseTX

Fa0/6 Link to PC-A connected 10 a-full a-100 10/100BaseTX

Fa0/7 disabled 999 auto auto 10/100BaseTX

Fa0/8 disabled 999 auto auto 10/100BaseTX

Fa0/9 disabled 999 auto auto 10/100BaseTX

Fa0/10 disabled 999 auto auto 10/100BaseTX

<output omitted>

S2# **show interfaces status**

Port Name Status Vlan Duplex Speed Type

Fa0/1 Link to S1 connected trunk a-full a-100 10/100BaseTX

Fa0/2 disabled 999 auto auto 10/100BaseTX

Fa0/3 disabled 999 auto auto 10/100BaseTX

<output omitted>

Fa0/14 disabled 999 auto auto 10/100BaseTX

Fa0/15 disabled 999 auto auto 10/100BaseTX

Fa0/16 disabled 999 auto auto 10/100BaseTX

Fa0/17 disabled 999 auto auto 10/100BaseTX

Fa0/18 Link to PC-B connected 10 a-full a-100 10/100BaseTX

Fa0/19 disabled 999 auto auto 10/100BaseTX

Fa0/20 disabled 999 auto auto 10/100BaseTX

Fa0/21 disabled 999 auto auto 10/100BaseTX

Fa0/22 disabled 999 auto auto 10/100BaseTX

Fa0/23 disabled 999 auto auto 10/100BaseTX

Fa0/24 disabled 999 auto auto 10/100BaseTX

Gi0/1 disabled 999 auto auto 10/100/1000BaseTX

Gi0/2 disabled 999 auto auto 10/100/1000BaseTX

### Document and implement port security features.

The interfaces F0/6 on S1 and F0/18 on S2 are configured as access ports. In this step, you will also configure port security on these two access ports.

* + - 1. On S1, issue the **show port-security** **interface f0/6** command to display the default port security settings for interface F0/6. Record your answers in the table below.

S1# show port-security interface f0/6

Port Security : Disabled

Port Status : Secure-down

Violation Mode : Shutdown

Aging Time : 0 mins

Aging Type : Absolute

SecureStatic Address Aging : Disabled

Maximum MAC Addresses : 1

Total MAC Addresses : 0

Configured MAC Addresses : 0

Sticky MAC Addresses : 0

Last Source Address:Vlan : 0000.0000.0000:0

Security Violation Count : 0

| Default Port Security Configuration | |
| --- | --- |
| Feature | Default Setting |
| Port Security | Disabled |
| Maximum number of MAC addresses | 1 |
| Violation Mode | Shutdown |
| Aging Time | 0 mins |
| Aging Type | Absolute |
| Secure Static Address Aging | Disabled |
| Sticky MAC Address | 0 |

* + - 1. On S1, enable port security on F0/6 with the following settings:
* Maximum number of MAC addresses: **3**
* Violation type: **restrict**
* Aging time: **60 min**
* Aging type: **inactivity**

S1(config)# interface f0/6

S1(config-if)# switchport port-security

S1(config-if)# switchport port-security maximum 3

S1(config-if)# switchport port-security violation restrict

S1(config-if)# switchport port-security aging time 60

S1(config-if)# switchport port-security aging type inactivity

* + - 1. Verify port security on S1 F0/6.

S1# **show port-security interface f0/6**

Port Security : Enabled

Port Status : Secure-up

Violation Mode : Restrict

Aging Time : 60 mins

Aging Type : Inactivity

SecureStatic Address Aging : Disabled

Maximum MAC Addresses : 3

Total MAC Addresses : 1

Configured MAC Addresses : 0

Sticky MAC Addresses : 0

Last Source Address:Vlan : 0022.5646.3411:10

Security Violation Count : 0

S1# **show port-security address**

Secure Mac Address Table

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

Vlan Mac Address Type Ports Remaining Age

(mins)

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

10 0022.5646.3411 SecureDynamic Fa0/6 60 (I)

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

Total Addresses in System (excluding one mac per port) : 0

Max Addresses limit in System (excluding one mac per port) : 8192

* + - 1. Enable port security for F0/18 on S2. Configure the port to add MAC addresses learned on the port automatically to the running configuration.

S2(config)# interface f0/18

S2(config-if)# switchport port-security

S2(config-if)# switchport port-security mac-address sticky

* + - 1. Configure the following port security settings on S2 F/18:
* Maximum number of MAC addresses: **2**
* Violation type: **Protect**
* Aging time: **60 min**

S2(config)# interface f0/18

S2(config-if)# switchport port-security aging time 60

S2(config-if)# switchport port-security maximum 2

S2(config-if)# switchport port-security violation protect

* + - 1. Verify port security on S2 F0/18.

S2# **show port-security interface f0/18**

Port Security : Enabled

Port Status : Secure-up

Violation Mode : Protect

Aging Time : 60 mins

Aging Type : Absolute

SecureStatic Address Aging : Disabled

Maximum MAC Addresses : 2

Total MAC Addresses : 1

Configured MAC Addresses : 0

Sticky MAC Addresses : 0

Last Source Address:Vlan : 0022.5646.3413:10

Security Violation Count : 0

S2# **show port-security address**

Secure Mac Address Table

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

Vlan Mac Address Type Ports Remaining Age

(mins)

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

10 0022.5646.3413 SecureSticky Fa0/18 -

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

Total Addresses in System (excluding one mac per port) : 0

Max Addresses limit in System (excluding one mac per port) : 8192

### Implement DHCP snooping security.

* + - 1. On S2, enable DHCP snooping and configure DHCP snooping on VLAN 10.

S2(config)# ip dhcp snooping

S2(config)# ip dhcp snooping vlan 10

* + - 1. Configure the trunk port on S2 as a trusted port.

S2(config)# interface f0/1

S2(config-if)# ip dhcp snooping trust

* + - 1. Limit the untrusted port, F18 on S2, to five DHCP packets per second.

S2(config)# interface f0/18

S2(config-if)# ip dhcp snooping limit rate 5

* + - 1. Verify DHCP Snooping on S2.

S2# **show ip dhcp snooping**

Switch DHCP snooping is enabled

DHCP snooping is configured on following VLANs:

10

DHCP snooping is operational on following VLANs:

10

DHCP snooping is configured on the following L3 Interfaces:

Insertion of option 82 is enabled

circuit-id default format: vlan-mod-port

remote-id: 0cd9.96d2.3f80 (MAC)

Option 82 on untrusted port is not allowed

Verification of hwaddr field is enabled

Verification of giaddr field is enabled

DHCP snooping trust/rate is configured on the following Interfaces:

Interface Trusted Allow option Rate limit (pps)

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

FastEthernet0/1 yes yes unlimited

Custom circuit-ids:

FastEthernet0/18 no no 5

Custom circuit-ids:

* + - 1. From the command prompt on PC-B, release and then renew the IP address.

C:\Users\Student> **ipconfig /release**

C:\Users\Student> **ipconfig /renew**

* + - 1. Verify the DHCP snooping binding using the **show ip dhcp snooping binding** command.

S2# **show ip dhcp snooping binding**

MacAddress IpAddress Lease(sec) Type VLAN Interface

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

00:50:56:90:D0:8E 192.168.10.11 86213 dhcp-snooping 10 FastEthernet0/18

Total number of bindings: 1

### Implement PortFast and BPDU guard.

* + - 1. Configure PortFast on all the access ports that are in use on both switches.

S1(config)# interface range f0/5 - 6

S1(config-if)# spanning-tree portfast

S2(config)# interface f0/18

S2(config-if)# spanning-tree portfast

* + - 1. Enable BPDU guard on S1 and S2 VLAN 10 access ports connected to PC-A and PC-B.

S1(config)# interface f0/6

S1(config-if)# spanning-tree bpduguard enable

S2(config)# interface f0/18

S2(config-if)# spanning-tree bpduguard enable

* + - 1. Verify that BPDU guard and PortFast are enabled on the appropriate ports.

S1# **show spanning-tree interface f0/6 detail**

Port 8 (FastEthernet0/6) of VLAN0010 is designated forwarding

Port path cost 19, Port priority 128, Port Identifier 128.6.

<output omitted for brevity>

Number of transitions to forwarding state: 1

The port is in the portfast mode

Link type is point-to-point by default

Bpdu guard is enabled

BPDU: sent 128, received 0

### Verify end-to-end connectivity.

Verify PING connectivity between all devices in the IP Addressing Table. If the pings fail, you may need to disable the firewall on the PC hosts.

**Lecturer Note**: Refer to the Lab Manual for the procedures to initialize and reload devices [Router and Switches].

# Appendix A: Initialize and Reload a Switch

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

Open configuration window

Switch> **enable**

Switch#

* + - 1. Use the **show flash** command to determine if any VLANs have been created on the switch.

Switch# **show flash**

Directory of flash:/

2 -rwx 1919 Mar 1 1993 00:06:33 +00:00 private-config.text

3 -rwx 1632 Mar 1 1993 00:06:33 +00:00 config.text

4 -rwx 13336 Mar 1 1993 00:06:33 +00:00 multiple-fs

5 -rwx 11607161 Mar 1 1993 02:37:06 +00:00 c2960-lanbasek9-mz.150-2.SE.bin

6 -rwx 616 Mar 1 1993 00:07:13 +00:00 vlan.dat

32514048 bytes total (20886528 bytes free)

* + - 1. If the **vlan.dat** file was found in flash, then delete this file.

Switch# **delete vlan.dat**

Delete filename [vlan.dat]?

* + - 1. You are prompted to verify the filename. If you have entered the name correctly, press Enter; otherwise, you can change the filename.

You are prompted to confirm deletion of this file. Press Enter to confirm.

Delete flash:/vlan.dat? [confirm]

Switch#

* + - 1. Use the **erase startup-config** command to erase the startup configuration file from NVRAM. You are prompted to remove the configuration file. Press Enter to confirm.

Switch# **erase startup-config**

Erasing the nvram filesystem will remove all configuration files! Continue? [confirm]

[OK]

Erase of nvram: complete

Switch#

* + - 1. Reload the switch to remove any old configuration information from memory. You will then receive a prompt to confirm reloading of the switch. Press Enter to proceed.

Switch# **reload**

Proceed with reload? [confirm]

**Note**: You may receive a prompt to save the running configuration prior to reloading the switch. Respond by typing **no** and press Enter.

System configuration has been modified. Save? [yes/no]: **no**

* + - 1. After the switch reloads, you should see a prompt to enter the initial configuration dialog. Respond by entering **no** at the prompt and press Enter.

Would you like to enter the initial configuration dialog? [yes/no]: **no**

Switch>

# Appendix B: Clear All conf at the routers interfaces and

Close configuration window

# Reflection Questions

* 1. In reference to Port Security on S2, why is there no timer value for the remaining age in minutes when sticky learning was configured?

Type your answers here.

This switch does not support the port security aging of sticky secure addresses.

* 1. In reference to Port Security on S2, if you load the running-config script on S2, why will PC-B on port 18 never get an IP address via DHCP?

Type your answers here.

Port security is set for only two MAC addresses and port 18 has two “sticky” MAC address bound to the port. Additionally, the violation is protect, which will never send a console/syslog message or increment the violation counter.

* 1. In reference to Port Security, what is the difference between the absolute aging type and inactivity aging type?

Type your answers here.

If the inactivity type is set, then the secure addresses on the port will be removed only if there is no data traffic from the secure source addresses for the specified time period.

If the absolute type is set, then all secure addresses on this port age out exactly after the time specified ends.

End of Document

# Device Configurations – Final

# Switch S1

S1# show running-config

Building configuration...

Current configuration : 5203 bytes

!

version 15.0

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname S1

!

no ip domain-lookup

!

spanning-tree mode pvst

!

vlan 10

name Management

!

vlan 333

name Native

!

vlan 999

name ParkingLot

!

interface FastEthernet0/1

description Link to S2

switchport trunk encapsulation dot1q

switchport trunk native vlan 333

switchport mode trunk

switchport nonegotiate

!

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

description Link to R1

switchport access vlan 10

switchport mode access

spanning-tree portfast

!

interface FastEthernet0/6

description Link to PC-A

switchport access vlan 10

switchport mode access

switchport port-security maximum 3

switchport port-security violation restrict

switchport port-security aging time 60

switchport port-security aging type inactivity

switchport port-security

spanning-tree portfast

spanning-tree bpduguard enable

!

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

!

interface Vlan10

description Management SVI

ip address 192.168.10.201 255.255.255.0

!

ip default-gateway 192.168.10.1

line con 0

exec-timeout 0 0

logging synchronous

line vty 0 4

login

line vty 5 15

login

!

end

# Switch S2

S2# show running-config

Building configuration...

Current configuration : 5303 bytes

!

version 15.0

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

no service password-encryption

!

hostname S2

!

ip dhcp snooping vlan 10

ip dhcp snooping

no ip domain-lookup

!

spanning-tree mode pvst

!

vlan 10

name Students

!

vlan 333

name Native

!

vlan 999

name ParkingLot

!

interface FastEthernet0/1

description Link to S1

switchport trunk native vlan 333

switchport mode trunk

switchport nonegotiate

ip dhcp snooping trust

!

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 access vlan 999

switchport mode access

shutdown

!

interface FastEthernet0/6

switchport access vlan 999

switchport mode access

shutdown

!

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

description Link to PC-B

switchport access vlan 10

switchport mode access

switchport port-security maximum 2

switchport port-security violation protect

switchport port-security mac-address sticky

switchport port-security aging time 60

switchport port-security

spanning-tree portfast

spanning-tree bpduguard enable

ip dhcp snooping limit rate 5

!

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

!

interface Vlan10

description Management SVI

ip address 192.168.10.202 255.255.255.0

!

ip default-gateway 192.168.10.1

!

line con 0

exec-timeout 0 0

logging synchronous

line vty 0 4

login

line vty 5 15

login

!

end