

NETWORK ASSESSMENT

In Cisco Packet Tracer and real networking environments, **port security** is a feature used on switches to control access to the network by limiting and managing the number of devices allowed to connect to each switch port. Port security helps protect against unauthorized access and network attacks, such as MAC flooding, by allowing only specified devices (identified by their MAC addresses) to connect.

Why Use Port Security?

1. **Restrict Access:** Port security allows only authorized devices to connect to a switch port. This helps prevent unauthorized devices from gaining access to the network.
2. **Limit Network Attacks:** Port security protects against MAC flooding attacks. In a MAC flooding attack, an attacker tries to overwhelm the switch's MAC address table by sending frames with many different MAC addresses, which could cause legitimate devices to lose connectivity.
3. **Reduce Risks of Rogue Devices:** Unauthorized devices connecting to the network can be prevented, thus enhancing network security.

How Port Security Works

With port security configured, the switch allows only a specific number of MAC addresses on each port. It can also enforce security policies, such as:

- **Maximum MAC Addresses:** Set the maximum number of MAC addresses allowed on a port.
- **Sticky MAC Addresses:** Learn MAC addresses dynamically and "stick" them to the port so that only the learned addresses are permitted in the future.
- **Violation Actions:** Specify what the switch should do if an unauthorized MAC address tries to access the port. Common actions include shutting down the port, dropping packets, or generating alerts.

IMPORTANT :

Summary

Port security is essential for network security, especially in environments where physical access to the network is not entirely controlled. By configuring port security on individual interfaces (or a range of interfaces), you can prevent unauthorized devices from accessing your network, reduce security risks, and protect against certain types of network attacks.

These are the interfaces that I have secured :

Fa0/2

```
Switch#conf t
Switch#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fa0/2
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
Switch(config-if)#sw
Switch(config-if)#switchport port-security
Switch(config-if)#sw
Switch(config-if)#switchport port-security maximum 1
Switch(config-if)#sw
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#exit
Switch(config)#write memory
^
% Invalid input detected at '^' marker.
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch#write memory
Building configuration...
[OK]
Switch# show port-security interface fa0/2
Port Security : Enabled
Port Status : Secure-up
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
```

Fa0/3

```
Switch>enable
Switch#conf t
Switch#conf terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Switch(config)#inter
Switch(config)#interface fa0/3
Switch(config-if)#sw
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
Switch(config-if)#switchport port-security
Switch(config-if)#sw
Switch(config-if)#switchport port-security maximum 1
Switch(config-if)#sw
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch#write memory
Building configuration...
[OK]
Switch# show port-security interface fa0/3
Port Security : Enabled
Port Status : Secure-up
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
```

Switch#

Fa0/4

```
Switch#conf t
Switch#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#inter
Switch(config)#interface fa0/4
Switch(config-if)#sw
```

```
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
Switch(config-if)#sw
Switch(config-if)#switchport port-security
Switch(config-if)#sw
Switch(config-if)#switchport port-security maximum 1
Switch(config-if)#sw
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch# write memory
Building configuration...
[OK]
Switch# show port-security interface fa0/4
Port Security : Enabled
Port Status : Secure-up
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
```

Switch#

Fa0/5

```
Switch# conf t
Switch# conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#inter
Switch(config)#interface fa0/5
Switch(config-if)#sw
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
```

```
Switch(config-if)#sw
Switch(config-if)#switchport port-security
Switch(config-if)#sw
Switch(config-if)#switchport port-security maximum 1
Switch(config-if)#sw
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch# write memory
Building configuration...
[OK]
Switch# show port-security interface fa0/5
Port Security : Enabled
Port Status : Secure-up
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
```

Switch#

Fa0/6

```
Switch#
Switch# conf t
Switch# conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#inter
Switch(config)#interface fa0/6
Switch(config-if)#sw
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
Switch(config-if)#sw
Switch(config-if)#switchport port-security maximum 1
```

```
Switch(config-if)#sw
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch# write memory
Building configuration...
[OK]
Switch# show port-security interface fa0/6
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
```

Switch#

Fa0/7

```
Switch#conf t
Switch#conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#inter
Switch(config)#interface fa0/7
Switch(config-if)#sw
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
Switch(config-if)#sw
Switch(config-if)#switchport port-security
Switch(config-if)#sw
Switch(config-if)#switchport port-security maximum 1
Switch(config-if)#sw
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#exit
```

```
Switch(config)#exit  
Switch#  
%SYS-5-CONFIG_I: Configured from console by console
```

```
Switch# write memory  
Building configuration...  
[OK]  
Switch# show port-security interface fa0/7  
Port Security : Enabled  
Port Status : Secure-up  
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
```

```
Switch#  
Fa0/8  
Switch#conf t  
Switch#conf terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Switch(config)#inter  
Switch(config)#interface fa0/8  
Switch(config-if)#sw  
Switch(config-if)#switchport mo  
Switch(config-if)#switchport mode ac  
Switch(config-if)#switchport mode access  
Switch(config-if)#sw  
Switch(config-if)#switchport port-security  
Switch(config-if)#sw  
Switch(config-if)#switchport por  
Switch(config-if)#switchport port-security max  
Switch(config-if)#switchport port-security maximum 1  
Switch(config-if)#sw  
Switch(config-if)#switchport port-security mac-address sticky  
Switch(config-if)#exit  
Switch(config)#exit
```

Switch#

%SYS-5-CONFIG_I: Configured from console by console

Switch# write memory

Building configuration...

[OK]

Switch# show port-security interface fa0/8

Port Security : Enabled

Port Status : Secure-up

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

Fa0/9

Switch#

Switch# conf t

Switch# conf terminal

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#inter

Switch(config)#interface fa0/9

Switch(config-if)#sw

Switch(config-if)#switchport mo

Switch(config-if)#switchport mode ac

Switch(config-if)#switchport mode access

Switch(config-if)#sw

Switch(config-if)#switchport por

Switch(config-if)#switchport port-security

Switch(config-if)#sw

Switch(config-if)#switchport por

Switch(config-if)#switchport port-security max

Switch(config-if)#switchport port-security maximum 1

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

Switch(config-if)#exit

Switch(config)#exit

Switch#

%SYS-5-CONFIG_I: Configured from console by console

```
Switch# write memory
Building configuration...
[OK]
Switch# show port-security interface fa0/9
Port Security : Enabled
Port Status : Secure-up
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
```

Fa0/10

```
Switch# conf t
Switch# conf terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#inter
Switch(config)#interface fa0/10
Switch(config-if)#sw
Switch(config-if)#switchport mo
Switch(config-if)#switchport mode ac
Switch(config-if)#switchport mode access
Switch(config-if)#sw
Switch(config-if)#switchport por
Switch(config-if)#switchport port-security
Switch(config-if)#sw
Switch(config-if)#switchport port
Switch(config-if)#switchport port-security max
Switch(config-if)#switchport port-security maximum 1
Switch(config-if)#switchport port-security mac-address sticky
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
```

Switch# write memory

Building configuration...

[OK]

Switch# show port-security interface fa0/10

Port Security : Enabled

Port Status : Secure-up

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

Fa0/11

Switch# show port-security interface fa0/11

Port Security : Enabled

Port Status : Secure-up

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

Fa0/12

Switch# show port-security interface fa0/12

Port Security : Enabled

Port Status : Secure-up

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

Fa0/13

Switch# show port-security interface fa0/13
Port Security : Enabled
Port Status : Secure-up
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

Fa0/14

Switch# show port-security interface fa0/14
Port Security : Enabled
Port Status : Secure-up
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

Fa0/15

Switch# show port-security interface fa0/15
Port Security : Enabled
Port Status : Secure-up

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

Fa0/16

Switch# show port-security interface fa0/16
Port Security : Enabled
Port Status : Secure-up
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

Fa0/17

Switch# show port-security interface fa0/17
Port Security : Enabled
Port Status : Secure-up
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

Why Use a Management Interface?

Having a management interface allows IT teams to securely monitor and manage switches without impacting regular network traffic. Additionally, by configuring the management interface on a separate VLAN or IP subnet, it provides a layer of security, as only authorized devices (such as those in an HQ IT subnet) can access the switch for management purposes.