Overview of Port Security

You can use the port security feature to restrict input to an interface by limiting and identifying MAC addresses of the workstations that are allowed to access the port. When you assign secure MAC addresses to a secure port, the port does not forward packets with source addresses outside the group of defined addresses. If you limit the number of secure MAC addresses to one and assign a single secure MAC address, the workstation attached to that port is assured the full bandwidth of the port.

If a port is configured as a secure port and the maximum number of secure MAC addresses is reached, when the MAC address of a workstation attempting to access the port is different from any of the identified secure MAC addresses, a security violation occurs.

After you have set the maximum number of secure MAC addresses on a port, the secure addresses are included in an address table in one of these ways:

- You can configure all secure MAC addresses by using the **switchport port-security mac-address** mac_address interface configuration command.
- You can allow the port to dynamically configure secure MAC addresses with the MAC addresses of connected devices.
- You can configure a number of addresses and allow the rest to be dynamically configured.

Note If the port shuts down, all dynamically learned addresses are removed.

- You can configure MAC addresses to be sticky. These can be dynamically learned or manually configured, stored in the address table, and added to the running configuration. If these addresses are saved in the configuration file, the interface does not need to dynamically relearn them when the switch restarts. Although sticky secure addresses can be manually configured, it is not recommended.

You can configure an interface to convert the dynamic MAC addresses to sticky secure MAC addresses and to add them to the running configuration by enabling *sticky* *learning*. To enable sticky learning, enter the **switchport port-security mac-address sticky** command. When you enter this command, the interface converts all the dynamic secure MAC addresses, including those that were dynamically learned before sticky learning was enabled, to sticky secure MAC addresses.

The sticky secure MAC addresses do not automatically become part of the configuration file, which is the startup configuration used each time the switch restarts. If you save the sticky secure MAC addresses in the configuration file, when the switch restarts, the interface does not need to relearn these addresses. If you do not save the configuration, they are lost.

If sticky learning is disabled, the sticky secure MAC addresses are converted to dynamic secure addresses and are removed from the running configuration.

After the maximum number of secure MAC addresses is configured, they are stored in an address table. To ensure that an attached device has the full bandwidth of the port, configure the MAC address of the attached device and set the maximum number of addresses to one, which is the default.

Note When a Catalyst 4500 series switch port is configured to support voice as well as port security, the maximum number of allowable MAC addresses on this port should be changed to three.

A security violation occurs if the maximum number of secure MAC addresses has been added to the address table and a workstation whose MAC address is not in the address table attempts to access the interface.

You can configure the interface for one of these violation modes, based on the action to be taken if a violation occurs:

- Restrict—A port security violation restricts data, causes the SecurityViolation counter to increment, and causes an SNMP Notification to be generated. The rate at which SNMP traps are generated can be controlled by the snmp-server enable traps port-security trap-rate command. The default value ("0") causes an SNMP trap to be generated for every security violation.

- Shutdown—A port security violation causes the interface to shut down immediately. When a secure port is in the error-disabled state, you can bring it out of this state by entering the **errdisable recovery cause** psecure-violation global configuration command or you can manually reenable it by entering the **shutdown** and **no shut down** interface configuration commands. This is the default mode.

  You can also customize the time to recover from the specified error disable cause (default is 300 seconds) by entering the **errdisable recovery interval** interval command.

Default Port Security Configuration

The below tableshows the default port security configuration for an interface.

Feature	**Default Setting**
Port security	Disabled on a port
Maximum number of secure MAC addresses	1
Violation mode	Shutdown. The port shuts down when the maximum number of secure MAC addresses is exceeded, and an SNMP trap notification is sent.
Aging	Disabled
Aging type	Absolute
Static Aging	Disabled
Sticky	Disabled

Table 32-1 Default Port Security Configuration

Port Security Guidelines and Restrictions

Follow these guidelines when configuring port security:

- A secure port cannot be a trunk port.
- A secure port cannot be a destination port for Switch Port Analyzer (SPAN).
- A secure port cannot belong to an EtherChannel port-channel interface.
- A secure port and static MAC address configuration are mutually exclusive.