

2. Simulation Commands & Configuration

A. Cisco CLI Modes

Mode	Prompt	Purpose/Access	Key Action
User EXEC	Switch>	Default mode, limited commands for basic tests/display.	Enable to proceed.
Privileged EXEC	Switch#	Full viewing/testing, non-configuration commands.	configure terminal to proceed.
Global Configuration	Switch(config)#	Change global settings like hostname and passwords.	interface [type/num] to proceed.
Interface Configuration	Switch(config-if)#	Change settings for a specific port (e.g., speed, duplex, port security).	exit to go back.

B. Configuration Commands

Task	Configuration Mode	Command	Notes
Change Hostname	(config)#	hostname ALSwitch	Sets a descriptive name for the device.
Secure Console	(config-line)#	password cisco and login	Applied after line console 0. Prevents unauthorized physical access.
Secure VTY (Telnet)	(config-line)#	line vty 0 4 then password cisco and login	Secures virtual access lines (for remote management).

Assign Management IP	(config-if)#	interface vlan 1 then ip address 192.168.1.2 255.255.255.0	IP is configured on the virtual management interface (VLAN 1).
Set Default Gateway	(config)#	ip default-gateway 192.168.1.1	Allows the switch to communicate with devices in other networks.
Wipe Config	Switch#	erase startup-config and reload	Deletes the saved configuration in NVRAM and reboots.

C. Port Security Configuration

Port security limits the number of MAC addresses a switch port can learn, preventing unauthorized devices.

Command	Configuration Mode	Description
interface [Fa0/x]	Switch#	Selects the specific port to configure.
switchport mode access	(config-if)#	Sets the port type (required for port security).
switchport port-security	(config-if)#	Enables the port security feature on the interface.
switchport port-security maximum 1	(config-if)#	Sets the maximum learned MAC addresses to one.
switchport port-security violation shutdown	(config-if)#	Specifies the action when a violation occurs (shuts down the port).
switchport port-security mac-address [MAC]	(config-if)#	Manually configures a Static MAC address (never ages out, enhancing security).

D. Verification Commands (Essential for Troubleshooting)

Command	Purpose
show running-config	View the <i>currently active</i> configuration (in RAM).
show interface [type/num]	Check the line and protocol status of a specific port (is it UP?).
show mac-address-table	View the learned MAC addresses and which port they are associated with. (Dynamic MAC entries age out after 300 seconds.)
show port-security	View the global port security status for all ports.
show port-security interface [type/num]	Verify the exact port security settings (Max, Current MACs, Violation Mode) on a specific interface.
show version	Check the Cisco IOS software version and the switch's uptime.