

**Aim ⇨ To use the IOS commands for the basic configurations of the Switch in CPT.**

**Objectives ⇨**

- To use the console cable to connect the switch with the remote PC.
- To configure the switch using basic IOS commands using the terminal connection.

**Software Required ⇨ Cisco Packet Tracer**

**Theory ⇨**

A switch is a network device used to connect multiple devices within a local area network [LAN]. It operates at Layer 2 [Data Link Layer] of the OSI model and forwards data packets based on MAC addresses. Switches play a critical role in managing data traffic and ensuring efficient communication between devices on the same network.

To configure a switch, a direct connection between the switch and a PC [host or console PC] is required. This connection is typically made using a console cable [RS-232 or USB-to-Serial]. The console cable allows the user to access the switch's command-line interface [CLI] from the PC, enabling configuration and management.

**Using Console Cable for Connection ↴**

- a) **Console Cable:** A special cable that connects the PC to the switch's console port, enabling access to the switch's command-line interface [CLI].
- b) **Terminal Connection:** The connection is established using terminal software on the PC, such as Terminal in CPT, PuTTY, or Tera Term.

**Description of Commands Used ↴**

- i. **enable [en]:** Activates privileged EXEC mode, granting access to more advanced commands. This mode is essential for configuring the switch.
- ii. **configure terminal [config t]:** Enters global configuration mode, where the main configuration changes for the switch can be made.
- iii. **hostname [name]:** Sets the name of the switch, which is useful for identifying the device in a network.
- iv. **line console 0:** Enters console line configuration mode, which allows settings related to the console connection to be modified.

- v. **password [your\_password]**: Sets a password for the console line. This enhances security by requiring authentication to access the CLI.
- vi. **login**: Enables password checking at the login prompt, ensuring that the set password is required to access the console.
- vii. **exec-timeout [minutes] [seconds]**: Sets an inactivity timeout for the console line, which automatically logs the user out if there is no activity for the specified time.
- viii. **do show running-config [do sh run]**: Displays the current configuration running on the switch, allowing the user to verify settings.
- ix. **do show startup-config [do sh start]**: Displays the configuration saved in NVRAM, which is used when the switch starts up.
- x. **service**: Activates certain optional services on the switch, but it is usually used to enhance or modify the default behavior.
- xi. **service password-encryption**: Encrypts all passwords on the switch, adding an extra layer of security by preventing the plain text display of passwords in the configuration file.
- xii. **enable password [your\_password]**: Sets a password for entering privileged EXEC mode, adding an extra layer of security when accessing advanced commands.
- xiii. **exit**: Exits the current configuration mode and returns to the previous mode. This is used to navigate between configuration levels.

## Simulation ⇄

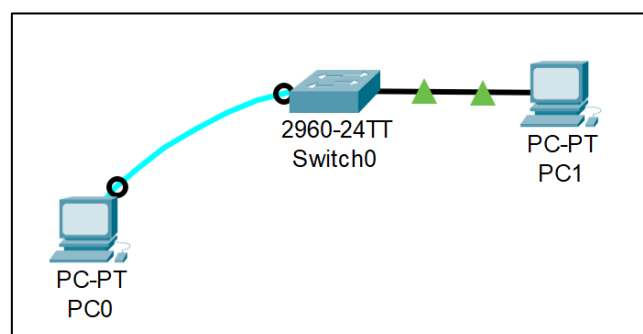


Fig. i) Switch Configuration

```

Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

Switch>en
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname Steve
Steve(config)#line console 0
Steve(config-line)#password cpt
Steve(config-line)#login
Steve(config-line)#exit
Steve(config)#?
Configure commands:
aaa                Authentication, Authorization and Accounting.
access-list        Add an access list entry
banner             Define a login banner
boot              Boot Commands
cdp               Global CDP configuration subcommands
clock             Configure time-of-day clock
crypto            Encryption module
default           Set a command to its defaults
do-exec          To run exec commands in config mode
dot1x            IEEE 802.1X Global Configuration Commands
enable           Modify enable password parameters
end              Exit from configure mode
exit             Exit from configure mode
hostname          Set system's network name
interface         Select an interface to configure
ip               Global IP configuration subcommands
line             Configure a terminal line
lldp             Global LLDP configuration subcommands
logging          Modify message logging facilities
mac             MAC configuration
mls              mls global commands
monitor          SPAN information and configuration
no              Negate a command or set its defaults
ntp             Configure NTP
port-channel     EtherChannel configuration
privilege        Command privilege parameters
sdm             Switch database management
service         Modify use of network based services
snmp-server     Modify SNMP engine parameters
spanning-tree   Spanning Tree Subsystem
tacacs-server   Modify TACACS query parameters
username        Establish User Name Authentication
vlan            Vlan commands
vtp             Configure global VTP state
Steve(config)#banner motd #For authorized personnel only.#

```

```

Steve(config)#line console 0
Steve(config-line)#?
Line configuration commands:
access-class      Filter connections based on an IP access list
accounting        Accounting parameters
databits          Set number of data bits per character
default           Set a command to its defaults
exec-timeout      Set the EXEC timeout
exit             Exit from line configuration mode
flowcontrol       Set the flow control
history          Enable and control the command history function
logging          Modify message logging facilities
login            Enable password checking
motd-banner       Enable the display of the MOTD banner
no              Negate a command or set its defaults
parity           Set terminal parity
password          Set a password
privilege         Change privilege level for line
speed            Set the transmit and receive speeds
stopbits         Set async line stop bits
transport         Define transport protocols for line
Steve(config-line)#exec-timeout ?
<0-35791> Timeout in minutes
Steve(config-line)#exec-timeout 1 0
Steve(config-line)#exit

Steve con0 is now available

Press RETURN to get started.|

```

```

Steve(config)#do sh run
Building configuration...

Current configuration : 1164 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Steve
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!

```

```

interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
no ip address
shutdown
!
banner motd ^CFor authorized personnel only.^C
!
!
!
!
!
line con 0
password cpt
login
exec-timeout 0 15
!
line vty 0 4
login
line vty 5 15
login
!
!
!
!
end

```

For authorized personnel only.

User Access Verification

Password:

```

Steve>en
Steve#config t
Enter configuration commands, one per line. End with CNTL/Z.
Steve(config)#service?
service
Steve(config)#service password?
password-encryption
Steve(config)#service password-encryption
Steve(config)#exit

```

```

interface Vlan1
no ip address
shutdown
!
banner motd ^CFor authorized personnel only.^C
!
!
!
!
!
line con 0
password 7 08225C5A
login
exec-timeout 1 0
!
line vty 0 4
login
line vty 5 15
login
!
!
!
!
end

```

```
For authorized personnel only.

User Access Verification

Password:

Steve>en
Steve#config t
Enter configuration commands, one per line. End with CNTL/Z.
Steve(config)#enable password cpt2
Steve(config)#exit
Steve#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

```
For authorized personnel only.

User Access Verification

Password:

Steve>en
Password:
Steve#
```

Fig. ii) Various Commands

## Result ↔

The switch was successfully configured using basic IOS commands in Cisco Packet Tracer. A console cable connected the switch to the PC, allowing terminal access to the CLI. Configurations like setting the hostname, securing access with passwords, and enabling password encryption were verified with the show running-config command, meeting the experiment's objectives.

## Conclusion ↔

This experiment showed how to configure a switch using IOS commands in Cisco Packet Tracer. It offered practical insights into switch setup, security, and command-line management, providing valuable experience in network switch configuration.

## Precautions ↔

- Ensure the correct console cable is used for connecting the switch and PC.
- Verify the correct syntax for each command to avoid configuration errors.
- Secure the switch with appropriate passwords and enable password encryption to protect configuration access.
- Regularly save the running configuration to avoid losing changes after a reboot.