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 ↬

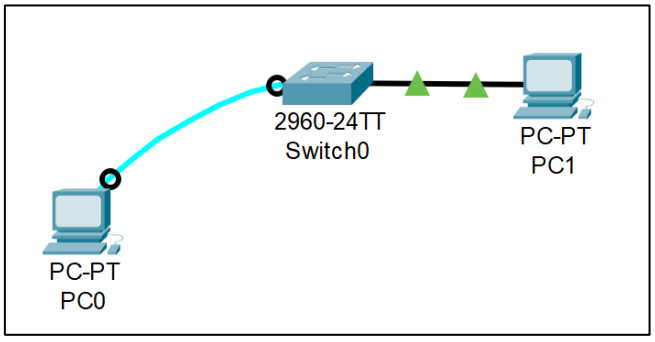


Fig. i) Switch Configuration

```
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
```

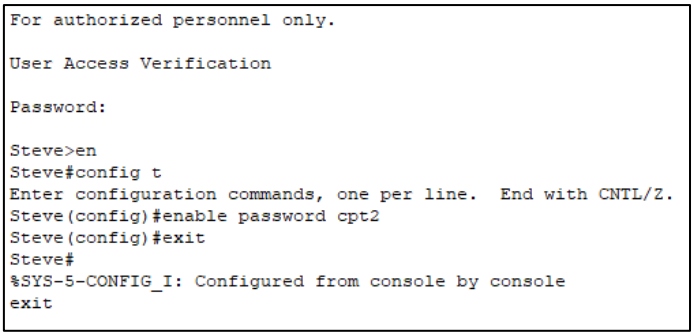
```
For authorized personnel only.

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
```



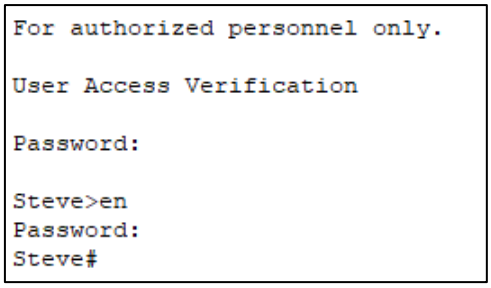


Fig. ii) Various Commands

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.