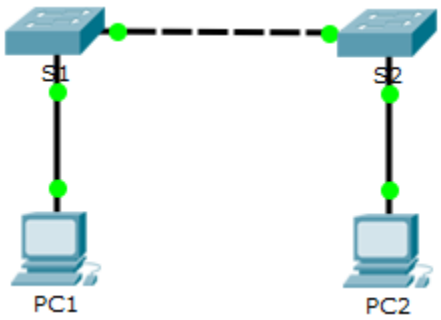
Packet Tracer - Configuring Initial Switch Settings

Topology



Objectives

Part 1: Verify the Default Switch Configuration

Part 2: Configure a Basic Switch Configuration

Part 3: Configure a MOTD Banner

Part 4: Save Configuration Files to NVRAM

Part 5: Configure S2

Background

In this activity, you will perform basic switch configurations. You will secure access to the command-line interface (CLI) and console ports using encrypted and plain text passwords. You will also learn how to configure messages for users logging into the switch. These banners are also used to warn unauthorized users that access is prohibited.

Part 1: Verify the Default Switch Configuration

Step 1: Enter privileged EXEC mode.

You can access all switch commands from privileged EXEC mode. However, because many of the privileged commands configure operating parameters, privileged access should be password-protected to prevent unauthorized use.

The privileged EXEC command set includes those commands contained in user EXEC mode, as well as the **configure** command through which access to the remaining command modes are gained.

a. Click **S1** and then the **CLI** tab. Press Enter.

b. Enter privileged EXEC mode by entering the **enable** command:

```
Switch> enable
Switch#
```

```
Switch>enable
Switch#
```

Notice that the prompt changed in the configuration to reflect privileged EXEC mode.

Step 2: Examine the current switch configuration.

a. Enter the **show running-config** command.

```
Switch# show running-config
```

b. Answer the following questions:

1) How many FastEthernet interfaces does the switch have? **24**

2) How many Gigabit Ethernet interfaces does the switch have? **2**

3) What is the range of values shown for the vty lines? **vty 0 4, vty 5 15 which I guess 0 15**

4) Which command will display the current contents of non-volatile random-access memory (NVRAM)?

```
Switch#
Switch#show ?
  access-lists       List access lists
  arp                Arp table
  boot               show boot attributes
  cdp                CDP information
  clock              Display the system clock
  crypto             Encryption module
  dhcp               Dynamic Host Configuration Protocol status
  dtp                DTP information
  etherchannel       EtherChannel information
  flash:             display information about flash: file system
  history            Display the session command history
  hosts              IP domain-name, lookup style, nameservers, and host table
  interfaces         Interface status and configuration
  ip                 IP information
  lldp               LLDP information
  logging            Show the contents of logging buffers
  mac                MAC configuration
  mac-address-table  MAC forwarding table
  mls                Show MultiLayer Switching information
  monitor            SPAN information and configuration
  ntp                Network time protocol
  port-security      Show secure port information
  privilege          Show current privilege level
  processes          Active process statistics
  running-config     Current operating configuration
  sdm                Switch database management
  sessions           Information about Telnet connections
  snmp               snmp statistics
  spanning-tree      Spanning tree topology
  ssh                Status of SSH server connections
  startup-config     Contents of startup configuration
  storm-control      Show storm control configuration
 --More--
```

5) Why does the switch respond with `startup-config is not present`?

it means that there is no configuration file saved in the non-volatile random-access memory (NVRAM) of the switch.

Part 2: Create a Basic Switch Configuration

Step 1: Assign a name to a switch.

To configure parameters on a switch, you may be required to move between various configuration modes. Notice how the prompt changes as you navigate through the switch.

```
Switch# configure terminal
Switch(config)# hostname S1
S1(config)# exit
S1#
```

```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname S1
S1(config)#exit
S1#
%SYS-5-CONFIG_I: Configured from console by console
```

Step 2: Secure access to the console line.

To secure access to the console line, access config-line mode and set the console password to **letmein**.

```
S1# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
S1(config)# line console 0
S1(config-line)# password letmein
S1(config-line)# login
S1(config-line)# exit
S1(config)# exit
%SYS-5-CONFIG_I: Configured from console by console
S1#
```

Why is the **login** command required?

_to enable user to login, by configuring the "login" command, we are requiring users to enter a valid username and password before they can access the console
line._____

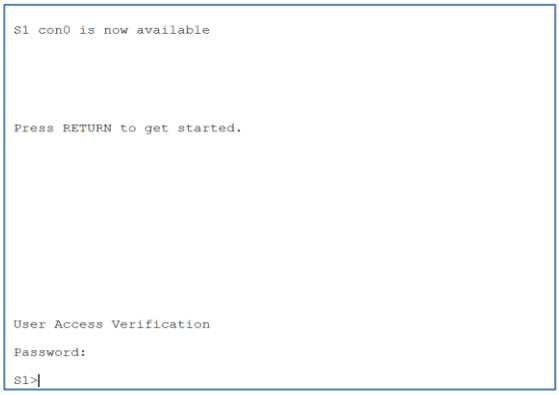
```
S1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#line console 0
S1(config-line)#password letmein
S1(config-line)#login
S1(config-line)#exit
S1(config)#exit
S1#
%SYS-5-CONFIG_I: Configured from console by console
```

Step 3: Verify that console access is secured.

Exit privileged mode to verify that the console port password is in effect.

```
S1# exit
Switch con0 is now available
Press RETURN to get started.

User Access Verification
Password:
S1>
```



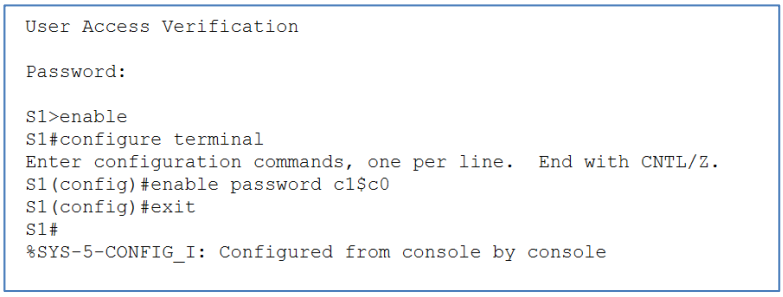
Note: If the switch did not prompt you for a password, then you did not configure the **login** parameter in Step 2.

Step 4: Secure privileged mode access.

Set the **enable** password to **c1$c0**. This password protects access to privileged mode.

Note: The **0** in **c1$c0** is a zero, not a capital O. This password will not grade as correct until after you encrypt it in Step 8.

```
S1> enable
S1# configure terminal
S1(config)# enable password c1$c0
S1(config)# exit
%SYS-5-CONFIG_I: Configured from console by console
S1#
```



Step 5: Verify that privileged mode access is secure.

a. Enter the **exit** command again to log out of the switch.

b. Press **<Enter>** and you will now be asked for a password:

```
User Access Verification
Password:
```

c. The first password is the console password you configured for **line con 0**. Enter this password to return to user EXEC mode.

d. Enter the command to access privileged mode.

e. Enter the second password you configured to protect privileged EXEC mode.

f. Verify your configurations by examining the contents of the running-configuration file:

```
S1# show running-config
```

```
Press RETURN to get started.

User Access Verification

Password:

S1>enable
Password:
S1#show running-config
Building configuration...

Current configuration : 1125 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S1
!
enable password c1$c0
!
!
```

```
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
!
!
!
line con 0
 password letmein
 login
!
line vty 0 4
 login
line vty 5 15
 login
!
!
!
!
end

S1#
```

Notice how the console and enable passwords are both in plain text. This could pose a security risk if someone is looking over your shoulder.

Step 6: Configure an encrypted password to secure access to privileged mode.

The **enable password** should be replaced with the newer encrypted secret password using the **enable secret** command. Set the enable secret password to **itsasecret**.

```
S1# config t
S1(config)# enable secret itsasecret
S1(config)# exit
S1#
```

```
S1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
S1(config)#enable secret itsasecret
S1(config)#exit
S1#
%SYS-5-CONFIG_I: Configured from console by console
```

Note: The **enable secret** password overrides the **enable** password. If both are configured on the switch, you must enter the **enable secret** password to enter privileged EXEC mode.

Step 7: Verify that the enable secret password is added to the configuration file.

a. Enter the **show running-config** command again to verify the new **enable secret** password is configured.

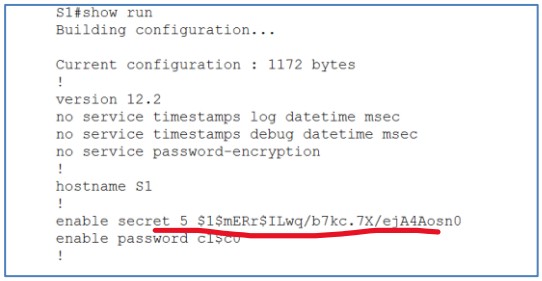
Note: You can abbreviate **show running-config** as

```
S1# show run
```

b. What is displayed for the **enable secret** password? **5 1mERr$ILwq/b7kc.7X/ejA4Aosn0** ____

c. Why is the **enable secret** password displayed differently from what we configured?

Because, it will enables a password and password encryption that based on the md5 hashing algorithm_____



```
S1#show run
Building configuration...

Current configuration : 1172 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S1
!
enable secret 5 $1$mERr$ILwq/b7kc.7X/ejA4Aosn0
enable password cisco
!
```

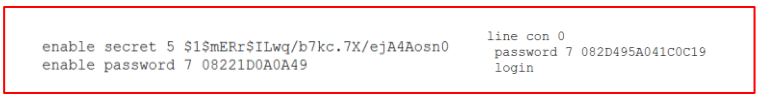
Step 8: Encrypt the enable and console passwords.

As you noticed in Step 7, the **enable secret** password was encrypted, but the **enable** and **console** passwords were still in plain text. We will now encrypt these plain text passwords using the **service password-encryption** command.

```
S1# config t
S1(config)# service password-encryption
S1(config)# exit
```

If you configure any more passwords on the switch, will they be displayed in the configuration file as plain text or in encrypted form? Explain.

the password will now be shown as encryption passwords because of the command service password-encryption, this command encrypt all the password in the switch.



```
enable secret 5 $1$mERr$ILwq/b7kc.7X/ejA4Aosn0
enable password 7 08221D0A0A49

line con 0
 password 7 082D495A041C0C19
 login
```

Part 3: Configure a MOTD Banner

Step 1: Configure a message of the day (MOTD) banner.

The Cisco IOS command set includes a feature that allows you to configure messages that anyone logging onto the switch sees. These messages are called message of the day, or MOTD banners. Enclose the banner text in quotations or use a delimiter different from any character appearing in the MOTD string.

```
S1# config t
S1(config)# banner motd "This is a secure system. Authorized Access Only!"
S1(config)# exit
%SYS-5-CONFIG_I: Configured from console by console
S1#
```

1) When will this banner be displayed?

he banner will be displayed after the user enters their username and password but before they are granted access to the privileged EXEC mode.

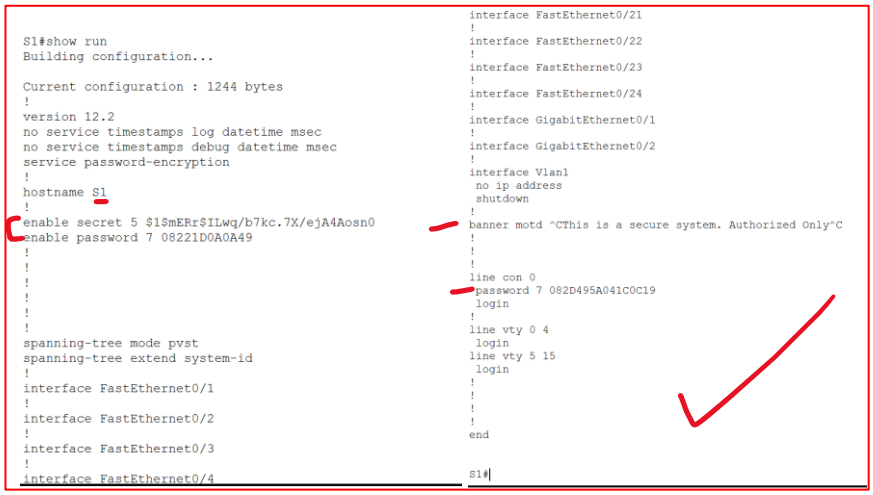
.

2) Why should every switch have a MOTD banner?

having a MOTD banner on every switch can help to improve security, meet compliance requirements, and provide important information to users who log into the device.

Part 4: Save Configuration Files to NVRAM

Step 1: Verify that the configuration is accurate using the show run command.



Step 2: Save the configuration file.

You have completed the basic configuration of the switch. Now back up the running configuration file to NVRAM to ensure that the changes made are not lost if the system is rebooted or loses power.

```
S1# copy running-config startup-config
Destination filename [startup-config]?[Enter]
Building configuration...
[OK]
```

```
S1#copy running-config startup-config?
startup-config
S1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
S1#
```

What is the shortest, abbreviated version of the **copy running-config startup-config** command?
"wr"/"write"

Step 3: Examine the startup configuration file.

Which command will display the contents of NVRAM? **show startup-config in privileged EXEC user**

Are all the changes that were entered recorded in the file? **Yes**

Part 5: Configure S2

You have completed the configuration on S1. You will now configure S2. If you cannot remember the commands, refer to Parts 1 to 4 for assistance.

Configure S2 with the following parameters:

a. Name device: **S2**

b. Protect access to the console using the **letmein** password.

c. Configure an enable password of **c1$c0** and an enable secret password of **itsasecret**.

d. Configure a message to those logging into the switch with the following message:

```
Authorized access only. Unauthorized access is prohibited and violators
will be prosecuted to the full extent of the law.
```

e. Encrypt all plain text passwords.

f. Ensure that the configuration is correct.

g. Save the configuration file to avoid loss if the switch is powered down.

_____

_____

_____

_____

_____

_____

_____

Step/s (a, b, c, d)

```
Switch>enable
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname S2
S2(config)#line console 0
S2(config-line)#password letmein
S2(config-line)#exit
S2(config)#line console 0
S2(config-line)#login
S2(config-line)#exit
S2(config)#enable password c1$c0.
S2(config)#enable password c1$c0
S2(config)#login
                ^
% Invalid input detected at '^' marker.

S2(config)#exit
S2#
%SYS-5-CONFIG_I: Configured from console by console

S2#config t
Enter configuration commands, one per line.  End with CNTL/Z.
S2(config)#enable secret itsasecret
S2(config)#exit
S2#
%SYS-5-CONFIG_I: Configured from console by console

S2#disable
S2>exit


S2#disable
S2>exit

S2>enable
Password:
S2#config t
Enter configuration commands, one per line.  End with CNTL/Z.
S2(config)#banner motd "Authorized access only. Unauthorized access is prohibited and violator
will be prosecuted to the full extent of the law."
```

Step/s (e, f)

Before encrypting (show startup-config)

```
S2(config)#exit
S2#
%SYS-5-CONFIG_I: Configured from console by console

S2#show run
Building configuration...

Current configuration : 1308 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname S2
!
enable secret 5 $1$mERr$ILwq/b7kc.7X/ejA4Aosn0
enable password c1$c0
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
banner motd ^CAuthorized access only. Unauthorized access is prohibited and violators will be
prosecuted to the full extent of the law.^C
!
!
!
line con 0
 password letmein
 login
!
line vty 0 4
 login
line vty 5 15
 login
!
!
!
end

S2#
```

After encryption (service pasword-encryption)

```
S2#config t
Enter configuration commands, one per line.  End with CNTL/Z.
S2(config)#services password-encryption
                ^
% Invalid input detected at '^' marker.

S2(config)#service password-encryption
S2(config)#exit
S2#
%SYS-5-CONFIG_I: Configured from console by console

S2#show startup-config
startup-config is not present
S2#show run
Building configuration...

Current configuration : 1325 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname S2
!
enable secret 5 $1$mERr$ILwq/b7kc.7X/ejA4Aosn0
enable password 7 08221D0A0A49
!
!
!
!
!
!
spanning-tree mode pvst
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 no ip address
 shutdown
!
banner motd ^CAuthorized access only. Unauthorized access is prohibited and violators will be
prosecuted to the full extent of the law.^C
!
!
!
line con 0
 password 7 082D495A041C0C19
 login
!
line vty 0 4
 login
line vty 5 15
 login
!
!
!
!
end
```

Step (g)

Confirm all the configration have been saved to the NVRAM

```
S2#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
S2#show startup-config
Using 1325 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname S2
!
enable secret 5 $1$mERr$ILwq/b7kc.7X/ejA4Aosn0
enable password 7 08221D0A0A49
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
!
interface Vlan1
 no ip address
 shutdown
!
banner motd ^CAuthorized access only. Unauthorized access is prohibited and violators will b
prosecuted to the full extent of the law.^C
!
!
!
line con 0
 password 7 082D495A041C0C19
 login
!
line vty 0 4
 login
line vty 5 15
 login
!
!
!
!
end

S2#
```

Suggested Scoring Rubric

Activity Section	Question Location	Possible Points	Earned Points
Part 1: Verify the Default Switch Configuration	Step 2b, q1	2	
	Step 2b, q2	2	
	Step 2b, q3	2	
	Step 2b, q4	2	
	Step 2b, q5	2	
	Part 1 Total	**10**	
Part 2: Create a Basic Switch Configuration	Step 2	2	
	Step 7b	2	
	Step 7c	2	
	Step 8	2	
	Part 2 Total	**8**	
Part 3: Configure a MOTD Banner	Step 1, q1	2	
	Step 1, q2	2	
	Part 3 Total	**4**	
Part 4: Save Configuration Files to NVRAM	Step 2	2	
	Step 3, q1	2	
	Step 3, q2	2	
	Part 4 Total	**6**	
	Packet Tracer Score	**72**	
	Total Score	**100**	

Result