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Activity Report
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Subject: Computer Networks and Security
Subject Code: 18CS52

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B.N.M. Institute of Technology

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Department of Computer Science and Engineering

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1. Introduction about Cisco Packet Tracer

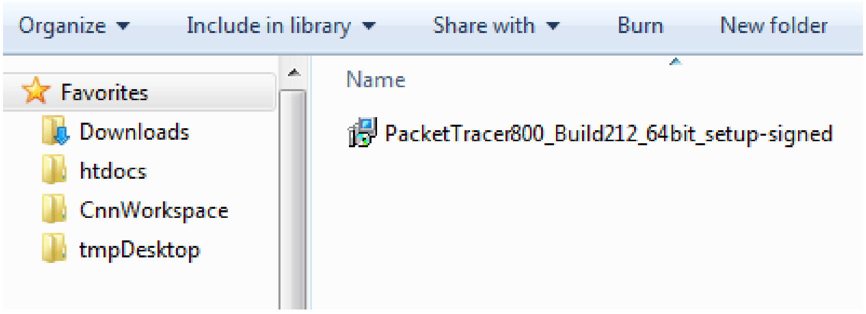
Packet Tracer is a protocol simulator developed at Cisco Systems. Packet Tracer (PT) is a powerful and dynamic tool that displays the various protocols used in networking. Routing protocols can also be traced. Packet Tracer is a supplement for experience with real equipment by creating a network with an almost unlimited number of devices, encouraging practice, discovery and troubleshooting. It makes the job easier for Engineers allowing them to add or remove simulated network devices, with a Command line interface and a drag and drop user interface. Cisco Packet Tracer is a powerful network simulation program that allows to perform experiment with network behaviour.. Packet Tracer provides simulation, visualization, authoring, assessment, and collaboration capabilities to facilitate the teaching and learning of complex technology concepts.

2. Steps to download the software

Download the latest version or the version of Packet Tracer to install on the Windows system. Download the installer file of Packet Tracer from the following web page.

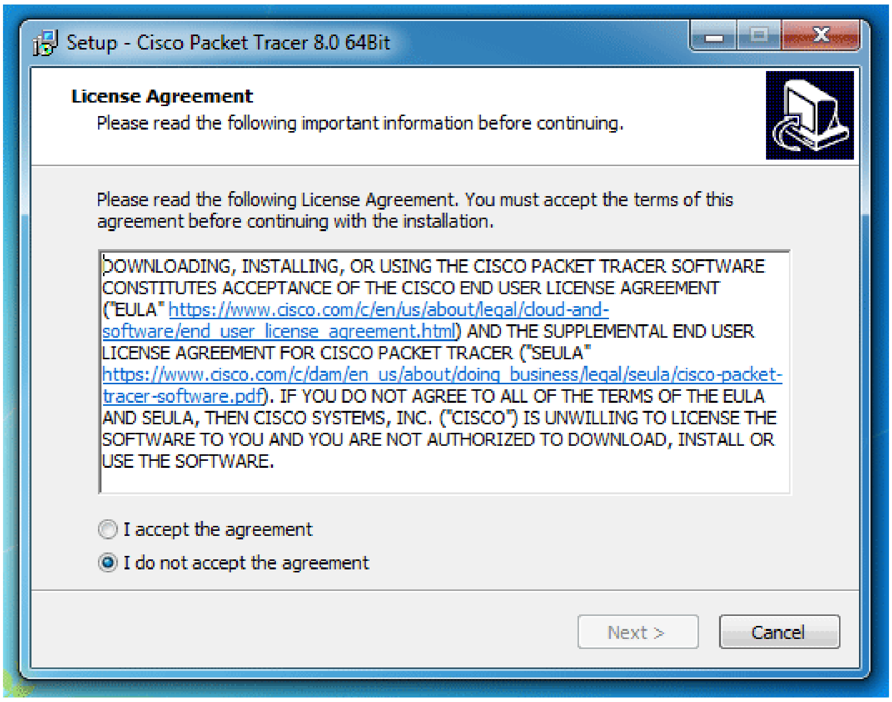
https://archive.org/download/packet-tracer-800-build-212-mac-notarized/PacketTracer800_Build212_64bit_setup-signed.exe

Once the downloading is finished, open the folder that contains the downloaded file.



Double click the setup or installer file of Packet Tracer. Depending on UAC (User Access Control) setting, Windows may prompt to confirm the installation. If it prompts, click the **Yes** button to confirm the installation. After confirmation, the installation process starts in a graphical wizard.

The first screen of the installation wizard presents the license agreement. Select the **"I accept the agreement"** option and click the **"Next"** button.



Setup - Cisco Packet Tracer 8.0 64Bit

License Agreement

Please read the following important information before continuing.

Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

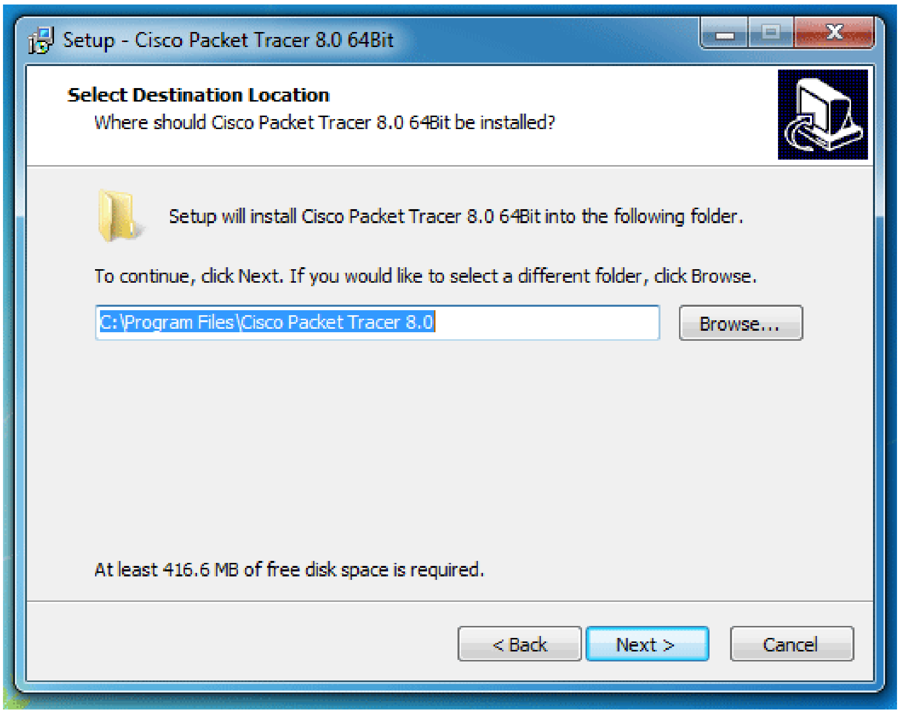
DOWNLOADING, INSTALLING, OR USING THE CISCO PACKET TRACER SOFTWARE CONSTITUTES ACCEPTANCE OF THE CISCO END USER LICENSE AGREEMENT ("EULA" https://www.cisco.com/c/en/us/about/legal/cloud-and-software/end_user_license_agreement.html) AND THE SUPPLEMENTAL END USER LICENSE AGREEMENT FOR CISCO PACKET TRACER ("SEULA" https://www.cisco.com/c/dam/en_us/about/doing_business/legal/seula/cisco-packet-tracer-software.pdf). IF YOU DO NOT AGREE TO ALL OF THE TERMS OF THE EULA AND SEULA, THEN CISCO SYSTEMS, INC. ("CISCO") IS UNWILLING TO LICENSE THE SOFTWARE TO YOU AND YOU ARE NOT AUTHORIZED TO DOWNLOAD, INSTALL OR USE THE SOFTWARE.

○ I accept the agreement

● I do not accept the agreement

The next screen provides an option to customize the installation directory. By default, Packet Tracer is installed in the **"Program File"** folder of the Windows partition. To install Packet Tracer in another folder, click the **Browse** button and select the folder to install Packet Tracer.

Make the choice and click the **Next** button to continue the installation.



Setup - Cisco Packet Tracer 8.0 64Bit

Select Destination Location

Where should Cisco Packet Tracer 8.0 64Bit be installed?

Setup will install Cisco Packet Tracer 8.0 64Bit into the following folder.

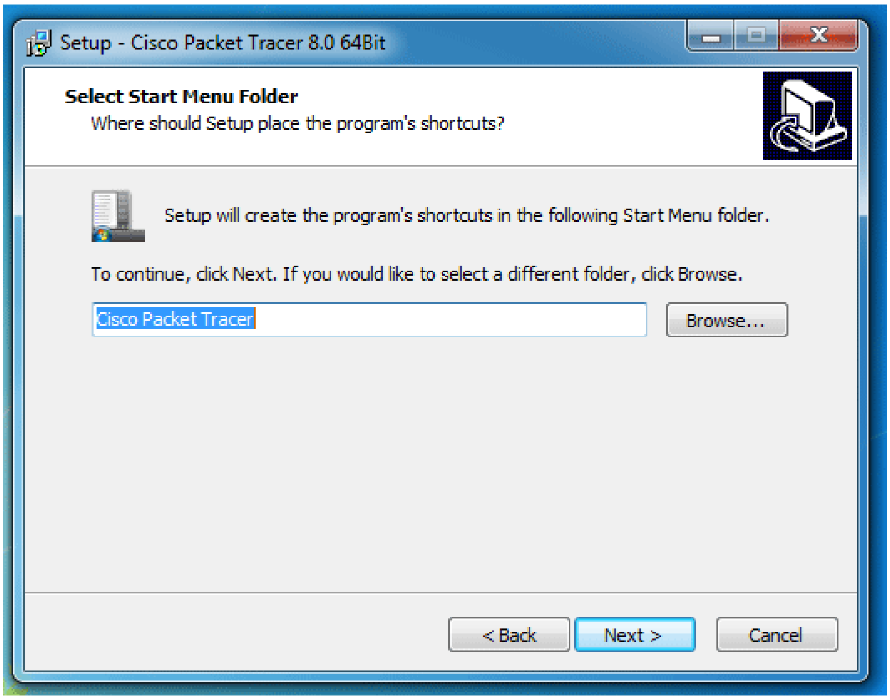
To continue, click Next. If you would like to select a different folder, click Browse.

C:\Program Files\Cisco Packet Tracer 8.0

At least 416.6 MB of free disk space is required.

The next screen allows to customize the shortcut-link name and the location of Packet Tracer in the Start menu.

A shortcut-link name is used to launch an application from the Start menu. By default, the wizard uses the name **"Cisco Packet Tracer"** for both the folder-name and the shortcut-link name. Keep default selections and click the **Next** button.



Setup - Cisco Packet Tracer 8.0 64Bit

Select Start Menu Folder

Where should Setup place the program's shortcuts?

Setup will create the program's shortcuts in the following Start Menu folder.

To continue, click Next. If you would like to select a different folder, click Browse.

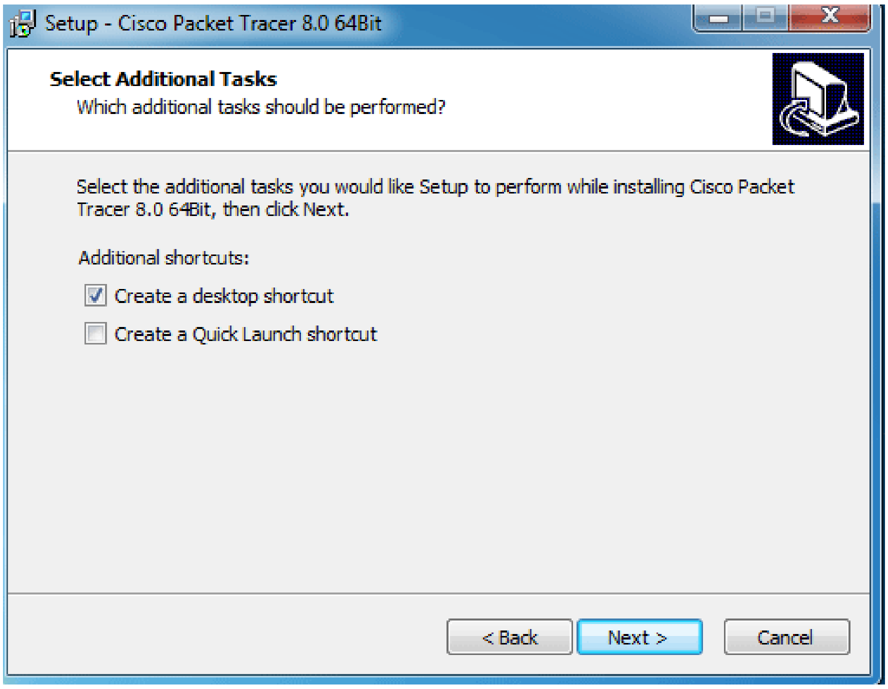
Cisco Packet Tracer

The next screen allows to create two more shortcut links to launch the Packet Tracer.

Create a desktop icon: - This option creates a shortcut link on the Desktop.

Create a quick launch icon: - This option creates a shortcut link in the Quick-Launch bar.

Make the choice and click the **Next** button.



Setup - Cisco Packet Tracer 8.0 64Bit

Select Additional Tasks

Which additional tasks should be performed?

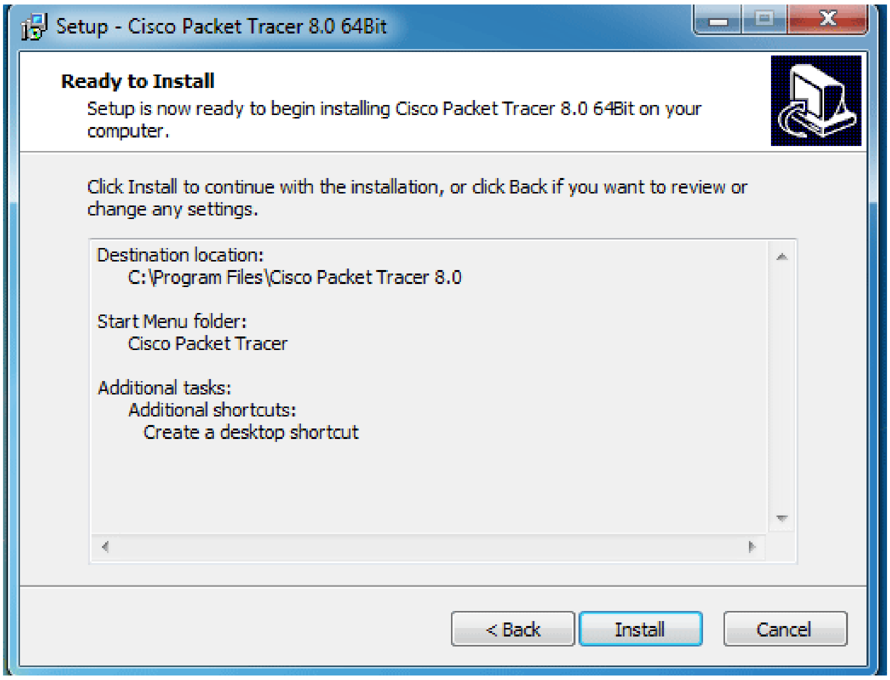
Select the additional tasks you would like Setup to perform while installing Cisco Packet Tracer 8.0 64Bit, then click Next.

Additional shortcuts:

☑ Create a desktop shortcut

□ Create a Quick Launch shortcut

The next screen provides a summary of selections. To change an option, use the **Back** button to get that option. To start the installation with currently selected options, click the **Install** button.



Setup - Cisco Packet Tracer 8.0 64Bit

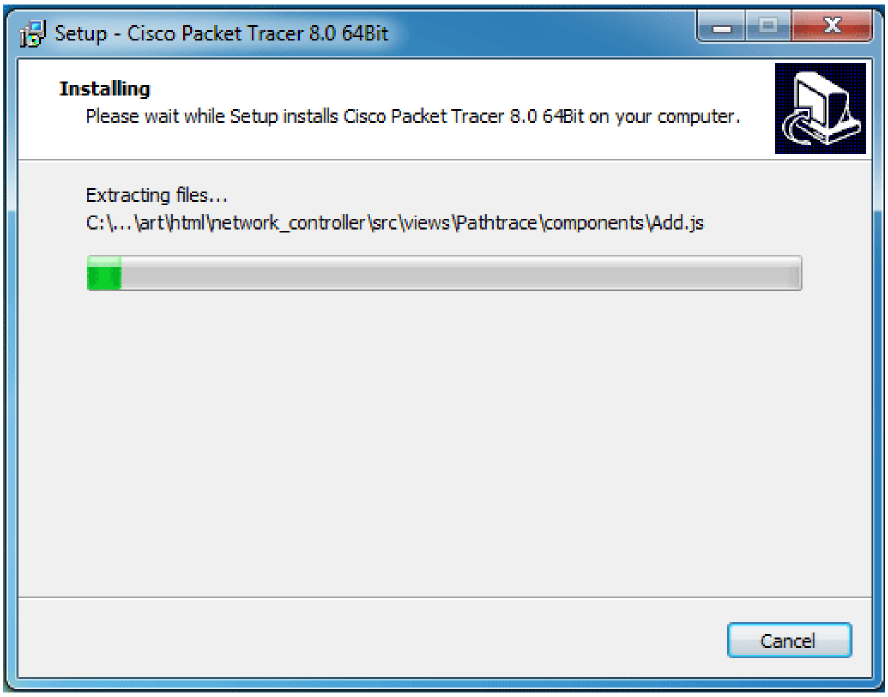
Ready to Install

Setup is now ready to begin installing Cisco Packet Tracer 8.0 64Bit on your computer.

Click Install to continue with the installation, or click Back if you want to review or change any settings.

```
Destination location:
    C:\Program Files\Cisco Packet Tracer 8.0

Start Menu folder:
    Cisco Packet Tracer

Additional tasks:
    Additional shortcuts:
      Create a desktop shortcut
```

The wizard displays the real-time progress of the installation.



Setup - Cisco Packet Tracer 8.0 64Bit

Installing

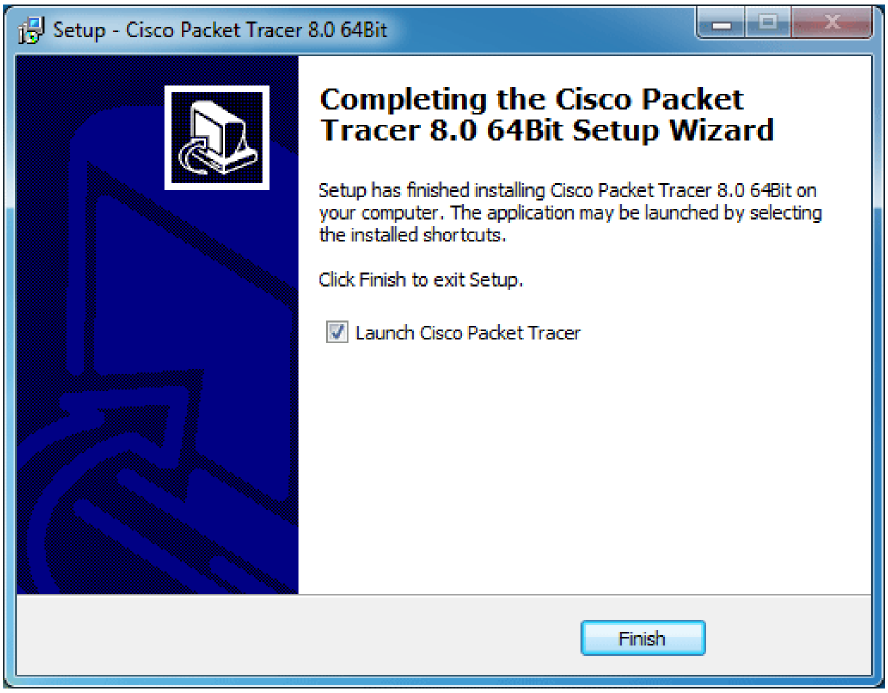
Please wait while Setup installs Cisco Packet Tracer 8.0 64Bit on your computer.

Extracting files...
C:\...\art\html\network_controller\src\views\Pathtrace\components\Add.js

The last screen of the wizard displays the result of the installation. If any error occurred during the installation, this screen displays that error. If the installation process is completed without any error and notice, this screen shows the confirmation message.

If the installation is successful, this screen shows an option to launch the Packet Tracer. If this option is kept selected, the packet tracer starts when the wizard is closed.

Click the **Finish** button to close the wizard.



Setup - Cisco Packet Tracer 8.0 64Bit

Completing the Cisco Packet Tracer 8.0 64Bit Setup Wizard

Setup has finished installing Cisco Packet Tracer 8.0 64Bit on your computer. The application may be launched by selecting the installed shortcuts.

Click Finish to exit Setup.

☑ Launch Cisco Packet Tracer

When Packet Tracer starts the first time, it asks the user to select the mode in which it should start. **Multi-user** mode allows multiple users to work simultaneously. To avoid to share or exchange the packet tracer instance, click the **No** button.

cisco Networking Academy
Cisco Packet Tracer
Try Simulation Mode to see how packets travel through your network
© Copyright Cisco 2021

3. Detail description of the experiment performed

In this activity we have used 2 switches (Cisco 2960) and 2 PCs to create a topology. Switches allow different devices on one network to communicate. A switch creates networks. In this activity, we will perform basic switch configurations. We will secure access to the command-line interface (CLI) and console ports using encrypted and plain text passwords. We 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.

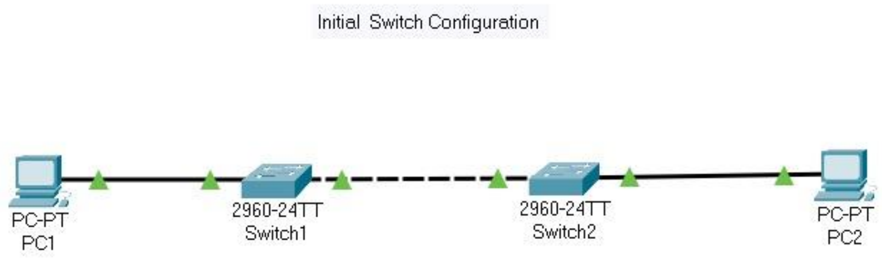


Fig: Topology

4. Step by step Explanation of the experiment

Verify the Default Switch Configuration

Step 1: Enter privileged EXEC mode.

We 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.

Click S1 and then the CLI tab. Press Enter.

Enter privileged EXEC mode by entering the enable command:

```
Switch> enable

Switch#
```

The prompt changed in the configuration to reflect privileged EXEC mode.

Step 2: Examine the current switch configuration

Enter the show running-config command.

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

Create a Basic Switch Configuration

Step 1: Step 1: Assign a name to a switch.

To configure parameters on a switch, we need to move between various configuration modes.

```
Switch# configure terminal

Switch(config)# hostname S1

S1(config)# exit

S1#
```

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#
```

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>
```

Step 4: Secure privileged mode access.

Set the enable password. This password protects access to privileged mode.

```
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.

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

Press <Enter> and we will now be asked for a password:

```
User Access Verification
Password:
```

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

Enter the command to access privileged mode.

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

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

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

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#
```

The enable secret password overrides the enable password. If both are configured on the switch, we 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.

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

We can abbreviate show running-config as

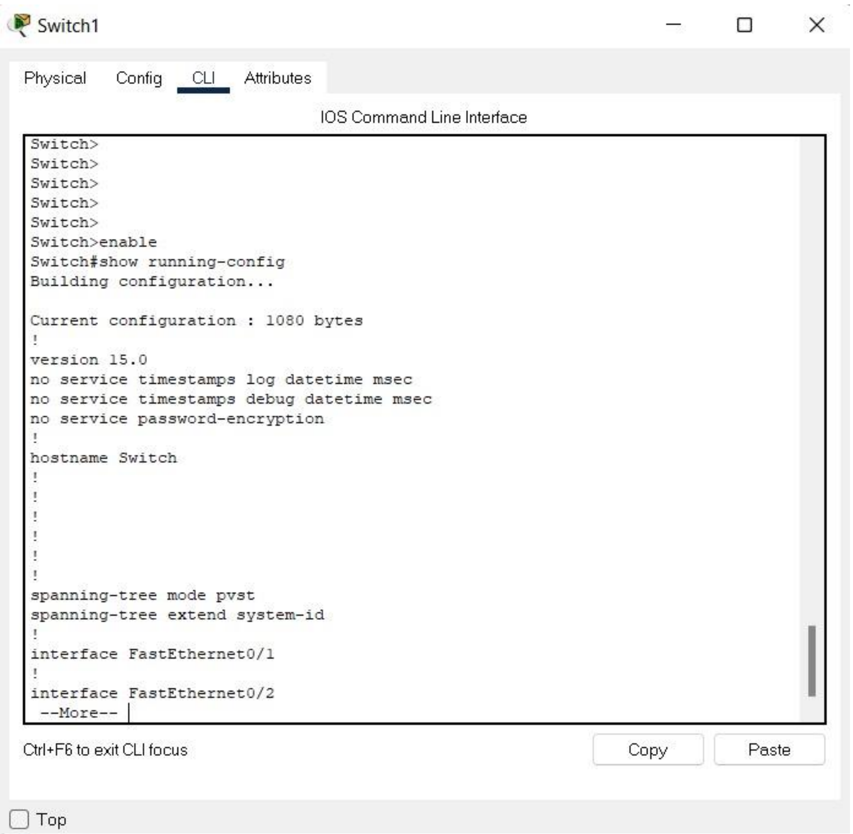
```
S1# show run
```

Step 8: Encrypt the enable and console passwords.

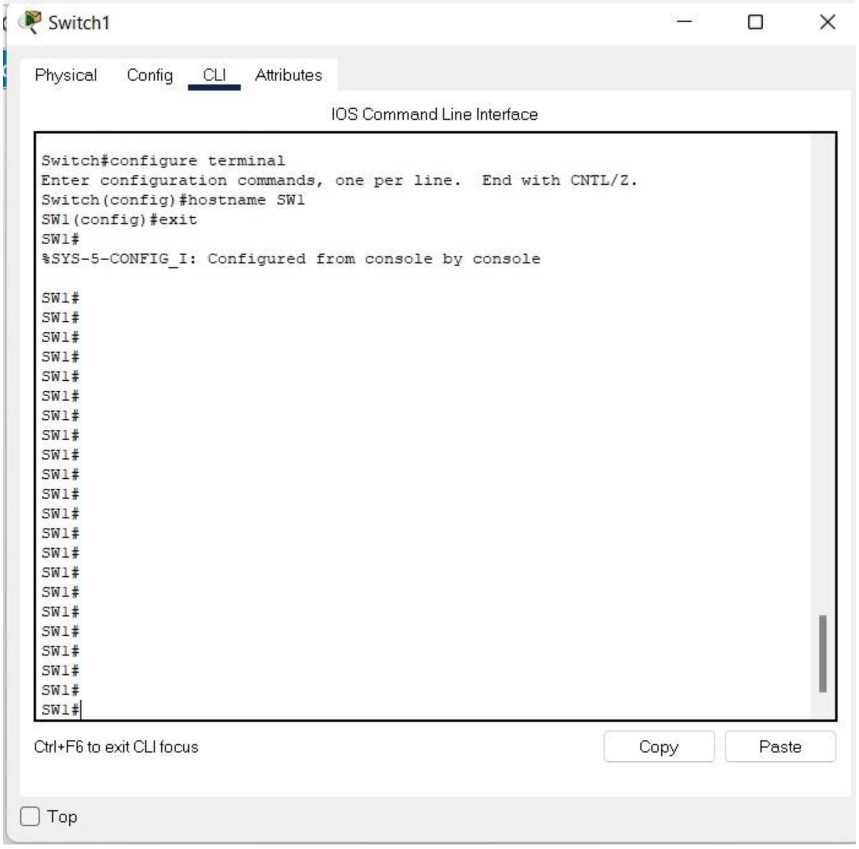
As noticed from Step 7, the enable secret password was encrypted, but the enable and console passwords were still in plain text. We will make encrypt these plain text passwords using the service password-encryption command.

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

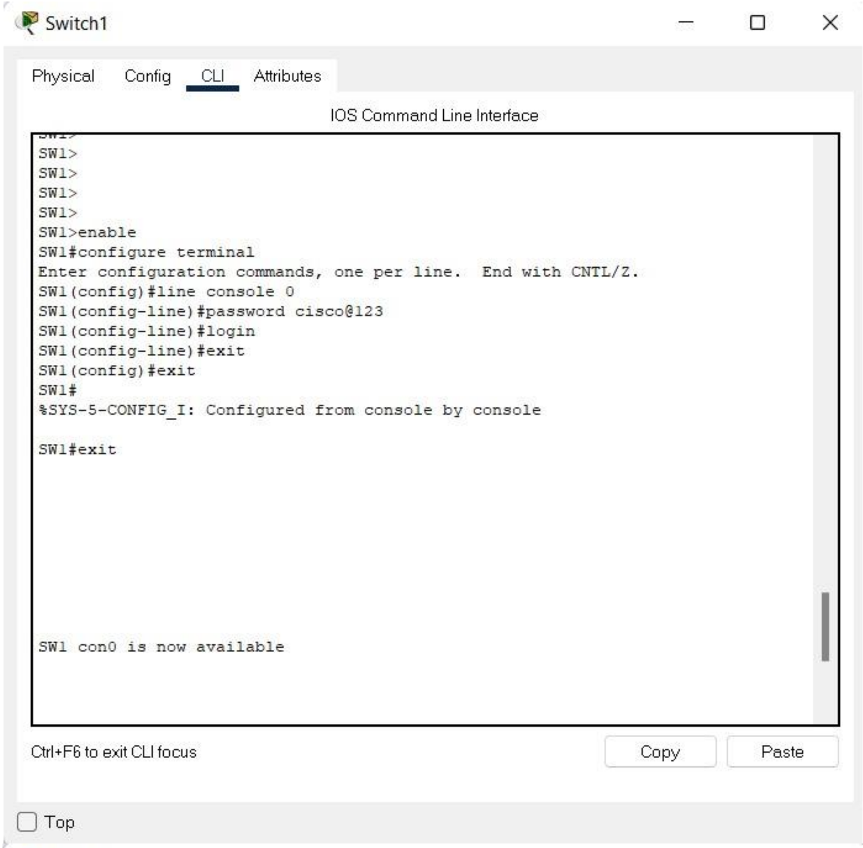
5. Screen shot of the Results



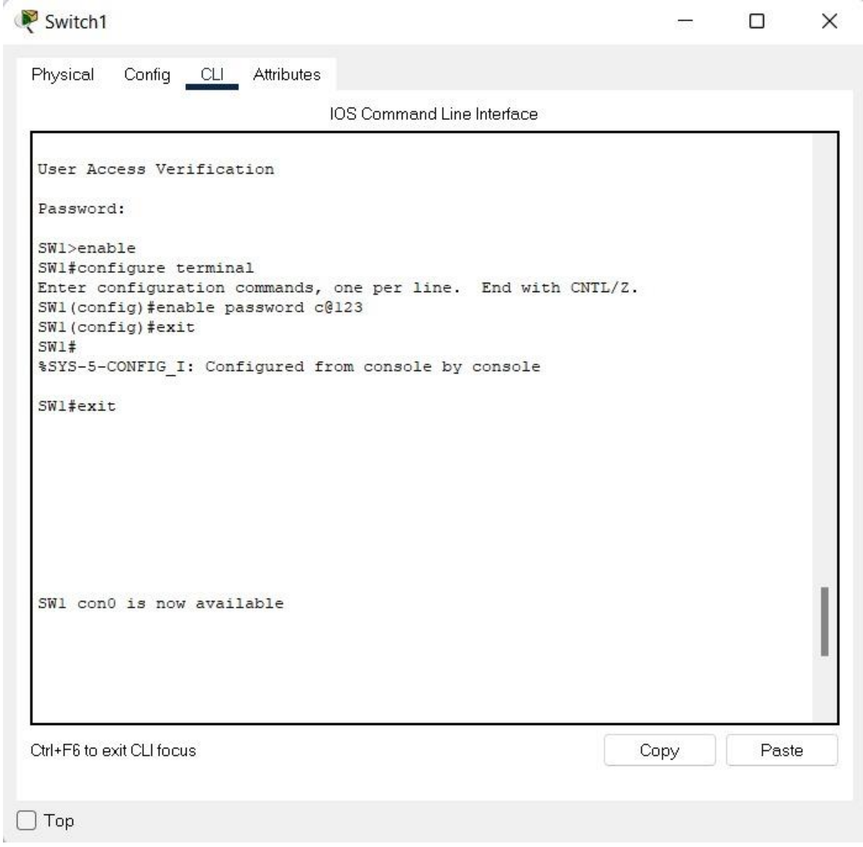
```
Switch>
Switch>
Switch>
Switch>
Switch>
Switch>enable
Switch#show running-config
Building configuration...

Current configuration : 1080 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Switch
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
 --More--
```



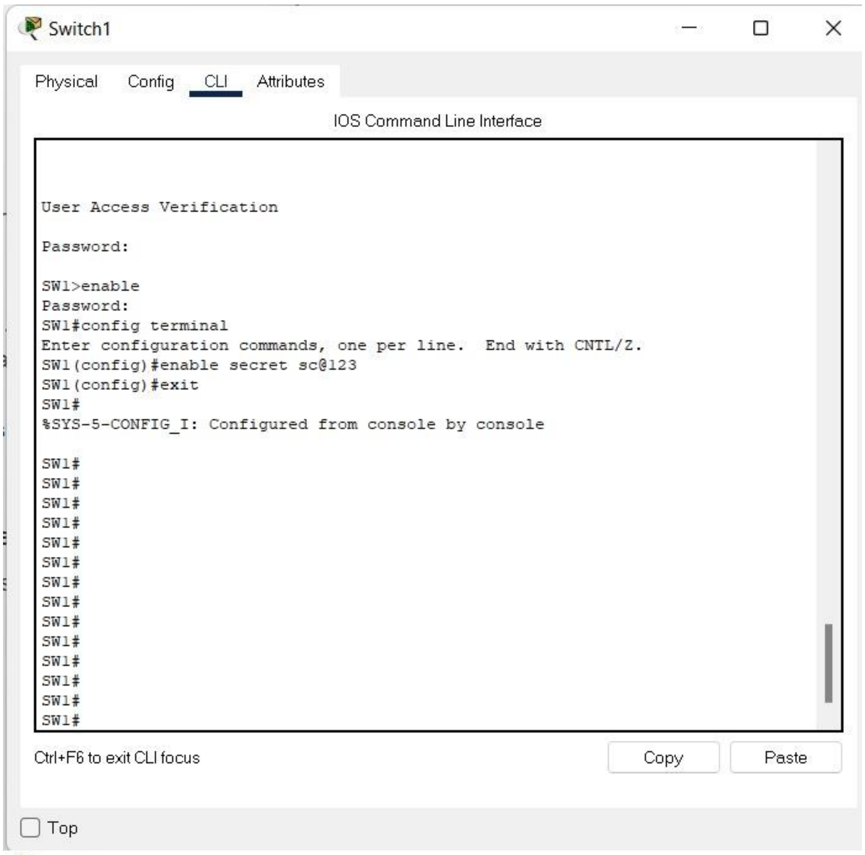
```
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname SW1
SW1(config)#exit
SW1#
%SYS-5-CONFIG_I: Configured from console by console

SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
```



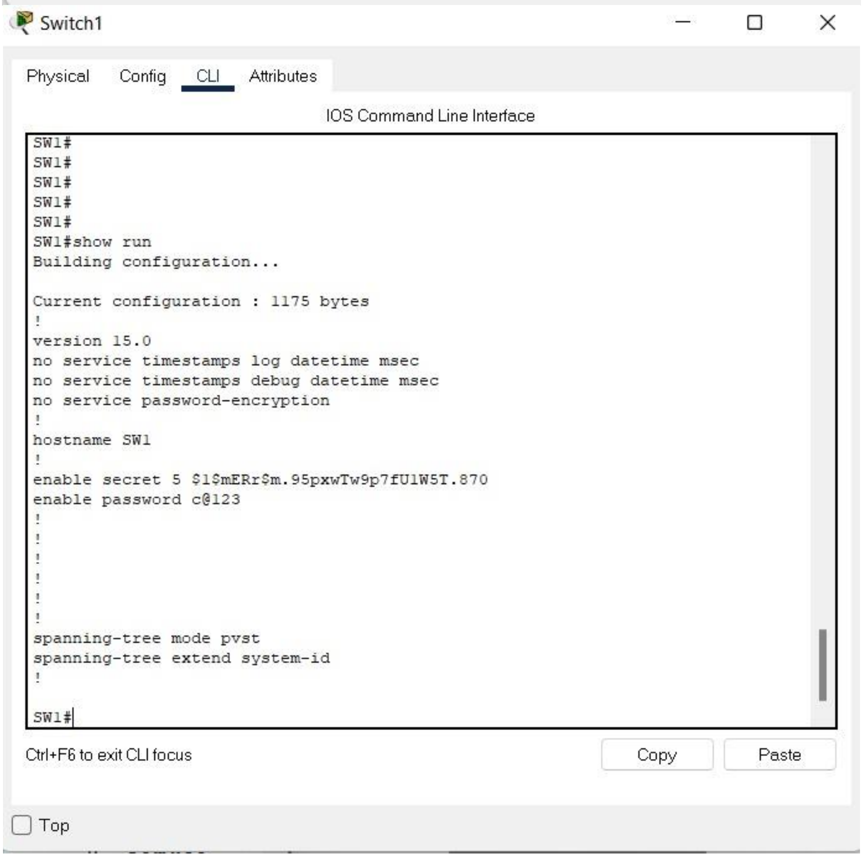
```
SW1>
SW1>
SW1>
SW1>
SW1>enable
SW1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
SW1(config)#line console 0
SW1(config-line)#password cisco@123
SW1(config-line)#login
SW1(config-line)#exit
SW1(config)#exit
SW1#
%SYS-5-CONFIG_I: Configured from console by console

SW1#exit









SW1 con0 is now available
```



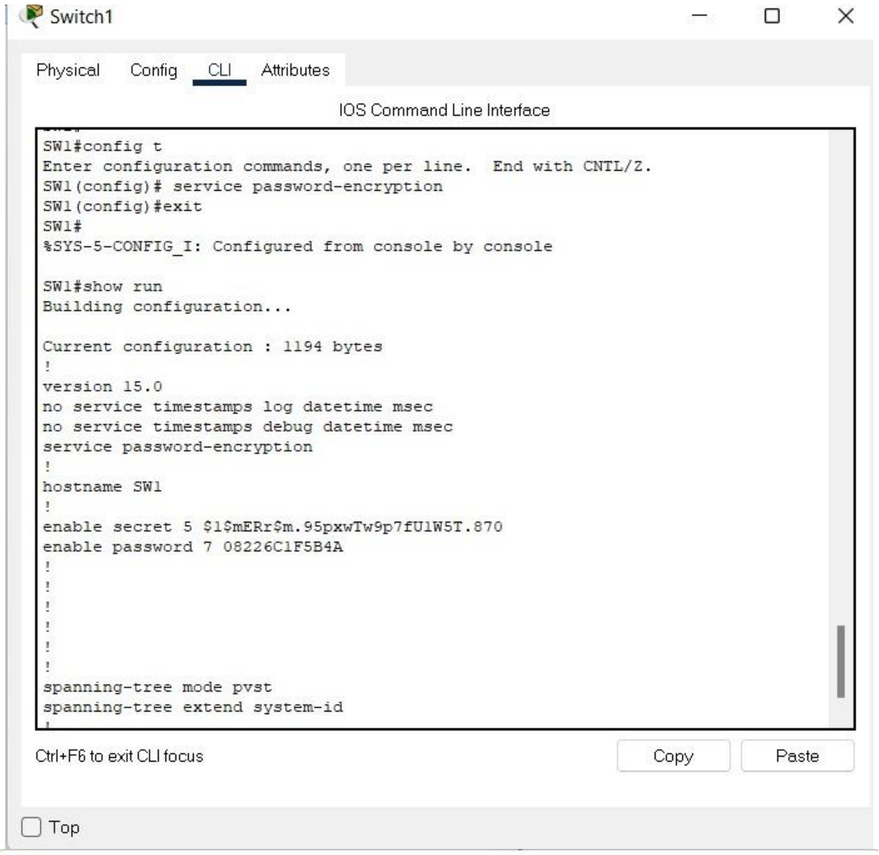
```
User Access Verification

Password:

SW1>enable
SW1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
SW1(config)#enable password c@123
SW1(config)#exit
SW1#
%SYS-5-CONFIG_I: Configured from console by console

SW1#exit









SW1 con0 is now available
```



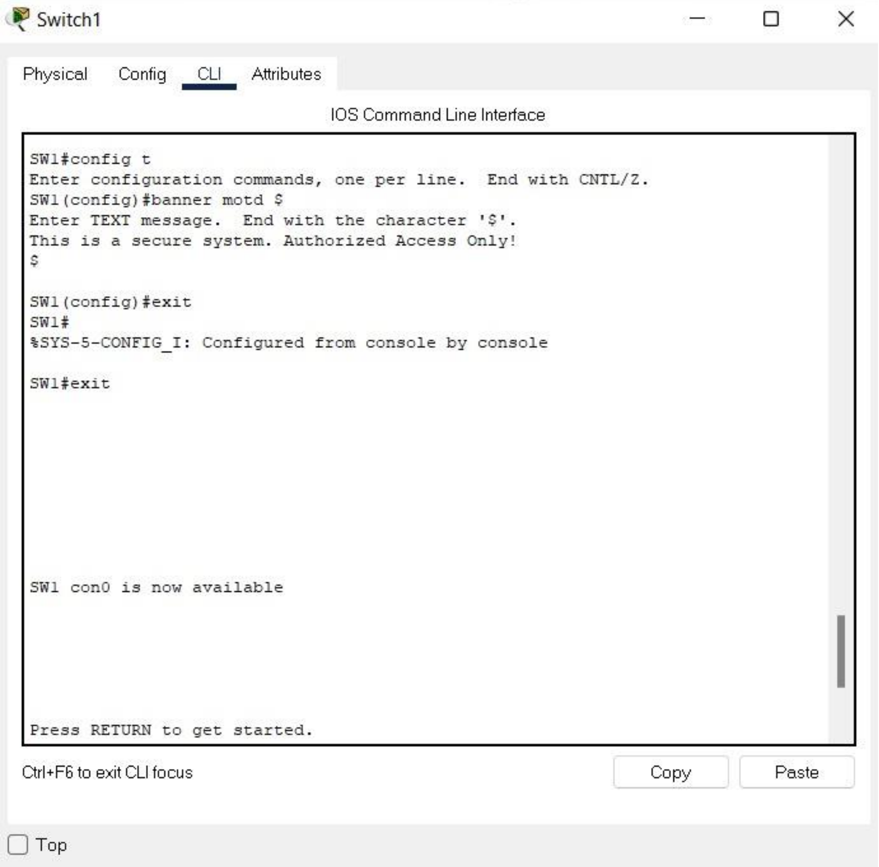
```
User Access Verification

Password:

SW1>enable
Password:
SW1#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
SW1(config)#enable secret sc@123
SW1(config)#exit
SW1#
%SYS-5-CONFIG_I: Configured from console by console

SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#
```



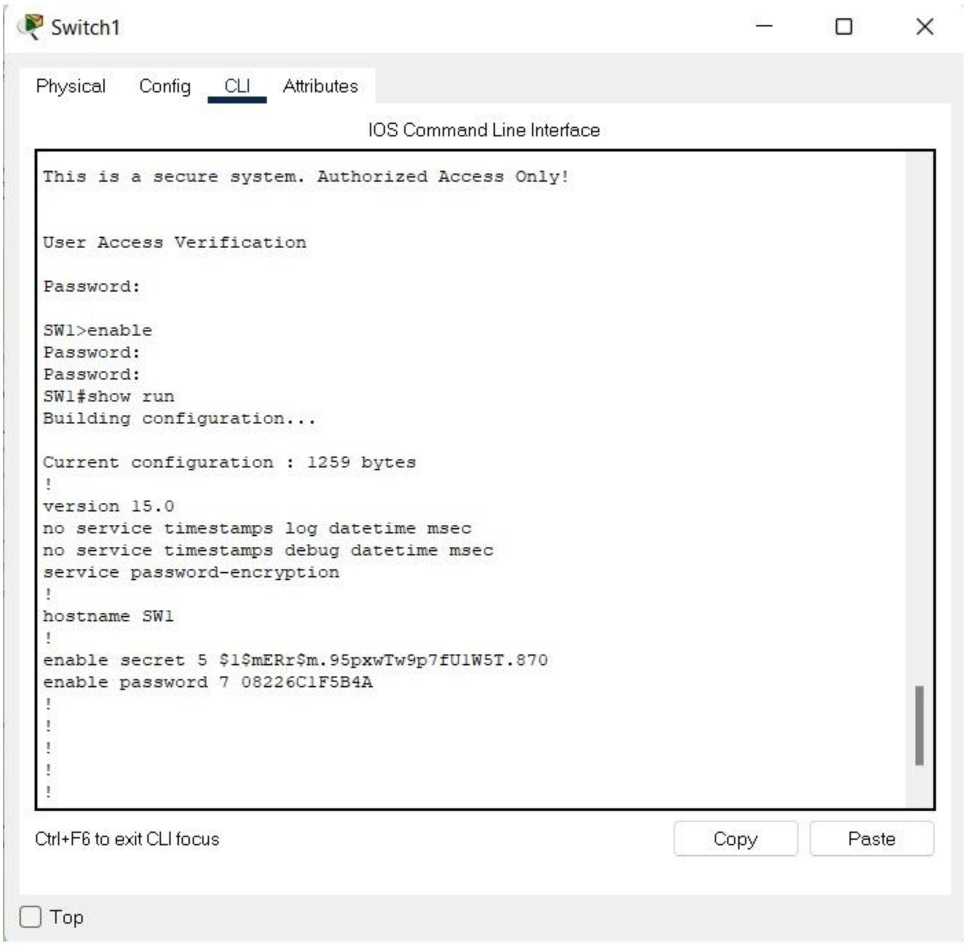
```
SW1#
SW1#
SW1#
SW1#
SW1#
SW1#show run
Building configuration...

Current configuration : 1175 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SW1
!
enable secret 5 $1$mERr$m.95pxwTw9p7fU1W5T.870
enable password c@123
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!

SW1#
```



```
SW1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
SW1(config)# service password-encryption
SW1(config)#exit
SW1#
%SYS-5-CONFIG_I: Configured from console by console

SW1#show run
Building configuration...

Current configuration : 1194 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname SW1
!
enable secret 5 $1$mERr$m.95pxwTw9p7fU1W5T.870
enable password 7 08226C1F5B4A
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
```



```
SW1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
SW1(config)#banner motd $
Enter TEXT message.  End with the character '$'.
This is a secure system. Authorized Access Only!
$

SW1(config)#exit
SW1#
%SYS-5-CONFIG_I: Configured from console by console

SW1#exit









SW1 con0 is now available






Press RETURN to get started.
```



```
This is a secure system. Authorized Access Only!


User Access Verification

Password:

SW1>enable
Password:
Password:
SW1#show run
Building configuration...

Current configuration : 1259 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname SW1
!
enable secret 5 $1$mERr$m.95pxwTw9p7fU1W5T.870
enable password 7 08226C1F5B4A
!
!
!
!
!
```

6. Conclusion

Through this activity we were able to learn to learn practically about switch configuration with the help of Cisco Packet Tracer (CPT). We learnt about switches. A switch is a networking hardware that connects devices on a computer network to establish a LAN. It is a layer 2 device that works in the data-link layer. We can simulate a LAN using switch. We verified the default switch configuration. We learnt step by step procedure of basic switch configuration.