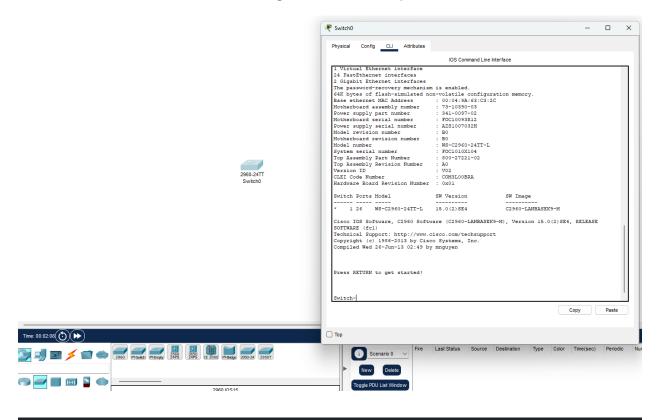
GETTING TO KNOW THE CISCO-IOS INTERFACE

OBJECTIVES

The aim of the work is to familiarize yourself with the Cisco user interface (IOS) and the basic configuration of the switch using the Packet Tracer program.

- 1. In Packet Tracer, choose the Cisco 2960 switch, select the CLI tab, and learn how the user interface works.
 - Open Packet Tracer and select Network Devices => Switches => 2960
 - 2. Select the network switch and go to CLI tab then press Enter,



2. Familiarize yourself with the switch interface by figuring out the meaning of the following commands. (Note that you can always type a question mark, e.g. show?, after a command, so that the command is not executed, but you can see what kind of additional commands can be entered.)

- • Find out how to navigate the different command modes of the router (user, priviledge, global configuration and specific configuration)
- • Try shortening commands e.g. ena instead of enable, etc.
- • Try completing commands with the tab key
 - User mode: User mode can be identify by the > symbole and when you first enter to
 the CLI mode you are in the user mode. You can switch between User
 mode and Exe priviledge mode by using commands enable and disable.
 - Exe priviledge mode: The Exe priviledge mode can be identified by the # symbole.

Switch>enable Switch#disable Switch>enable Switch#

- **Global configuration mode**: You can enter into this mode by command shortly **config t** or **configure terminal** command,
- Other Commands: You can aso use auto filling by using the tab button, It will auto fill the commands if we enter unique values, if duplicate commands are available we can always use? to see the available commands ex: con?, config t

```
Switch#config ?
terminal Configure from the terminal
<cr>
Switch#config
```

• **specific configuration modes**: You can log in to specific config modes using below commands, and exit from the modes using **exit** command or end the config mode by **end** command. -- line console 0 -- line vty 0 15 -- interface vlan 1

```
Switch#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface vlan 1
Switch(config-if)#exit
Switch(config)#line console 0
Switch(config-line)#exit
Switch(config-line)#exit
Switch(config-line)#exit
Switch(config-line)#exit
Switch(config-line)#exit
Switch(config-line)#exit
Switch(config-line)#exit
Switch(config-line)#exit
Switch(config-line)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#
```

- 3. Make sure you're in priviledge mode (use enable to access priviledge mode) and find out what the following commands mean.
 - Using the show command will display the current saved details,
- show running-config: This will show the running configuration details of the switch. This is saved in the RAM and once the switch restart the setting saved under this file will be

reset.

• show startup-config: This will show the startup configuration details. If you save the configuration data in startup-config file it will remain even if you restart the device. If you do not saved any startup config data it will show the message that startup-config is not

present. You can copy the running config to startup-config and check if the file is updated by **copy** command. to see more simply press **spacebar**.

```
Switch#show startup-config
startup-config is not present
Switch#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#show startup-config
Using 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
interface FastEthernet0/3
--More--
```

• show version:

```
Switch# show version
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE
SOFTWARE (fcl)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen
ROM: Bootstrap program is C2960 boot loader
BOOTLDR: C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(25r)FX, RELEASE SOFTWARE (fc4)
Switch uptime is 39 minutes
System returned to ROM by power-on
System image file is "flash:c2960-lanbasek9-mz.150-2.SE4.bin"
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email to
export@cisco.com.
cisco WS-C2960-24TT-L (PowerPC405) processor (revision B0) with 65536K bytes of memory.
Processor board ID FOC1010X104
Last reset from power-on
1 Virtual Ethernet interface
24 FastEthernet interfaces
```

Copy

Paste

show flash

show ip interface brief

	IP-Address	OK?	Method	Status	Protocol
astEthernet0/1	unassigned	YES	manual	down	down
astEthernet0/2	unassigned	YES	manual	down	down
astEthernet0/3	unassigned	YES	manual	down	down
astEthernet0/4	unassigned	YES	manual	down	down
astEthernet0/5	unassigned	YES	manual	down	down
astEthernet0/6	unassigned	YES	manual	down	down
astEthernet0/7	unassigned	YES	manual	down	down
astEthernet0/8	unassigned	YES	manual	down	down
astEthernet0/9	unassigned	YES	manual	down	down
astEthernet0/10	unassigned	YES	manual	down	down
astEthernet0/11	unassigned	YES	manual	down	down
astEthernet0/12	unassigned	YES	manual	down	down
astEthernet0/13	unassigned	YES	manual	down	down
astEthernet0/14	unassigned	YES	manual	down	down
astEthernet0/15	unassigned	YES	manual	down	down
astEthernet0/16	unassigned	YES	manual	down	down
astEthernet0/17	unassigned	YES	manual	down	down
astEthernet0/18	unassigned	YES	manual	down	down
astEthernet0/19	unassigned	YES	manual	down	down
astEthernet0/20	unassigned	YES	manual	down	down
astEthernet0/21	unassigned	YES	manual	down	down

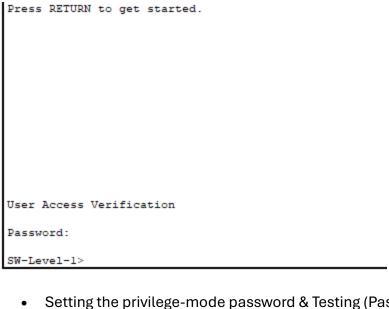
4. Define a suitable "host name" for your switch

```
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-Level-1
SW-Level-1(config)#
```

5. Define console password and privilege-mode password. Test that they work as intended.

• Setting console mode password & Testing (Password: cisco)

```
SW-Level-1(config) #line console 0
SW-Level-1(config-line) #password cisco
SW-Level-1(config-line) #login
SW-Level-1(config-line) #exit
SW-Level-1(config) #exit
SW-Level-1#
%SYS-5-CONFIG_I: Configured from console by console
SW-Level-1#exit
```



• Setting the privilege-mode password & Testing (Password : class)

```
SW-Level-1>enable
SW-Level-1#config t
Enter configuration commands, one per line. End with CNTL/Z.
SW-Level-1(config) #enable secret class
SW-Level-1(config) #end
SW-Level-1#
%SYS-5-CONFIG_I: Configured from console by console
SW-Level-l#exit
```

Press RETURN to get started. User Access Verification Password: SW-Level-1>enable Password: SW-Level-1#

- 6. Save your settings to the "permanent memory" of the switch. Use copy running-config startup-config commands. Also command write could be use. How to find out if a configuration is saved?
 - If you check the startup-configuration file **show start** it should be empty since we do not save anything. And if we check the running-configuration file by **show run** it will show the password setting and the running config data. And if we restart the device the running config data will be lost.

```
EGSSWULU.
SW-Level-l#show start
startup-config is not present
SW-Level-1#show run
Building configuration...
Current configuration : 1156 bytes
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
hostname SW-Level-1
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCil
spanning-tree mode pvst
spanning-tree extend system-id
interface FastEthernet0/1
 --More--
```

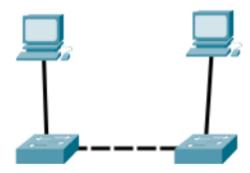
• Using **copy run start** will copy the running config data to starting configuration file. Then if we go **show start** it will show the saved data.

```
SW-Level-1#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
SW-Level-1#show start
Using 1156 bytes
!
version 15.0
```

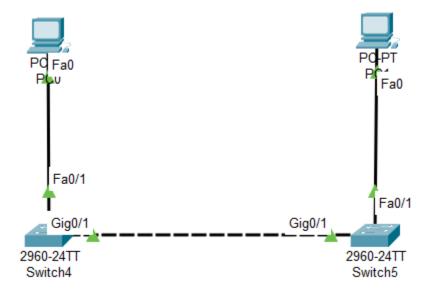
 we can confirm this using the reload command without saving anything. the system should ask for the password again even if we restart the system.

```
SW-Level-1# reload
Proceed with reload? [confirm]
C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(25r)FX, RELEASE SOFTWARE (fc4)
Cisco WS-C2960-24TT (RC32300) processor (revision C0) with 21039K bytes of memory.
2960-24TT starting...
Base ethernet MAC Address: 0001.9797.B6D6
Xmodem file system is available.
Initializing Flash...
flashfs[0]: 2 files, 0 directories
flashfs[0]: 0 orphaned files, 0 orphaned directories
flashfs[0]: Total bytes: 64016384
flashfs[0]: Bytes used: 4671611
flashfs[0]: Bytes available: 59344773
flashfs[0]: flashfs fsck took 1 seconds.
...done Initializing Flash.
Boot Sector Filesystem (bs:) installed, fsid: 3
Parameter Block Filesystem (pb:) installed, fsid: 4
Loading "flash:/2960-lanbasek9-mz.150-2.SE4.bin"...
************************
                                                                          Copy
                                                                                     Paste
```

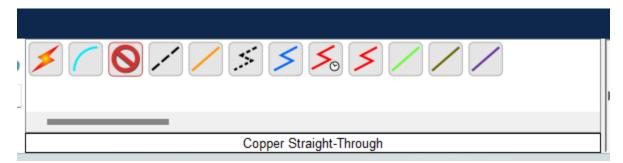
7. Build the network as shown in the picture below



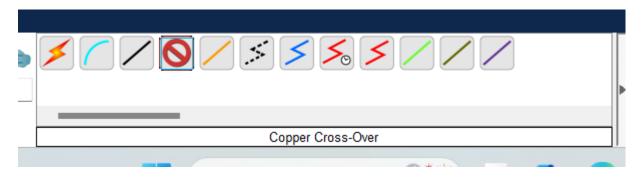
• The End Devices => PC and Network Devices => Switches => 2960 selected,



• The PC's are connected with copper straight-through cable,

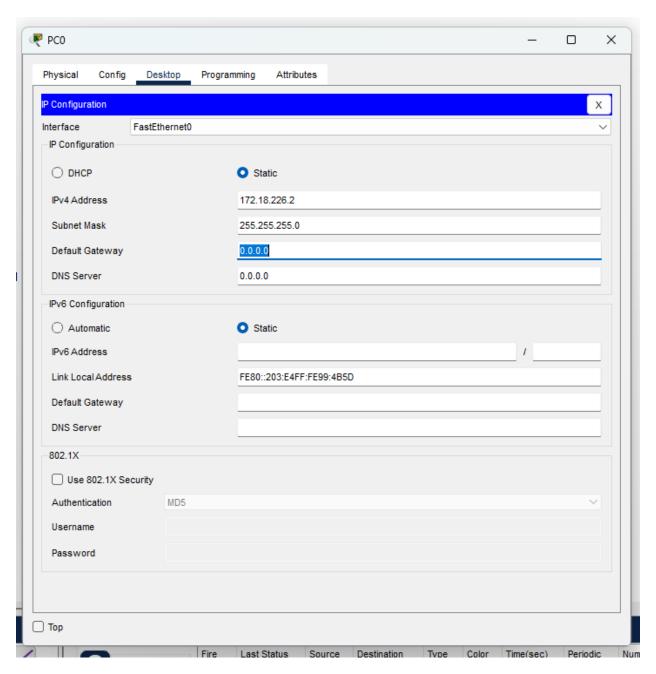


• The Switches's are connected with copper cross-over cable,



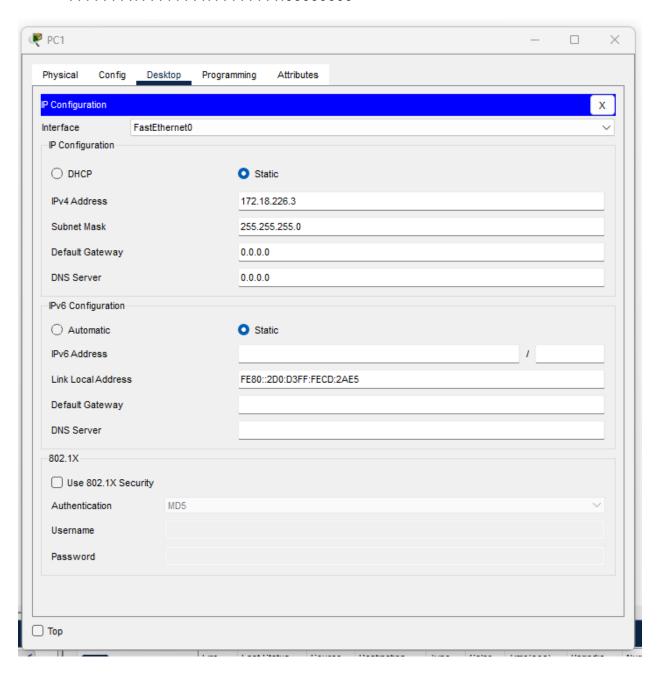
8. Assign the computer an IP address of 172.18.226.0/24 from the network. (/24 means a mask where the first 24 bits are set to one. The mask is therefore 255.255.255.0)

- The IP and the subnet can be set to the PC by click on PC => Desktop(Tab) => IP Configuration
- PC0 => IP => 172.18.226.2
- PC0 => Subnet => 255.255.2555.0 or /24 or 11111111.11111111111111111100000000



• PC1 => IP => 172.18.226.3

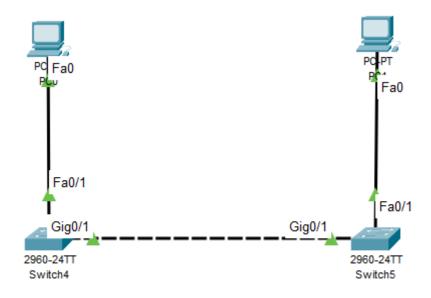
 PC1 => Subnet => 255.255.2555.0 or /24 or 11111111.11111111111111111100000000



9. Test your computer-to-computer connection by pinging or using the envelope tool Envelop method

 Select the closed envelop and click on PC0 and PC1, then the msg should flow, the success msg should be visible as below,

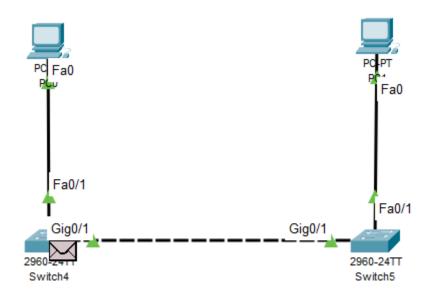


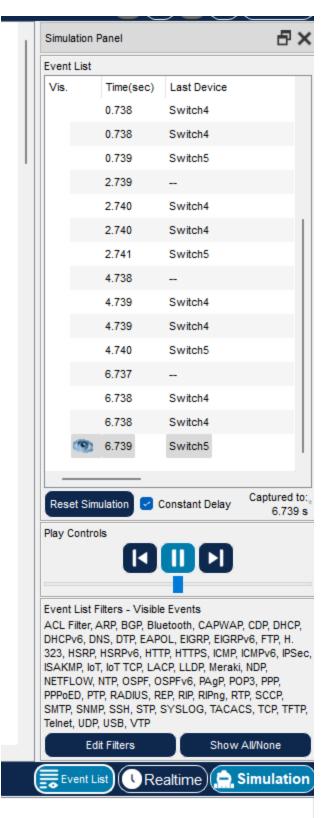




• To see the simulation you can select on Simulation and play to see the dataflow,



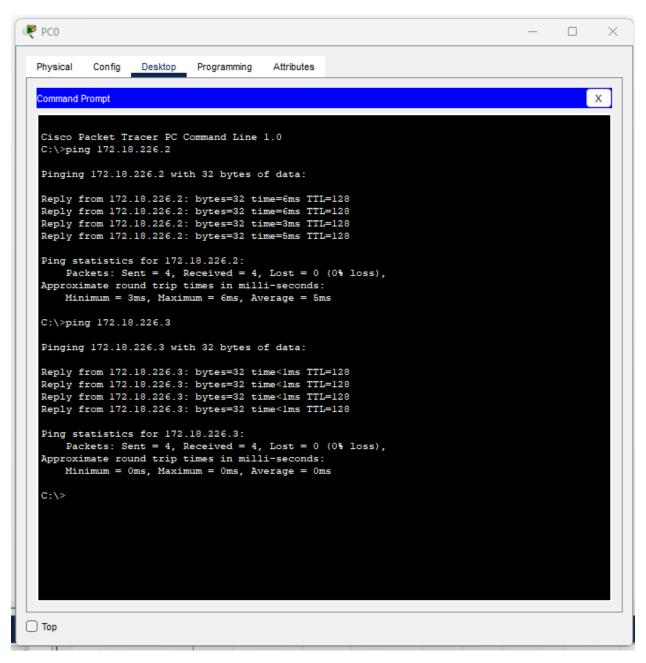




(delete)

pinging mode

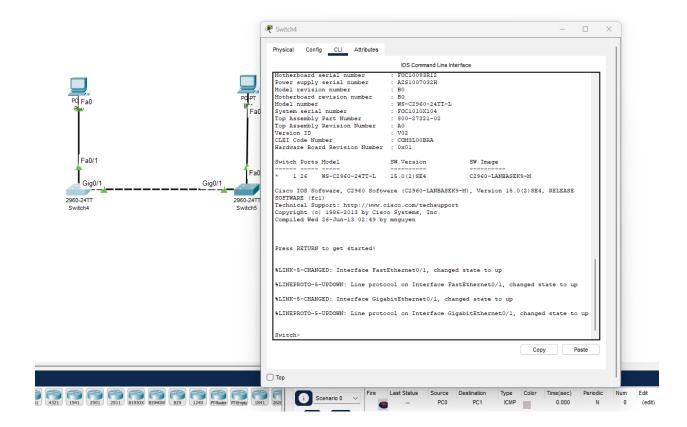
• Go to PC0 => Desktop => Command Prompt, Then use command ping 172.18.226.2 & ping 172.18.226.3, If you see the below msg then connection is success.



You can repeat this on PC1, if you need to double check,

10. Assign each switch its own IP address from that previously used network. As you saw earlier, the switch forwards computer-to-computer traffic even if it doesn't have an IP address. The importance of the IP address on the switch is only related to network management.

· Click on the switch and open the CLI



i. Update the Hostname of the switch to SW-Room-1.

```
Switch>enable
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#hostname SW-Room-1
SW-Room-1(config)#
```

ii. Assign IP address 172.18.226.253 and subnetmask 255.255.255.0 to SW-Room-1. Turn on the IP port by **no shutdown** command.

```
SW-Room-1>enable
SW-Room-1#config t
Enter configuration commands, one per line. End with CNTL/Z.
SW-Room-1(config)#interface vlan 1
SW-Room-1(config-if)#ip address 192.168.1.253 255.255.255.0
SW-Room-1(config-if)#no shutdown

SW-Room-1(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up

SW-Room-1(config-if)#end
SW-Room-1#
%SYS-5-CONFIG_I: Configured from console by console

SW-Room-1#
```

• I had to change the IP again since I have set an incorrect IP as per the image, so the following step is an additional step.

```
SW-Room-l#config t
Enter configuration commands, one per line. End with CNTL/Z.
SW-Room-l(config)#interface vlan 1
SW-Room-l(config-if)#ip address 172.18.226.253 255.255.255.0
SW-Room-l(config-if)#no shutdown
SW-Room-l(config-if)#end
SW-Room-l#
%SYS-5-CONFIG_I: Configured from console by console
```

•

iii. Save the running config to startup config by copy run start

```
SW-Room-1#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
SW-Room-1#
```

•

iv. Repeat this to Switch 2 with following data,

```
|-----|
```

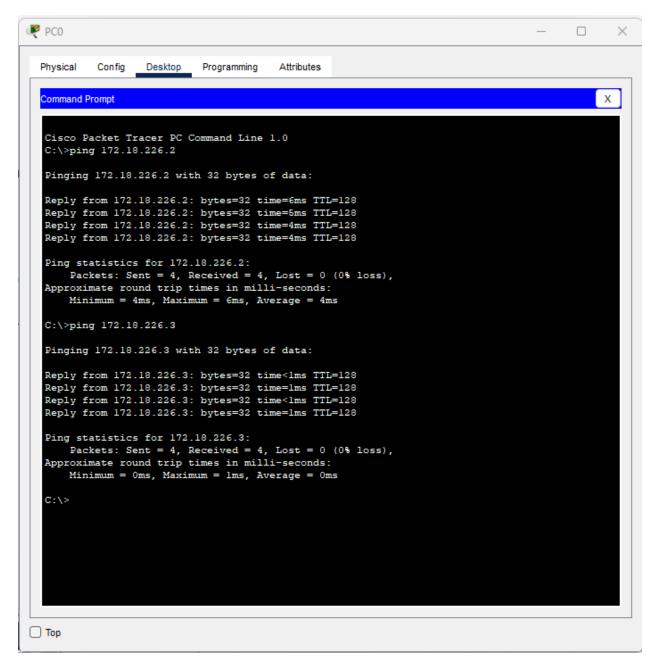
Device Name	Host Name	IP	Subnet Mask
PC 0	-	172.18.226.2	255.255.255.0

Device Name	Host Name	IP	Subnet Mask
PC 1	-	172.18.226.3	255.255.255.0
SW1	SW-Room-1	172.18.226.253	255.255.255.0
SW2	SW-Room-2	172.18.226.254	255.255.255.0

```
SW-Room-2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
SW-Room-2(config)#interface vlan 1
SW-Room-2(config-if) #ip address 172.18.226.254 255.255.255.0
SW-Room-2(config-if)#no shutdown
SW-Room-2(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlanl, changed state to up
SW-Room-2(config-if)#exit
SW-Room-2 (config) #exit
SW-Room-2#
%SYS-5-CONFIG_I: Configured from console by console
SW-Room-2#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
SW-Room-2#
```

11. Test the operation by pinging from computer to switches and from switches to switches, etc.

• Using PC0 => Desktop => Command Prompt, pinging from computer to computer



Using pinging from PC0 to SW1

```
C:\>ping 172.18.226.253
Pinging 172.18.226.253 with 32 bytes of data:
Request timed out.
Reply from 172.18.226.253: bytes=32 time<1ms TTL=255
Reply from 172.18.226.253: bytes=32 time<1ms TTL=255
Reply from 172.18.226.253: bytes=32 time<1ms TTL=255
Ping statistics for 172.18.226.253:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
   Minimum = Oms, Maximum = Oms, Average = Oms
C:\>ping 172.18.226.253
Pinging 172.18.226.253 with 32 bytes of data:
Reply from 172.18.226.253: bytes=32 time<1ms TTL=255
Reply from 172.18.226.253: bytes=32 time<1ms TTL=255
Reply from 172.18.226.253: bytes=32 time<1ms TTL=255
Reply from 172.18.226.253: bytes=32 time=1ms TTL=255
Ping statistics for 172.18.226.253:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
   Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Using pinging from PC0 to SW2

```
C:\>ping 172.18.226.254
Pinging 172.18.226.254 with 32 bytes of data:
Request timed out.
Reply from 172.18.226.254: bytes=32 time<1ms TTL=255
Reply from 172.18.226.254: bytes=32 time<1ms TTL=255
Reply from 172.18.226.254: bytes=32 time<1ms TTL=255
Ping statistics for 172.18.226.254:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 172.18.226.254
Pinging 172.18.226.254 with 32 bytes of data:
Reply from 172.18.226.254: bytes=32 time<1ms TTL=255
Reply from 172.18.226.254: bytes=32 time=1ms TTL=255
Reply from 172.18.226.254: bytes=32 time<1ms TTL=255
Reply from 172.18.226.254: bytes=32 time<1ms TTL=255
Ping statistics for 172.18.226.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
C:\>
```

12. Enable telnet management of switches by specifying telnet passwords

 To enable Telnet on cisco devices we need to enable VTY lines by setting an password from the Switch CLI,

```
SW-Room-2>enable
SW-Room-2#config t
Enter configuration commands, one per line. End with CNTL/Z.
SW-Room-2(config)#line vty 1
SW-Room-2(config-line)#password cisco
SW-Room-2(config-line)#login
SW-Room-2(config-line)#exit
SW-Room-2(config)#exit
SW-Room-2(config)#exit
SW-Room-2#
%SYS-5-CONFIG_I: Configured from console by console
```

```
C:\>telnet 172.18.226.253
Trying 172.18.226.253 ...Open
User Access Verification
Password:
SW-Room-1>
```

14. Save your configuration to the startup-configuration file.

```
C:\>telnet 172.18.226.253
Trying 172.18.226.253 ...Open

User Access Verification

Password:
SW-Room-1>enable
Password:
SW-Room-1#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]
SW-Room-1#
```

15. Find out how to save configuration file data to a PC. At the last return your configuration file to the Learn.

• In Switch => Config => Use Export method we can save this config data in to the PC,

