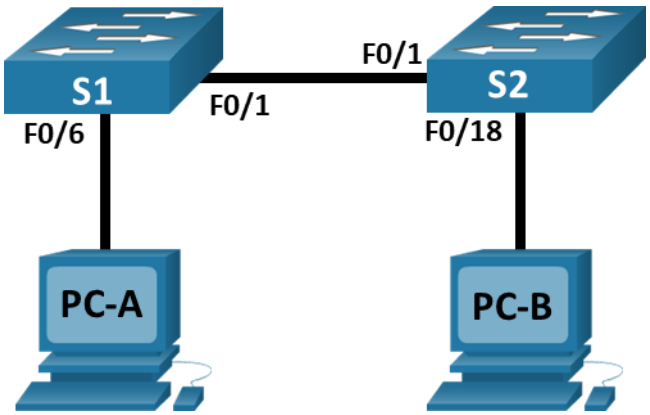
Lab - Basic Switch and End Device Configuration

Topology



Addressing Table

Device	Interface	IP Address	Subnet Mask
S1	VLAN 1	192.168.1.1	255.255.255.0
S2	VLAN 1	192.168.1.2	255.255.255.0
PC-A	NIC	192.168.1.10	255.255.255.0
PC-B	NIC	192.168.1.11	255.255.255.0

Objectives

- Set Up the Network Topology
- Configure PC Hosts
- Configure and Verify Basic Switch Settings

Background / Scenario

In this lab, you will build a simple network with two hosts and two switches. You will also configure basic settings including hostname, local passwords, and login banner. Use **show** commands to display the running configuration, IOS version, and interface status. Use the **copy** command to save device configurations.

You will apply IP addressing for this lab to the PCs and switches to enable communication between the devices. Use the **ping** utility to verify connectivity.

Note: The switches used are Cisco Catalyst 2960s with Cisco IOS Release 15.0(2) (lanbasek9 image). Other switches and Cisco IOS versions can be used. Depending on the model and Cisco IOS version, the commands available and output produced might vary from what is shown in the labs.

Note: Make sure that the switches have been erased and have no startup configurations. Refer to Appendix A for the procedure to initialize and reload a switch.

Required Resources

- 2 Switches (Cisco 2960 with Cisco IOS Release 15.0(2) lanbasek9 image or comparable)
- 2 PCs (Windows with terminal emulation program, such as Tera Term)
- Console cables to configure the Cisco IOS devices via the console ports
- Ethernet cables as shown in the topology

Instructions

Step 1: Set Up the Network Topology

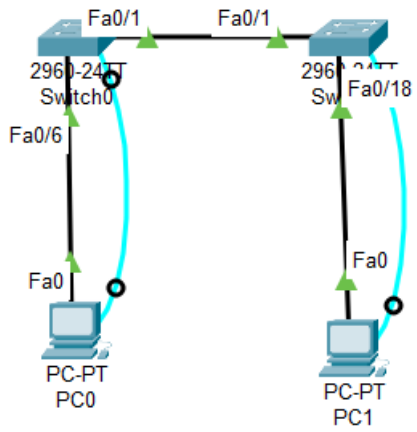
In this step, you will cable the devices together according to the network topology.

a. Power on the devices.

b. Connect the two switches.

c. Connect the PCs to their respective switches.

d. Visually inspect network connections.



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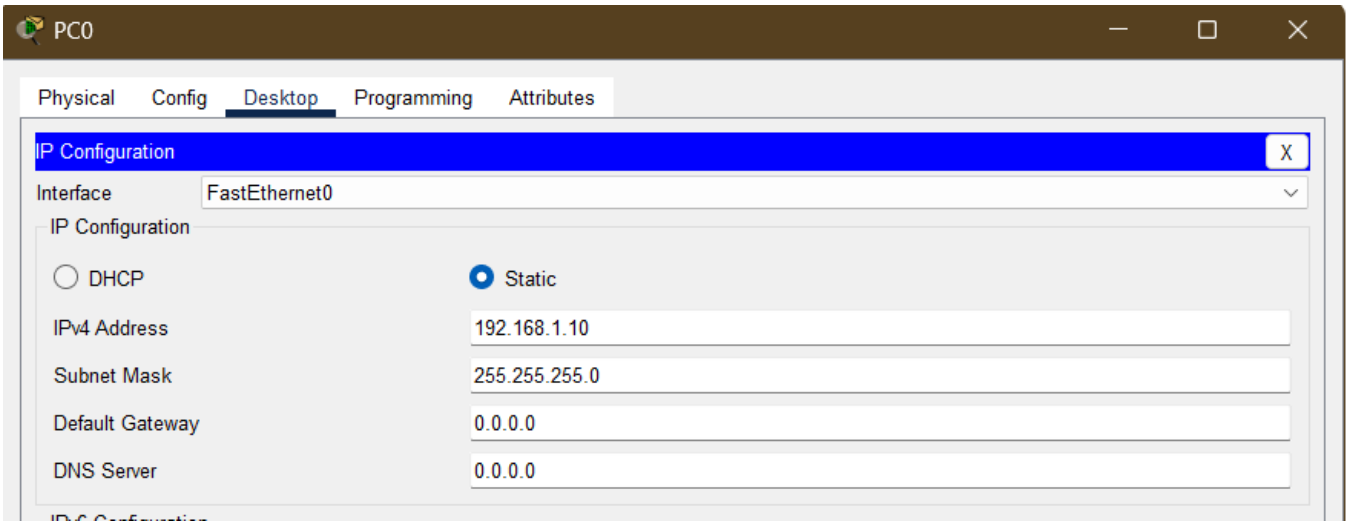

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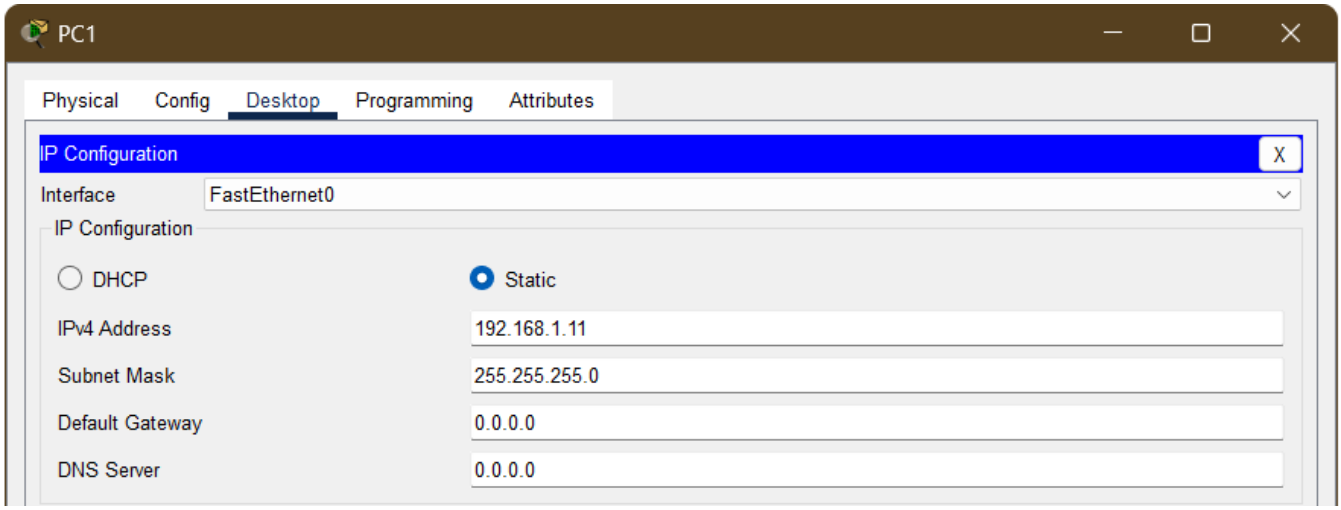

Step 2: Configure PC Hosts

a. Configure static IP address information on the PCs according to the Addressing Table.

b. Verify PC settings and connectivity.

Step 3: Configure and Verify Basic Switch Settings

a. Console into the switch. Enter the global configuration mode.

-
```
Switch>ena
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
```

b. Give the switch a name according to the Addressing Table.

-
```
Switch(config)#hostname PC-A
PC-A(config)#
```

-
```
PC-A(config)#hostname S1
S1(config)#
```

- It should be “S1” instead of “PC-A”

c. Prevent unwanted DNS lookups.

-
```
PC-A(config)#no ip domain-lookup
PC-A(config)#
```

d. Enter local passwords. Use **class** as the privileged EXEC password and **cisco** as the password for console access.

-
```
PC-A(config)#enable secret class
PC-A(config)#line c
PC-A(config)#line console 0
PC-A(config-line)#password cisco
PC-A(config-line)#login
PC-A(config-line)#
```

e. Configure and enable the SVI according to the Addressing Table.

-
```
PC-A(config)#interface vlan 1
PC-A(config-if)#ip address 192.168.1.1 255.255.255.0
PC-A(config-if)#no shutdown
PC-A(config-if)#
```

f. Enter a login MOTD banner to warn about unauthorized access.

```
PC-A(config)#banner motd $ Authorized Access Only! Violators will be punished. $
PC-A(config)#
```

g. Save the configuration.

```
PC-A(config)#do copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
PC-A(config)#
```

h. Display the current configuration.

```
sh run
Building configuration...

Current configuration : 1252 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname PC-A
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
!
no ip domain-lookup
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
```

```
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 ip address 192.168.1.10 255.255.255.0
!
banner motd ^C Authorized Access Only! Violators will be punished. ^C
!
!
!
line con 0
 password cisco
 login
!
line vty 0 4
```

-

```
 login
line vty 5 15
 login
!
!
!
!
end


PC-A#
```

-

i. Display the IOS version and other useful switch information.

```
PC-A#show version
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
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
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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
2 Gigabit Ethernet interfaces
The password-recovery mechanism is enabled.

64K bytes of flash-simulated non-volatile configuration memory.
Base ethernet MAC Address       : 00:E0:F7:58:12:84
Motherboard assembly number     : 73-10390-03
Power supply part number        : 341-0097-02
Motherboard serial number       : FOC10093R12
Power supply serial number      : AZS1007032H
Model revision number           : B0
Motherboard revision number     : B0
Model number                    : WS-C2960-24TT-L
System serial number            : FOC1010X104
Top Assembly Part Number        : 800-27221-02
Top Assembly Revision Number    : A0
Version ID                      : V02
CLEI Code Number                : COM3L00BRA
Hardware Board Revision Number  : 0x01


Switch Ports Model              SW Version            SW Image
------ ----- -----              ----------            ----------
*    1 26    WS-C2960-24TT-L    15.0(2)SE4            C2960-LANBASEK9-M


Configuration register is 0xF



PC-A#
```

j. Display the status of the connected interfaces on the switch.

```
PC-A#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/1        unassigned      YES manual up                    up
FastEthernet0/2        unassigned      YES manual down                  down
FastEthernet0/3        unassigned      YES manual down                  down
FastEthernet0/4        unassigned      YES manual down                  down
FastEthernet0/5        unassigned      YES manual down                  down
FastEthernet0/6        unassigned      YES manual up                    up
FastEthernet0/7        unassigned      YES manual down                  down
FastEthernet0/8        unassigned      YES manual down                  down
FastEthernet0/9        unassigned      YES manual down                  down
FastEthernet0/10       unassigned      YES manual down                  down
FastEthernet0/11       unassigned      YES manual down                  down
FastEthernet0/12       unassigned      YES manual down                  down
FastEthernet0/13       unassigned      YES manual down                  down
FastEthernet0/14       unassigned      YES manual down                  down
FastEthernet0/15       unassigned      YES manual down                  down
FastEthernet0/16       unassigned      YES manual down                  down
FastEthernet0/17       unassigned      YES manual down                  down
FastEthernet0/18       unassigned      YES manual down                  down
FastEthernet0/19       unassigned      YES manual down                  down
FastEthernet0/20       unassigned      YES manual down                  down
FastEthernet0/21       unassigned      YES manual down                  down
FastEthernet0/22       unassigned      YES manual down                  down
FastEthernet0/23       unassigned      YES manual down                  down
FastEthernet0/24       unassigned      YES manual down                  down
GigabitEthernet0/1     unassigned      YES manual down                  down
GigabitEthernet0/2     unassigned      YES manual down                  down
Vlan1                  192.168.1.10    YES manual up                    up
PC-A#
```

k. Configure switch S2.

```
PC-B#config t
Enter configuration commands, one per line.  End with CNTL/Z.
PC-B(config)#interface vlan 1
PC-B(config-if)#ip address 192.168.1.2 255.255.255.0
PC-B(config-if)#no shutdown
```

```
PC-B(config)#banner motd $ Authorized Access Only! Violators will be punished $
PC-B(config)# do copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
PC-B(config)#
```

```
sh run
Building configuration...

Current configuration : 1251 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname PC-B
!
enable secret 5 $1$mERr$9cTjUIEqNGurQiFU.ZeCi1
!
!
!
no ip domain-lookup
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
```

```
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 ip address 192.168.1.11 255.255.255.0
!
banner motd ^C Authorized Access Only! Violators will be punished ^C
!
!
!
line con 0
 password cisco
 login
!
line vty 0 4
 login
```

```
line vty 5 15
 login
!
!
!
!
end


PC-B#
```

```
PC-B#show version
Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
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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.
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Last reset from power-on
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The password-recovery mechanism is enabled.

64K bytes of flash-simulated non-volatile configuration memory.
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Power supply part number        : 341-0097-02
Motherboard serial number       : FOC10093R12
Power supply serial number      : AZS1007032H
Model revision number           : B0
```

```
Motherboard revision number     : B0
Model number                    : WS-C2960-24TT-L
System serial number            : FOC1010X104
Top Assembly Part Number        : 800-27221-02
Top Assembly Revision Number    : A0
Version ID                      : V02
CLEI Code Number                : COM3L00BRA
Hardware Board Revision Number  : 0x01


Switch Ports Model              SW Version            SW Image
------ ----- -----              ----------            ----------
*    1 26    WS-C2960-24TT-L    15.0(2)SE4            C2960-LANBASEK9-M


Configuration register is 0xF



PC-B#
```

```
PC-B#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/1        unassigned      YES manual up                    up
FastEthernet0/2        unassigned      YES manual down                  down
FastEthernet0/3        unassigned      YES manual down                  down
FastEthernet0/4        unassigned      YES manual down                  down
FastEthernet0/5        unassigned      YES manual down                  down
FastEthernet0/6        unassigned      YES manual down                  down
FastEthernet0/7        unassigned      YES manual down                  down
FastEthernet0/8        unassigned      YES manual down                  down
FastEthernet0/9        unassigned      YES manual down                  down
FastEthernet0/10       unassigned      YES manual down                  down
FastEthernet0/11       unassigned      YES manual down                  down
FastEthernet0/12       unassigned      YES manual down                  down
FastEthernet0/13       unassigned      YES manual down                  down
FastEthernet0/14       unassigned      YES manual down                  down
FastEthernet0/15       unassigned      YES manual down                  down
FastEthernet0/16       unassigned      YES manual down                  down
FastEthernet0/17       unassigned      YES manual down                  down
FastEthernet0/18       unassigned      YES manual up                    up
FastEthernet0/19       unassigned      YES manual down                  down
FastEthernet0/20       unassigned      YES manual down                  down
FastEthernet0/21       unassigned      YES manual down                  down
FastEthernet0/22       unassigned      YES manual down                  down
FastEthernet0/23       unassigned      YES manual down                  down
FastEthernet0/24       unassigned      YES manual down                  down
GigabitEthernet0/1     unassigned      YES manual down                  down
GigabitEthernet0/2     unassigned      YES manual down                  down
Vlan1                  192.168.1.11    YES manual up                    up
PC-B#
```

-

```
PC-B(config)#hostname S2
S2(config)#
```

-

- Edit: The Hostname should be “S2” instead of “PC-B”

l. Record the interface status for the following interfaces.

Interface	S1 Status	S1 Protocol	S2 Status	S2 Protocol
F0/1	**Up**	**Up**	**Up**	**Up**
F0/6	**Up**	**Up**	**Down**	**Down**
F0/18	**Down**	**Down**	**Up**	**Up**
VLAN 1	**Up**	**Up**	**Up**	**Up**

m. From a PC, ping S1 and S2. The pings should be successful.

```
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=6ms TTL=255
Reply from 192.168.1.2: bytes=32 time<1ms TTL=255
Reply from 192.168.1.2: bytes=32 time<1ms TTL=255
Reply from 192.168.1.2: bytes=32 time=5ms TTL=255

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 6ms, Average = 2ms

C:\>
```

n. From a switch, ping PC-A and PC-B. The pings should be successful.

```
S1#ping 192.168.1.10

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.10, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

S1#ping 192.168.1.11

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.11, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms

S1#
```

Reflection Question

Why some FastEthernet ports on the switches are up and others are down?

- Unless the administrators manually shut down the FastEthernet ports, they are active when cables are attached to the ports. If not, the ports would be down.

What could prevent a ping from being sent between the PCs?

- Incorrect IP address, disconnected media, switched off or administratively closed ports, and PC firewall.