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## CEL 51, DCCN, Monsoon 2020

### Lab 4: Prototyping a Network

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#### Objective:

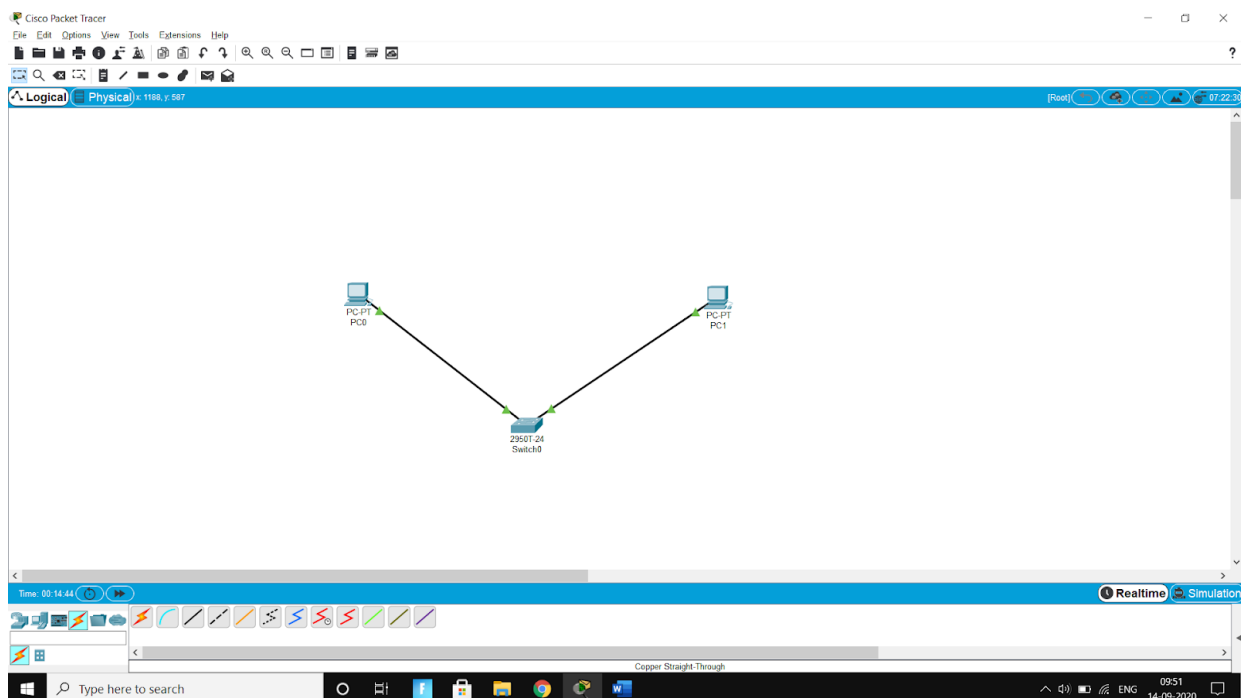
Prototype a network using Packet Tracer

#### Background

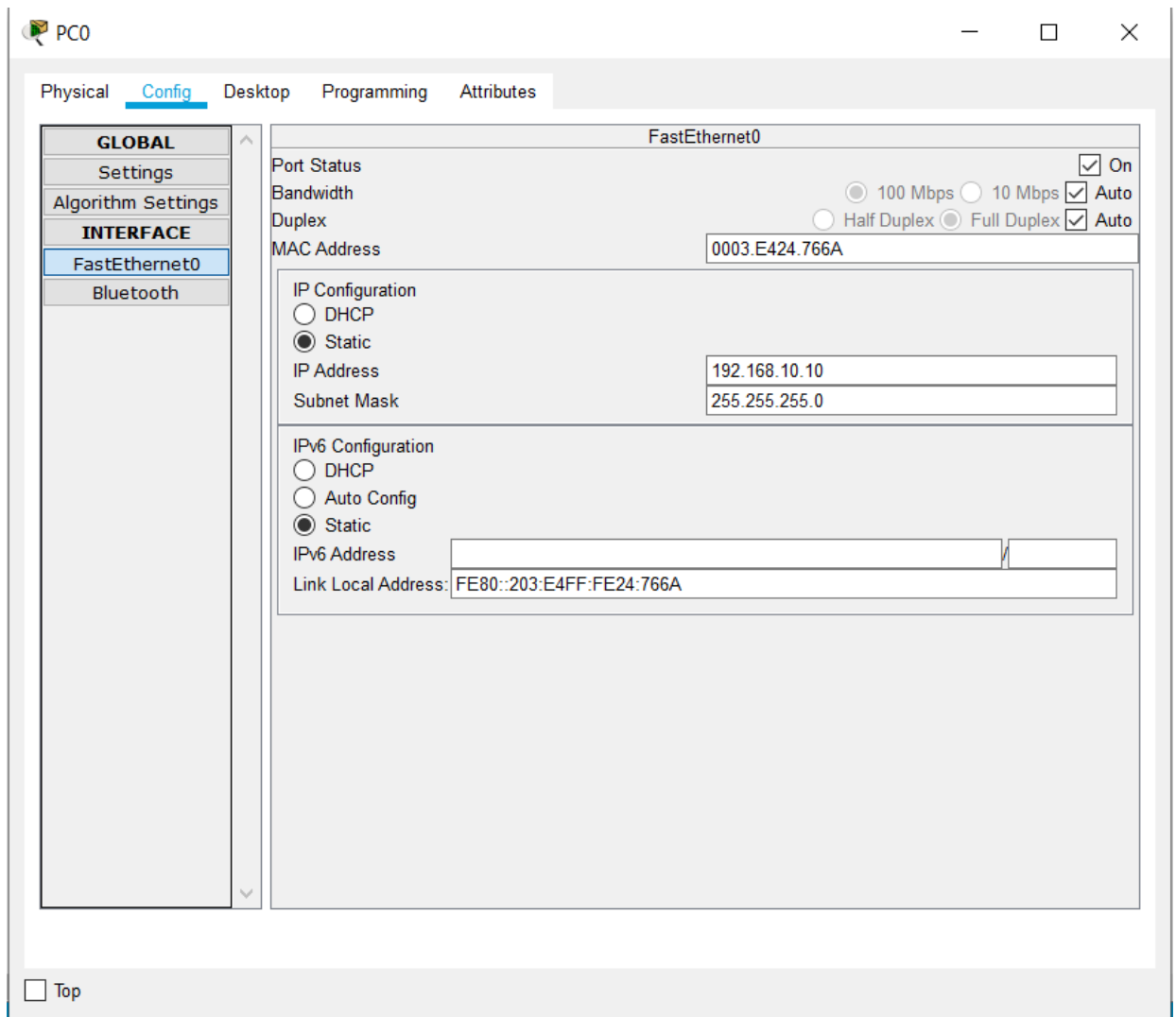
A client has requested that you set up a simple network with two PCs connected to a switch. Verify that the hardware, along with the given configurations, meet the requirements of the client.

#### Step 1: Set up the network topology

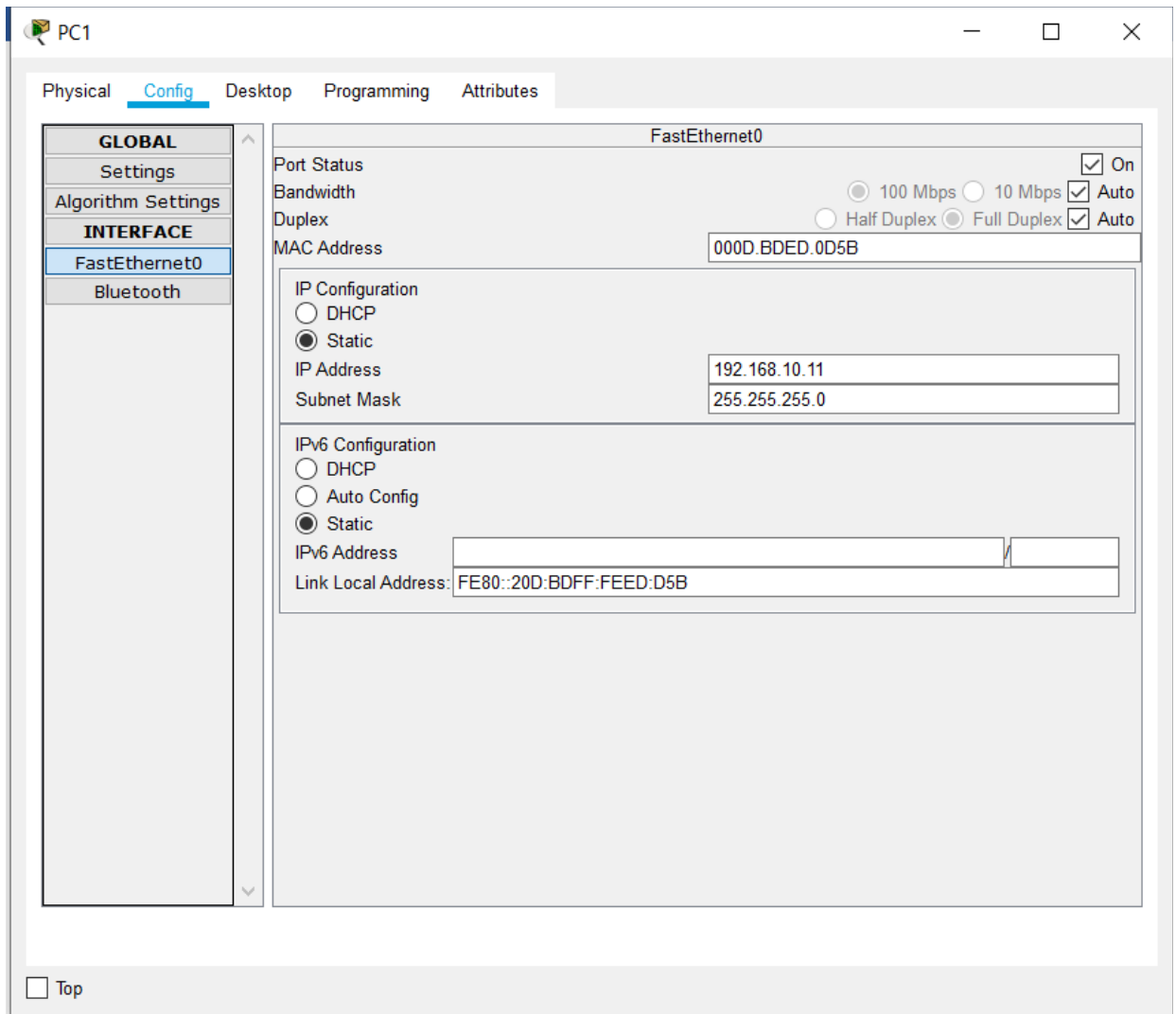
- Add two PCs and a Cisco 2950T switch
- Using straight-through cables, connect **PC0** to interface **Fa0/1** on **Switch0** and **PC1** to interface **Fa0/2** on **Switch0**.



- Configure PC0 using the **Config** tab in the PC0 configuration window:
  - IP address: 192.168.10.10
  - Subnet Mask 255.255.255.0



- d) Configure PC1 using the **Config** tab in the PC1 configuration window
- IP address: 192.168.10.11
  - Subnet Mask 255.255.255.0



## **Step 2: Test connectivity from PC0 to PC1**

- a) Use the **ping** command to test connectivity.
  - a. Click PC0.
  - b. Choose the **Desktop** tab.
  - c. Choose **Command Prompt**.
  - d. Type: **ping 192.168.10.11** and press *enter*.
- b) A successful **ping** indicates the network was configured correctly and the prototype validates the hardware and software configurations. A successful ping should resemble the below output:

PC0

Physical Config Desktop Programming Attributes

Command Prompt

X

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.11

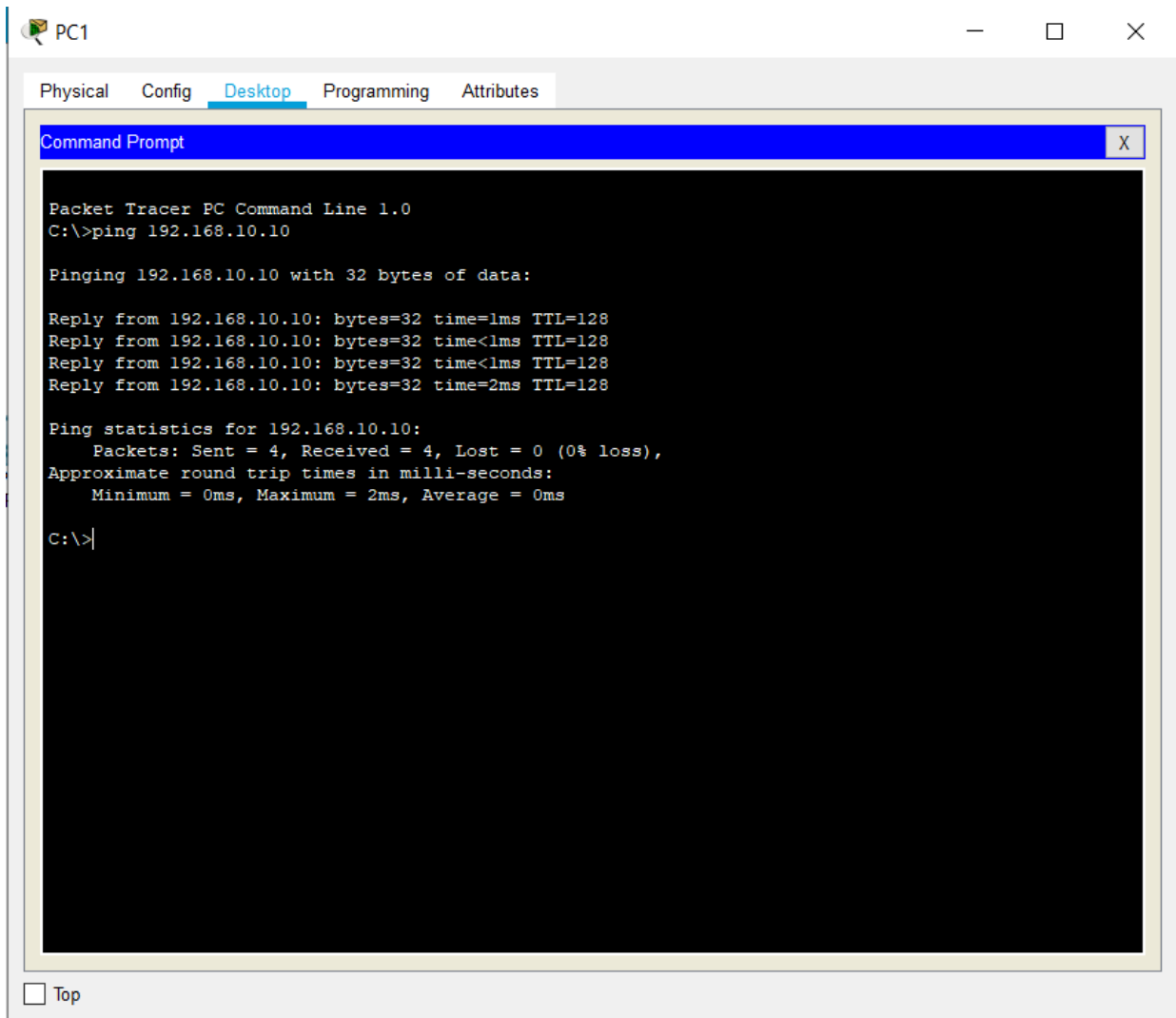
Pinging 192.168.10.11 with 32 bytes of data:

Reply from 192.168.10.11: bytes=32 time=1ms TTL=128
Reply from 192.168.10.11: bytes=32 time<1ms TTL=128
Reply from 192.168.10.11: bytes=32 time<1ms TTL=128
Reply from 192.168.10.11: bytes=32 time=3ms TTL=128

Ping statistics for 192.168.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 1ms

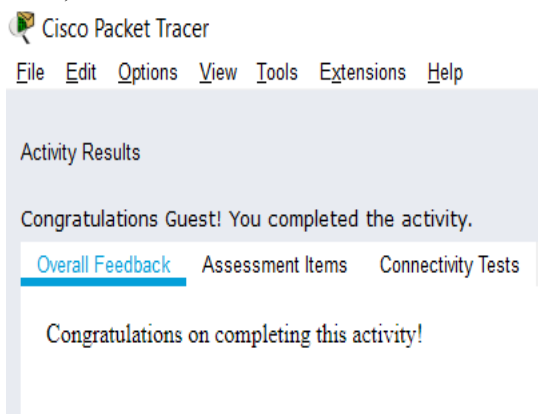
C:\>|
```

☐ Top



c) Close the configuration window.

d) Click the **Check Results** button at the bottom of the instruction window to check your work.



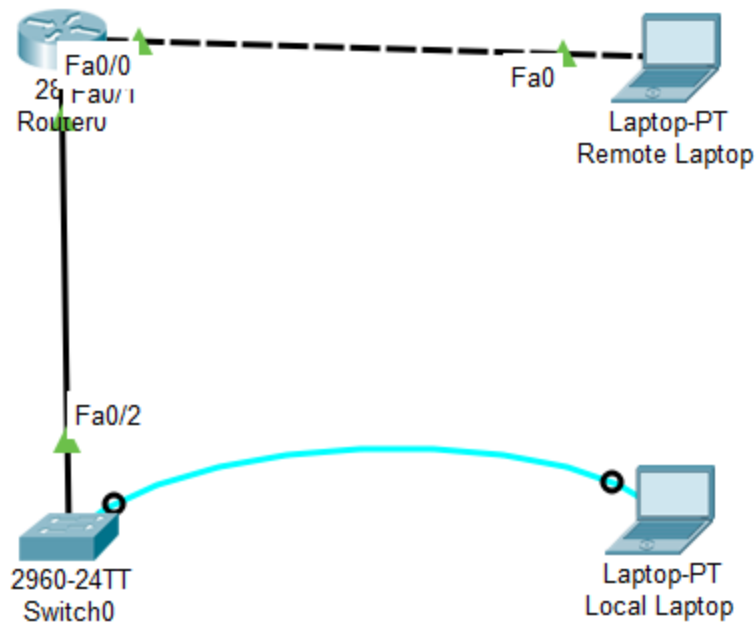
## CEL51, DCCN, Monsoon 2020

### Lab 4.1: Basic configuration - hostname, motd banner, passwd etc

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**Objective:**

This lab will test your ability to configure basic settings such as hostname, motd banner, encrypted passwords, and terminal options on a Packet Tracer 6.2 simulated Cisco Catalyst switch.



1. Use the local laptop connect to the switch console.

Physical Config CLI Attributes

GLOBAL	FastEthernet0/0
Settings	Port Status <input checked="" type="checkbox"/> On
Algorithm Settings	Bandwidth <input checked="" type="radio"/> 100 Mbps <input type="radio"/> 10 Mbps <input checked="" type="checkbox"/> Auto
ROUTING	Duplex <input type="radio"/> Half Duplex <input checked="" type="radio"/> Full Duplex <input checked="" type="checkbox"/> Auto
Static	MAC Address <input type="text" value="000B.BED4.9201"/>
RIP	IP Configuration
SWITCHING	IP Address <input type="text" value="172.16.1.1"/>
VLAN Database	Subnet Mask <input type="text" value="255.255.255.0"/>
INTERFACE	
FastEthernet0/0	Tx Ring Limit <input type="text" value="10"/>
FastEthernet0/1	

## Equivalent IOS Commands

```
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.16.1.1 255.255.255.0
Router(config-if)#
```



Router0



Physical

**Config**

CLI

Attributes

**GLOBAL**

Settings

Algorithm Settings

**ROUTING**

Static

RIP

**SWITCHING**

VLAN Database

**INTERFACE**

FastEthernet0/0

**FastEthernet0/1****FastEthernet0/1**

Port Status

☒ On

Bandwidth

☐ 100 Mbps☐ 10 Mbps☒ Auto

Duplex

☐ Half Duplex☒ Full Duplex☒ Auto

MAC Address

000B.BED4.9202

**IP Configuration**

IP Address

192.168.1.1

Subnet Mask

255.255.255.0

Tx Ring Limit

10

**Equivalent IOS Commands**

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0,  
changed state to up
```

```
Router(config-if)#exit
```

```
Router(config)#interface FastEthernet0/1
```

```
Router(config-if)#
```



Top



Remote Laptop

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IP Address 172.16.1.1

Subnet Mask 255.255.0.0

Default Gateway 172.16.1.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address /

Link Local Address FE80::290:21FF:FE0A:3D3B

IPv6 Gateway

IPv6 DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

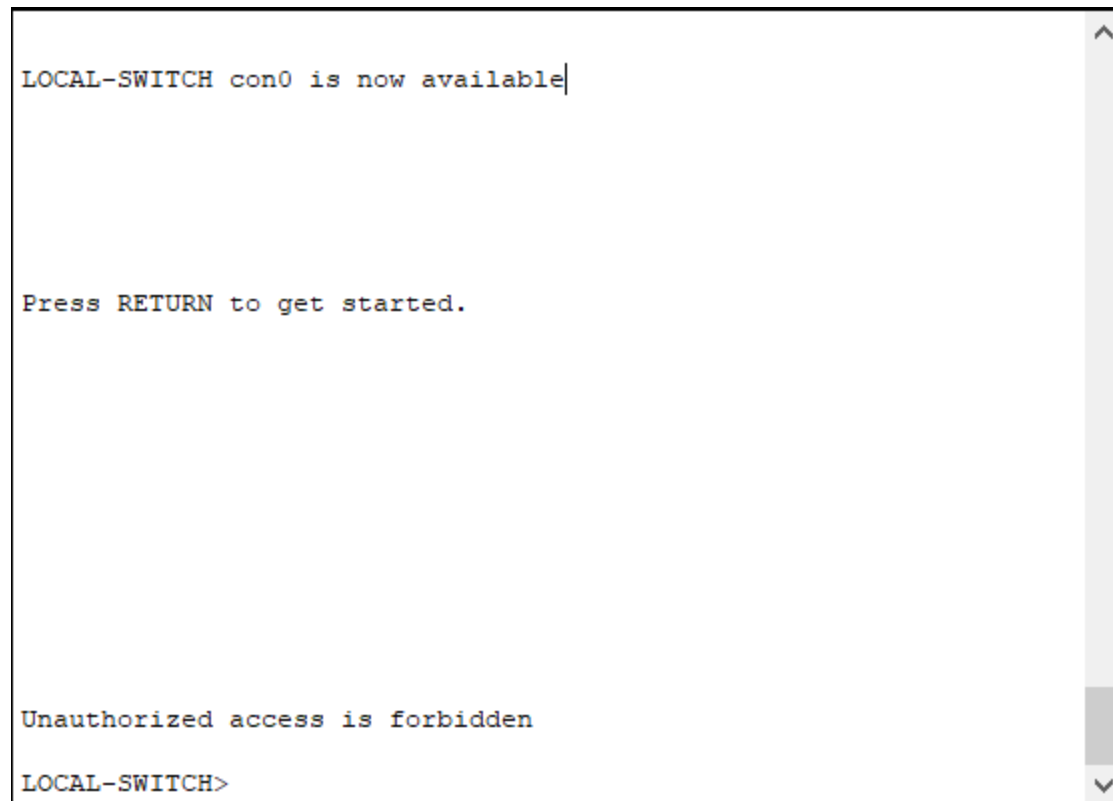
2. Configure Switch hostname as LOCAL-SWITCH

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

3. Configure the message of the day as "Unauthorized access is forbidden"

```
LOCAL-SWITCH(config)#banner motd 'Unauthorized access is
forbidden'
LOCAL-SWITCH(config)#
LOCAL-SWITCH(config)#end
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

LOCAL-SWITCH#exit
```



A screenshot of a terminal window with a light gray background and a black border. The text is in a monospaced font. At the top, it says "LOCAL-SWITCH con0 is now available|". Below that, it says "Press RETURN to get started.". Further down, it says "Unauthorized access is forbidden". At the bottom, it says "LOCAL-SWITCH>". On the right side of the terminal window, there is a vertical scrollbar with a gray track and a white slider. Above the slider is an upward-pointing arrow, and below it is a downward-pointing arrow.

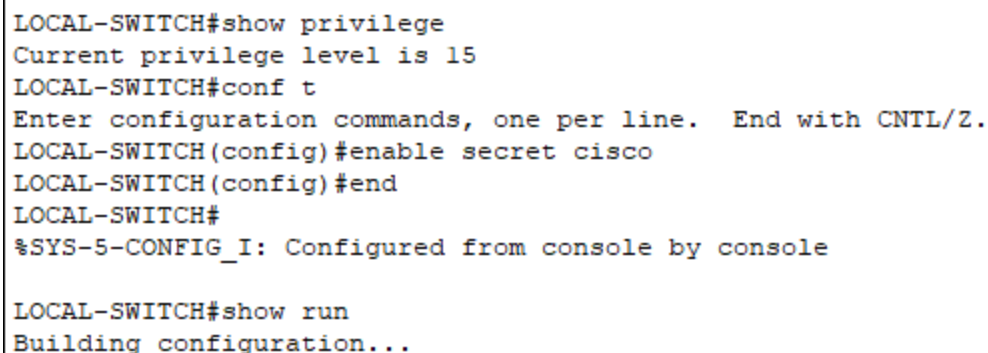
```
LOCAL-SWITCH con0 is now available|

Press RETURN to get started.

Unauthorized access is forbidden

LOCAL-SWITCH>
```

4. Configure the password for privileged mode access as "cisco". The password must be md5 encrypted



A screenshot of a terminal window with a light gray background and a black border. The text is in a monospaced font. It shows the configuration of a privileged mode password. At the top, it says "LOCAL-SWITCH#show privilege". Below that, it says "Current privilege level is 15". Then it says "LOCAL-SWITCH#conf t". Below that, it says "Enter configuration commands, one per line. End with CNTL/Z.". Then it says "LOCAL-SWITCH(config)#enable secret cisco". Below that, it says "LOCAL-SWITCH(config)#end". Then it says "LOCAL-SWITCH#". Below that, it says "%SYS-5-CONFIG\_I: Configured from console by console". At the bottom, it says "LOCAL-SWITCH#show run". Below that, it says "Building configuration...". On the right side of the terminal window, there is a vertical scrollbar with a gray track and a white slider.

```
LOCAL-SWITCH#show privilege
Current privilege level is 15
LOCAL-SWITCH#conf t
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#enable secret cisco
LOCAL-SWITCH(config)#end
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

LOCAL-SWITCH#show run
Building configuration...
```

```
Current configuration : 1180 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname LOCAL-SWITCH
!
enable secret 5 $1$mERr$hX5rVt7rPNoS4wqbXKX7m0
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
--More-- |
```

LOCAL-SWITCH con0 is now available

Press RETURN to get started.

Unauthorized access is forbidden

LOCAL-SWITCH>enable

Password:

LOCAL-SWITCH#

---

5. Configure password encryption on the switch using the global configuration command

```
Unauthorized access is forbidden

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

LOCAL-SWITCH#show run
Building configuration...

Current configuration : 1177 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname LOCAL-SWITCH
!
enable secret 5 $1$mERx$hx5rVt7rPN0S4wqbXKX7m0


---


!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
--More-- |


---


```

6. Configure CONSOLE access with the following settings :

- Login enabled
- Password : whatever you like
- History size : 15 commands
- Timeout : 6'45"
- Synchronous logging

```

LOCAL-SWITCH#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
LOCAL-SWITCH(config)#line con 0
LOCAL-SWITCH(config-line)#password consolepwd
LOCAL-SWITCH(config-line)#login
LOCAL-SWITCH(config-line)#history size 15
LOCAL-SWITCH(config-line)#exec-timeout 6 45
LOCAL-SWITCH(config-line)#logging synchronous
LOCAL-SWITCH(config-line)#end
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

LOCAL-SWITCH#

```

---

6. Configure TELNET access with the following settings :

- Login enabled
- Password : whatever you like
- History size : 15 commands
- Timeout : 8'20"
- Synchronous logging

Press RETURN to get started!

Unauthorized access is forbidden

User Access Verification

Password:

Password:

```

LOCAL-SWITCH>enable
Password:
LOCAL-SWITCH#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
LOCAL-SWITCH(config)#line vty 0 15
LOCAL-SWITCH(config-line)#password telnetpwd
LOCAL-SWITCH(config-line)#login
LOCAL-SWITCH(config-line)#history size 15
LOCAL-SWITCH(config-line)#exec-timeout 8 20
LOCAL-SWITCH(config-line)#logging synchronous
LOCAL-SWITCH(config-line)#end
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

LOCAL-SWITCH#

```

```
LOCAL-SWITCH#show run
Building configuration...
```

```
Current configuration : 1456 bytes
```

```
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname LOCAL-SWITCH
!
enable secret 5 $l$mERr$hx5rVt7rPNoS4wqbXKX7m0
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
```

---

```
interface GigabitEthernet0/2
!
interface Vlan1
  no ip address
  shutdown
!
banner motd ^CUnauthorized access is forbidden^C
!
!
!
line con 0
  password 7 082243401A160912021C08
  logging synchronous
  login
  history size 15
  exec-timeout 6 45
!
line vty 0 4
  exec-timeout 8 20
  password 7 08354942071C1107050F
  logging synchronous
  login
  history size 15
line vty 5 15
```

---

```
exec-timeout 8 20
password 7 08354942071C1107050F
logging synchronous
login
history size 15
!
!
!
!
end
--More-- |
```

---

7. Configure the IP address of the switch as 192.168.1.2/24 and its default gateway IP (192.168.1.1).

```
LOCAL-SWITCH#conf t
Enter configuration commands, one per line. End with CNTL/Z.
LOCAL-SWITCH(config)#interface VLAN1
LOCAL-SWITCH(config-if)#ip address 192.168.1.2 255.255.255.
                                     ^
% Invalid input detected at '^' marker.

LOCAL-SWITCH(config-if)#ip address 192.168.1.2 255.255.255.0
LOCAL-SWITCH(config-if)#ip default-gateway 192.168.1.1
LOCAL-SWITCH(config)#end
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

LOCAL-SWITCH# show run
Building configuration...

Current configuration : 1512 bytes
!
version 12.2
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname LOCAL-SWITCH
.
```

```

:
interface Vlan1
  ip address 192.168.1.2 255.255.255.0
  shutdown
!
ip default-gateway 192.168.1.1
!
banner motd ^CUnauthorized access is forbidden^C
!
!
!
line con 0
  password 7 082243401A160912021C08
  logging synchronous
  login
  history size 15
  exec-timeout 6 45
!
line vty 0 4
  exec-timeout 8 20
  password 7 08354942071C1107050F
  --More--

```

---

```

LOCAL-SWITCH#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
LOCAL-SWITCH(config)#interface vlan1
LOCAL-SWITCH(config-if)#no shutdown

LOCAL-SWITCH(config-if)#
%LINK-5-CHANGED: Interface Vlan1, changed state to up

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

LOCAL-SWITCH(config-if)#end
LOCAL-SWITCH#
%SYS-5-CONFIG_I: Configured from console by console

LOCAL-SWITCH#

```



```

!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
interface Vlan1
 ip address 192.168.1.2 255.255.255.0
!
ip default-gateway 192.168.1.1
!
banner motd ^CUnauthorized access is forbidden^C
!
!
!
line con 0
 password 7 082243401A160912021C08
 logging synchronous
 login
 history size 15
 exec-timeout 6 45
 --More-- |

```

8. Test telnet connectivity from the Remote Laptop using the telnet client.

