

CCNA Day-05 Lab Report (Part 1)

Title: Simulating and Analyzing Interface Status Scenarios on Cisco Routers

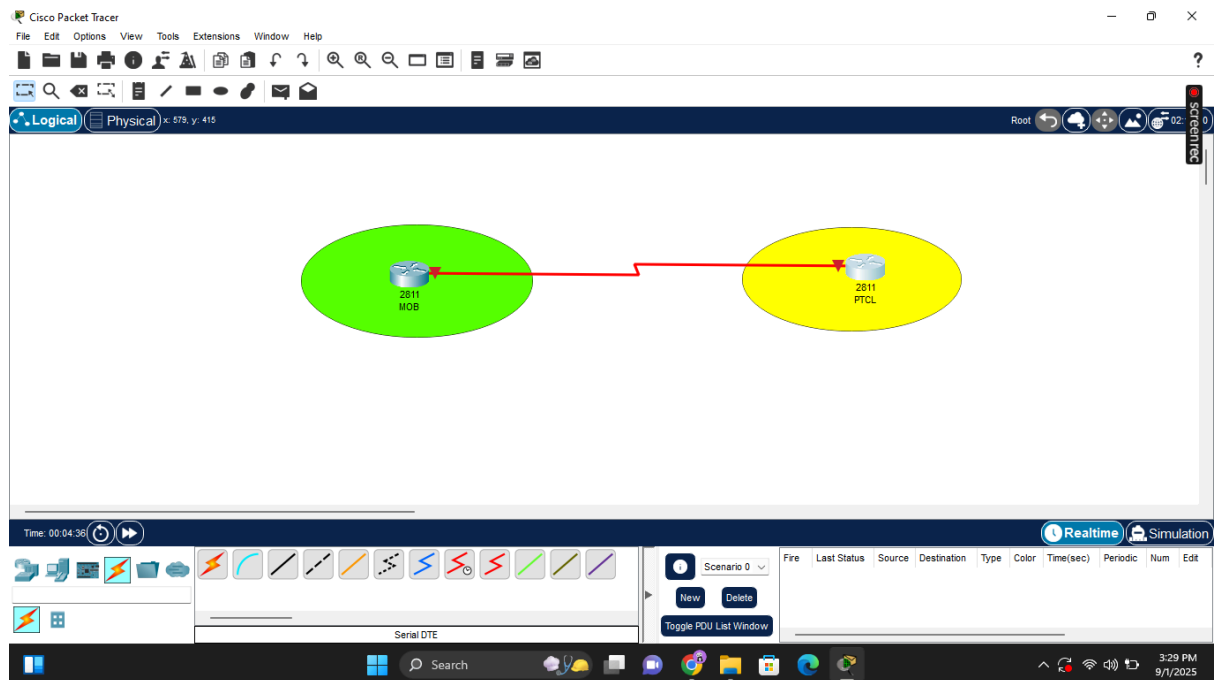
1. Objective

To configure two Cisco routers connected via a serial DCE cable and simulate two interface status scenarios:

1. **Up / up** ----- **up / up** both routers fully operational
2. **administratively down / down** ----- **down / down** simulating a manual shutdown on one side.

2. Lab Topology Overview

- **Devices:** 2 Cisco Routers (PTCL and MOB)
- **Cable:** Serial DCE cable
- **Interfaces Used:**
 - PTCL → Serial0/0/0 (DCE)
 - MOB → Serial0/0/0 (DTE)
- **Software:** Cisco Packet Tracer.



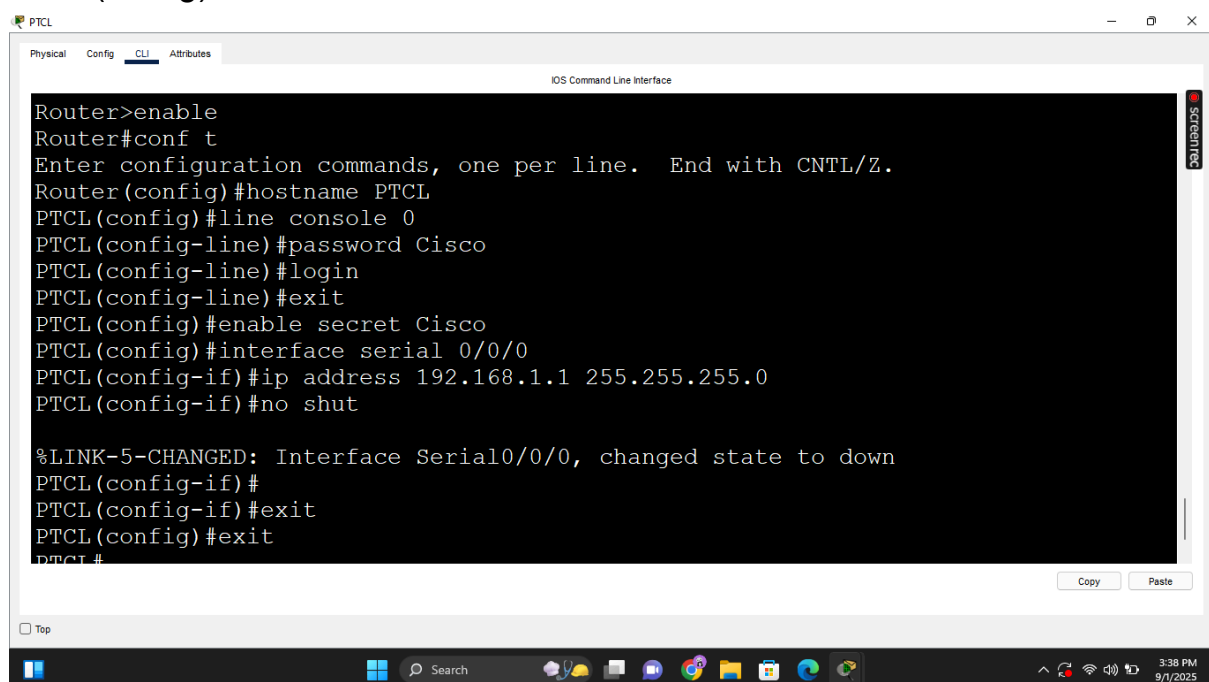
3. IP Addressing

The PTCL router's Serial0/1/0 interface is assigned the IP address **192.168.1.1** with a subnet mask of **255.255.255.0**. The MOB router's Serial0/2/0 interface is assigned the IP address **192.168.1.2** with the same subnet mask of **255.255.255.0**.

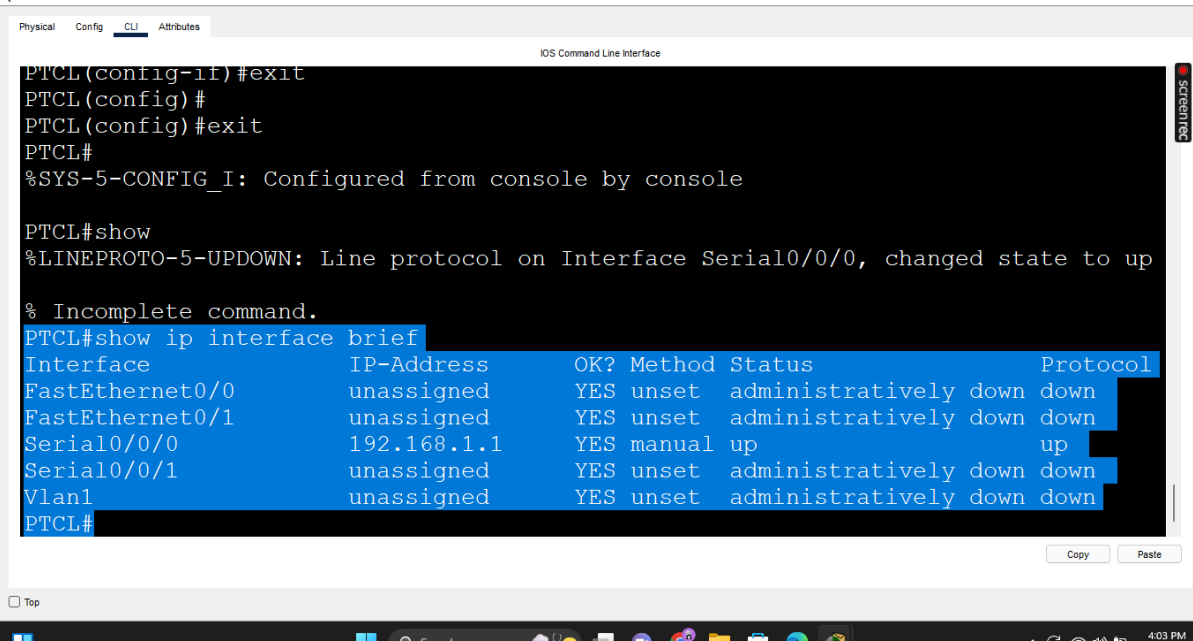
4. Scenario 1 : Interface UP / UP on both routers

PTCL Configuration

```
PTCL> enable
PTCL# configure terminal
PTCL(config)# hostname PTCL
PTCL(config)# line console 0
PTCL(config-line)# password cisco
PTCL(config-line)# login
PTCL(config-line)# exit
PTCL(config)# enable password class
PTCL(config)# interface Serial0/0/0
PTCL(config-if)# ip address 192.168.1.1 255.255.255.0
PTCL(config-if)# clock rate 64000
PTCL(config-if)# no shutdown
PTCL(config-if)# exit
PTCL(config)# exit
```



Verification Output PTCL



The screenshot shows the PTCL (Physical Terminal Command Line Interface) window. The CLI shows the following commands and output:

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

PTCL#show
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

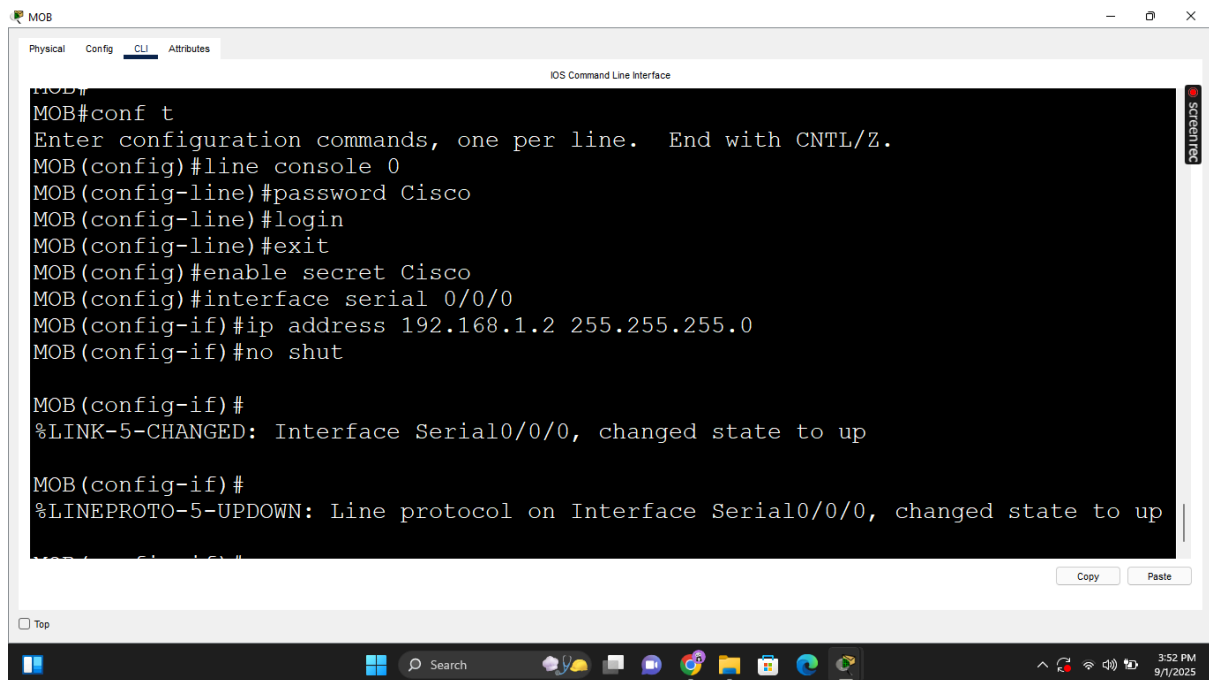
% Incomplete command.
PTCL#show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	unassigned	YES	unset	administratively down	down
FastEthernet0/1	unassigned	YES	unset	administratively down	down
Serial0/0/0	192.168.1.1	YES	manual	up	up
Serial0/0/1	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

The screenshot also shows the Windows taskbar at the bottom with the time 4:03 PM on 9/1/2025.

MOB Configuration

```
MOB> enable
MOB# configure terminal
MOB(config)# hostname MOB
MOB(config)# line console 0
MOB(config-line)# password cisco
MOB(config-line)# login
MOB(config-line)# exit
MOB(config)# enable secret Cisco
MOB(config)# interface Serial0/0/0
MOB(config-if)# ip address 192.168.1.2 255.255.255.0
MOB(config-if)# no shutdown
MOB(config-if)# exit
MOB(config)# exit
```



The screenshot shows a Cisco IOS Command Line Interface window titled "IOS Command Line Interface". The window has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The terminal output shows the following commands and responses:

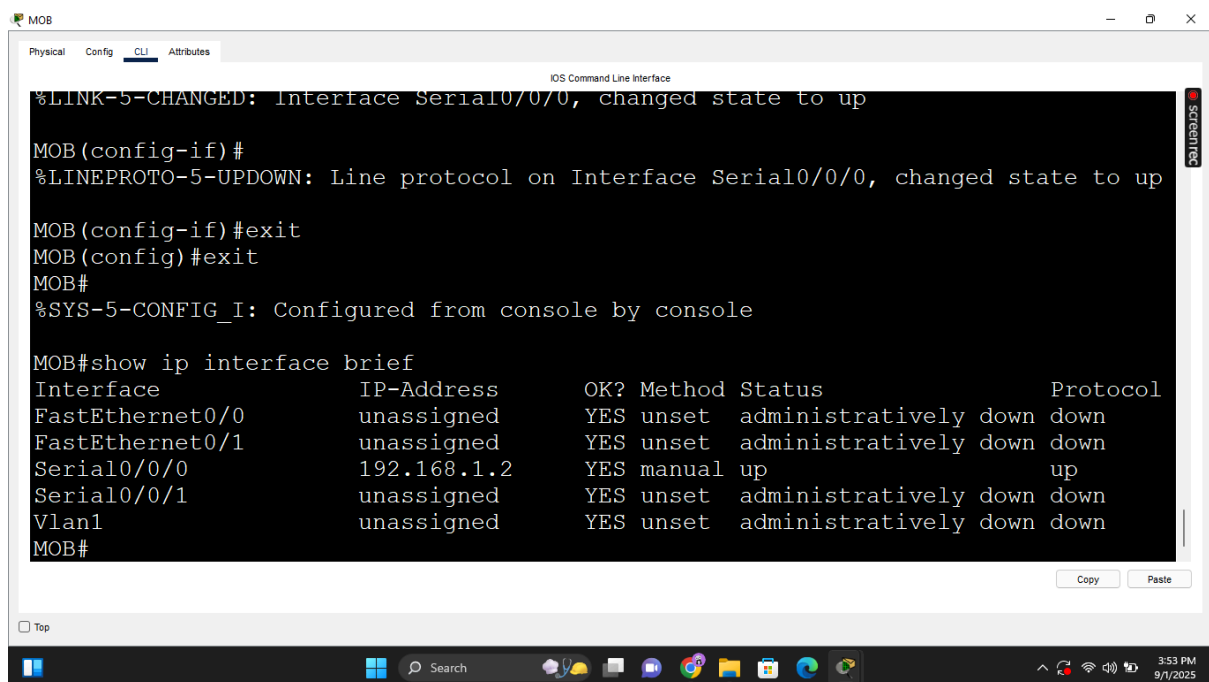
```
MOB#
MOB#conf t
Enter configuration commands, one per line. End with CNTL/Z.
MOB(config)#line console 0
MOB(config-line)#password Cisco
MOB(config-line)#login
MOB(config-line)#exit
MOB(config)#enable secret Cisco
MOB(config)#interface serial 0/0/0
MOB(config-if)#ip address 192.168.1.2 255.255.255.0
MOB(config-if)#no shut

MOB(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

MOB(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
```

At the bottom of the window, there are "Copy" and "Paste" buttons. The Windows taskbar is visible at the bottom of the screen, showing the time as 3:52 PM on 9/1/2025.

Verification Output MOB



The screenshot shows the same Cisco IOS Command Line Interface window, now displaying verification output. The terminal output shows the following commands and responses:

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

MOB(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up

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

MOB#show ip interface brief
Interface          IP-Address      OK? Method Status        Protocol
FastEthernet0/0    unassigned      YES unset  administratively down  down
FastEthernet0/1    unassigned      YES unset  administratively down  down
Serial0/0/0        192.168.1.2     YES manual    up              up
Serial0/0/1        unassigned      YES unset  administratively down  down
Vlan1              unassigned      YES unset  administratively down  down
MOB#
```

At the bottom of the window, there are "Copy" and "Paste" buttons. The Windows taskbar is visible at the bottom of the screen, showing the time as 3:53 PM on 9/1/2025.

Scenario 2 : PTCL administratively down / MOB down

PTCL – Configuration

PTCL> enable

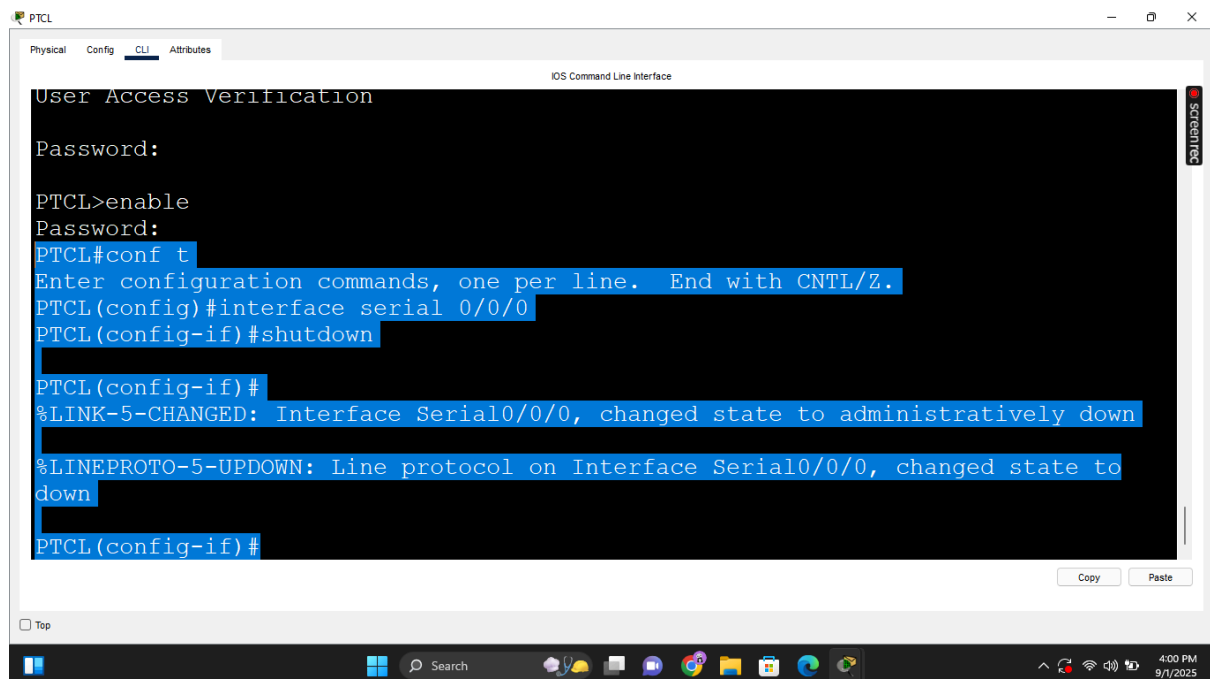
PTCL# configure terminal

PTCL(config)# interface Serial0/0/0

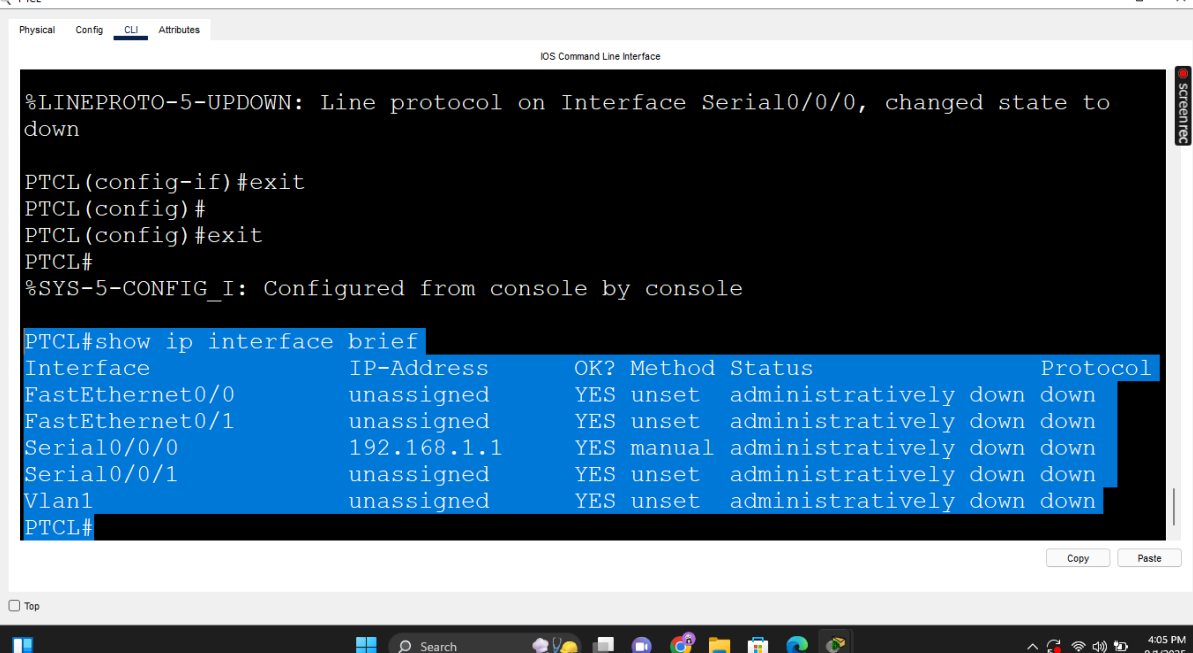
PTCL(config-if)# shutdown

PTCL(config-if)# exit

PTCL(config)# exit



Verification Output PTCL



The screenshot shows the PTCL CLI interface with the following commands and output:

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to down

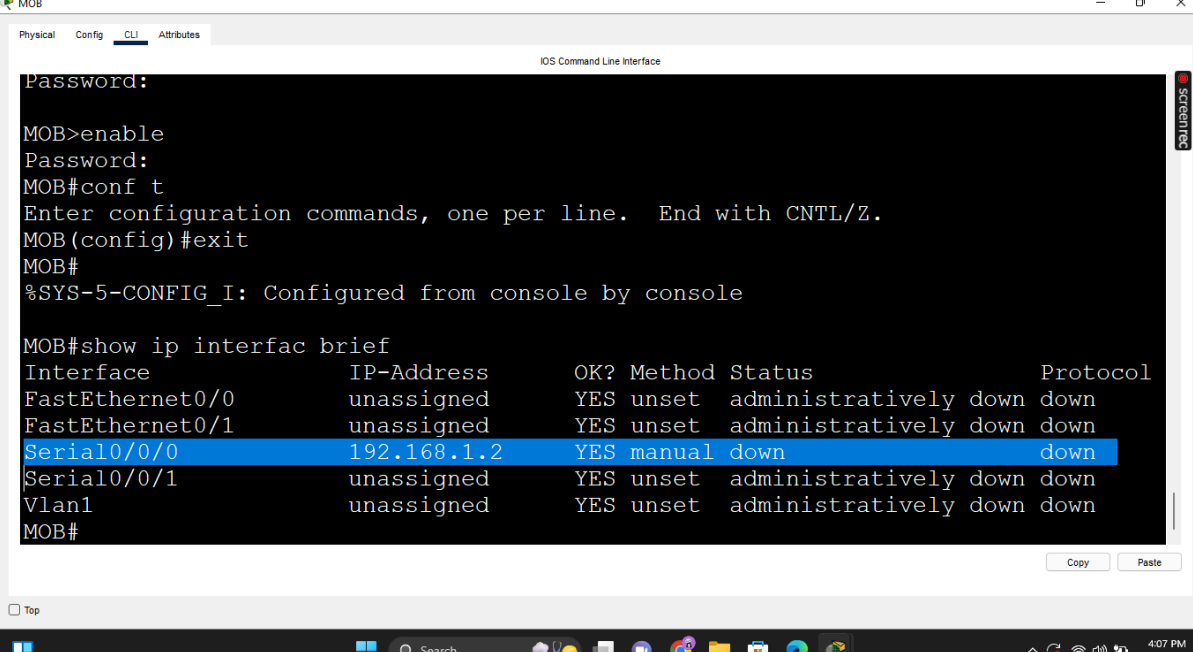
PTCL(config-if)#exit
PTCL(config)#
PTCL(config)#exit
PTCL#
%SYS-5-CONFIG_I: Configured from console by console

PTCL#show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	unassigned	YES	unset	administratively down	down
FastEthernet0/1	unassigned	YES	unset	administratively down	down
Serial0/0/0	192.168.1.1	YES	manual	administratively down	down
Serial0/0/1	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

The interface Serial0/0/0 is highlighted in blue in the original image.

MOB No configuration change (effect observed)



The screenshot shows the MOB CLI interface with the following commands and output:

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

MOB#show ip interfac brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	unassigned	YES	unset	administratively down	down
FastEthernet0/1	unassigned	YES	unset	administratively down	down
Serial0/0/0	192.168.1.2	YES	manual	down	down
Serial0/0/1	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

The interface Serial0/0/0 is highlighted in blue in the original image.

Summary & Troubleshooting Insights

Scenario 1 : Link Operational (up/up ↔ up/up). In this state, both the Status and Protocol fields for the serial interfaces display up. This indicates that

1. The physical layer is active (cabling, modules, and clocking are correct).
2. The data link layer is functioning (encapsulation matches, IP addressing is correct, and the interface is not administratively shut down).
3. End to end communication is possible, and pings between routers should succeed without packet loss.

Troubleshooting Note: If a link is expected to be operational but is not, verify:

1. Correct IP addressing and subnet mask on both ends.
2. Clock rate configured on the DCE side.

Scenario 2

Provider Side Administrative Shutdown (admin down/down ↔ down/down)

Here, the Status on the provider's (PTCL) interface shows administratively down, while the customer side (MOB) interface shows down for both Status and Protocol. This occurs when the provider manually disables the interface using the `shutdown` command.

1. On the provider side, the interface is intentionally disabled, preventing any physical or data link activity.
2. On the receiver side, the interface detects no carrier signal from the remote end, resulting in a down/down state.

Troubleshooting Note When you see down/down on your side:

1. Check cabling and hardware first.
2. If physical connections are intact, contact the remote end (provider) to confirm whether the interface is administratively shut down.
3. Use `show ip interface brief` and `show controllers serial` to confirm the role (DCE/DTE) and detect remote shutdowns.

Key Takeaway

1. up/up confirms both ends are configured, enabled, and communicating.
2. down/down on your side can be caused by the far end being administratively shut down, a common scenario in provider-customer setups.
3. Always start troubleshooting from the physical layer upward, and verify remote end status before making local changes.
- 4.

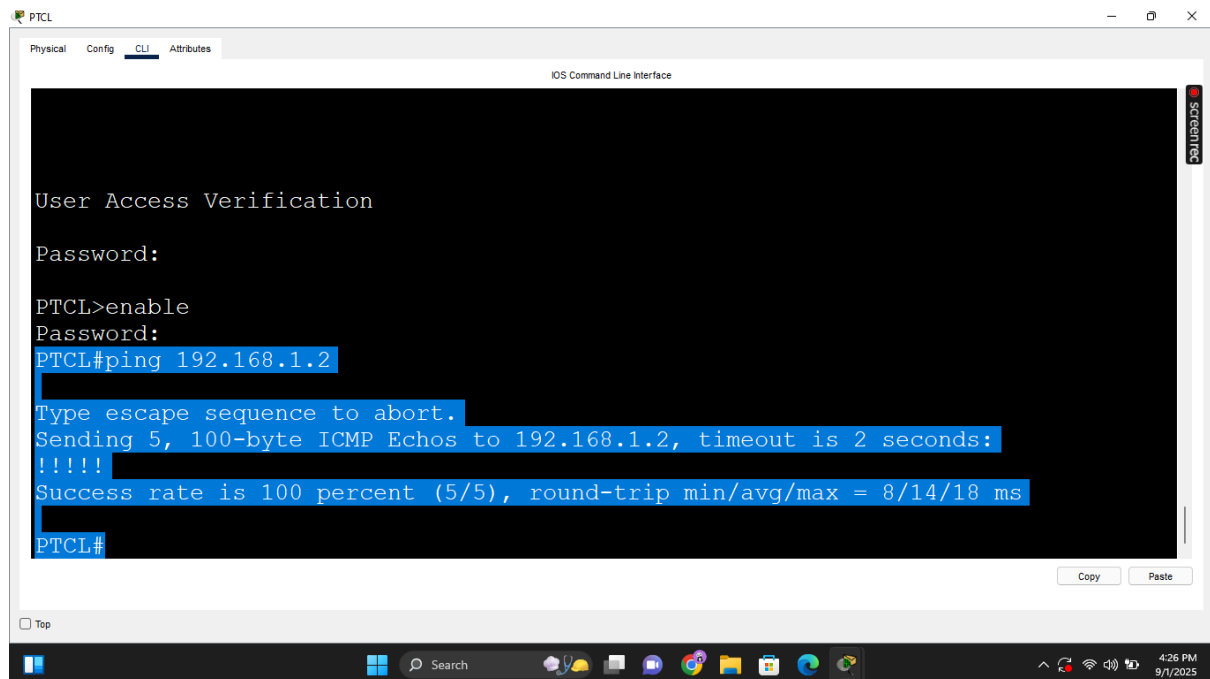
Restoring the Link and Testing Connectivity

PTCL re-enables Interface with no shut command.

```
PTCL> enable
PTCL# configure terminal
PTCL(config)# interface Serial0/1/0
PTCL(config-if)# no shutdown
PTCL(config-if)# exit
PTCL(config)# exit
```

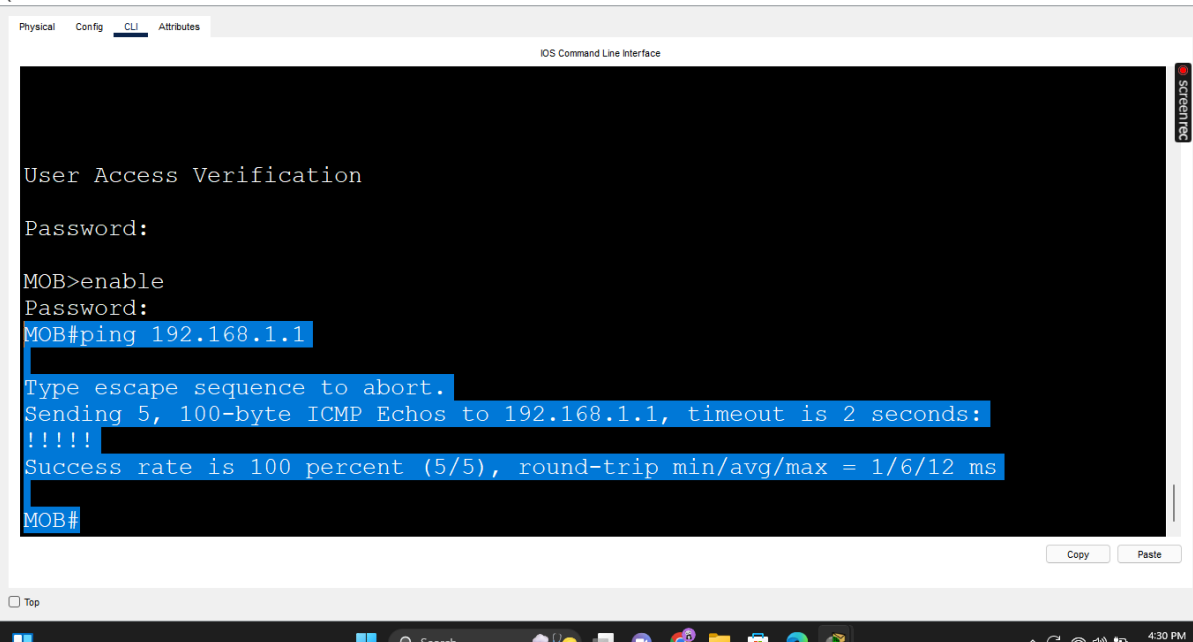
Connectivity Test Ping From PTCL To MOB

Output:



Connectivity Test Ping From MOB To PTCL

Output:



```
MOB
Physical Config CLI Attributes
IOS Command Line Interface

User Access Verification

Password:

MOB>enable
Password:
MOB#ping 192.168.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/6/12 ms
MOB#
```

The screenshot shows a Cisco IOS CLI window titled "MOB". The interface has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The main window displays the "IOS Command Line Interface". The prompt is "User Access Verification" with a "Password:" field. After entering the password, the prompt changes to "MOB>". The user enters "enable", and the prompt changes to "MOB#". The user then enters "ping 192.168.1.1". The output shows "Type escape sequence to abort.", "Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:", "!!!!", and "Success rate is 100 percent (5/5), round-trip min/avg/max = 1/6/12 ms". The prompt returns to "MOB#". The window has a "Copy" and "Paste" button at the bottom right. The Windows taskbar is visible at the bottom of the screen.

Summary:

In this lab, we practiced disabling and re-enabling a provider side serial interface using `shutdown` and `no shutdown`. We verified interface states with `show ip interface brief` and confirmed link restoration with successful pings. The exercise demonstrated how administrative actions affect both ends of a WAN link. We reinforced a structured troubleshooting workflow: disable → verify down → re-enable → verify up → test. By the end, the link was fully operational with 100% connectivity, reflecting real world ISP customer recovery steps.

