CCNA Day-05 Lab Report (Part 1)

Title: Simulating and Analyzing Interface Status Scenarios on Cisco Routers

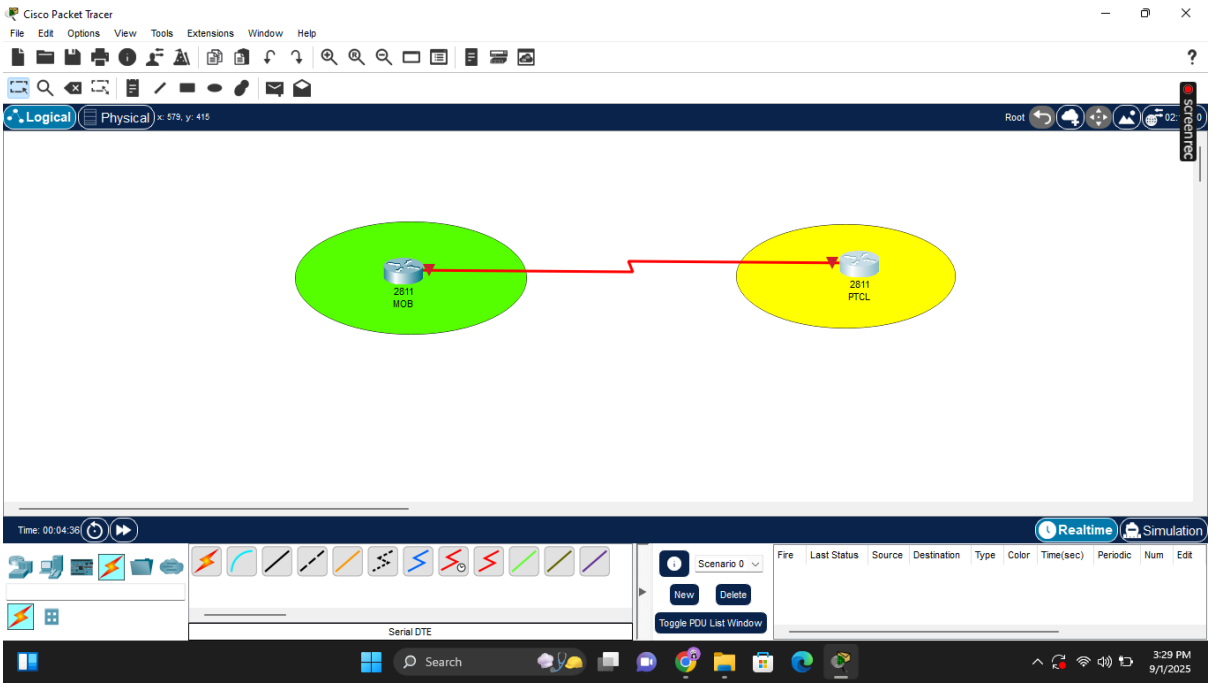
1. Objective

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.



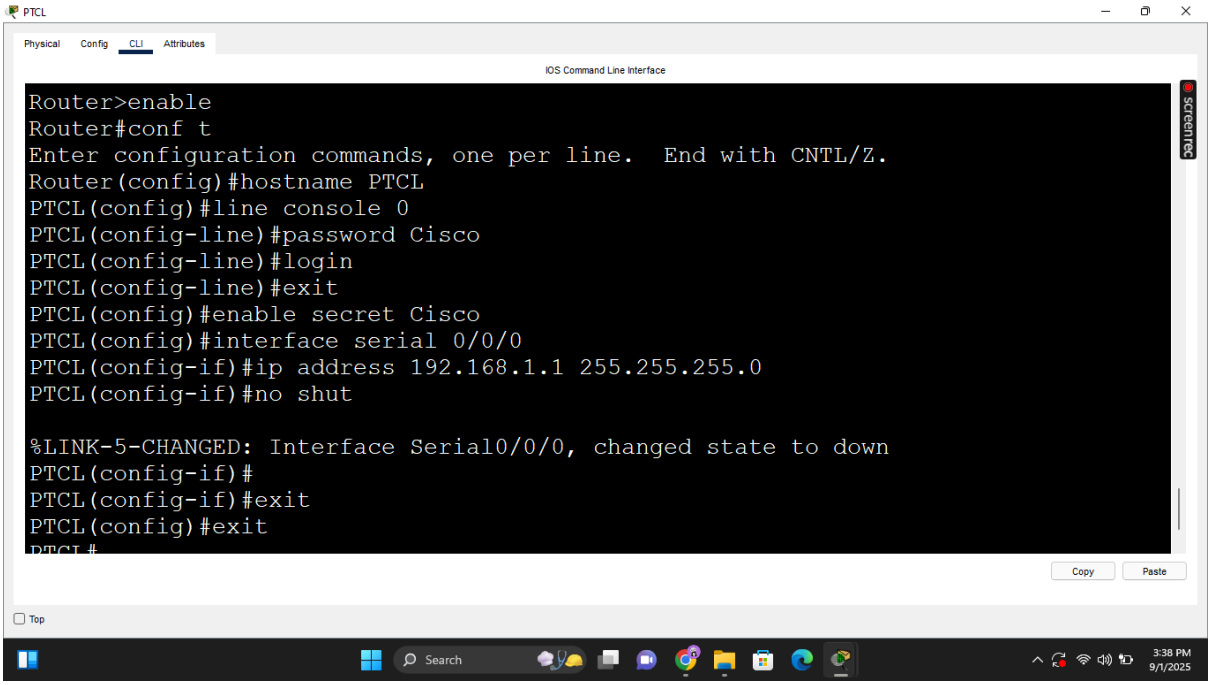
3. IP Addressing

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**.

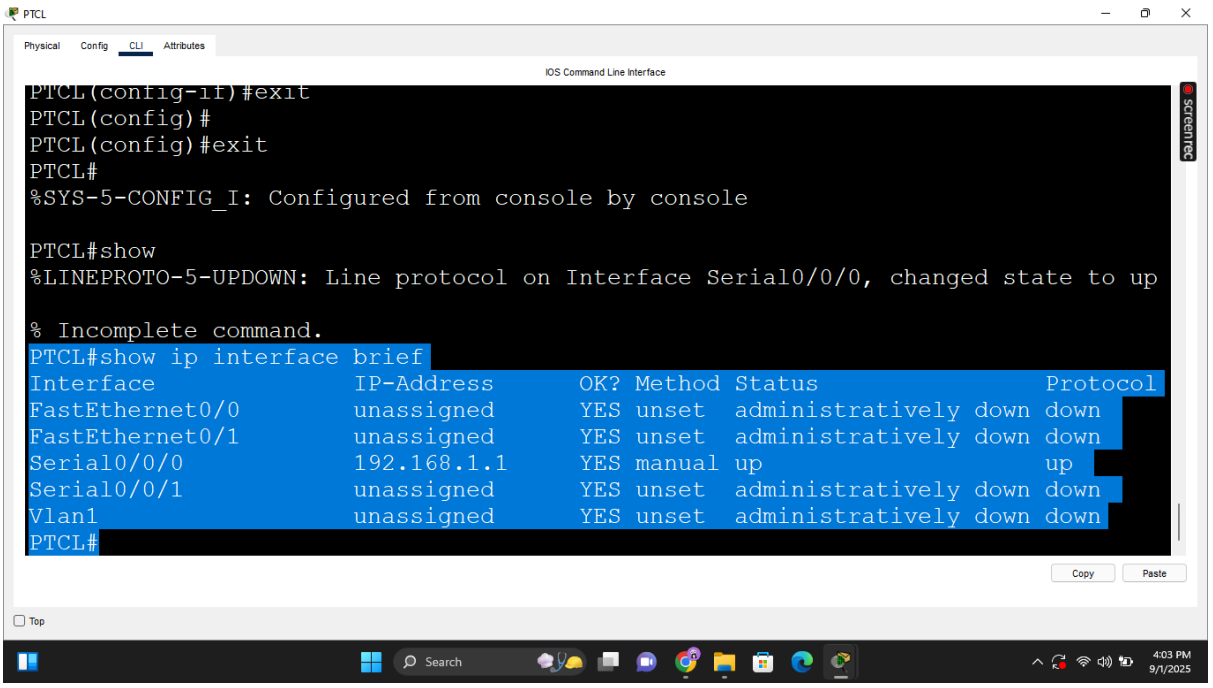
4. Scenario 1 : Interface UP / UP on both routers

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

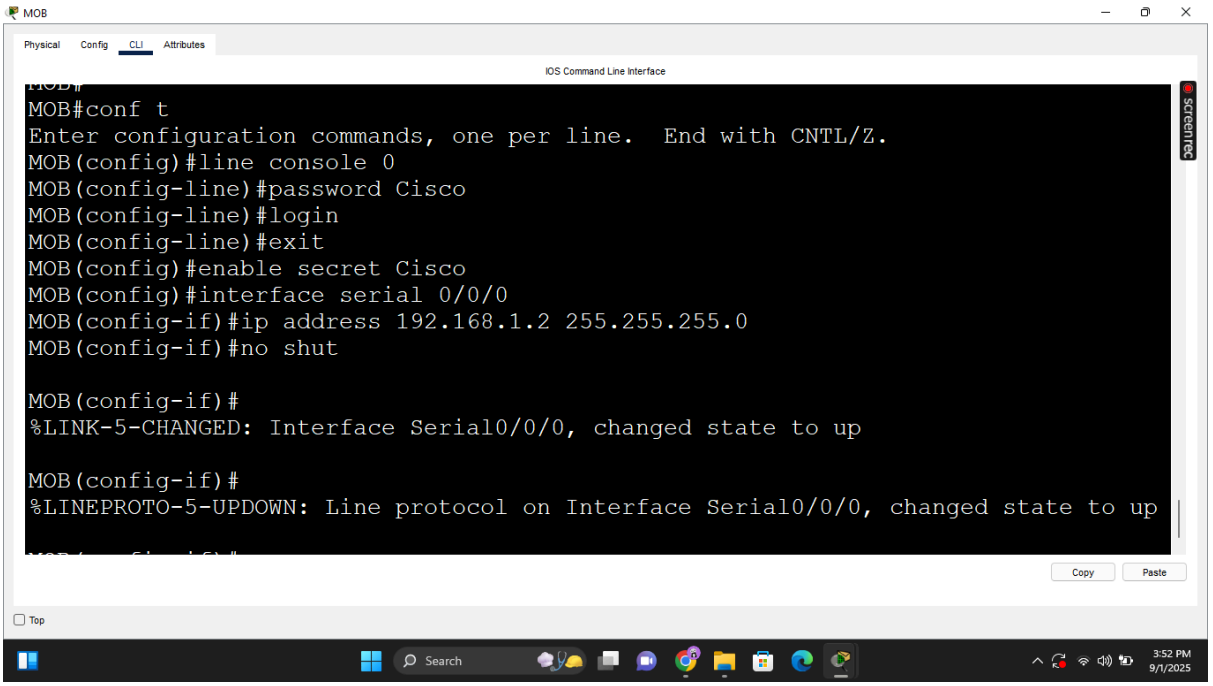


Verification Output PTCL

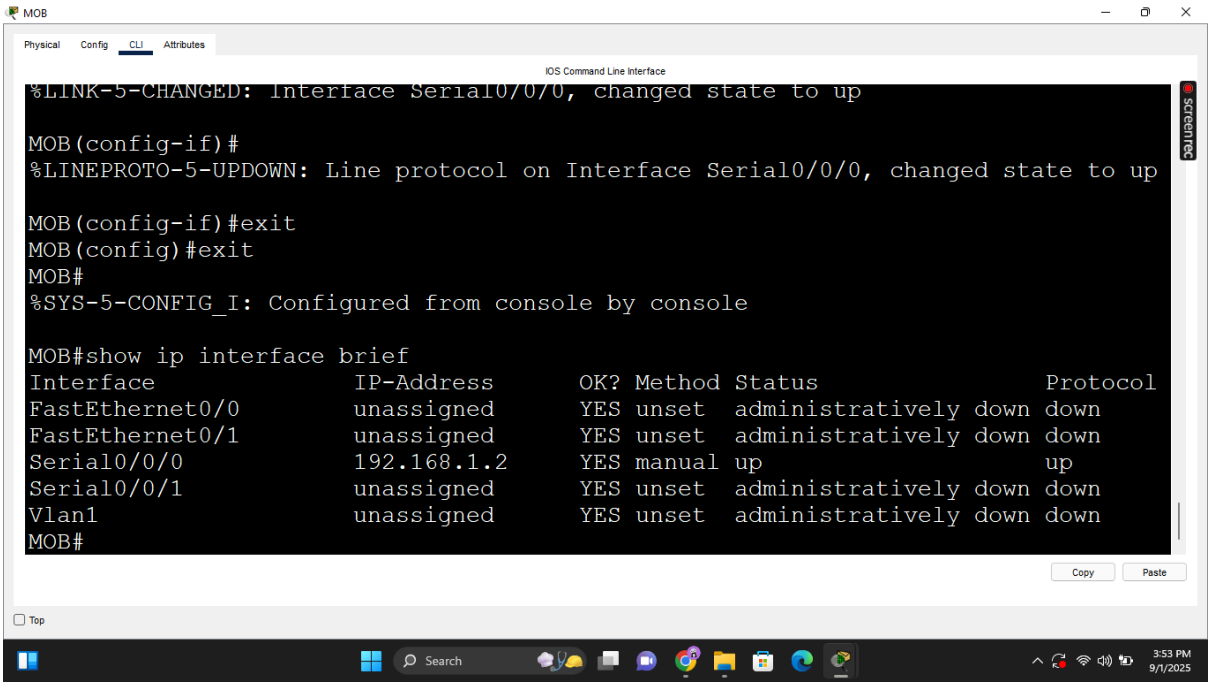


MOB Configuration

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



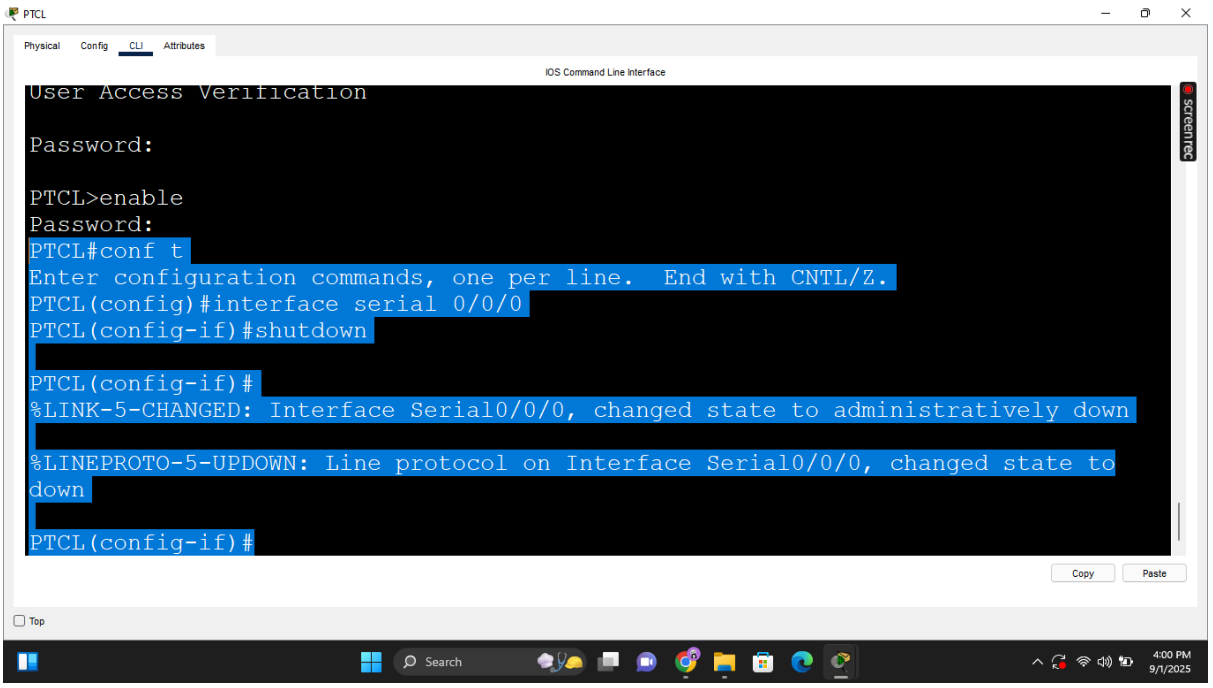
Verification Output MOB



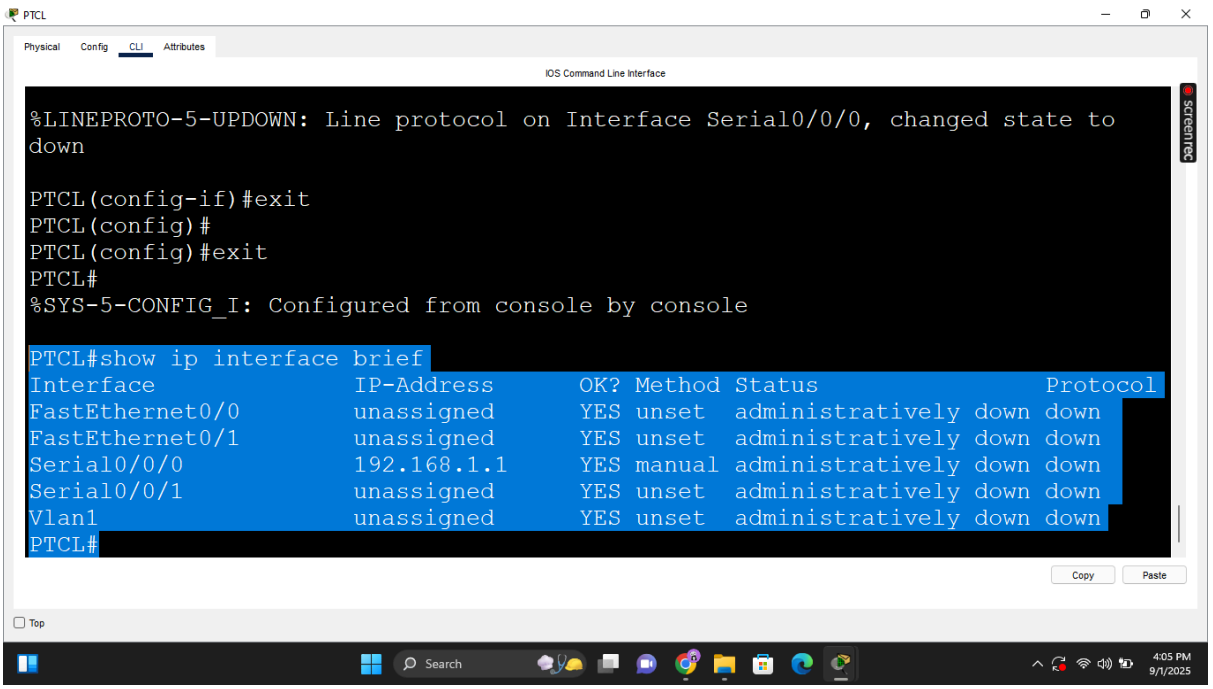
Scenario 2 : PTCL administratively down / MOB down

PTCL – Configuration

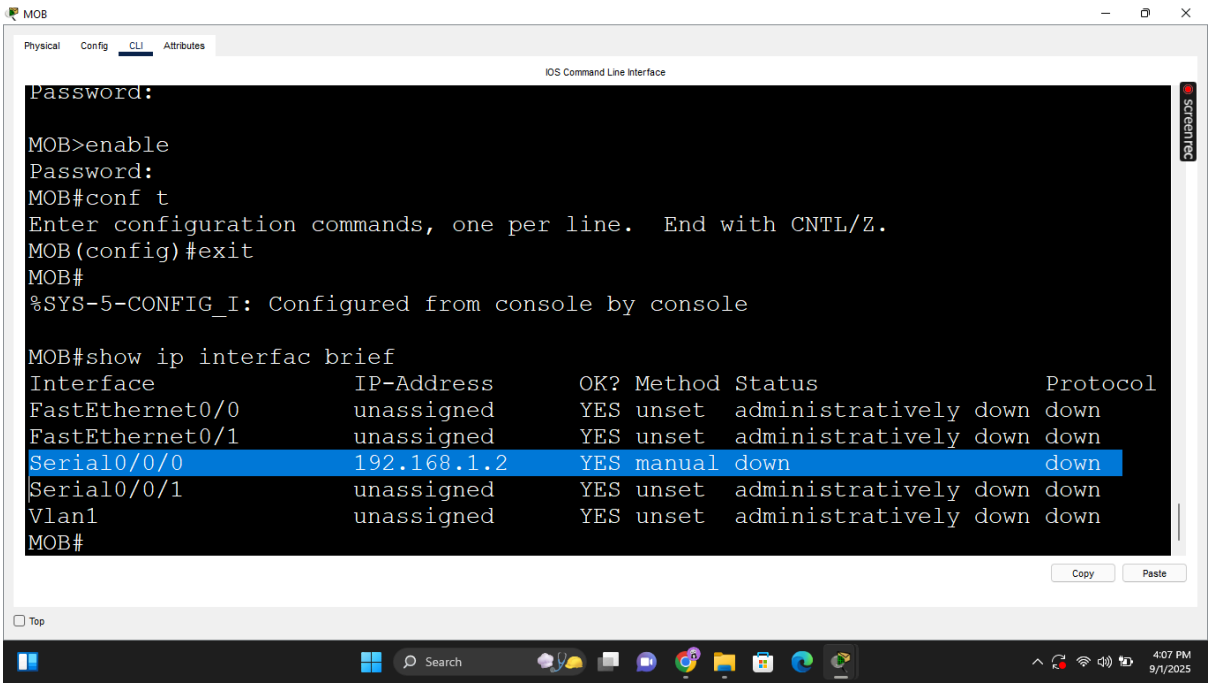
PTCL> enable
PTCL# configure terminal
PTCL(config)# interface Serial0/0/0
PTCL(config-if)# shutdown
PTCL(config-if)# exit
PTCL(config)# exit



Verification Output PTCL



MOB No configuration change (effect observed)



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.

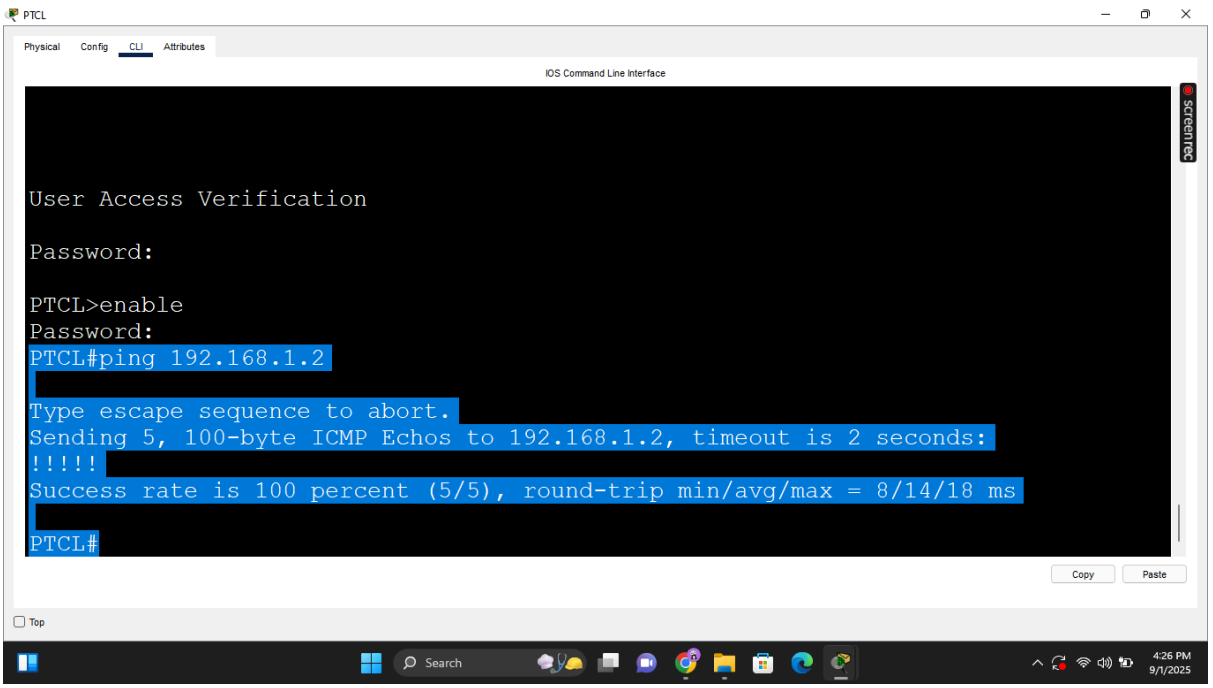
Restoring the Link and Testing Connectivity

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

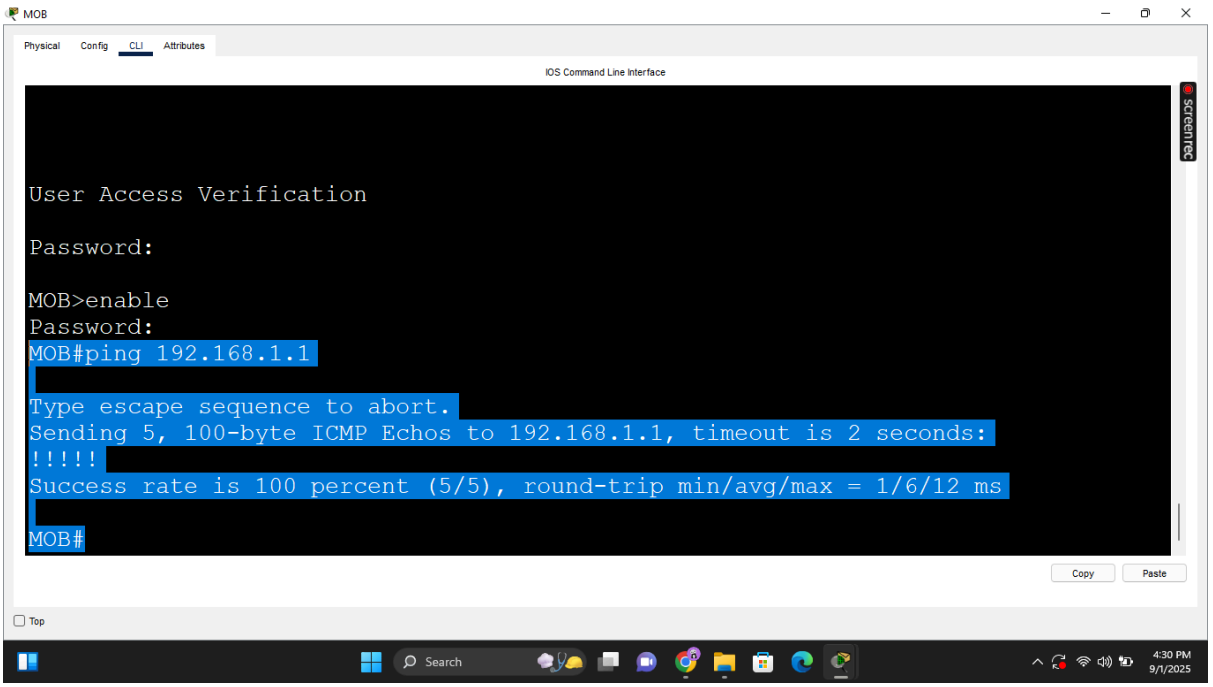
Connectivity Test Ping From PTCL To MOB

Output:



Connectivity Test Ping From MOB To PTCL

Output:



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.