

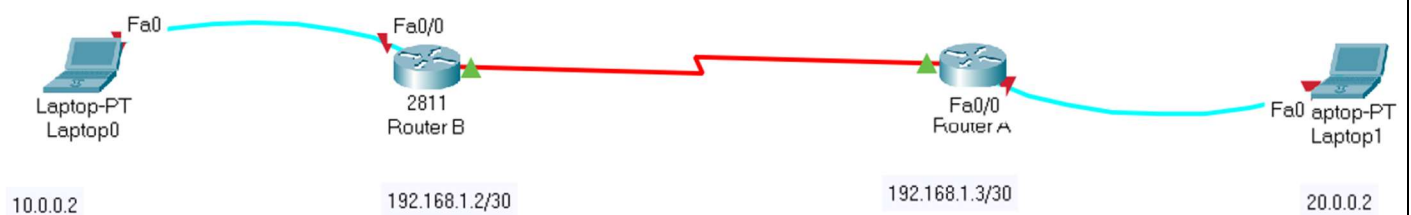
Ex.No:15	COMMUNICATION USING HDLC
Date:	

AIM:

To configure PPP using routers in Cisco Packet Tracer.

PROCEDURE:

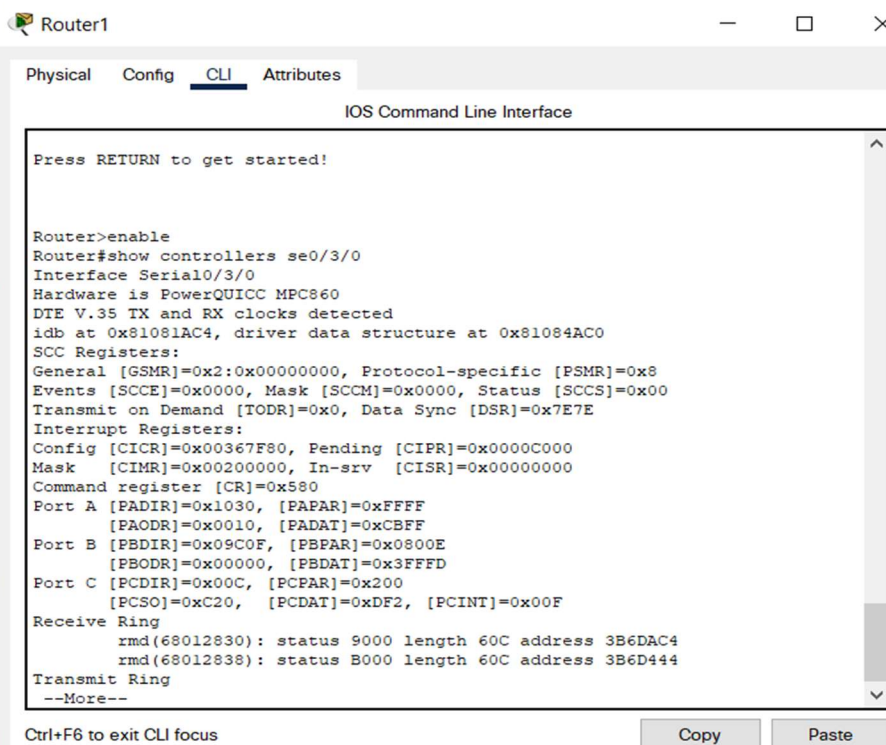
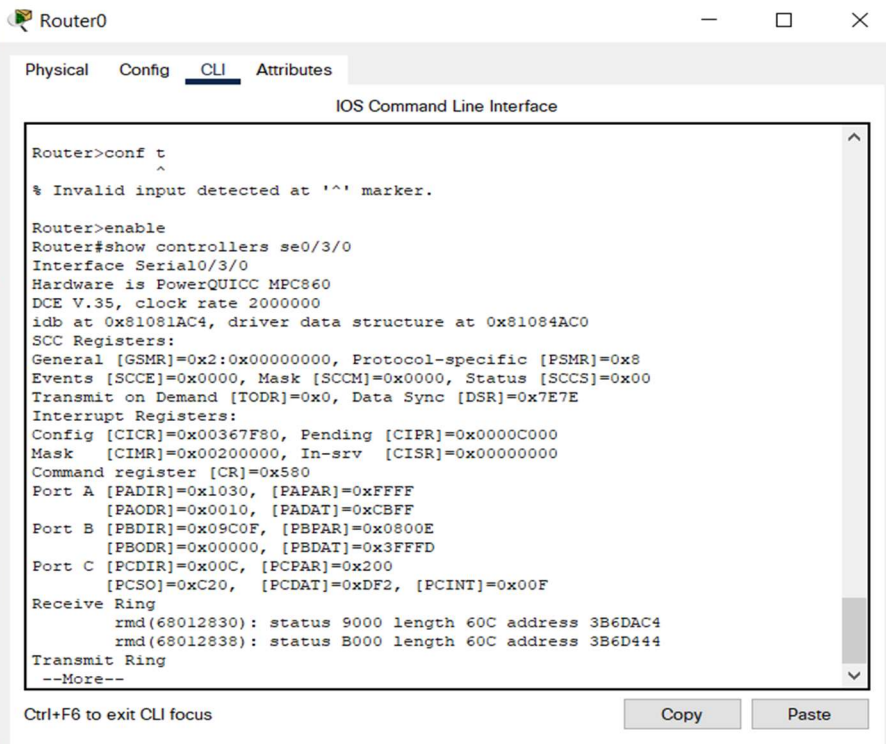
1 . Connect the devices as shown in the below figure.



2 . Initial IP configuration.

Device / Interface	IP Address	Connected with
PC0 / Fa0	10.0.0.2 /8	Router0 / Fa0/0
PC1 / Fa0	20.0.0.2 /8	Router1 / Fa0/0
Router0 / Se0/3/0	192.168.1.2 /30	Router1 / Se0/3/0
Router1 / Se0/3/0	192.168.1.3 /30	Router0 / Se0/3/0

3 . Use the connected laptops to find the DCE and DTE routers



Router0 being the DCE, clock rate has to be configured on Router0 serial 0/3/0 interface.

5. Then, configure PPP encapsulation and IP address on Router0 serial 0/3/0 interface. The **encapsulation ppp** configures PPP protocol on the serial interface. Router0 being the DCE side of the serial link, the 192.168.1.3 /30 IP address is configured on Router0 serial 0/3/0 interface. Don't forget to enable the interface with a no shutdown command.

The screenshot shows a Cisco Packet Tracer environment. At the top, there's a toolbar with icons for various functions. Below it, a tabbed interface has three tabs: "Physical", "Config", and "Attributes". The "Config" tab is active, displaying the "IOS Command Line Interface" for a router named "Router0". The CLI window contains a series of commands entered by the user, resulting in the configuration of interface se0/3/0 with PPP encapsulation and IP address 192.168.1.2/24. A system message "%SYS-5-CONFIG_I: Configured from console by console" is displayed. Below the CLI window, there are two buttons labeled "Copy" and "Paste".

Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#
Router(config)#int se0/3/0
Router(config-if)#encapsulation ppp
Router(config-if)#ip add 192.168.1.2 255.255.255.252
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
```

Ctrl+F6 to exit CLI focus

Copy Paste

6. The show interfaces serial 0/3/0 confirms that PPP encapsulation is enabled on the interface : Encapsulation PPP, loopback not set, keepalive set (10 sec)

Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#
Router#
Router#
Router#
Router#
Router#show int se0/3/0
Serial0/3/0 is up, line protocol is down (disabled)
  Hardware is HD64570
  Internet address is 192.168.1.2/30
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation PPP, loopback not set, keepalive set (10 sec)
  LCP Closed
  Closed: LEXCP, BRIDGECP, IPCP, CCP, CDPCP, LLC2, BACP
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations  0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 1158 kilobits/sec
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    1 packets input, 52 bytes, 0 no buffer
    Received 1 broadcasts, 0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    1 packets output, 52 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
  --More--
```

Ctrl+F6 to exit CLI focus

Copy Paste

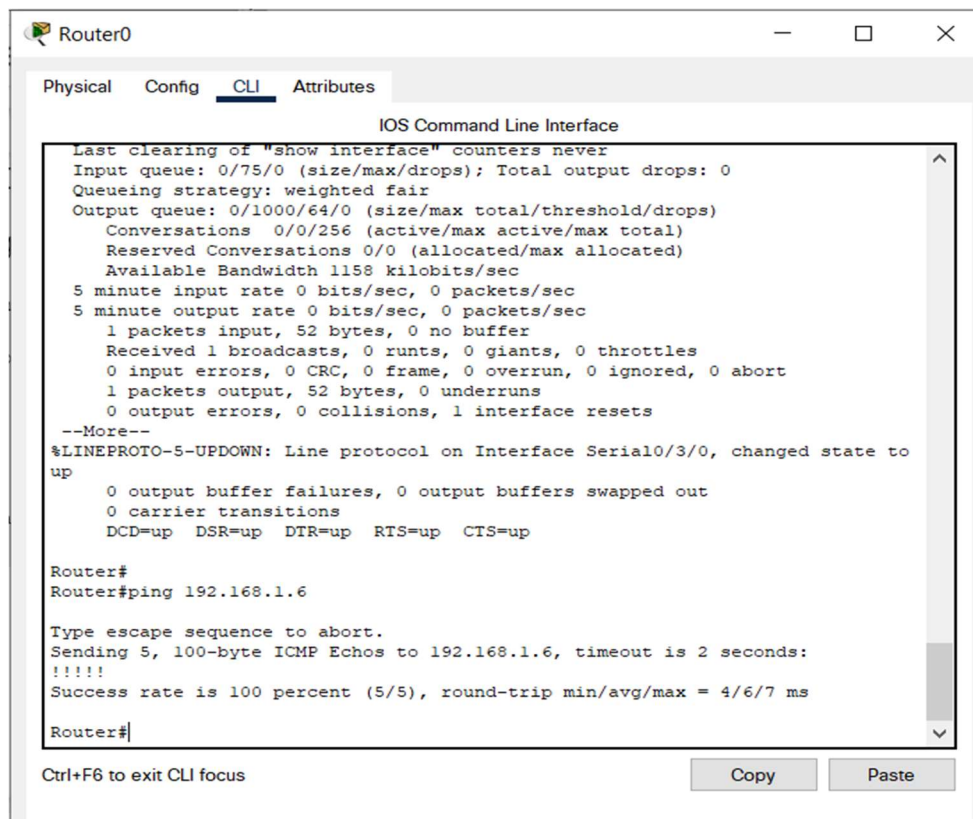
7. Finally, configure PPP encapsulation and IP address on Router1 serial 0/3/0 interface. The link comes up as both routers are correctly configured.

The screenshot shows a window titled "Router1" with three tabs: "Physical", "Config", and "CLI". The "CLI" tab is selected and underlined. Below the tabs, the title "IOS Command Line Interface" is centered. A scrollable text area contains the following commands and system messages:

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to down  
  
Router>  
Router>  
Router>enable  
Router#  
Router#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#  
Router(config)#int se0/3/0  
Router(config-if)#  
Router(config-if)#encapsulation ppp  
Router(config-if)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to up  
  
Router(config-if)#ip add 192.168.1.6 255.255.255.252  
Router(config-if)#no shut  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#
```

A vertical scrollbar is visible on the right side of the CLI window. At the bottom left of the entire window, there is a status bar that reads "Ctrl+F6 to exit CLI focus". At the bottom right, there are two buttons labeled "Copy" and "Paste".

8. NOW CHECK THE CONNECTION BY PINGING EACH OTHER. First we go to Router0 and ping with Router1:



The screenshot shows the CLI window for Router0. The 'CLI' tab is selected. The window displays the output of the 'show interface' command, showing details for Serial0/3/0, including bandwidth, queueing strategy, and error statistics. Below this, the command 'Router#ping 192.168.1.6' is entered, resulting in a success rate of 100 percent (5/5) with a round-trip time of 4/6/7 ms. At the bottom, there are 'Copy' and 'Paste' buttons and a note 'Ctrl+F6 to exit CLI focus'.

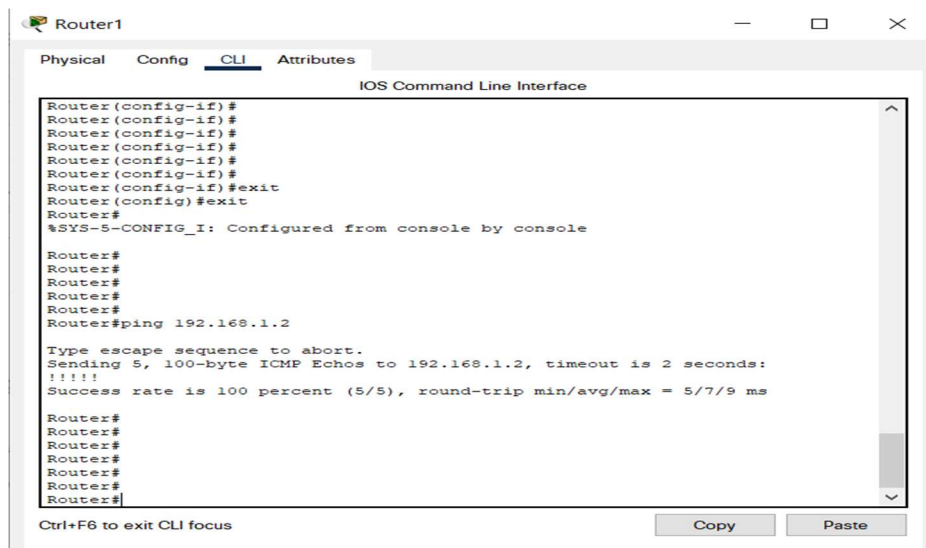
```
Router0
Physical Config CLI Attributes
IOS Command Line Interface
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
1 packets input, 52 bytes, 0 no buffer
Received 1 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
1 packets output, 52 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
--More--
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to
up
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up

Router#
Router#ping 192.168.1.6

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.6, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/6/7 ms

Router#
```

Now we go to Router1 and test the network by pinging the Router0 interface.



The screenshot shows the CLI window for Router1. The 'CLI' tab is selected. The window displays the output of the 'show interface' command, showing details for Serial0/3/0, including bandwidth, queueing strategy, and error statistics. Below this, the command 'Router#ping 192.168.1.2' is entered, resulting in a success rate of 100 percent (5/5) with a round-trip time of 5/7/9 ms. At the bottom, there are 'Copy' and 'Paste' buttons and a note 'Ctrl+F6 to exit CLI focus'.

```
Router1
Physical Config CLI Attributes
IOS Command Line Interface
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#
Router#
Router#
Router#
Router#ping 192.168.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 5/7/9 ms

Router#
Router#
Router#
Router#
Router#
Router#
Router#
```

RESULT:

Hence successfully, configured PPP using routers in Cisco Packet Tracer.