

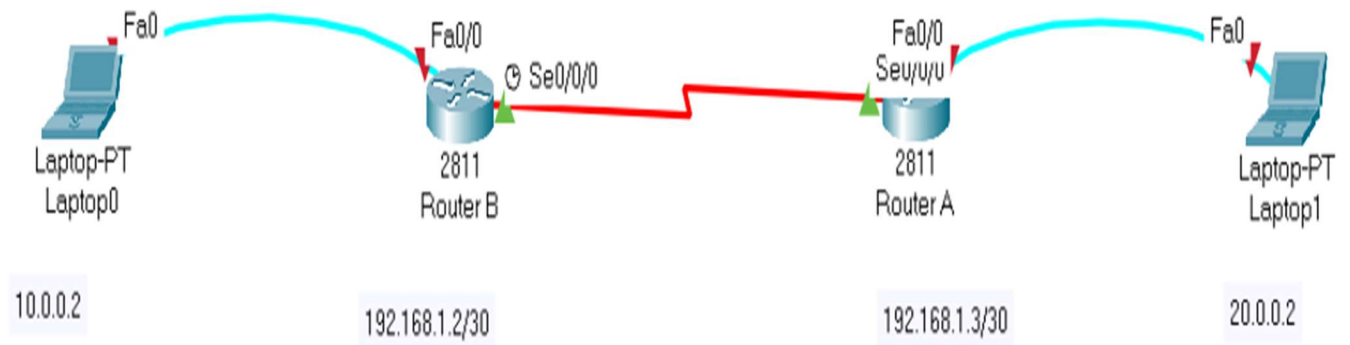
Ex.No:14	COMMUNICATION USING HDLC
Date:	

AIM:

To configure HDLC Protocol using routers in Cisco Packet Tracer.

PROCEDURE:

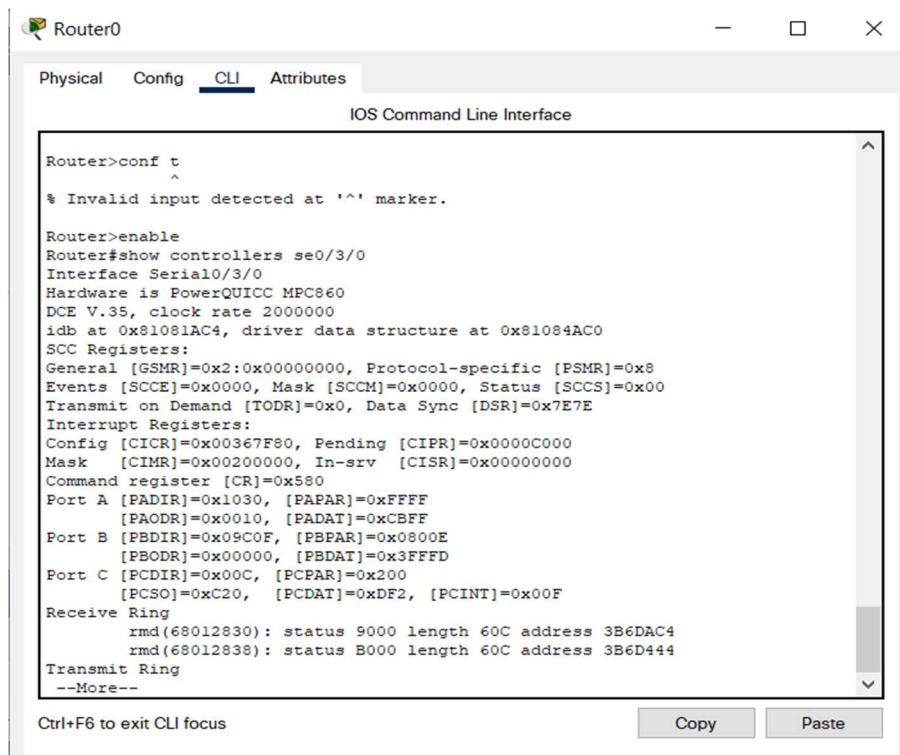
1. Connect the devices as shown in the below figure.



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

Physical Config CLI Attributes

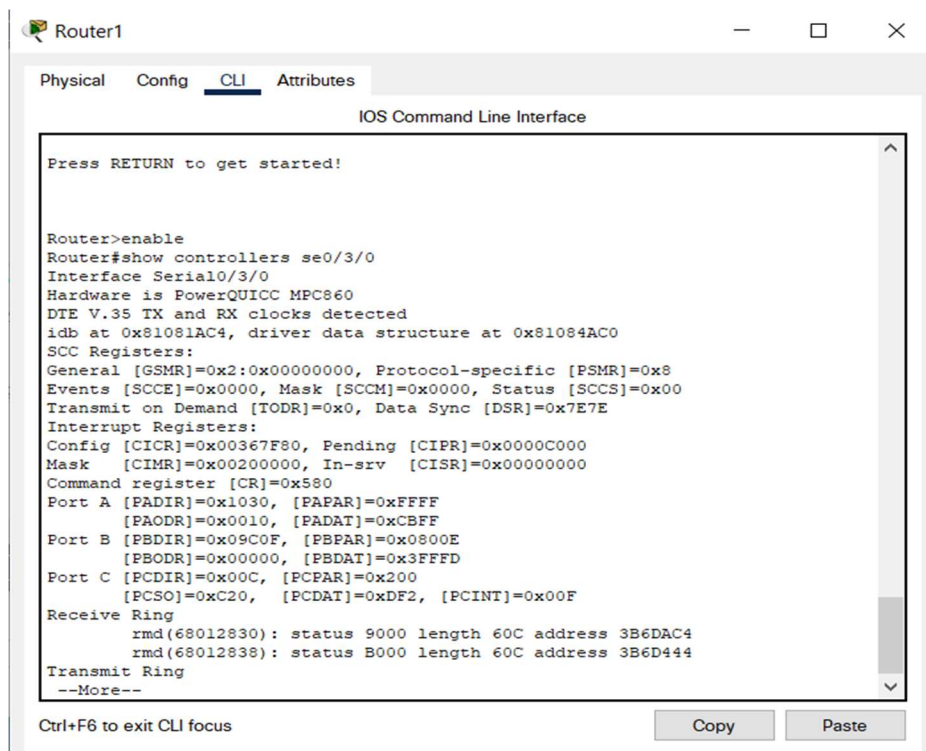
IOS Command Line Interface

```
Router>conf t
^
% Invalid input detected at '^' marker.

Router>enable
Router#show controllers se0/3/0
Interface Serial0/3/0
Hardware is PowerQUICC MPC860
DCE V.35, clock rate 2000000
idb at 0x81081AC4, driver data structure at 0x81084AC0
SCC Registers:
General [GSMR]=0x2:0x00000000, Protocol-specific [PSMR]=0x8
Events [SCCE]=0x0000, Mask [SCCM]=0x0000, Status [SCCS]=0x00
Transmit on Demand [TODR]=0x0, Data Sync [DSR]=0x7E7E
Interrupt Registers:
Config [CICR]=0x00367F80, Pending [CIPR]=0x0000C000
Mask [CIMR]=0x00200000, In-srv [CISR]=0x00000000
Command register [CR]=0x580
Port A [PADIR]=0x1030, [PAPAR]=0xFFFF
[PAODR]=0x0010, [PADAT]=0xCBFF
Port B [PBDIR]=0x09C0F, [PBPAR]=0x0800E
[PBODR]=0x00000, [PBDAT]=0x3FFFD
Port C [PCDIR]=0x00C, [PCPAR]=0x200
[PCSO]=0xC20, [PCDAT]=0xDF2, [PCINT]=0x00F
Receive Ring
  rmd(68012830): status 9000 length 60C address 3B6DAC4
  rmd(68012838): status B000 length 60C address 3B6D444
Transmit Ring
--More--
```

Ctrl+F6 to exit CLI focus

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Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
Press RETURN to get started!

Router>enable
Router#show controllers se0/3/0
Interface Serial0/3/0
Hardware is PowerQUICC MPC860
DTE V.35 TX and RX clocks detected
idb at 0x81081AC4, driver data structure at 0x81084AC0
SCC Registers:
General [GSMR]=0x2:0x00000000, Protocol-specific [PSMR]=0x8
Events [SCCE]=0x0000, Mask [SCCM]=0x0000, Status [SCCS]=0x00
Transmit on Demand [TODR]=0x0, Data Sync [DSR]=0x7E7E
Interrupt Registers:
Config [CICR]=0x00367F80, Pending [CIPR]=0x0000C000
Mask [CIMR]=0x00200000, In-srv [CISR]=0x00000000
Command register [CR]=0x580
Port A [PADIR]=0x1030, [PAPAR]=0xFFFF
[PAODR]=0x0010, [PADAT]=0xCBFF
Port B [PBDIR]=0x09C0F, [PBPAR]=0x0800E
[PBODR]=0x00000, [PBDAT]=0x3FFFD
Port C [PCDIR]=0x00C, [PCPAR]=0x200
[PCSO]=0xC20, [PCDAT]=0xDF2, [PCINT]=0x00F
Receive Ring
  rmd(68012830): status 9000 length 60C address 3B6DAC4
  rmd(68012838): status B000 length 60C address 3B6D444
Transmit Ring
--More--
```

Ctrl+F6 to exit CLI focus

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

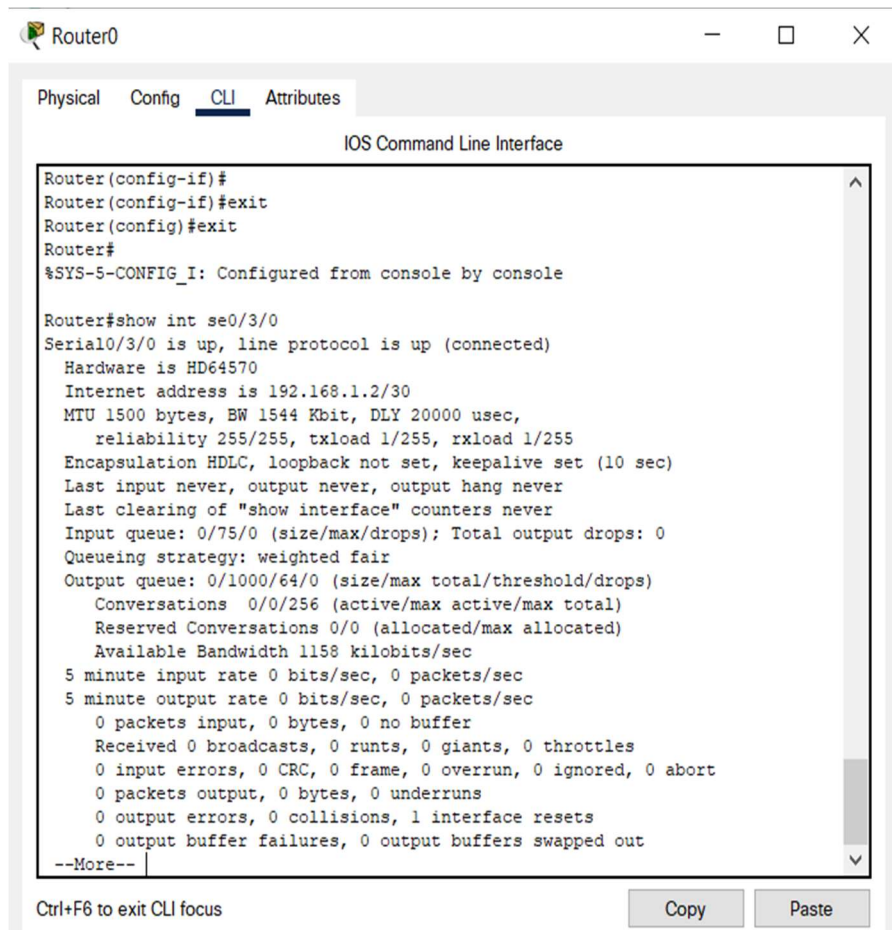
5. Then, configure HDLC encapsulation and IP address on Router0 serial 0/3/0 interface. The **encapsulation hdlc** configures HDLC protocol on the serial interface. Router0 being the DCE side of the serial link, the 192.168.1.3 /30 IP address is configured on Router0 serial 0/3/0 interface. Don't forget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

The screenshot shows the Cisco Packet Tracer application window titled "Router0". The top navigation bar includes tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" being the active tab. Below the tabs, the title "IOS Command Line Interface" is displayed. The main area contains a terminal window with the following text:

```
Router#  
Router#  
Router#  
Router#  
Router#  
Router#  
Router#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#int se0/3/0  
Router(config-if)#encapsulation hdlc  
Router(config-if)#ip address 192.168.1.2 255.255.255.252  
Router(config-if)#no shutdown  
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)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#  
Router(config-if)#
```

The bottom status bar indicates "Ctrl+F6 to exit CLI focus". On the right side, there are two buttons labeled "Copy" and "Paste".

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



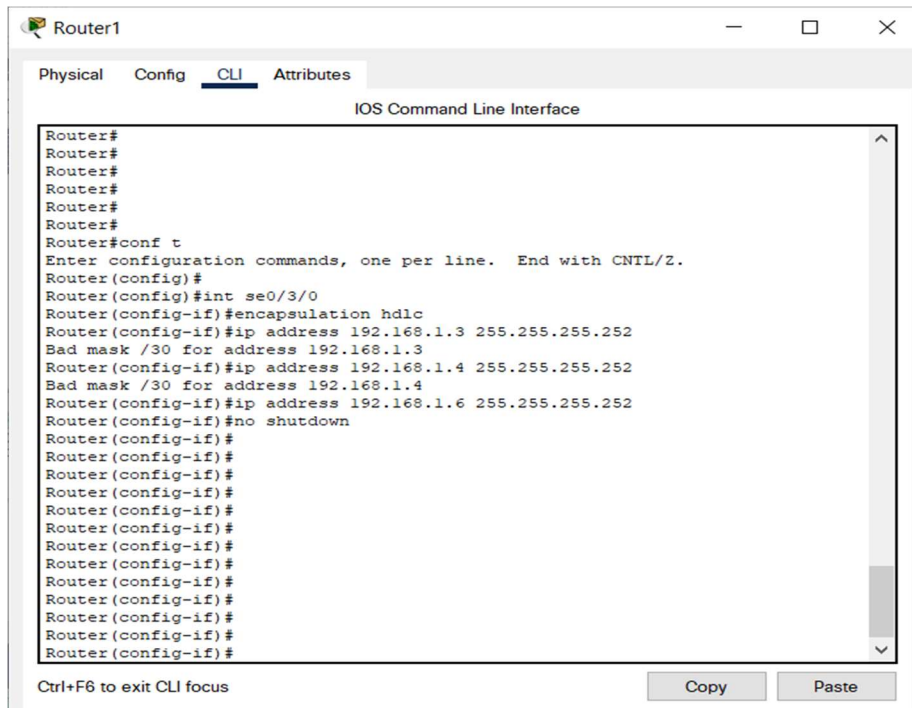
```
Router0
Physical Config CLI Attributes
IOS Command Line Interface
Router(config-if)#
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show int se0/3/0
Serial0/3/0 is up, line protocol is up (connected)
  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 HDLC, loopback not set, keepalive set (10 sec)
  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
    0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
--More--
```

Ctrl+F6 to exit CLI focus

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



8. NOW CHECK THE CONNECTION BY PINGING EACH OTHER.

First we go to Router0 and ping with Router1:

```
Router#ping 192.168.1.6
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 198.168.1.6, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 26/28/33 ms

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

```
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 = 25/28/32 ms

RESULT :

Hence successfully, configured HDLC Protocol using routers in Cisco Packet Tracer.