Configure, Verify, and Troubleshoot IPv4 Addresses

Lab Topology

Devices:
- R1 (Router)
- R3 (Router)

Lab Setup :

1. Assuming the devices, Router R1 and R3 are 1841 routers.

2. Configuring hostnames :

Configuring R1 :

```
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R1
R1(config)#
```
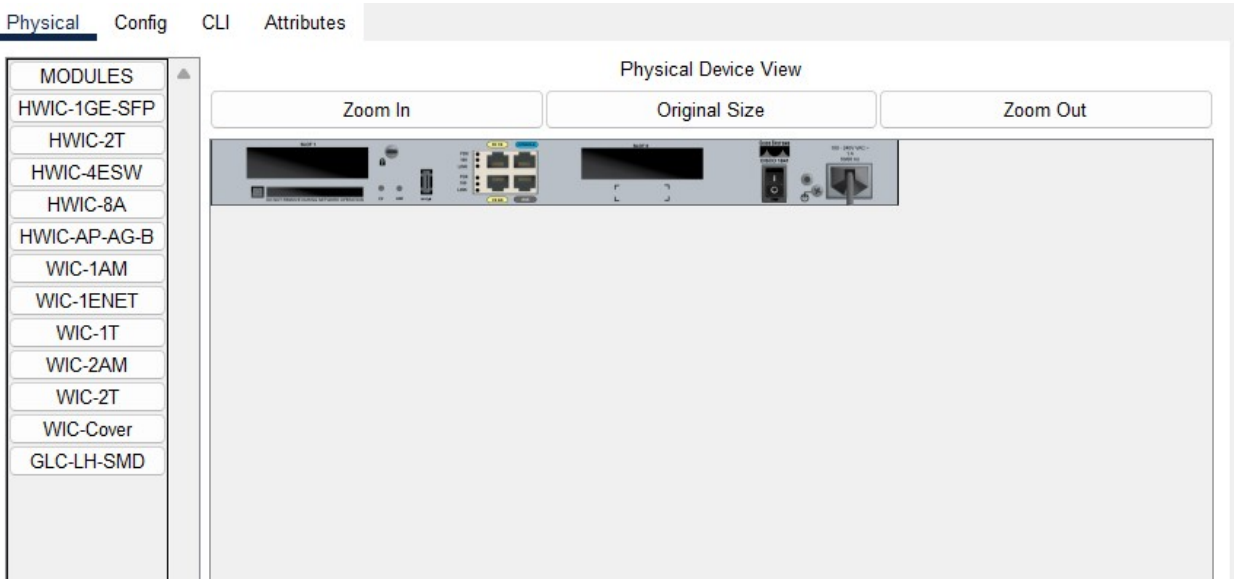
Configuring R3:

```
Router>enable
Router#hostname R3
              ^
% Invalid input detected at '^' marker.

Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R3
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#
```

Adding Serial Ports to the 1841 Cisco Routers :

1. Switch OFF Router
2. Select WIC-1T
3. Add the Serial Port

4. Switch On the Router

Connecting the 2 Routers using Serial DCE Cable On Serial 0/0 Interface on both the routers to get the following topology :

Configuring IP Addresses and Loopback addresses to the serial ports in both the Routers
For Router R1,

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 172.16.1.1 255.255.255.192


Router(config-if)#clock rate ?
Speed (bits per second
  1200
  2400
  4800
  9600
  19200
  38400
  56000
  64000
  72000
  125000
  128000
  148000
  250000
  500000
  800000
  1000000
  1300000
  2000000
  4000000
  <300-4000000>  Choose clockrate from list above



Router(config)#interface Serial0/0/0
Router(config-if)#clock rate 72000
Router(config-if)#exit
Router(config)#exit
```

Similarly for Router R3,

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 172.16.1.2 255.255.255.192
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/0, changed state to down
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#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            172.16.1.2      YES manual down                  down
Vlan1                  unassigned      YES unset  administratively down down
```

The clock rate command is only applied to the DCE (Data Circuit-terminating Equipment) side of a serial connection. R1's Serial0/0/0 interface is the DCE side.

Configuring the loopback address on R3 lo10, lo20 and lo30 using the IP addresses,
- lo10- 10.10.10.3/25
- lo20- 10.20.20.3/28
- lo30 -10.30.30.3 /29

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface lo10

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback10, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback10, changed state to up

Router(config-if)#ip add 10.10.10.3 255.255.255.128
Router(config-if)#exit
Router(config)#interface lo20

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback20, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback20, changed state to up

Router(config-if)#ip add 10.20.20.3 255.255.128
                                              ^
% Invalid input detected at '^' marker.

Router(config-if)#ip add 10.20.20.3 255.255.255.128
Router(config-if)#exit
Router(config)#interface lo20
Router(config-if)#ip add 10.20.20.3 255.255.255.240
Router(config-if)#exit
Router(config)#interface lo30

Router(config-if)#
%LINK-5-CHANGED: Interface Loopback30, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback30, changed state to up

Router(config-if)#ip add 10.30.30.3 255.255.255.248
Router(config-if)#
Router(config-if)#exit
Router(config)#
```

Results of ping R3 from R1

```
R1>
R1>
R1>ping 172.16.1.2

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.1.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/18/28 ms
```

Configuration can be verified using the command :

show ip interface brief