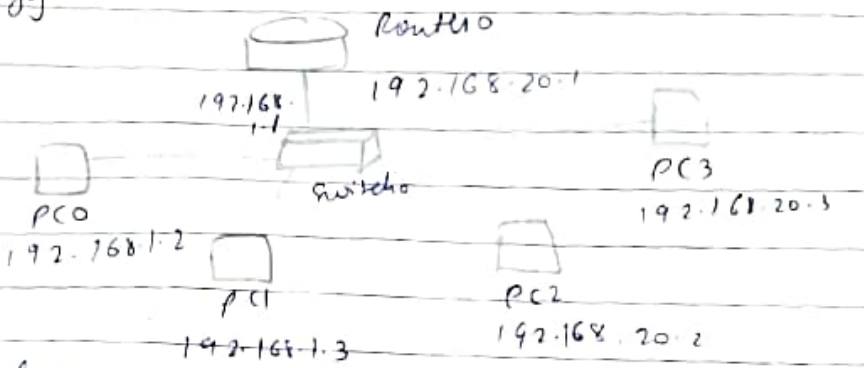
3/8/23

# Experiment - 9

To construct a VLAN and make the PC's communicate among a VLAN

Topology:-




Procedure:

i) Set up the topology as shown above, use 1841 router
ii) Add an extra port to the switch as its needed.
iii) Use copper straight through wire. Set the IP address & gateway & ~~configure the router~~.
iv) In switch → config → VLAN Database, give any VLAN number, here 20, and VLANName here → NEWVLAN
v) Select add. Select the interface here fastethernet 0/1 (nearest the switch from router) & make it trunk (from Access)
vi) Look into fast ethernet 2/1 & 3/1 and dont VLAN 1 to 20 : NEWVLAN
vii) And in Router → select VLAN DATABASE, enter the number and name of the vlan created. In clt of router.

```
Router > enable
Router # config t
Router (config) # interface fastethernet 0/0
Router (config-
Router (vlan) # exit
APPLY completed.
Exiting ...
Router # config t
Router (config) # interface fastethernet 0/0
Router (config-if) # ip address 192.168.1.1 255.255.255.0
Router (config-if) # no shut
```

Router(config)# interface fastethernet 0/0.1
Router(config-subif)# encapsulation dot1q 20
Router(config-subif)# ip address 192.168.20.1 255.255.255.0
Router(config-subif)# no shut
Router(config-subif)# exit

Result: (in PC0)

PC>ping 192.168.20.3

Pinging 192.168.20.3 with 32 bytes of data:

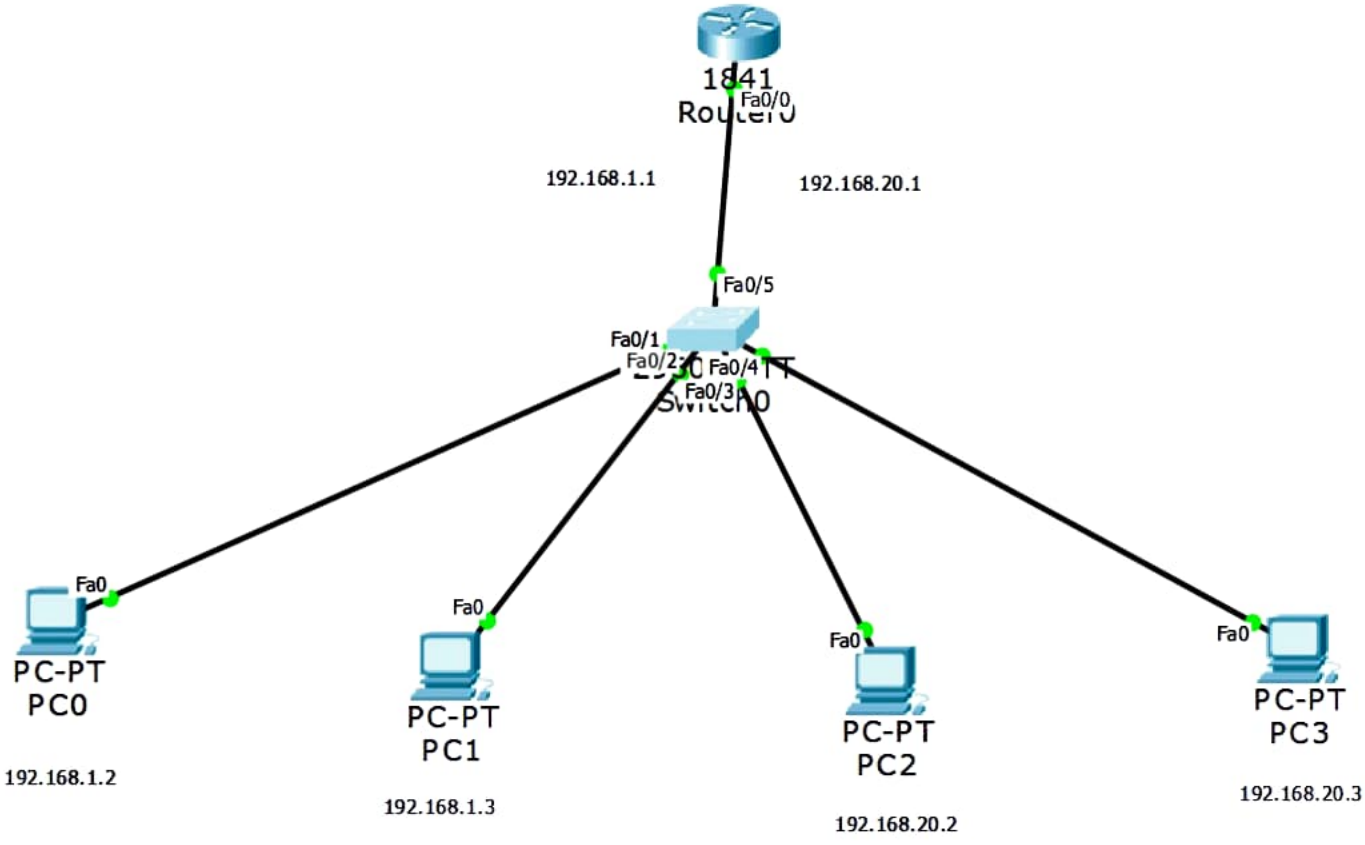
Reply from 192.168.20.3: bytes=32 time=1ms TTL=128
Reply from 192.168.20.3: bytes=32 time=0ms TTL=128
Reply from 192.168.20.3: bytes=32 time=0ms TTL=128
Reply from 192.168.20.3: bytes=32 time=0ms TTL=128

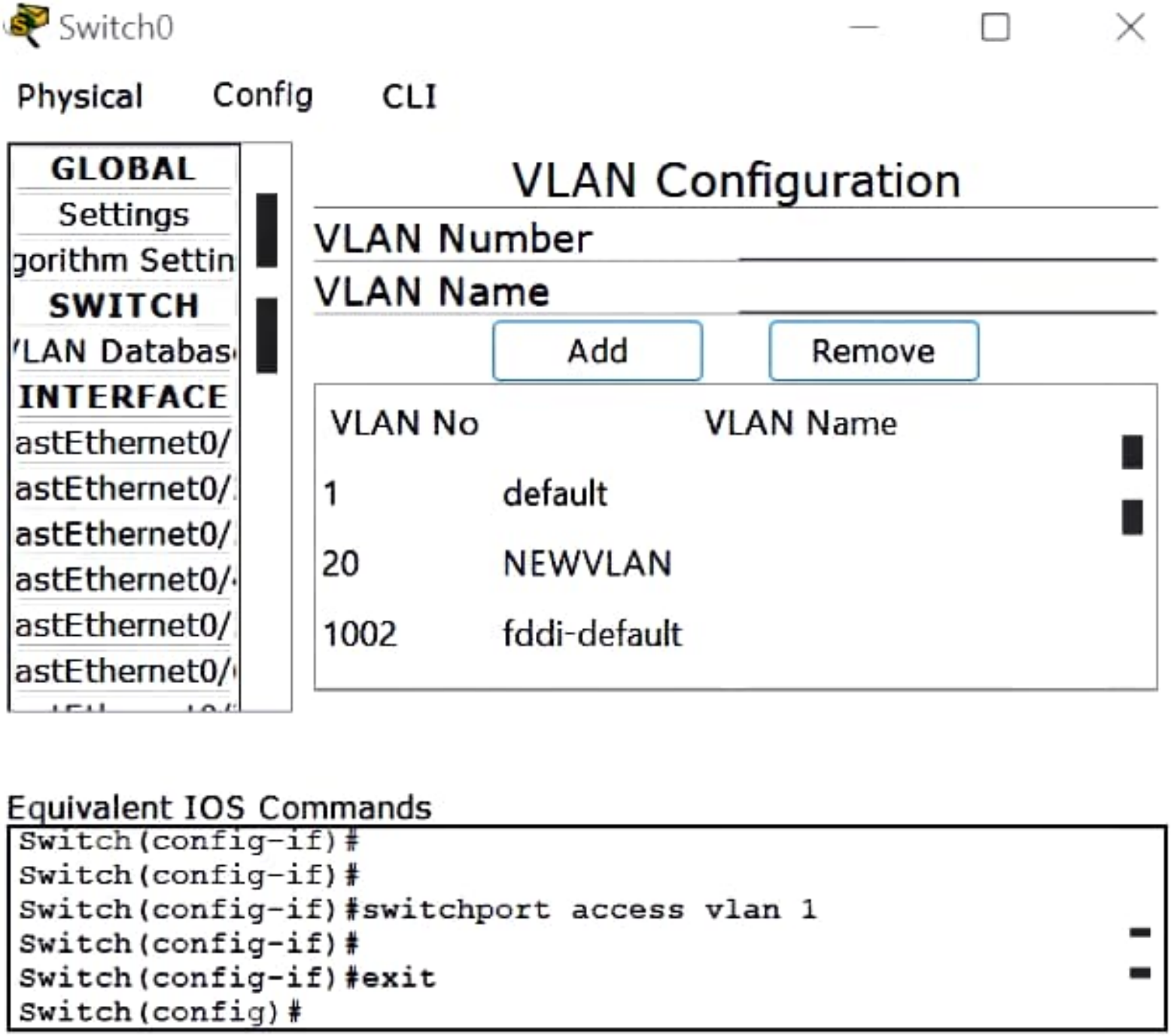
Ping statistics for 192.168.20.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms

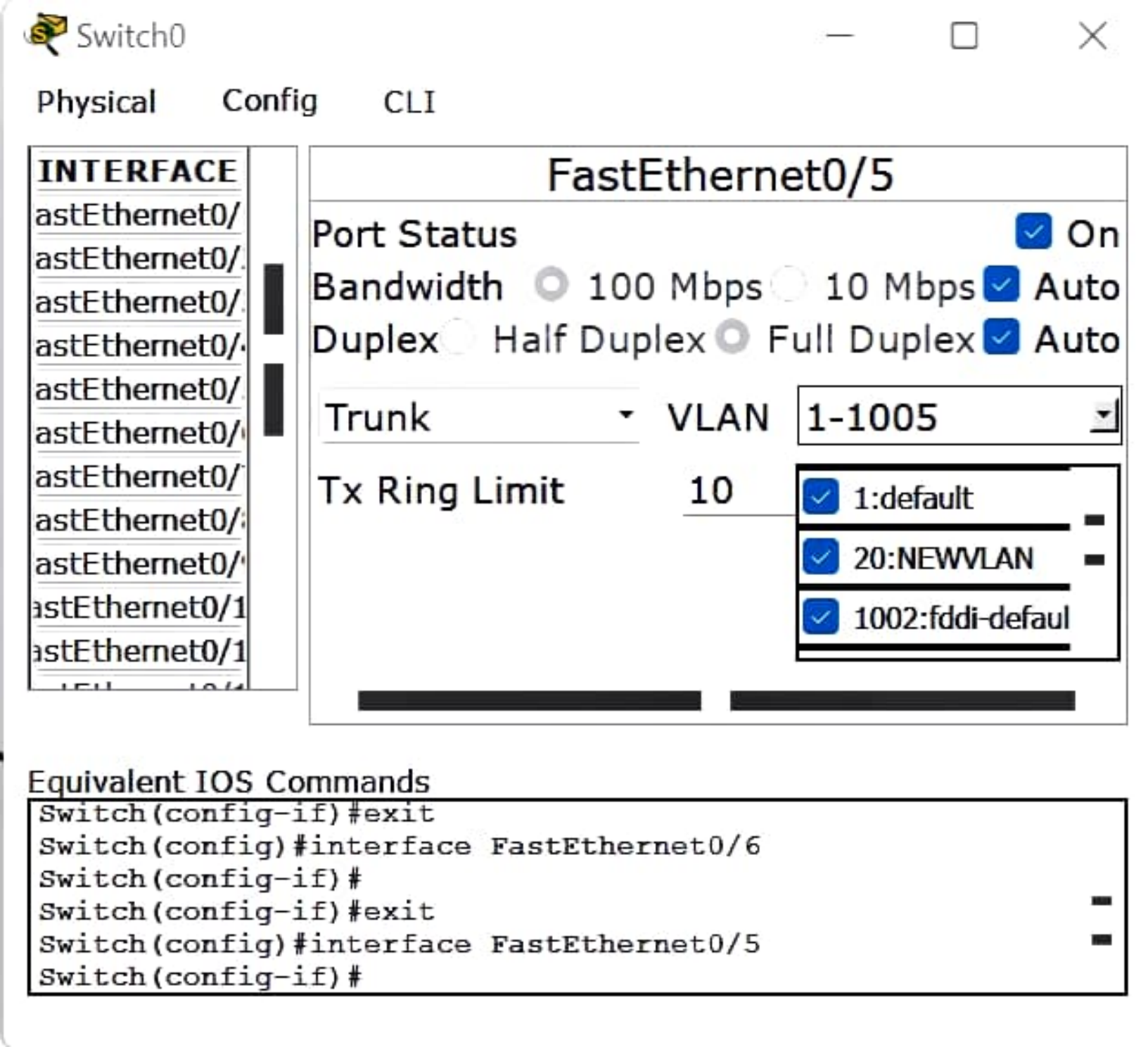
Observation:

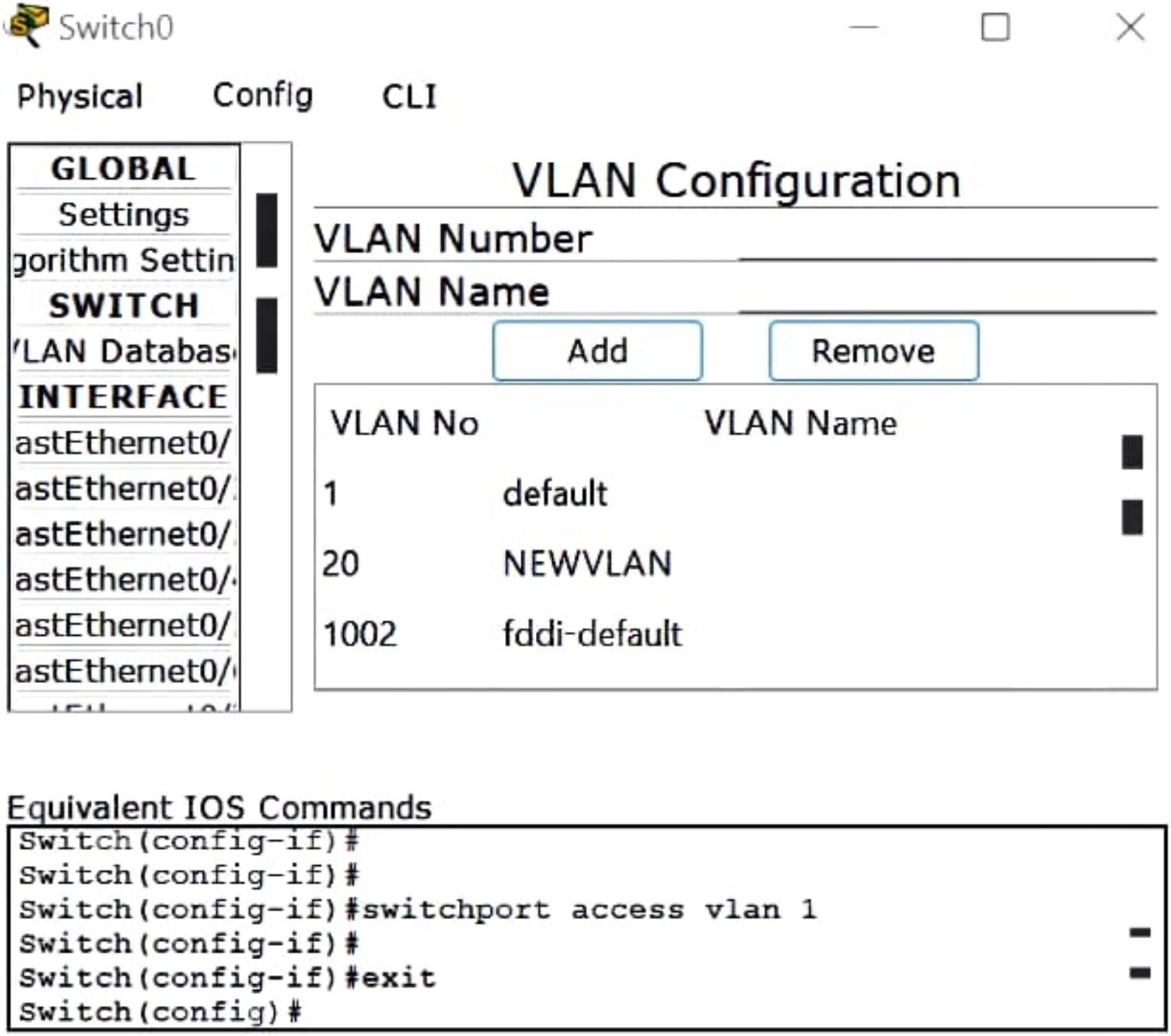
i) VLAN → Virtual local area network is any broadcast domain that is partitioned and isolated in a computer network at the data link layer

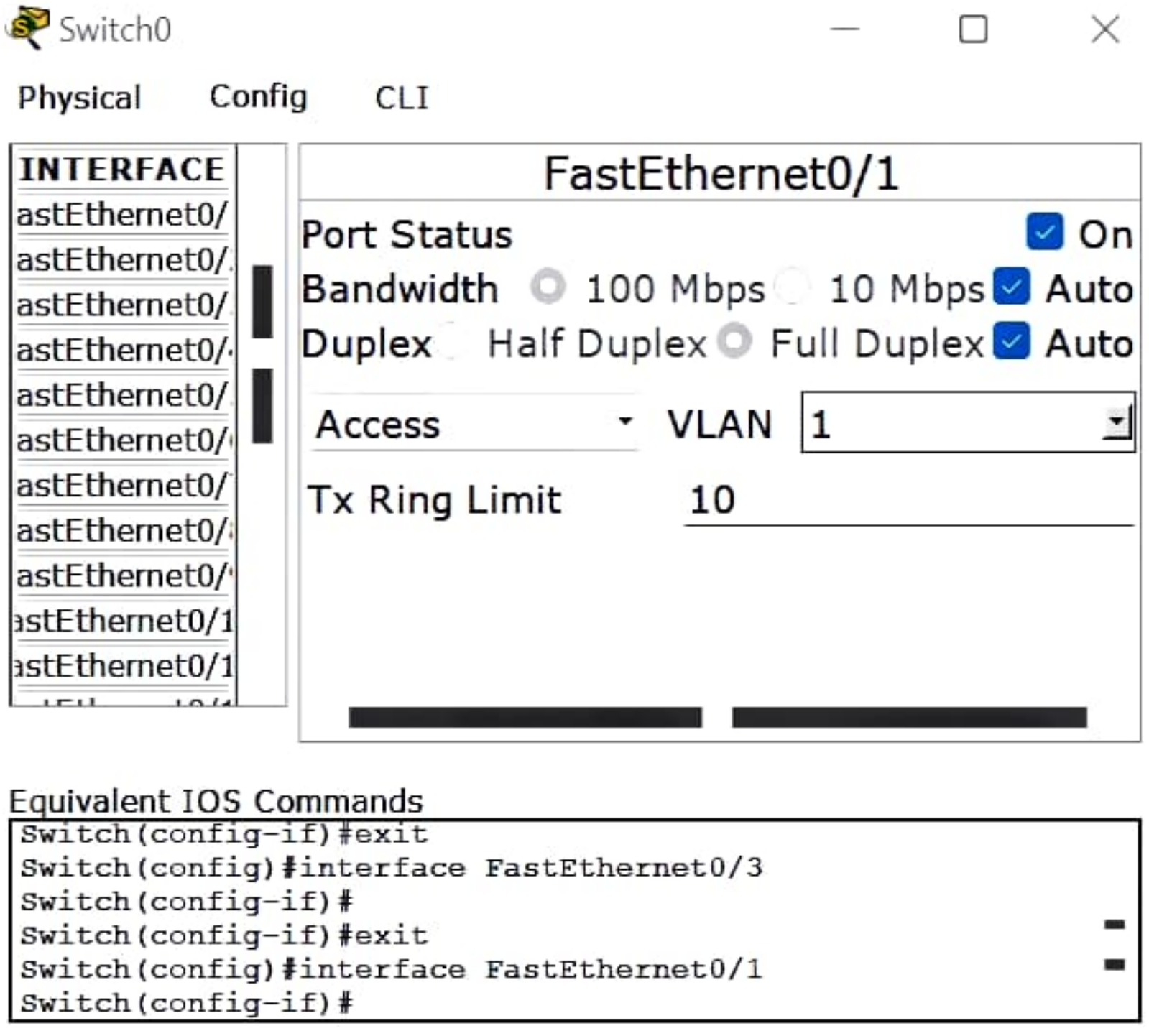
ii) It is a virtualized connection that connects multiple devices and network nodes from different LANs into one logical network.

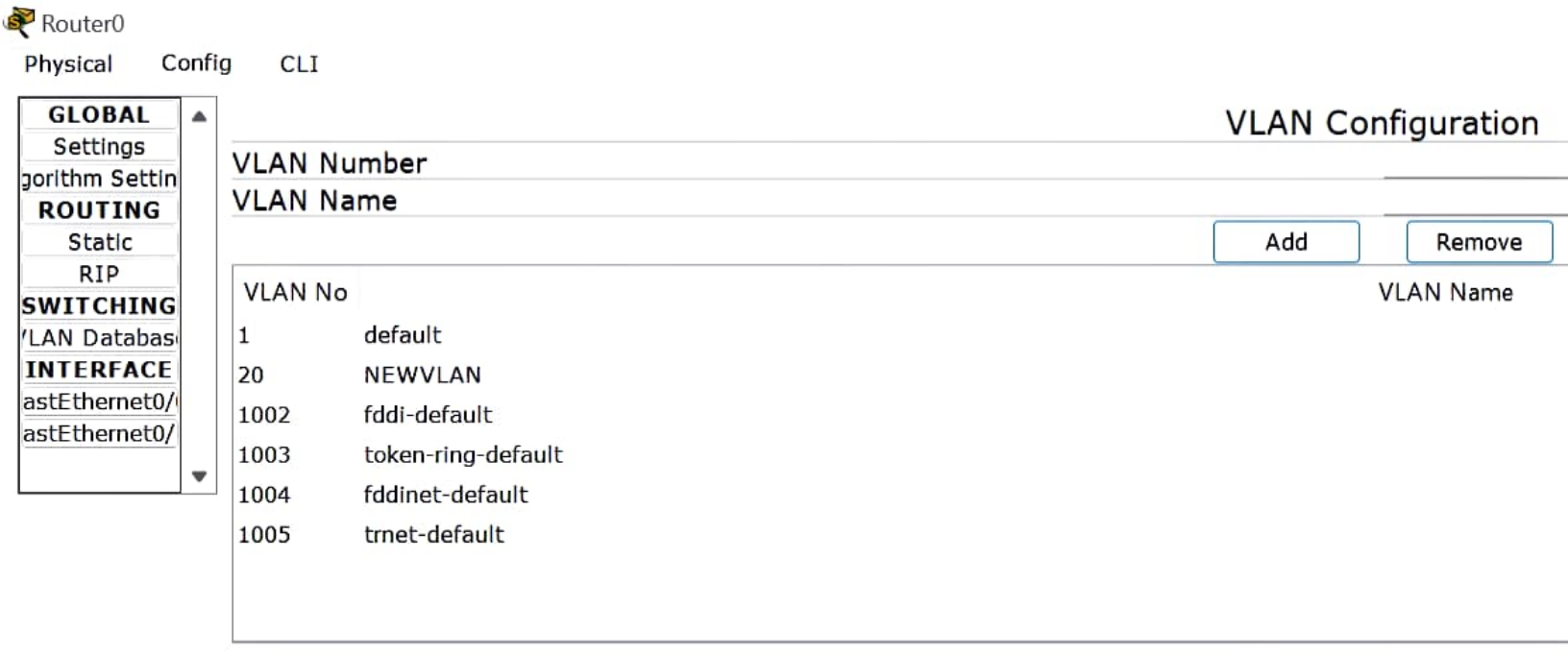

1841
Router0
Fa0/0
192.168.1.1
192.168.20.1
Fa0/5
Fa0/1
Fa0/4
Fa0/3
Switch0
Fa0
PC-PT
PC0
192.168.1.2
Fa0
PC-PT
PC1
192.168.1.3
Fa0
PC-PT
PC2
192.168.20.2
Fa0
PC-PT
PC3
192.168.20.3


Switch0
Physical
Config
CLI
GLOBAL
Settings
gorithm Settin
SWITCH
'LAN Databas
INTERFACE
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
VLAN Configuration
VLAN Number
VLAN Name
Add
Remove
VLAN No
VLAN Name
1
default
20
NEWVLAN
1002
fddi-default
Equivalent IOS Commands
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#switchport access vlan 1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#


Switch0
Physical
Config
CLI
INTERFACE
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/1
astEthernet0/1
FastEthernet0/5
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
Trunk
VLAN
1-1005
Tx Ring Limit
10
1:default
20:NEWVLAN
1002:fddi-defaul
Equivalent IOS Commands
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/6
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/5
Switch(config-if)#


Switch0
Physical
Config
CLI
GLOBAL
Settings
gorithm Settin
SWITCH
'LAN Databas
INTERFACE
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
VLAN Configuration
VLAN Number
VLAN Name
Add
Remove
VLAN No
VLAN Name
1
default
20
NEWVLAN
1002
fddi-default
Equivalent IOS Commands
Switch(config-if)#
Switch(config-if)#
Switch(config-if)#switchport access vlan 1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#


Switch0
Physical
Config
CLI
INTERFACE
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
astEthernet0/
stEthernet0/1
stEthernet0/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
Access
VLAN
1
Tx Ring Limit
10
Equivalent IOS Commands
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/3
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/1
Switch(config-if)#




Equivalent IOS Commands

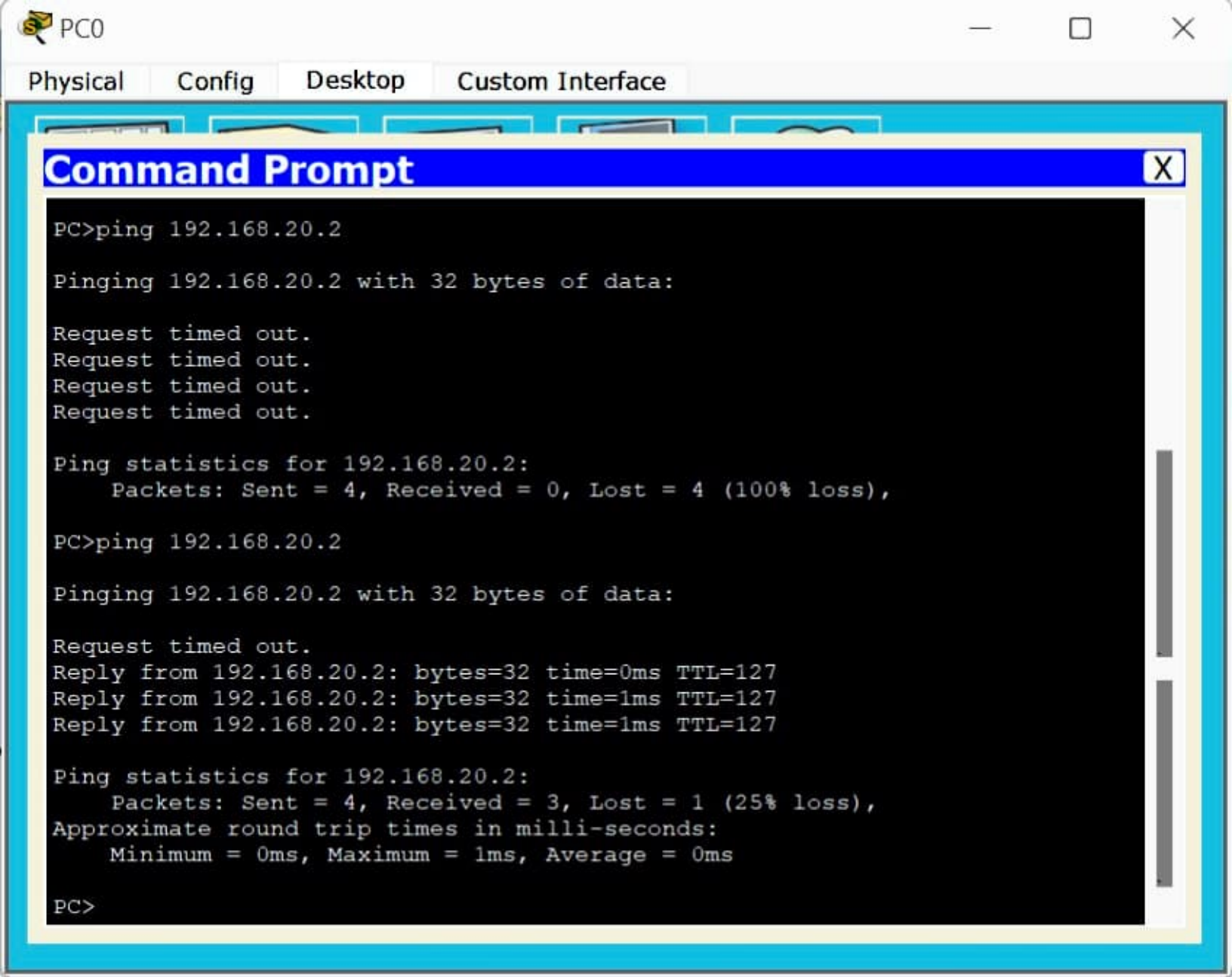
```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
exit
Router(config)#int fa 0/0.1
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.1, changed state to up

Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip address 192.168.20.1 255.255.255.0
Router(config-subif)#no shut
Router(config-subif)#exit
Router(config)#
Router(config)#exit
Router#vlan database
% Warning: It is recommended to configure VLAN from config mode,
  as VLAN database mode is being deprecated. Please consult user
  documentation for configuring VTP/VLAN in config mode.

Router(vlan)#
%SYS-5-CONFIG_I: Configured from console by console
```

Router0

Physical Config CLI

IOS Commar

```
         --- System Configuration Dialog ---

Continue with configuration dialog? [yes/no]: n


Press RETURN to get started!



Router>enable
Router#vlan database
% Warning: It is recommended to configure VLAN from config mode,
  as VLAN database mode is being deprecated. Please consult user
  documentation for configuring VTP/VLAN in config mode.

Router(vlan)#vlan 20 name NEWVLAN
VLAN 20 modified:
    Name: NEWVLAN
Router(vlan)#exit
APPLY completed.
Exiting....
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa0/5
%Invalid interface type and number
Router(config)#int fa0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
exit
Router(config)#int fa 0/0.1
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.1, changed state to up

Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip address 192.168.20.1 255.255.255.0
Router(config-subif)#no shut
Router(config-subif)#exit
Router(config)#
```


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
X
PC>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Request timed out.
Reply from 192.168.20.2: bytes=32 time=0ms TTL=127
Reply from 192.168.20.2: bytes=32 time=1ms TTL=127
Reply from 192.168.20.2: bytes=32 time=1ms TTL=127
Ping statistics for 192.168.20.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>