

- Multiple VLAN Diagram

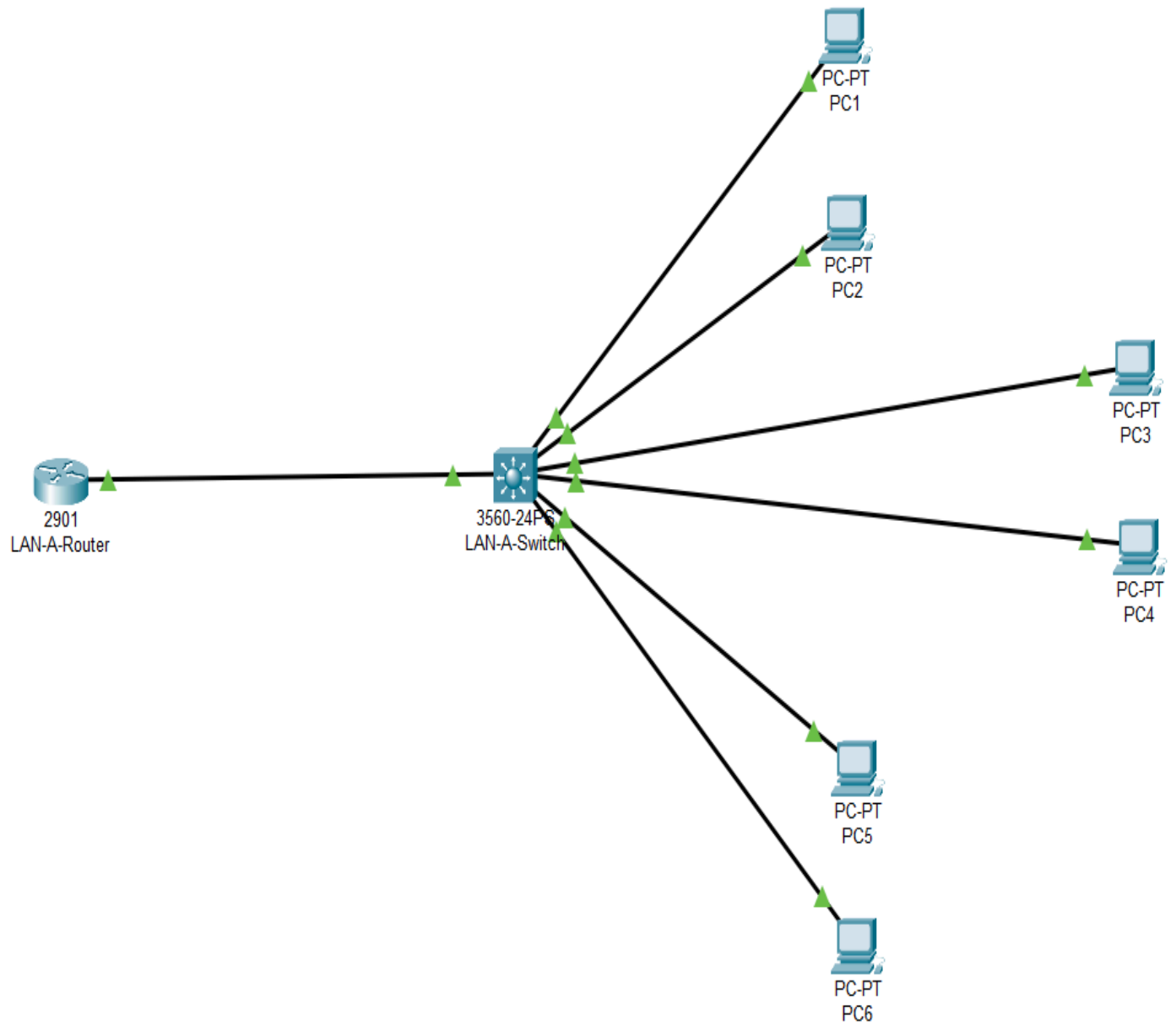


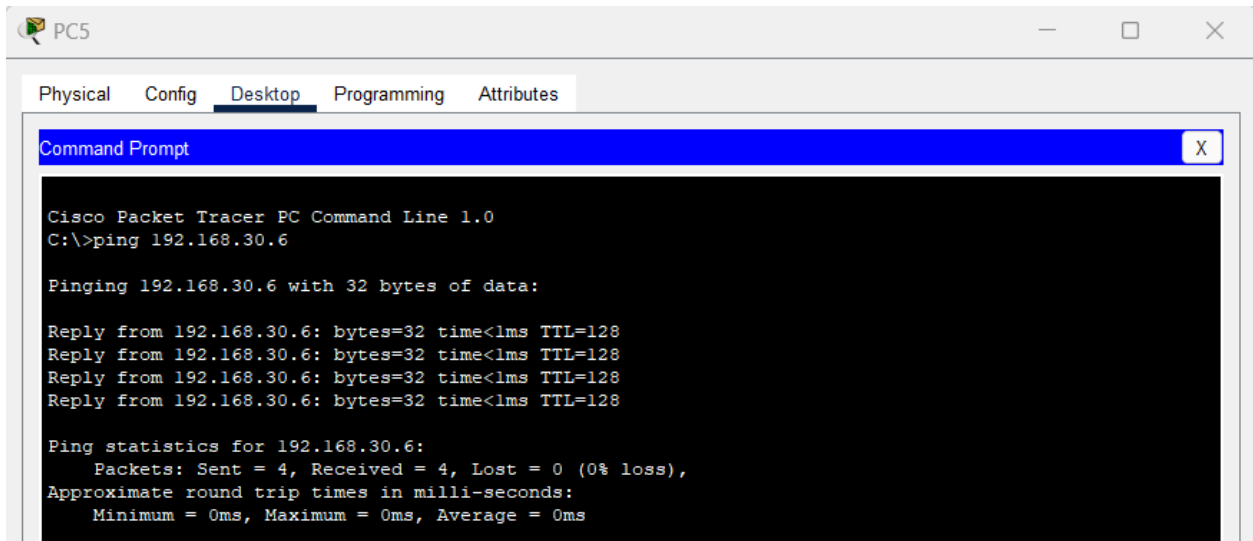
FIGURE 1.1 – LAN IP Addresses and VLANs

Equipment	IPv4 – Address	Subnet Mask	Switch Interface	VLAN
CISCO 2901-Router	172.168.1.1	255.255.255.0	fa0/24	N/A
	192.168.100.1	255.255.255.0	fa0/24	vlan 1
	192.168.10.1	255.255.255.240	fa0/24	vlan 10
	192.168.20.1	255.255.255.240	fa0/24	vlan 20
	192.168.30.1	255.255.255.240	fa0/24	vlan 30
PC1	192.168.10.2	255.255.255.240	fa0/1	vlan 10
PC2	192.168.10.3	255.255.255.240	fa0/2	vlan 10
PC3	192.168.20.3	255.255.255.240	fa0/3	vlan 20
PC4	192.168.20.4	255.255.255.240	fa0/4	vlan 20
PC5	192.168.30.5	255.255.255.240	fa0/5	vlan 30
PC6	192.168.30.6	255.255.255.240	fa0/6	vlan 30

FIGURE 1.2 – Router Sub-Interface Assignments

CISCO – Router / Interface	IPv4 – Address / Subnet	VLAN	VLAN - Name	Encapsulation Mode
gi0/1	172.168.1.1/24	N/A	N/A	N/A
gi0/1.1	192.168.100.1/24	1 (native)	default	IEEE 802.1Q
gi0/1.10	192.168.10.1/28	10	Zone10	IEEE 802.1Q
gi0/1.20	192.168.20.1/28	20	Zone20	IEEE 802.1Q
gi0/1.30	192.168.30.1/28	30	Zone30	IEEE 802.1Q

- Successful Ping from PC 5 (192.168.30.5) to PC 6 (192.168.30.6)



The screenshot shows a Cisco Packet Tracer PC window for PC5. The 'Desktop' tab is active, displaying a Command Prompt window. The command prompt shows the execution of the command 'ping 192.168.30.6'. The output indicates a successful ping with 32 bytes of data, showing four replies from 192.168.30.6 with 0ms round trip times. The ping statistics show 4 packets sent, 4 received, and 0% loss.

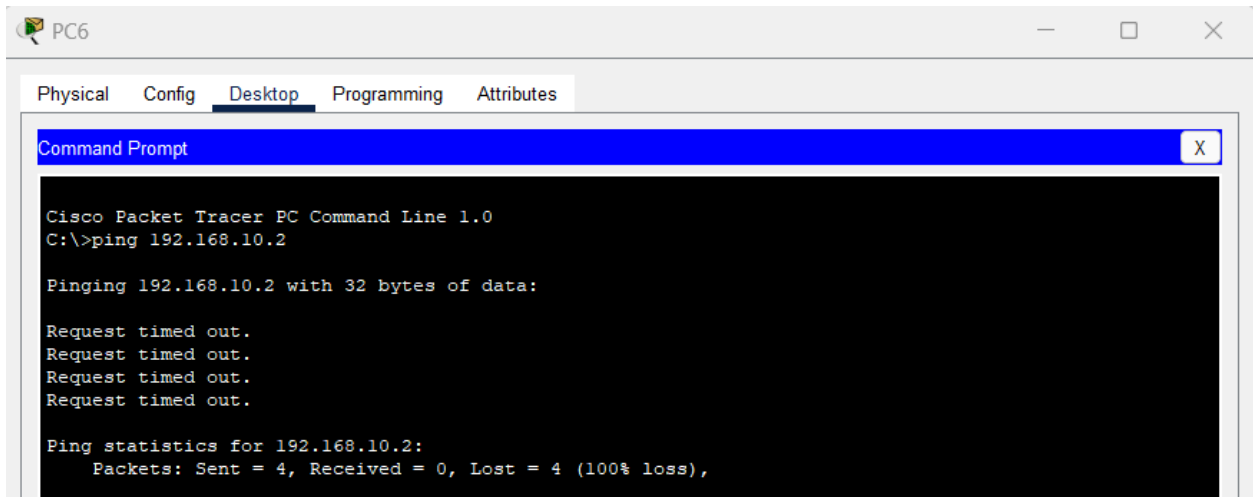
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.30.6

Pinging 192.168.30.6 with 32 bytes of data:

Reply from 192.168.30.6: bytes=32 time<1ms TTL=128
Reply from 192.168.30.6: bytes=32 time<1ms TTL=128
Reply from 192.168.30.6: bytes=32 time<1ms TTL=128
Reply from 192.168.30.6: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.30.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

- Unsuccessful ping from PC 6 (192.168.30.6) to PC 1 (192.168.10.2)



The screenshot shows a Cisco Packet Tracer PC window for PC6. The 'Desktop' tab is active, displaying a Command Prompt window. The command prompt shows the execution of the command 'ping 192.168.10.2'. The output indicates an unsuccessful ping with 32 bytes of data, showing four request timed out messages. The ping statistics show 4 packets sent, 0 received, and 100% loss.

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

- Configuration of Interfaces (IPv4) for PC 1 & 2 (VLAN 10)

PC1

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.10.2

Subnet Mask 255.255.255.240

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

PC2

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.10.3

Subnet Mask 255.255.255.240

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

- Configuration of Interfaces (IPv4) for PC 3 & 4 (VLAN 20)

PC3

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.20.3

Subnet Mask 255.255.255.240

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

PC4

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.20.4

Subnet Mask 255.255.255.240

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

- Configuration of Interfaces (IPv4) for PC 5 & 6 (VLAN 30)

PC5

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.30.5

Subnet Mask 255.255.255.240

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

PC6

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.30.6

Subnet Mask 255.255.255.240

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

- Command Output for Router #show ip int brief

LAN-A-Router#show ip int brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	unassigned	YES	unset	administratively down	down
GigabitEthernet0/1	172.168.1.1	YES	manual	up	up
GigabitEthernet0/1.1	192.168.100.1	YES	manual	up	up
GigabitEthernet0/1.10	192.168.10.1	YES	manual	up	up
GigabitEthernet0/1.20	192.168.20.1	YES	manual	up	up
GigabitEthernet0/1.30	192.168.30.1	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down

- Command Output for Switch #show VLAN

LAN-A-Switch#show vlan

VLAN	Name	Status	Ports
1	default	active	Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Gig0/1, Gig0/2
10	zone10	active	Fa0/1, Fa0/2
20	zone20	active	Fa0/3, Fa0/4
30	zone30	active	Fa0/5, Fa0/6
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
10	enet	100010	1500	-	-	-	-	-	0	0
20	enet	100020	1500	-	-	-	-	-	0	0
30	enet	100030	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
------	------	------	-----	--------	--------	----------	-----	----------	--------	--------

Remote SPAN VLANs

Primary	Secondary	Type	Ports
---------	-----------	------	-------

- Pings from Router to Workstations

```
LAN-A-Router>ping 192.168.10.2
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.10.2, timeout is 2 seconds:
```

```
.!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/2/11 ms
```

```
LAN-A-Router>ping 192.168.20.3
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.20.3, timeout is 2 seconds:
```

```
.!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/2/8 ms
```

```
LAN-A-Router>ping 192.168.20.4
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.20.4, timeout is 2 seconds:
```

```
.!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/2/9 ms
```

```
LAN-A-Router>ping 192.168.10.3
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.10.3, timeout is 2 seconds:
```

```
.!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/1 ms
```

```
LAN-A-Router>ping 192.168.30.5
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.30.5, timeout is 2 seconds:
```

```
.!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/4/17 ms
```

```
LAN-A-Router>ping 192.168.30.6
```

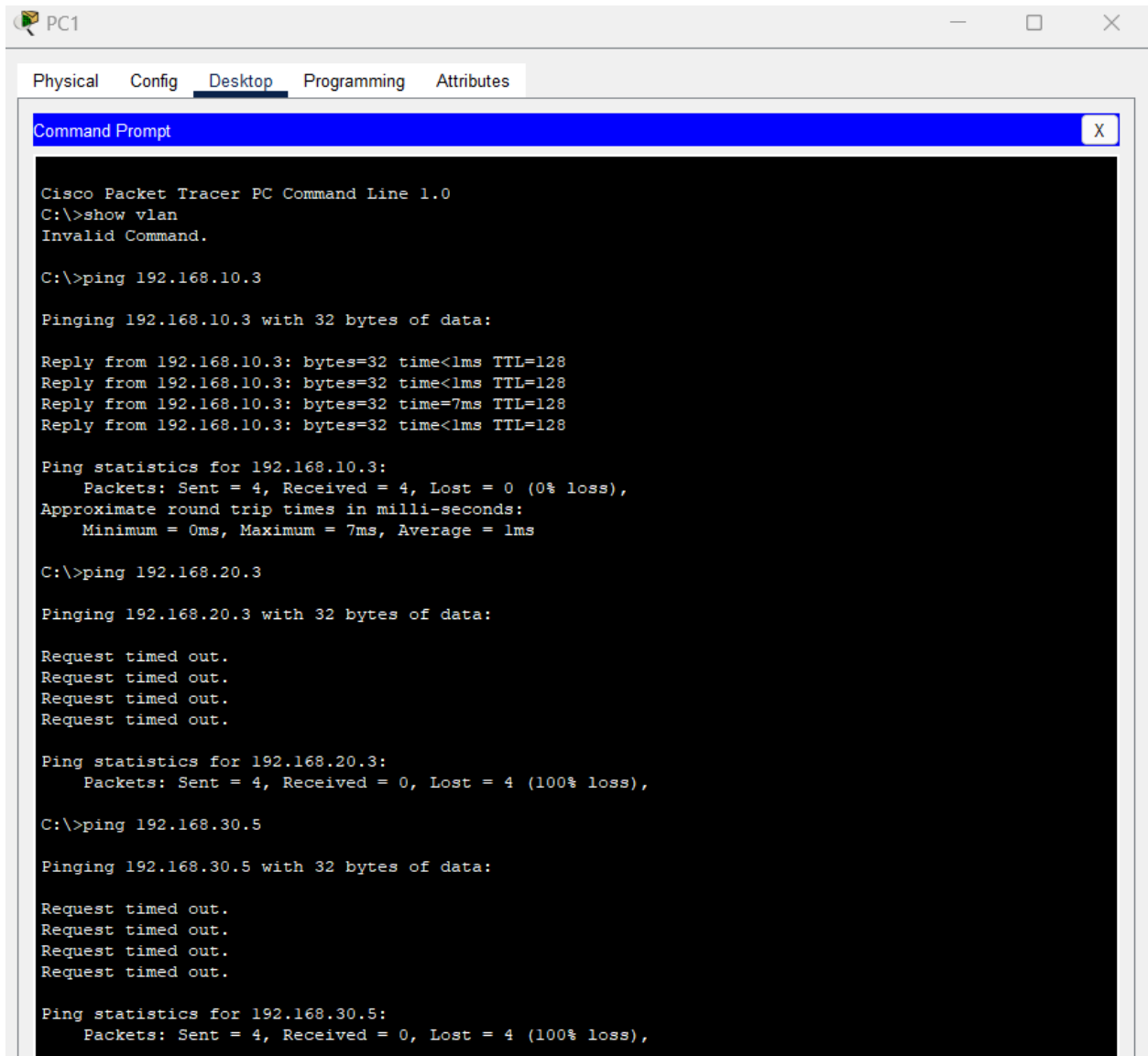
```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 192.168.30.6, timeout is 2 seconds:
```

```
.!!!!
```

```
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/0/1 ms
```

- Pings from Workstations to Workstations



The screenshot shows a Cisco Packet Tracer PC Command Prompt window for PC1. The window has tabs for Physical, Config, Desktop (selected), Programming, and Attributes. The Command Prompt displays the following text:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>show vlan
Invalid Command.

C:\>ping 192.168.10.3

Pinging 192.168.10.3 with 32 bytes of data:

Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128
Reply from 192.168.10.3: bytes=32 time=7ms TTL=128
Reply from 192.168.10.3: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 7ms, Average = 1ms

C:\>ping 192.168.20.3

Pinging 192.168.20.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

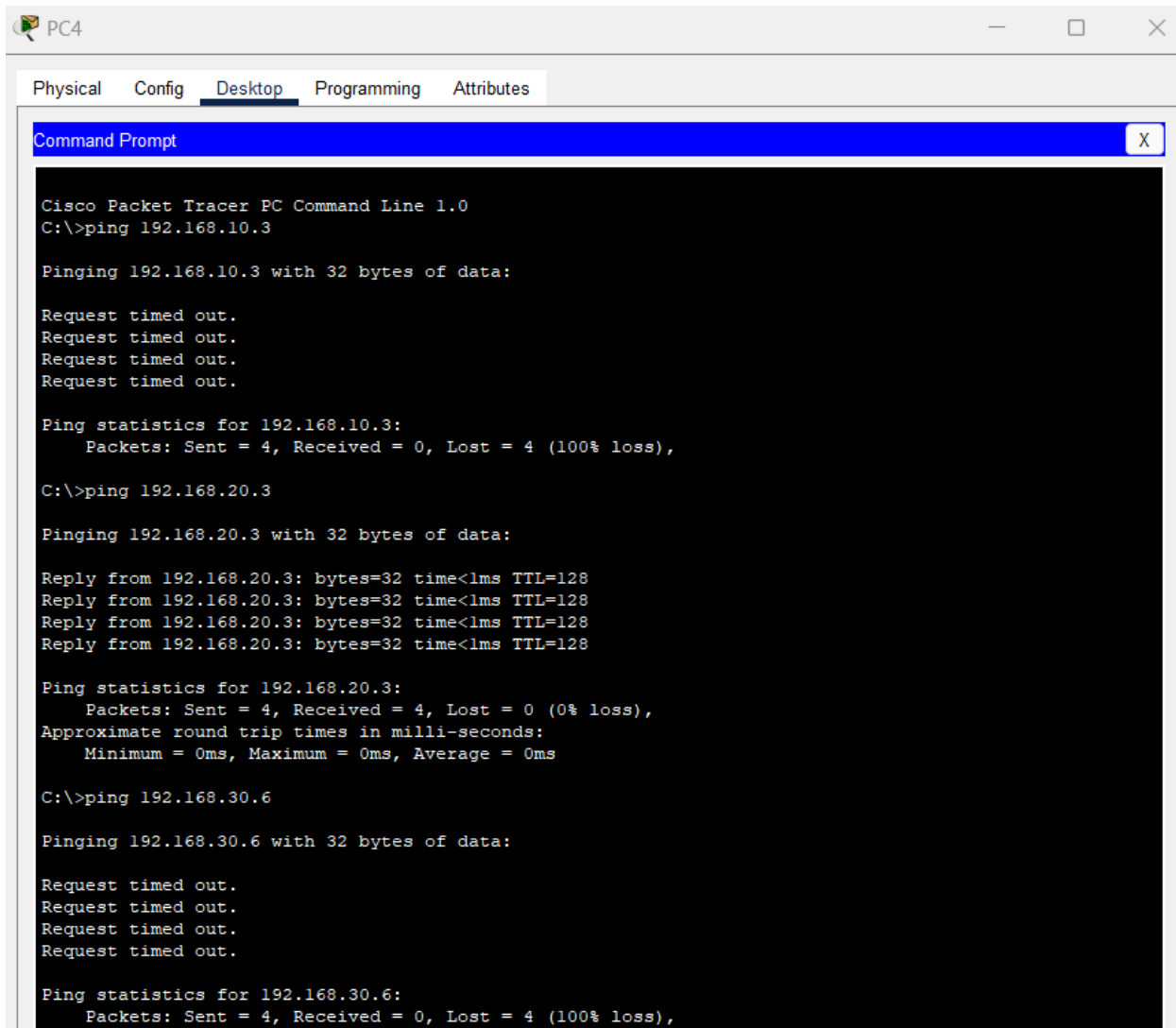
Ping statistics for 192.168.20.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.30.5

Pinging 192.168.30.5 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.30.5:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Command Prompt



```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.20.4

Pinging 192.168.20.4 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.20.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.30.5

Pinging 192.168.30.5 with 32 bytes of data:

Reply from 192.168.30.5: bytes=32 time<1ms TTL=128
Reply from 192.168.30.5: bytes=32 time=1ms TTL=128
Reply from 192.168.30.5: bytes=32 time<1ms TTL=128
Reply from 192.168.30.5: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.30.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```