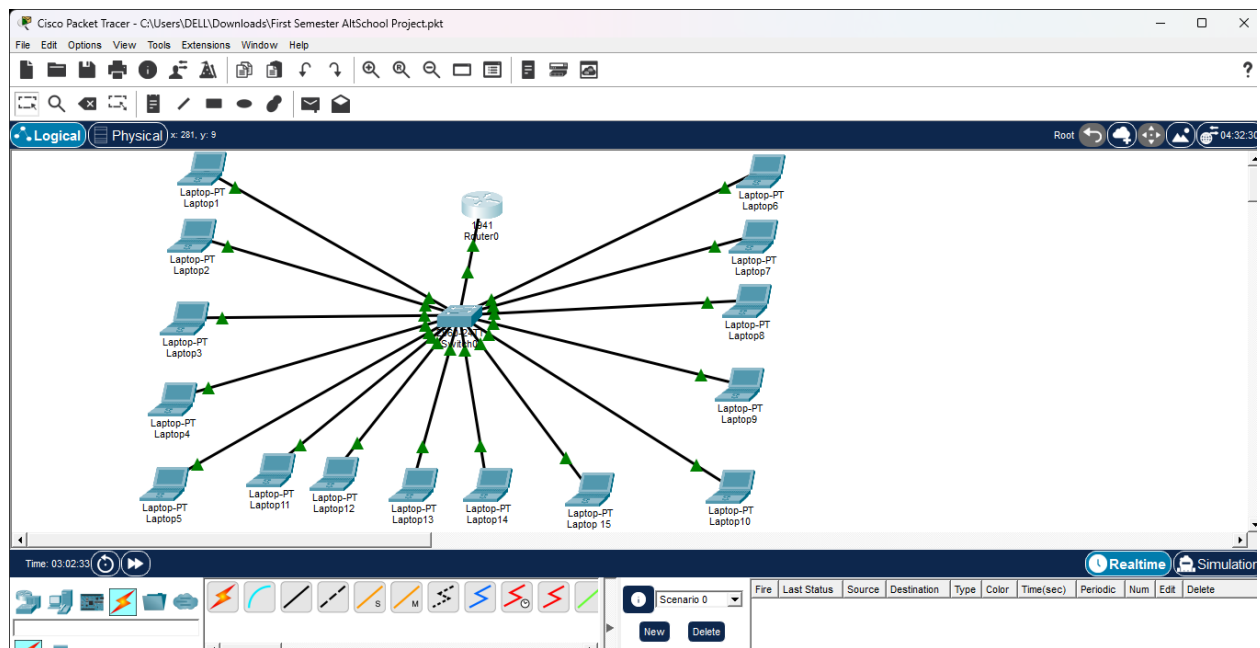
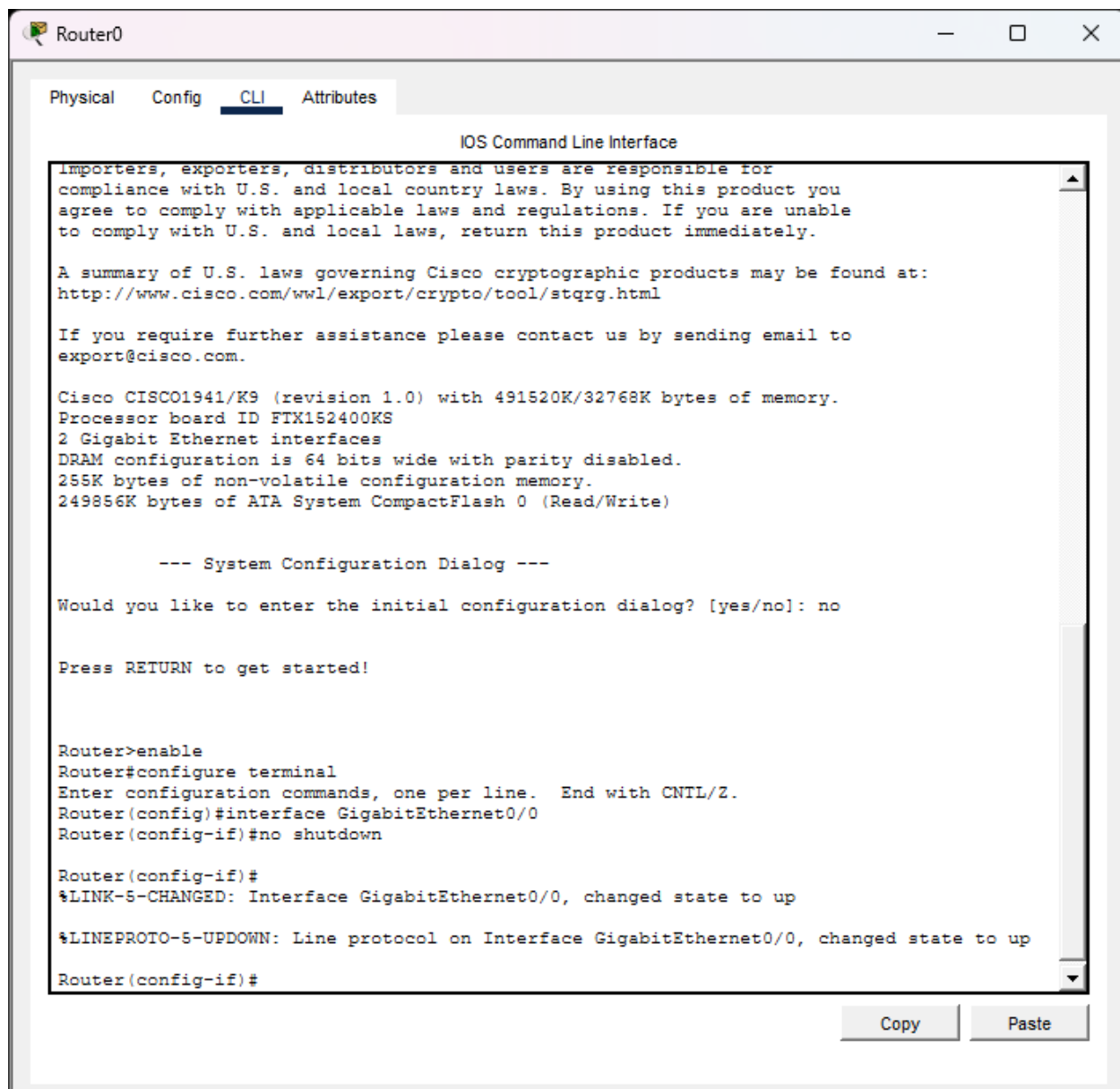


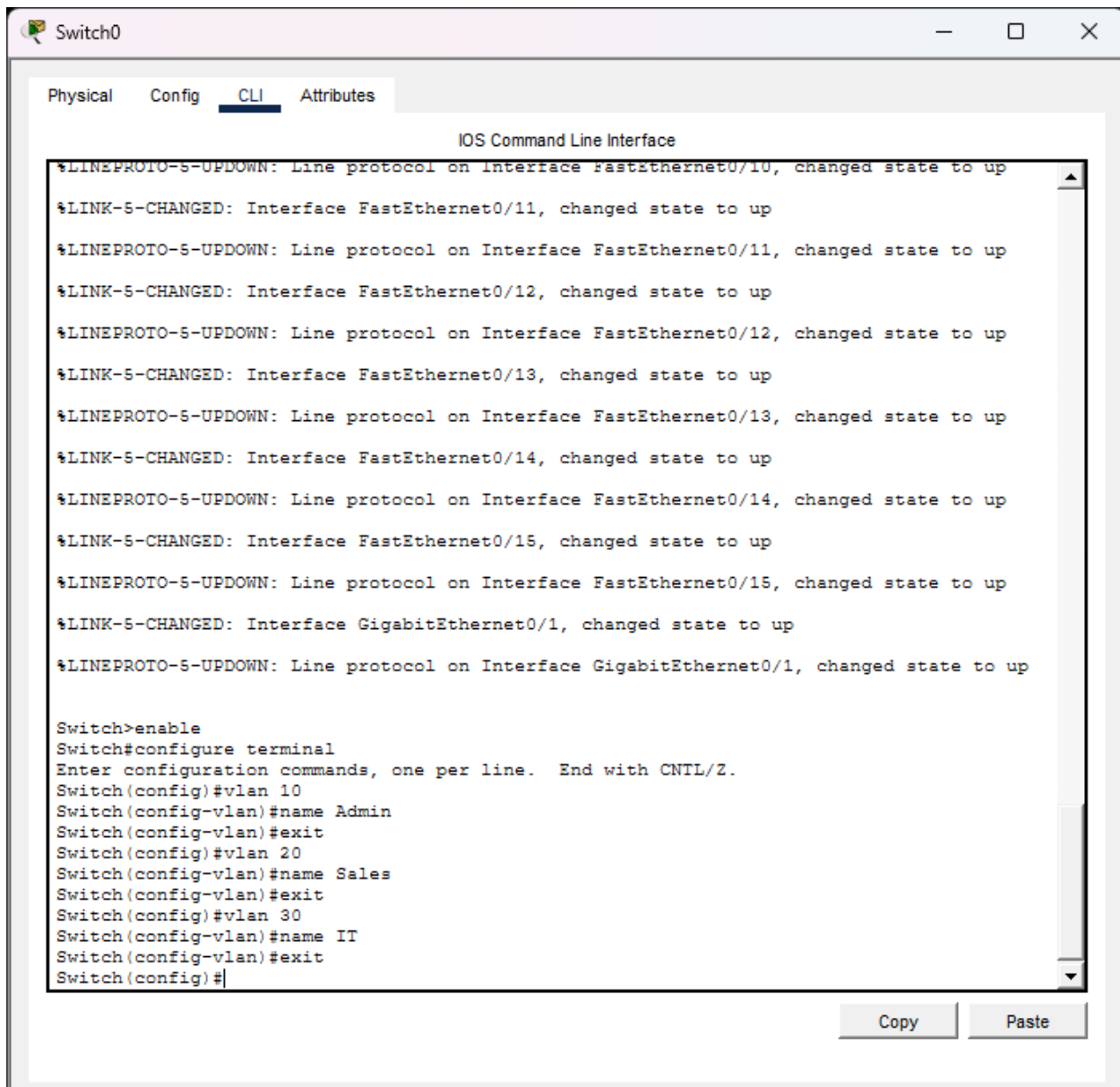
PROJECT QUESTION 2



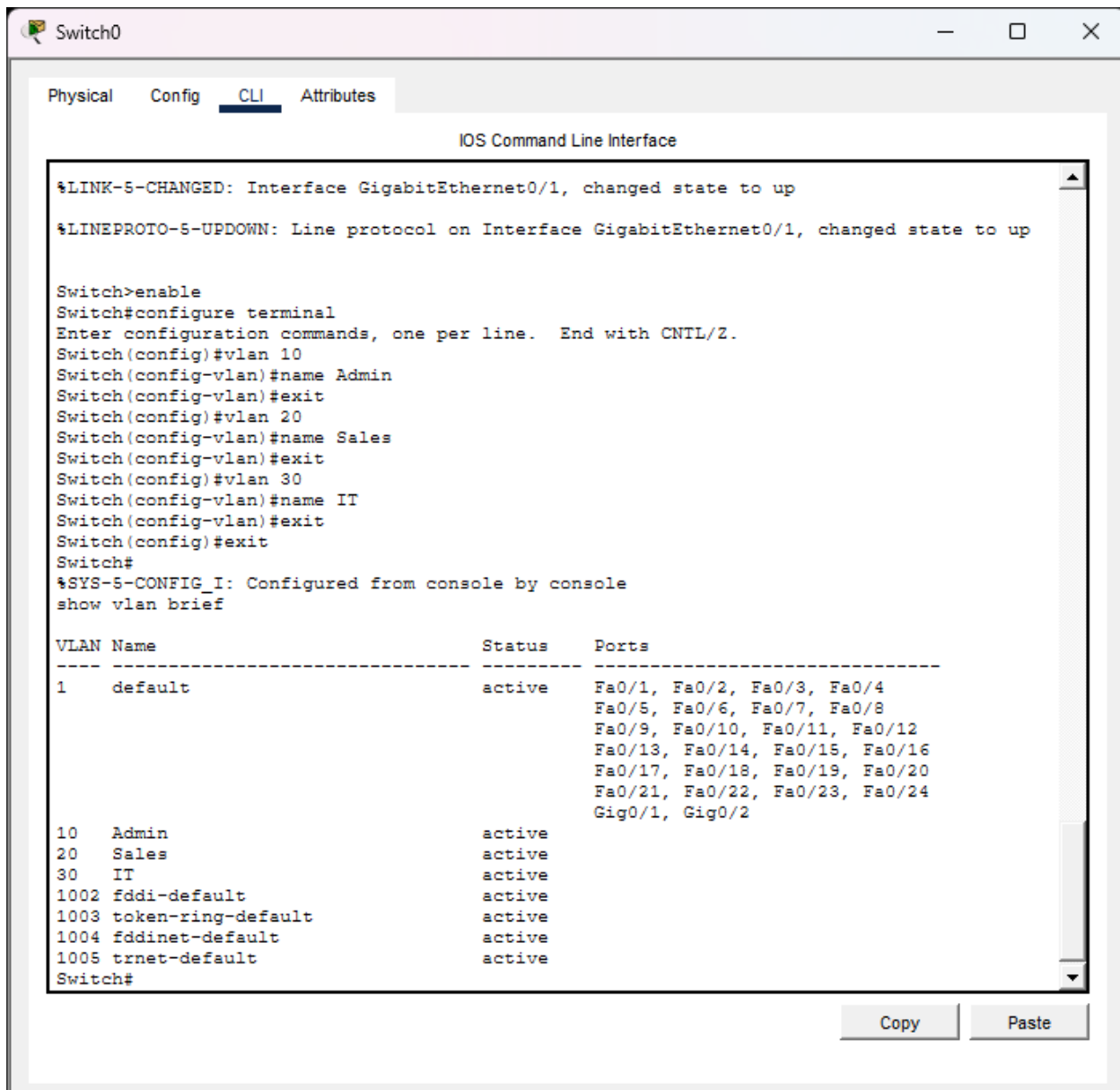
I assigned 5 PCs to each department and connect the PC to Switch using a copper straight wire and use the same to connect the switch to the router.



Since the switch was connected to the Router using the Copper straight wire and there is no show of connection so I had to use the no shutdown command



All VLANs for each department was created (Admin, Sales and IT)



I checked the VLANs created earlier to see if they are active

Switch0

Physical Config CLI Attributes

IOS Command Line Interface

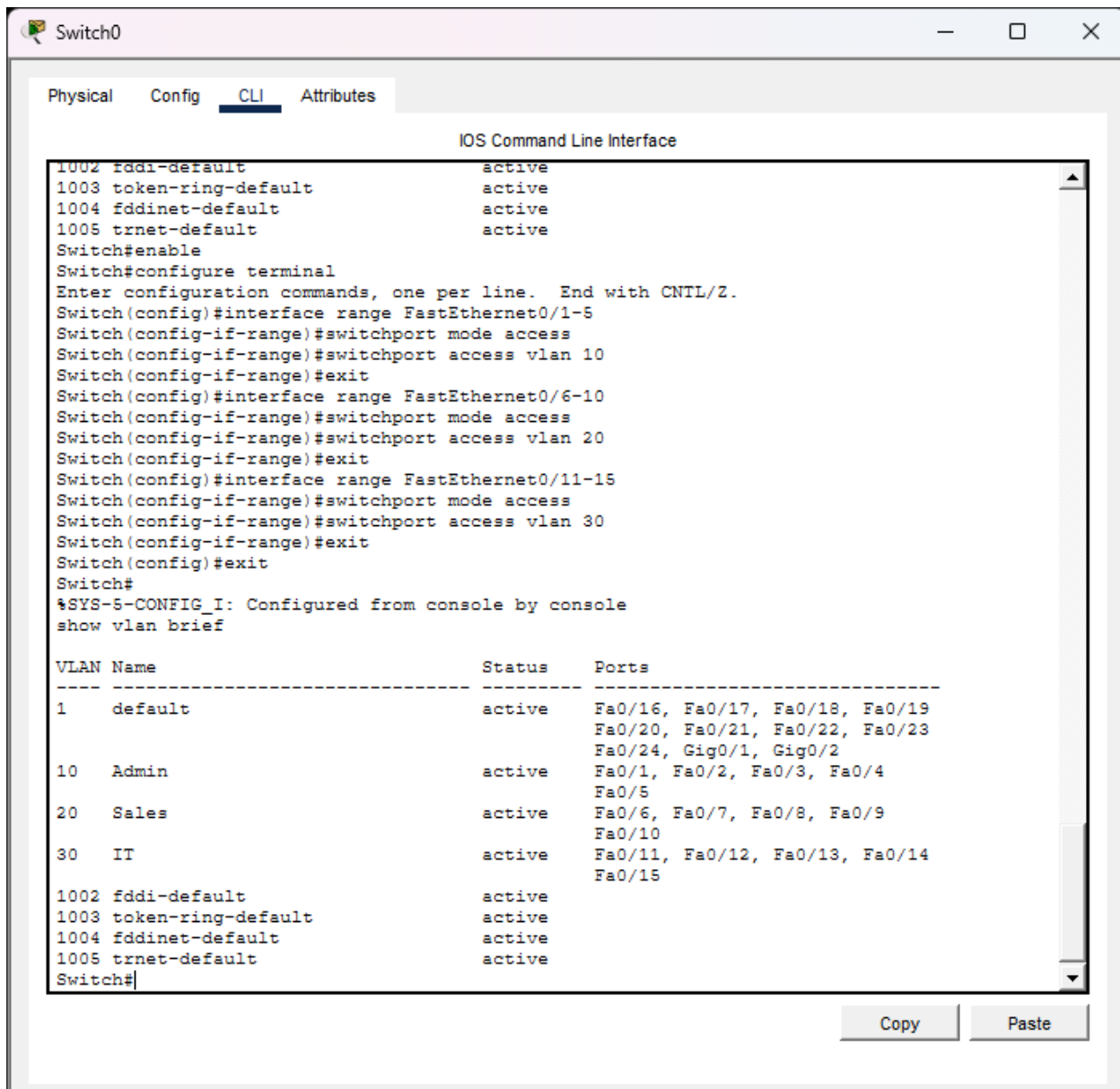
```
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
show vlan brief

VLAN Name                Status    Ports
-----
1    default                active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                           Fa0/5, Fa0/6, 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, Fa0/24
                                           Gig0/1, Gig0/2

10   Admin                  active
20   Sales                  active
30   IT                     active
1002 fddi-default          active
1003 token-ring-default    active
1004 fddinet-default        active
1005 trnet-default          active
Switch#enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface range FastEthernet0/1-5
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#interface range FastEthernet0/6-10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#interface range FastEthernet0/11-15
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
show
```

Copy Paste

Each PCs was assigned to respective VLANs. Fa0/1-5 was assigned to Admin, Fa0/6-10 was assigned to Admin and Fa0/11-15 was assigned to IT



Each device has been assigned to their individual VLANs

Switch0

Physical
Config
CLI
Attributes

IOS Command Line Interface

VLAN	Name	Status	Ports
1	default	active	Fa0/16, Fa0/17, Fa0/18, Fa0/19 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
10	Admin	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5
20	Sales	active	Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10
30	IT	active	Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```

Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface range FastEthernet0/24
Switch(config-if-range)#switchport trunk encapsulation dot1Q
Switch(config-if-range)#switchport mode trunk
Switch(config-if-range)#exit
Switch(config)#interface gigabitEthernet0/1
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

```

Copy
Paste

Trunk activated

```
Switch0
Physical Config CLI Attributes
IOS Command Line Interface

Switch(config-if-range)#exit
Switch(config)#interface gigabitEthernet0/1
Switch(config-if)#switchport mode trunk

Switch(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Switch(config-if)#exit
Switch(config)#hostname Altschool
Altschool(config)#ip-domain-name altschoolafrica.com
^
% Invalid input detected at '^' marker.

Altschool(config)#ip-domain-name admin
^
% Invalid input detected at '^' marker.

Altschool(config)#ip domain-name admin
Altschool(config)#crypto key generate rsa
The name for the keys will be: Altschool.admin
Choose the size of the key modulus in the range of 360 to 4096 for your
General Purpose Keys. Choosing a key modulus greater than 512 may take
a few minutes.

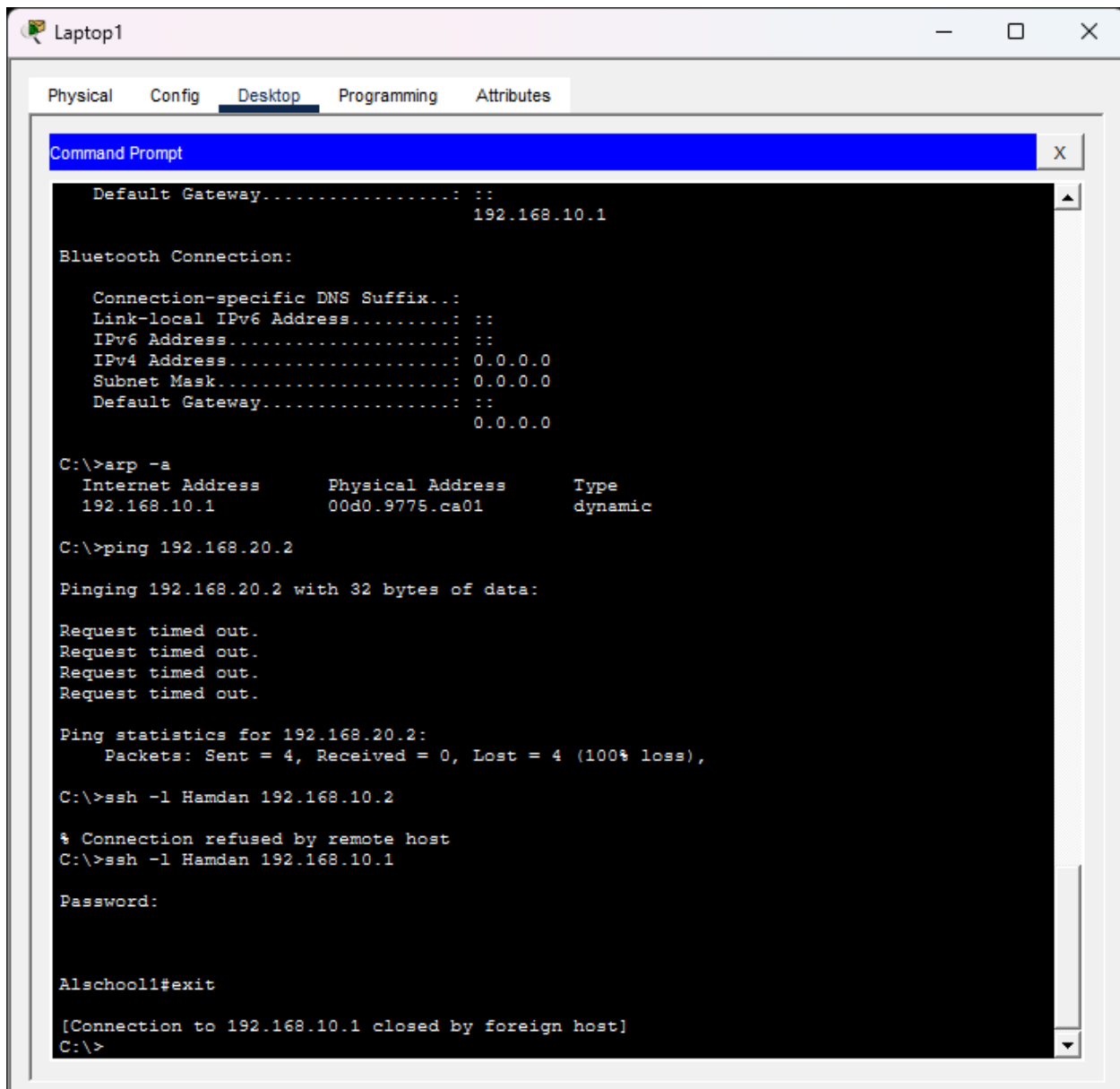
How many bits in the modulus [512]: 2048
% Generating 2048 bit RSA keys, keys will be non-exportable...[OK]

Altschool(config)#username Hamdan password Harkumeh87@
*Mar 1 0:58:5.87: %SSH-5-ENABLED: SSH 1.99 has been enabled
Altschool(config)#ip ssh version 2
Altschool(config)#line vty 0 15
Altschool(config-line)#transport input ssh
Altschool(config-line)#local login
^
% Invalid input detected at '^' marker.

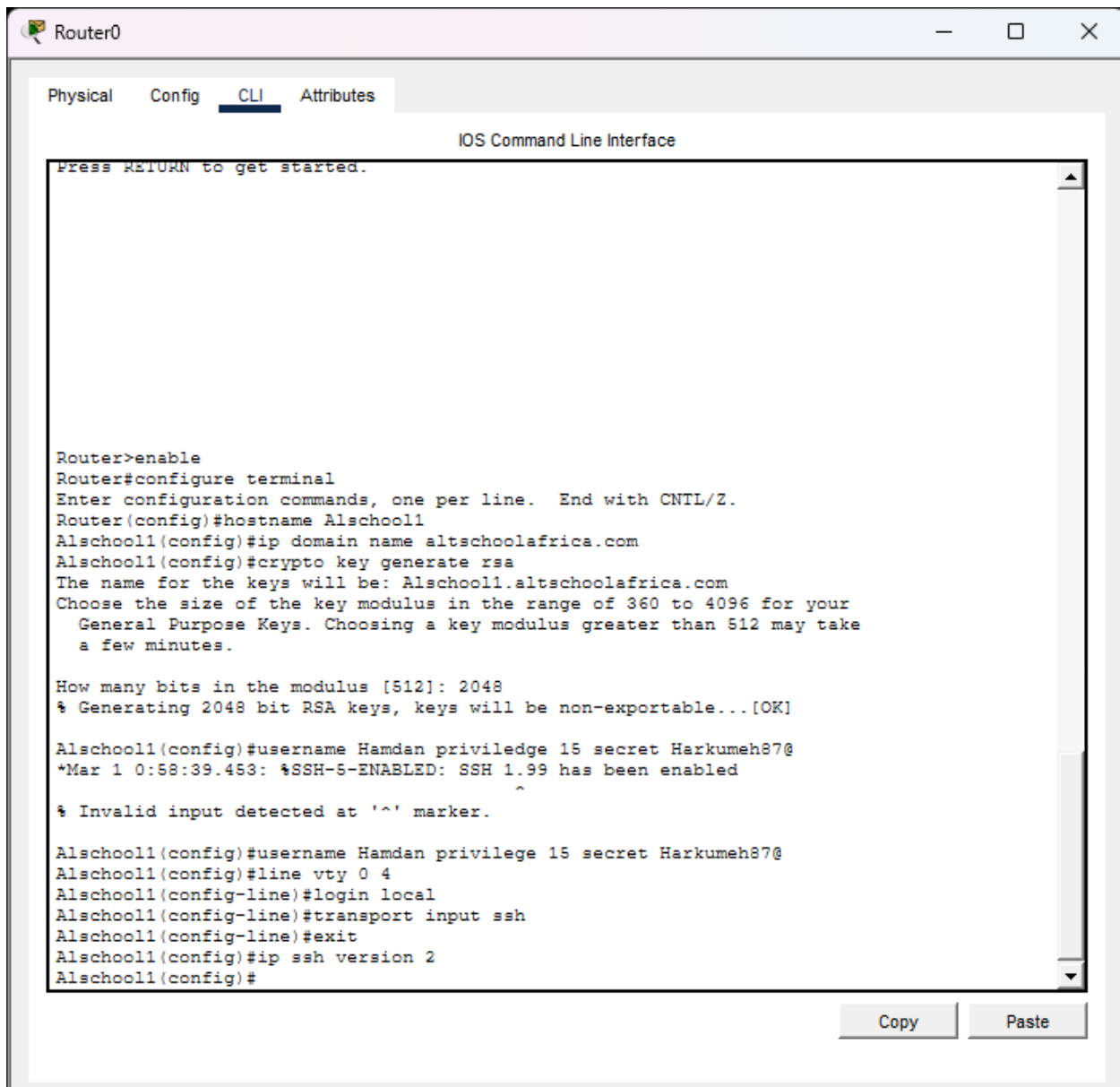
Altschool(config-line)#login local
Altschool(config-line)#
```

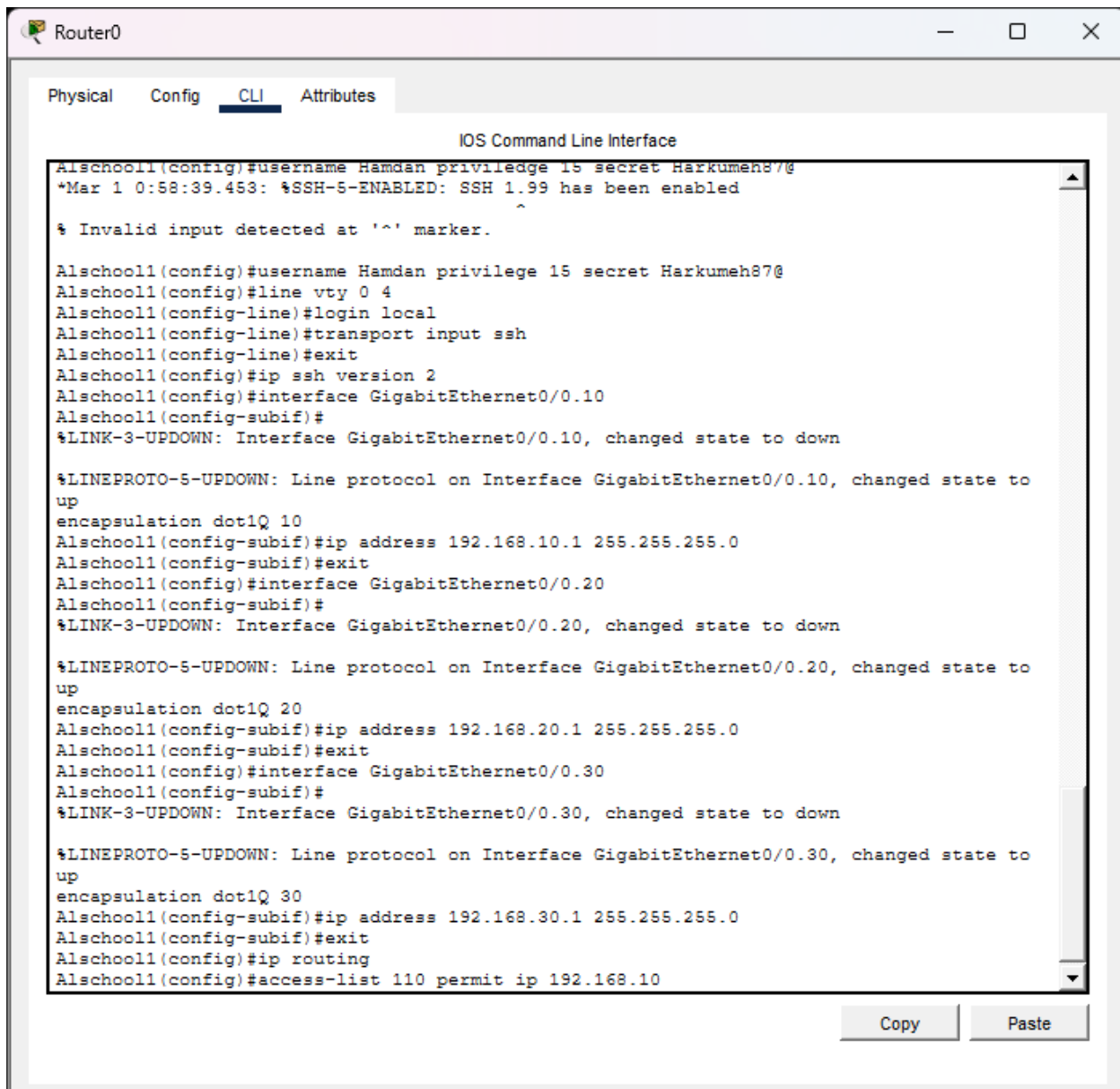
Copy Paste

SSH was created successfully



SSH was tested and shows that the SSH is working perfectly.





Sub Interfaces was created and assigned to their various IP addresses



Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.10, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to
up
encapsulation dot1Q 10
Alschooll(config-subif)#ip address 192.168.10.1 255.255.255.0
Alschooll(config-subif)#exit
Alschooll(config)#interface GigabitEthernet0/0.20
Alschooll(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.20, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to
up
encapsulation dot1Q 20
Alschooll(config-subif)#ip address 192.168.20.1 255.255.255.0
Alschooll(config-subif)#exit
Alschooll(config)#interface GigabitEthernet0/0.30
Alschooll(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.30, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to
up
encapsulation dot1Q 30
Alschooll(config-subif)#ip address 192.168.30.1 255.255.255.0
Alschooll(config-subif)#exit
Alschooll(config)#ip routing
Alschooll(config)#access-list 110 permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255
Alschooll(config)#access-list 110 deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschooll(config)#access-list 110 permit ip any any
Alschooll(config)#access-list 120 deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
Alschooll(config)#access-list 120 permit ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschooll(config)#access-list 120 deny ip any any
Alschooll(config)#access-list 130 permit ip 192.168.30.0 0.0.0.255 any
Alschooll(config)#interface FastEthernet0/0.10
%Invalid interface type and number
Alschooll(config)#interface GigabitEthernet0/0.10
Alschooll(config-subif)#ip access-group 110 in
Alschooll(config-subif)#interface GigabitEthernet0/0.20
Alschooll(config-subif)#ip access-group 120 in
Alschooll(config-subif)#
```

Copy

Paste



Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
Alschooll#no access-list 110
^
% Invalid input detected at '^' marker.

Alschooll#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Alschooll(config)#no access-list 110
Alschooll(config)#no access-list 120
Alschooll(config)#no access-list 130
Alschooll(config)#exit
Alschooll#
%SYS-5-CONFIG_I: Configured from console by console
show access-list
Alschooll#show access-list
Alschooll#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Alschooll(config)#ip access-list extended ADMIN-ACL
Alschooll(config-ext-nacl)#permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255
Alschooll(config-ext-nacl)#deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschooll(config-ext-nacl)#permit ip any any
Alschooll(config-ext-nacl)#exit
Alschooll(config)#ip access-list extended SALES-ACL
Alschooll(config-ext-nacl)#deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255
Alschooll(config-ext-nacl)#permit ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255
Alschooll(config-ext-nacl)#permit ip any any
Alschooll(config-ext-nacl)#exit
Alschooll(config)#ip access-list extended IT-ACL
Alschooll(config-ext-nacl)#permit ip any any
Alschooll(config-ext-nacl)#exit
Alschooll(config)#interface gigabitEthernet0/0.10
Alschooll(config-subif)#ip access-group ADMIN-ACL in
Alschooll(config-subif)#exit
Alschooll(config)#interface gigabitEthernet0/0.20
Alschooll(config-subif)#ip access-group SALES-ACL in
Alschooll(config-subif)#exit
Alschooll(config)#interface gigabitEthernet0/0.30
Alschooll(config-subif)#ip access-group IT-ACL in
Alschooll(config-subif)#exit
Alschooll(config)#
```

Copy

Paste



Router0

Physical Config CLI Attributes

IOS Command Line Interface

```
Alschoo11(config)#username Hamdan privilege 15 secret Harkumeh7@
*Mar 1 0:58:39.453: %SSH-5-ENABLED: SSH 1.99 has been enabled

^
% Invalid input detected at '^' marker.

Alschoo11(config)#username Hamdan privilege 15 secret Harkumeh87@
Alschoo11(config)#line vty 0 4
Alschoo11(config-line)#login local
Alschoo11(config-line)#transport input ssh
Alschoo11(config-line)#exit
Alschoo11(config)#ip ssh version 2
Alschoo11(config)#interface GigabitEthernet0/0.10
Alschoo11(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.10, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to
up
encapsulation dot1Q 10
Alschoo11(config-subif)#ip address 192.168.10.1 255.255.255.0
Alschoo11(config-subif)#exit
Alschoo11(config)#interface GigabitEthernet0/0.20
Alschoo11(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.20, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to
up
encapsulation dot1Q 20
Alschoo11(config-subif)#ip address 192.168.20.1 255.255.255.0
Alschoo11(config-subif)#exit
Alschoo11(config)#interface GigabitEthernet0/0.30
Alschoo11(config-subif)#
%LINK-3-UPDOWN: Interface GigabitEthernet0/0.30, changed state to down

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to
up
encapsulation dot1Q 30
Alschoo11(config-subif)#ip address 192.168.30.1 255.255.255.0
Alschoo11(config-subif)#exit
Alschoo11(config)#ip routing
Alschoo11(config)#access-list 110 permit ip 192.168.10
```

Copy

Paste



Router0



Physical

Config

CLI

Attributes

IOS Command Line Interface

```
Alschooll>show access list
^
% Invalid input detected at '^' marker.

Alschooll>show access-list
^
% Invalid input detected at '^' marker.

Alschooll>enable
Alschooll#show access-list
Extended IP access list ADMIN-ACL
 10 permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255 (49 match(es))
 20 deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255 (48 match(es))
 30 permit ip any any (58 match(es))
Extended IP access list SALES-ACL
 10 deny ip 192.168.20.0 0.0.0.255 192.168.10.0 0.0.0.255 (59 match(es))
 20 permit ip 192.168.20.0 0.0.0.255 192.168.30.0 0.0.0.255 (24 match(es))
 30 permit ip any any (5 match(es))
Extended IP access list IT-ACL
 10 permit ip any any (53 match(es))
Extended IP access list ADMIN_TO_OTHERS
 10 permit icmp 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255 echo-reply
 20 permit icmp 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
 30 permit ip 192.168.10.0 0.0.0.255 192.168.20.0 0.0.0.255
 40 deny ip 192.168.10.0 0.0.0.255 192.168.30.0 0.0.0.255
 50 permit ip 192.168.10.0 0.0.0.255 host 192.168.10.1
 60 deny ip any any
Alschooll#
```

Copy

Paste

Laptop1

Physical Config **Desktop** Programming Attributes

IP Configuration

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.10.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.10.1

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2E0:A3FF:FEE8:C4AD

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

IP Addresses was assigned to all PCs with their respective gateway

Laptop1

Physical Config Desktop Programming Attributes

Command Prompt

```
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=1ms TTL=255
Reply from 192.168.10.1: bytes=32 time=1ms TTL=255

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.20.1

Pinging 192.168.20.1 with 32 bytes of data:

Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.1

Pinging 192.168.30.1 with 32 bytes of data:

Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.
Reply from 192.168.10.1: Destination host unreachable.

Ping statistics for 192.168.30.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

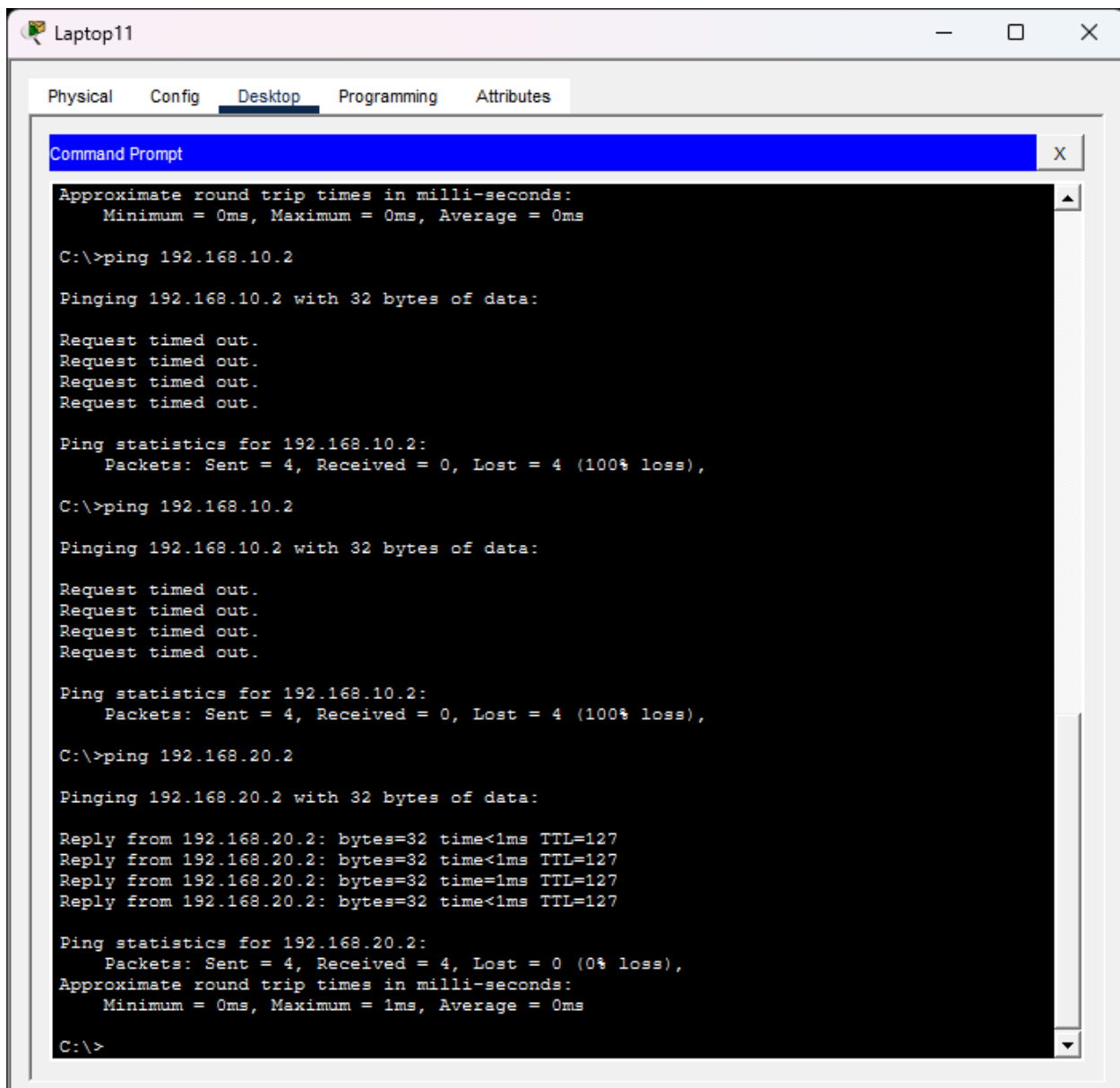
```
C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time<1ms 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
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

This is successful ping message from Admin to Sale and was denied by IT



The screenshot shows a Windows Command Prompt window titled "Laptop11" with tabs for Physical, Config, Desktop, Programming, and Attributes. The Desktop tab is active. The Command Prompt displays the following text:

```
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms

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 192.168.10.2

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),

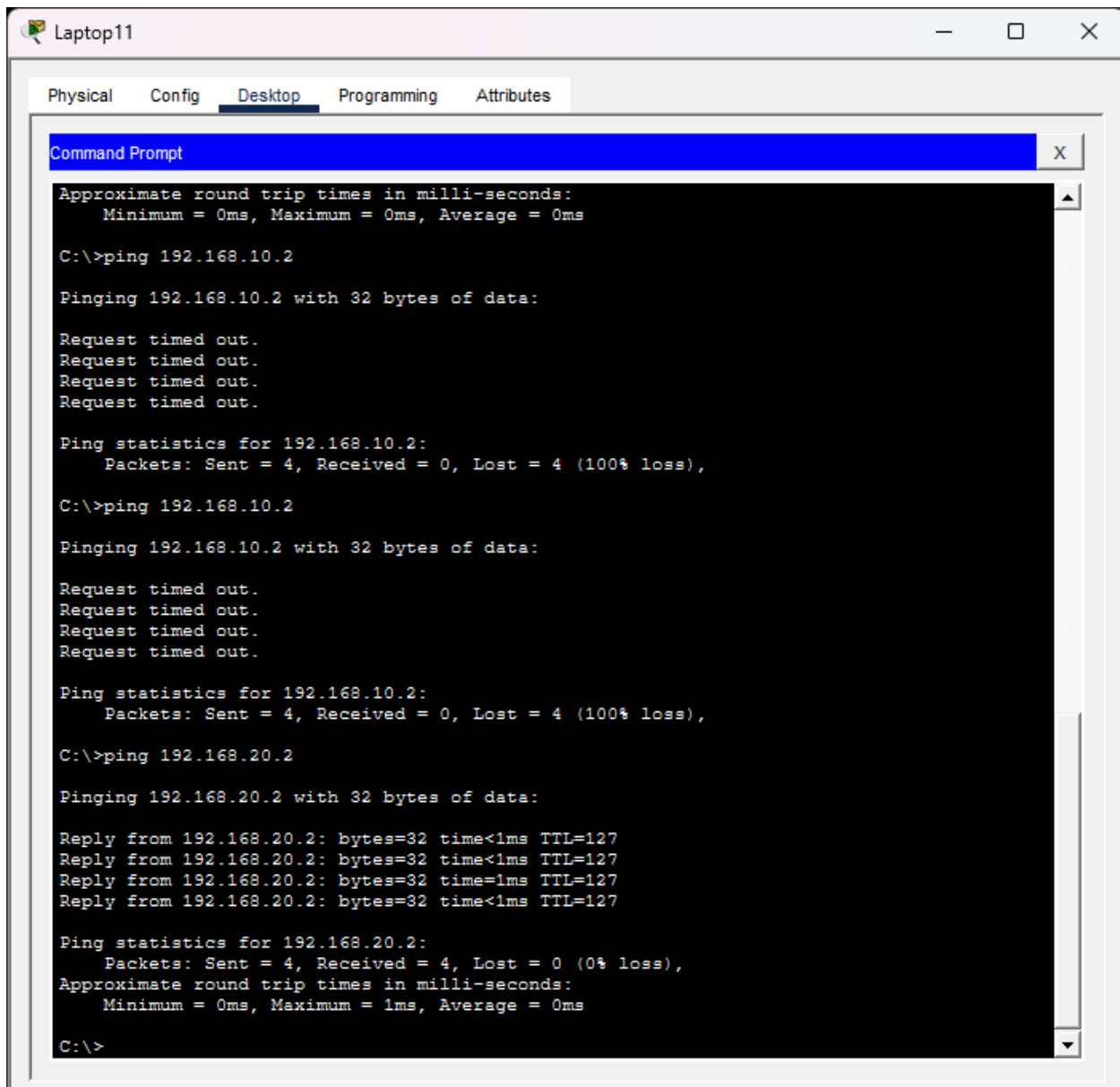
C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time<1ms 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
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```



Command Prompt

X

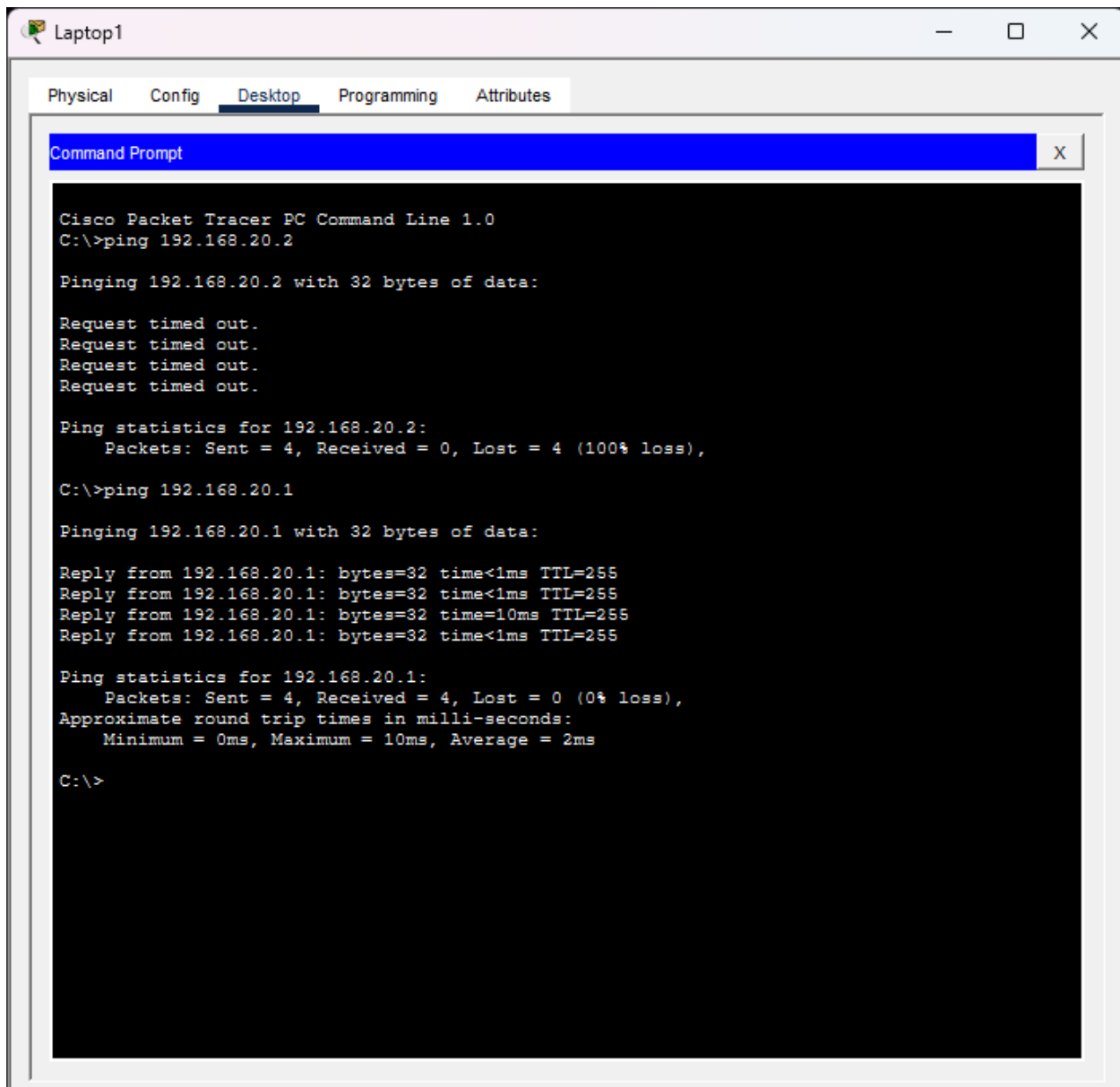
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.20.2

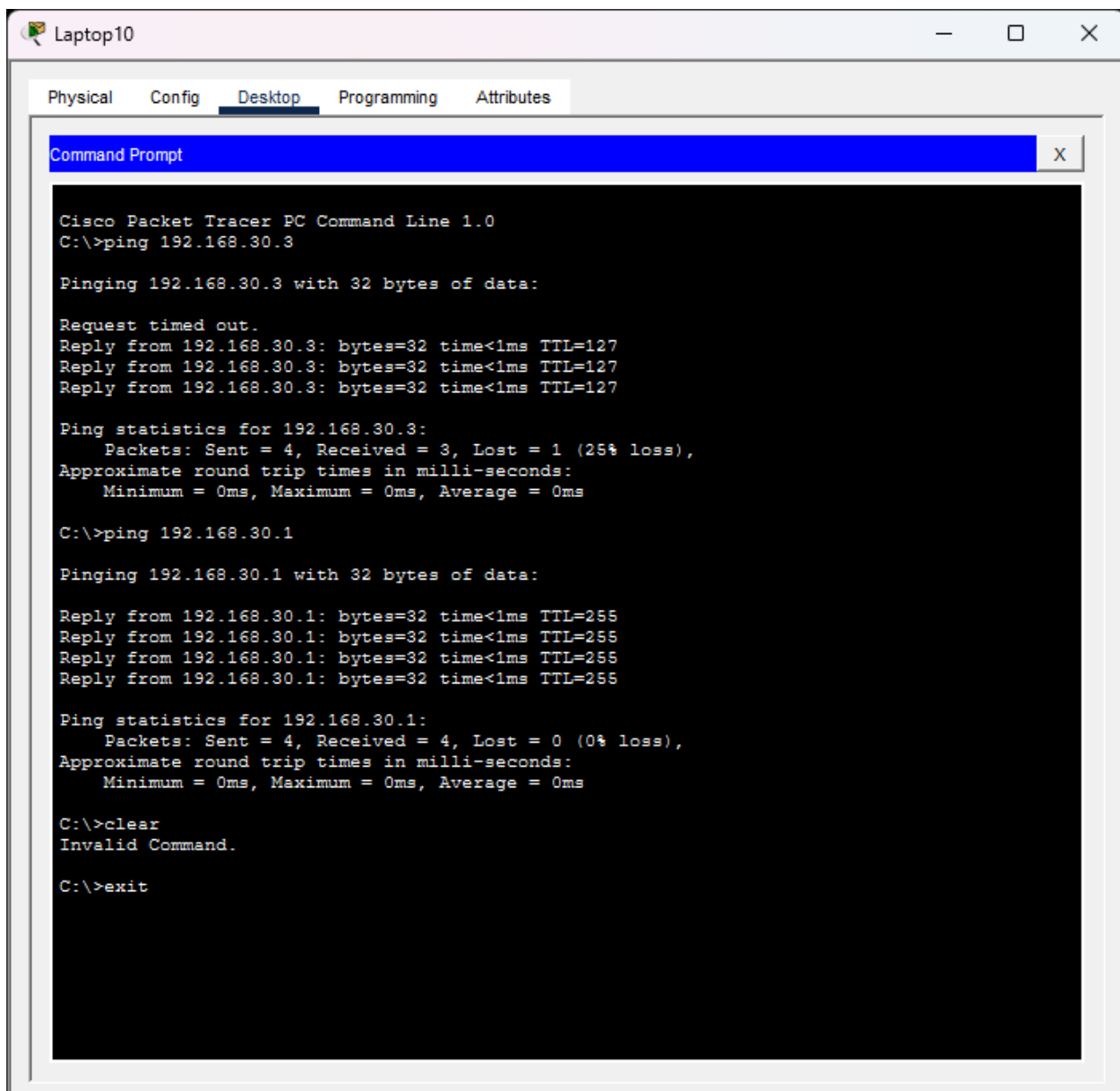
Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time<1ms 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
Reply from 192.168.20.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```





Command Prompt

```
Request timed out.
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127
Reply from 192.168.30.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.30.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.30.1

Pinging 192.168.30.1 with 32 bytes of data:

Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255
Reply from 192.168.30.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.30.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>clear
Invalid Command.

C:\>exit
ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.
Reply from 192.168.20.1: Destination host unreachable.

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>|
```