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Lab Task 1: Design an IP Address Scheme

1. The network 172.16.10.0/24 was divided into 8 subnets

Subnet Number	Network Address	Usable Host Address Range	Broadcast Address
1	172.16.10.0	172.16.10.1 - 172.16.10.30	172.16.10.31
2	172.16.10.32	172.16.10.33 - 172.16.10.62	172.16.10.63
3	172.16.10.64	172.16.10.65 - 172.16.10.94	172.16.10.95
4	172.16.10.96	172.16.10.97 - 172.16.10.126	172.16.10.127
5	172.16.10.128	172.16.10.129 - 172.16.10.158	172.16.10.159
6	172.16.10.160	172.16.10.161 - 172.16.10.190	172.16.10.191
7	172.16.10.192	172.16.10.193 - 172.16.10.222	172.16.10.223
8	172.16.10.224	172.16.10.225 - 172.16.10.254	172.16.10.255

2. The value of the new subnet mask is 255.255.255.224
3. 30 usable hosts exist per subnet

Lab Task 2: Implement VLANs and Trunk

S1-Office1 & S2-Office1

1. en
conf t
vlan 10
name Management
exit
vlan 20
name Marketing
exit
vlan 30
name Accounting
exit
vlan 100
name Native
exit

2. int range fa0/1-10
switchport mode access
switchport access vlan 10
exit
int range fa0/11-20
switchport mode access
switchport access vlan 20
exit
int range fa0/21-24
switchport mode access
switchport access vlan 30
exit

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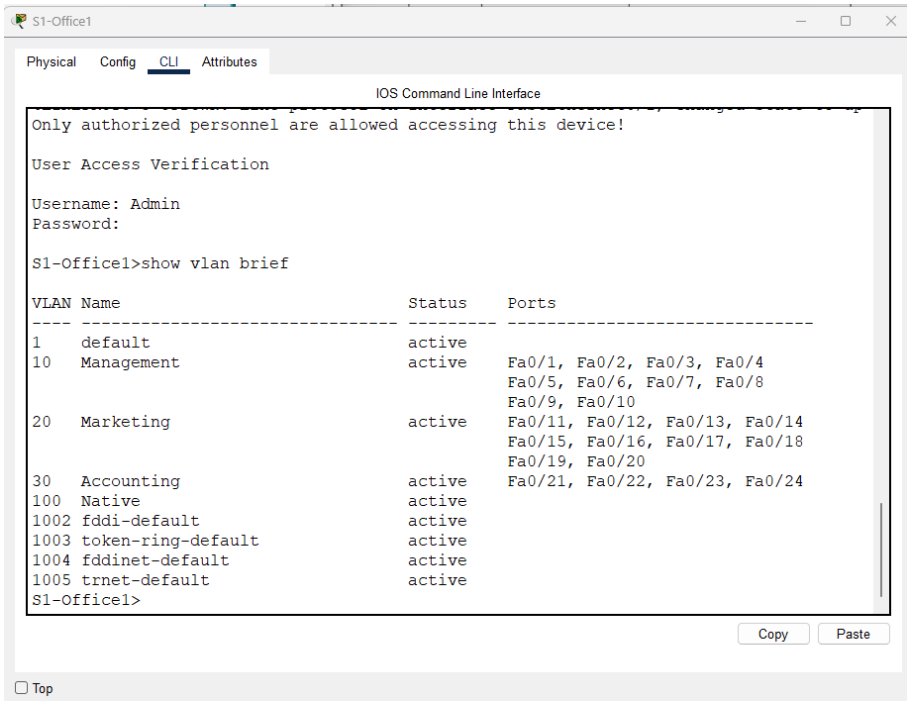
3 to 5 on S1-Office1

int gi0/1
switchport mode trunk
switchport trunk native vlan 100
exit
do sho vlan brief
do sho int trunk

int gi0/2
switchport mode trunk
switchport trunk native vlan 100
exit
do sho vlan brief
do sho int trunk

on S2-Office1
int gi0/1
switchport mode trunk
switchport trunk native vlan 100
exit
do sho vlan brief
do sho int trunk

S1-Office1 & S2-Office1
int range fa0/1-24
switchport nonegotiate
exit
do wr



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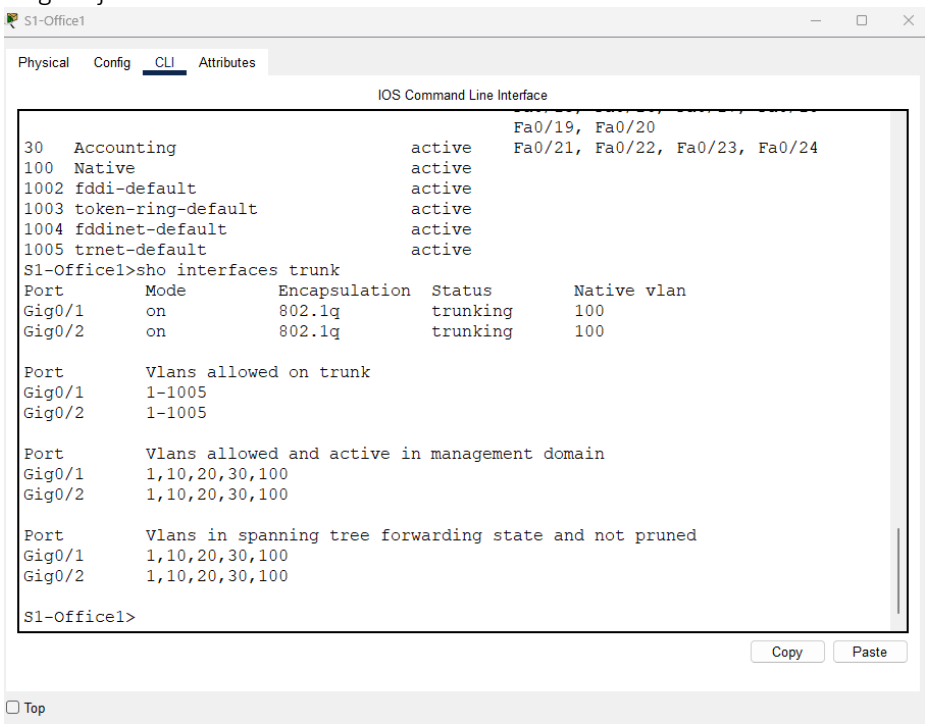


```
S2-Office1>sho vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Gig0/2
10   Management                        active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10
20   Marketing                         active    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                 Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                                 Fa0/19, Fa0/20
30   Accounting                        active    Fa0/21, Fa0/22, Fa0/23, Fa0/24
100  Native                            active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
S2-Office1>
```

```
S2-Office1>sho int trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/1      on           802.1q         trunking      100

Port        Vlans allowed on trunk
Gig0/1      1-1005

Port        Vlans allowed and active in management domain
Gig0/1      1,10,20,30,100

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/1      1,10,20,30,100

S2-Office1>
```

Copy Paste

Lab Task 3: Assign IP Address

1. 172.16.10.1 (from subnet 1) was assigned to the R3 / S1-Office3
   On R3:
   en
   conf t
   int gi0/0
   ip address 172.16.10.1 255.255.255.224
   desc To S1-Office3
   no shut
   exit
   do wr

2. 172.16.10.33 (from subnet 2) was assigned to the R3 / S1-Office2
   On R3:
   int gi0/1
   ip address 172.16.10.33 255.255.255.224
   desc To S1-Office2
   no shut
   exit

3. 172.16.10.65 was assigned on the R1 side, and 172.16.10.66 was assigned on the R2 side
   On R1:
   en
   conf t
   int se0/0/1
   ip addr 172.16.10.65 255.255.255.224
   desc To R2
   no shut
   ex
   On R2:
   en
   conf t
   int se0/0/1
   ip addr 172.16.10.66 255.255.255.224
   desc To R1
   no shut
   ex

4. 172.16.10.97 was assigned on the R1 side, and 172.16.10.98 was assigned on the R3 side
   On R1:
   int se0/0/0
   ip addr 172.16.10.97 255.255.255.224
   desc To R3
   no shut
   ex

do wr
On R3:
int se0/0/0
ip addr 172.16.10.98 255.255.255.224
desc To R1
no shut
ex

5. 172.16.10.130 was assigned on the R2 side, and 172.16.10.129 was assigned on the R3 side
   On R2:
   int se0/0/0
   ip addr 172.16.10.130 255.255.255.224
   desc To R3
   no shut
   ex
   do wr
   On R3:
   int se0/0/1
   ip addr 172.16.10.129 255.255.255.224
   desc To R2
   no shut
   ex
   do wr

6. 172.16.10.161, set as the default gateway
   CEO1: 172.16.10.190
   CEO2: 172.16.10.189

7. 172.16.10.193, set as the default gateway
   Copywriter1: 172.16.10.222
   Copywriter2: 172.16.10.221

8. 172.16.10.225, set as the default gateway
   Dialer1: 172.16.10.254
   Dialer2: 172.16.10.253

9. IP addresses were assigned to end devices in Offices 2 and 3
   172.16.10.33 was set as the default gateway
      Employee1: 172.16.10.62
      Employee2: 172.16.10.61
      Guest: 172.16.10.60
   172.16.10.1 was set as the default gateway
      Email Server: 172.16.10.30
      Syslog/NTP Server: 172.16.10.29
      Admin: 172.16.10.28

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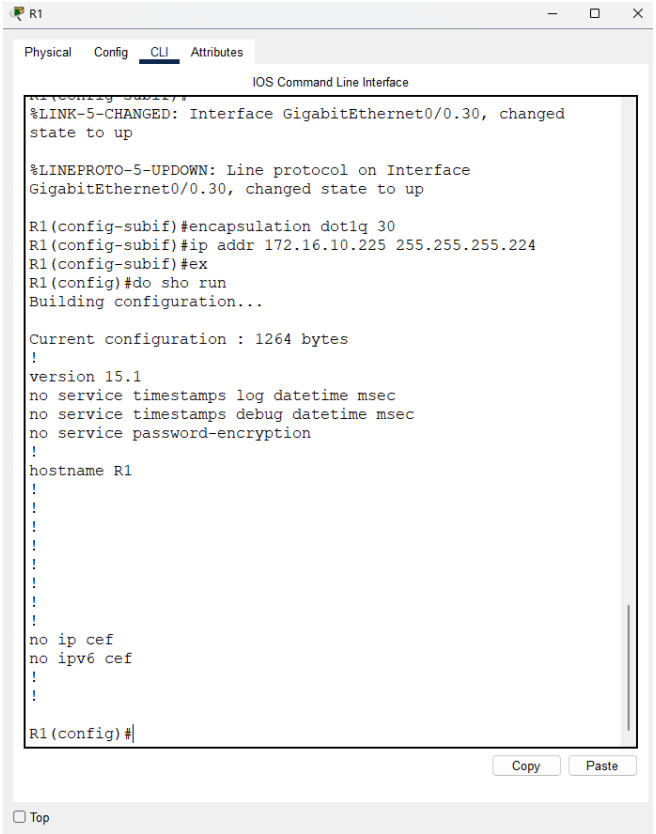
Lab Task 4: Configure R1 for Inter-Vlan Routing

1. R1
   en
   conf t
   int gi0/0
   no shut
   ex
2. To 4 on R1
   int gi0/0.10
   encapsulation dot1q 10
   ip addr 172.16.10.161 255.255.255.224
   ex
   int gi0/0.20
   encapsulation dot1q 20
   ip addr 172.16.10.193 255.255.255.224
   ex
   int gi0/0.30
   encapsulation dot1q 30
   ip addr 172.16.10.225 255.255.255.224
   ex

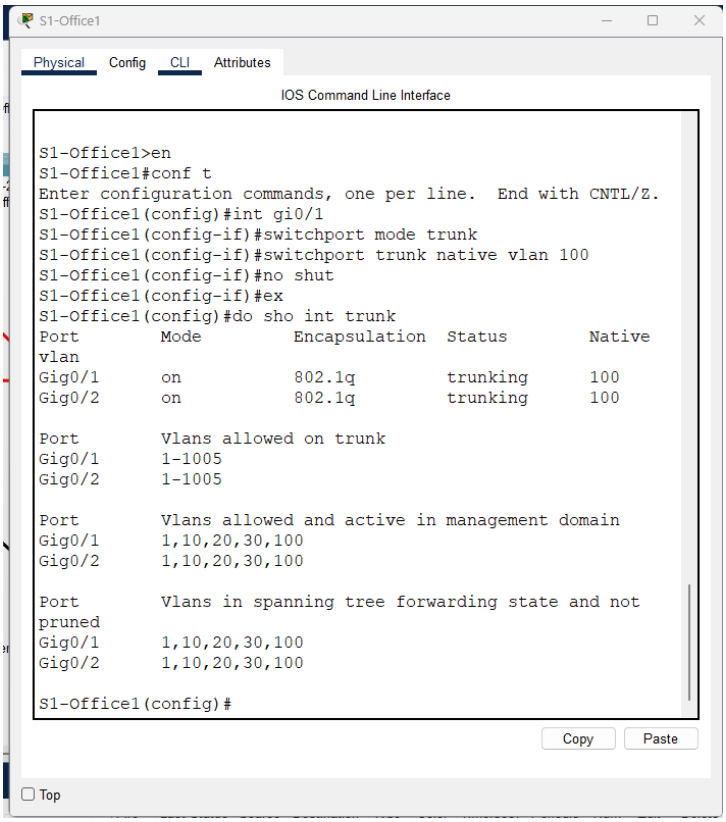
5.do sho run



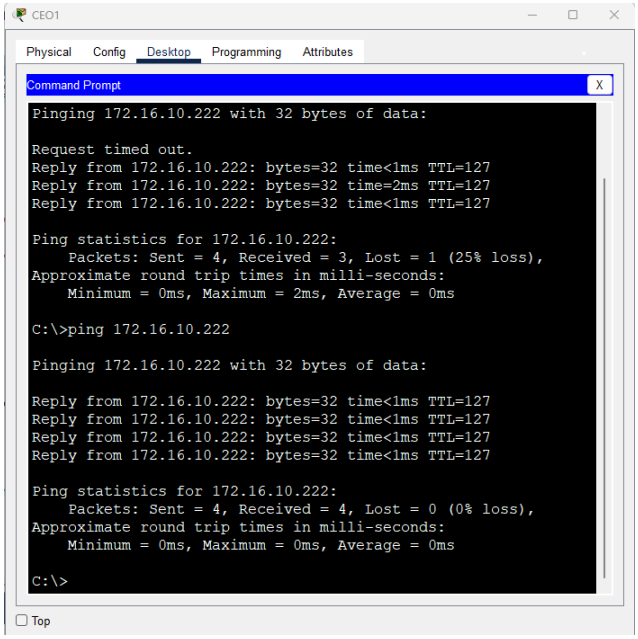
6. **On S1-Office1 & S2-Office1**

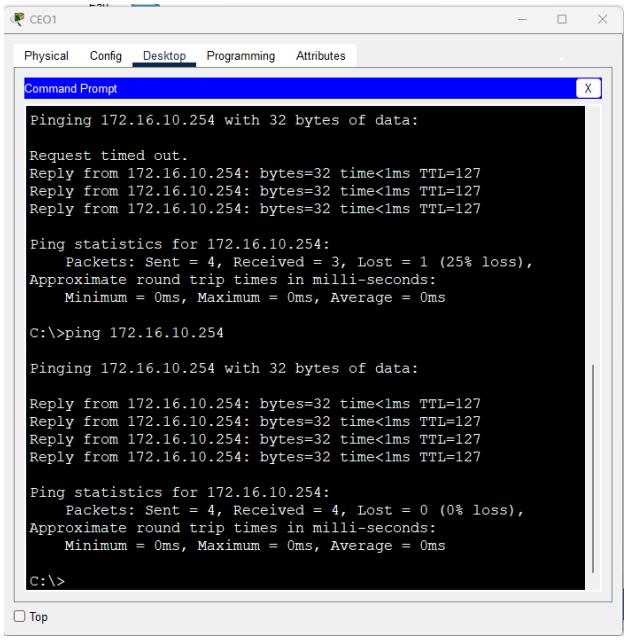
en
conf t
int gi0/1
switchport mode trunk
switchport trunk native vlan 100
no shut
ex

7. On S1-Office1: do sho int trunk



8. I was able to successfully ping Copywriter1 (172.16.10.222) and Dialer1 (172.16.10.254) from the CEO1 PC





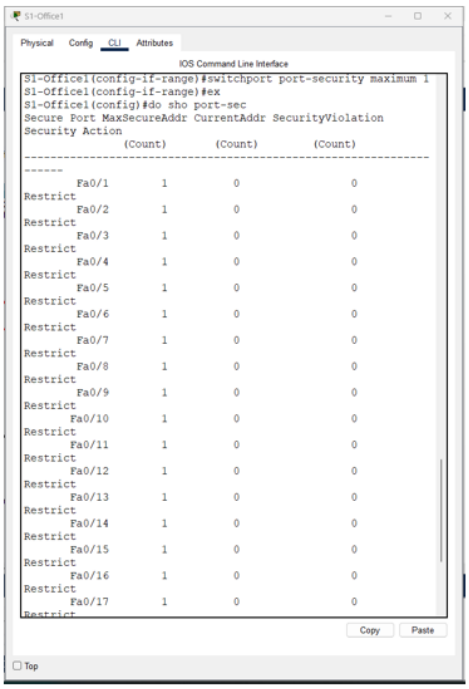
Lab Task 5: Secure Switch Physical Ports

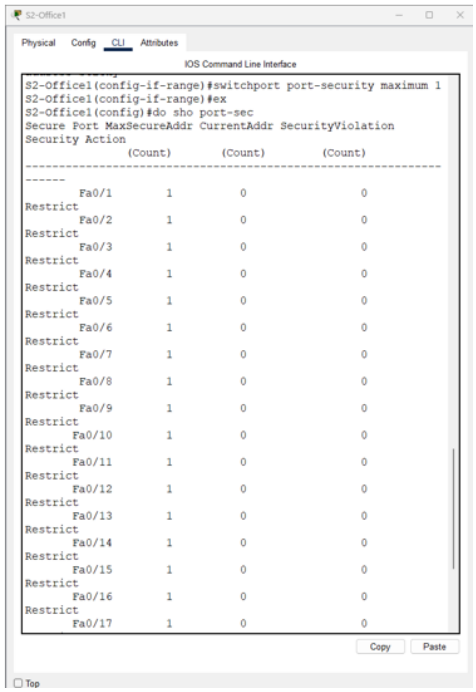
S1-Office1 and S2-Office1

1. en
   conf t
   int range fa0/1-24
   switchport port-security
   switchport port-security violation restrict

2. switchport port-security mac-address sticky
   switchport port-security maximum 1
   ex

3. do sho port-sec





4. On S1-Office1

```
int range fa0/2-10
shut
ex
int range fa0/12-20
shut
ex
int range fa0/22-24
shut
ex
do wr
```

On S2-Office1:

```
int range fa0/2-10
shut
ex
int range fa0/12-20
shut
ex
int range fa0/22-24
shut
ex
int gi0/2
shut
ex
do wr
```

Lab Task 6: Configure OSPF

1.R1, R2,R3

```
en
conf t
int se0/0/0
no shut
ex
int se0/0/1
no shut
ex
```

2. On R3 only:

```
int range gi0/0-1
no shut
ex
```

3.R1, R2,R3

```
router ospf 1
auto-cost reference-bandwidth 1000
```

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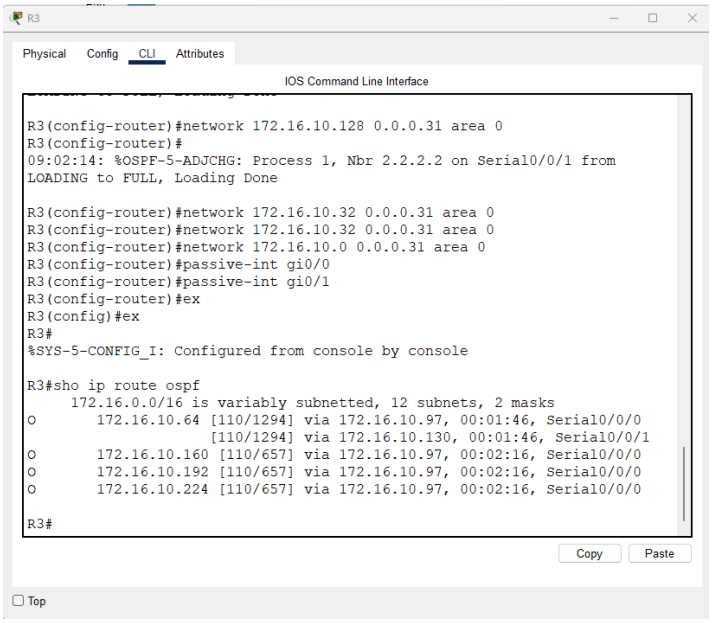
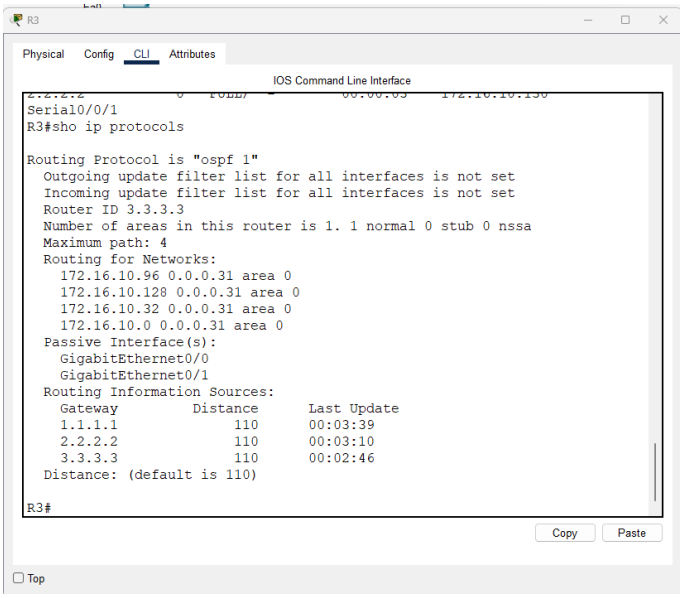
On R1:
router-id 1.1.1.1
network 172.16.10.64 0.0.0.31 area 0
network 172.16.10.96 0.0.0.31 area 0
network 172.16.10.160 0.0.0.31 area 0
network 172.16.10.192 0.0.0.31 area 0
network 172.16.10.224 0.0.0.31 area 0
On R2:
router-id 2.2.2.2
network 172.16.10.64 0.0.0.31 area 0
network 172.16.10.128 0.0.0.31 area 0
On R3:
router-id 3.3.3.3
network 172.16.10.96 0.0.0.31 area 0
network 172.16.10.128 0.0.0.31 area 0
network 172.16.10.32 0.0.0.31 area 0
network 172.16.10.0 0.0.0.31 area 0

4.On R1
passive-int gi0/0
passive-int gi0/0.10
passive-int gi0/0.20
passive-int gi0/0.30

On R3:
passive-int gi0/0
passive-int gi0/1

5 ex
ex
sho ip route ospf
sho ip ospf neighbor
sho ip protocols
wr





Lab Task 7: Extended ACL

R3
1. en
conf t
access-list 100 deny ip host 172.16.10.62 host 172.16.10.29
access-list 100 permit ip any any
int gi0/1
ip access-group 100 in
ex

2. ex
sho access-lists
sho run
wr

3. From the Guest PC, I was able to ping the email server and NTP Server
(Still need to figure this out)

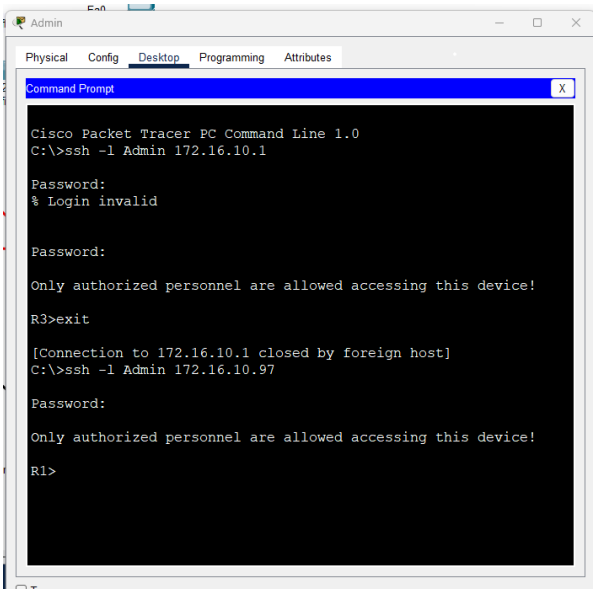
Lab Task 8: Initial and Security Settings for Network Devices

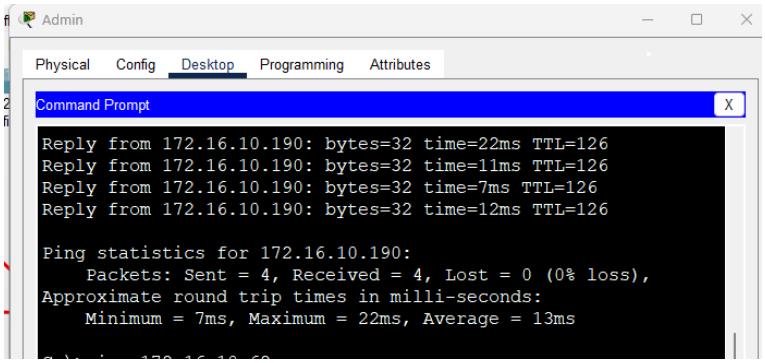
On All Routers and Switches
From 1to 5
en
conf t
username Admin password ACDC1973
line console 0
login local
exit
enable password beatles1960

service password-encryption
banner motd #Only authorized personnel are allowed accessing this device!#
ex
wr
ex

Lab Task 9: Secure Remote Access
R1,R2,R3

1. ip domain-name Cyber.com
2. crypto key generate rsa
   2048
3. ip ssh version 2
4. line vty 0 4
   login local
   motd-banner
   transport input ssh
   exit
5. ex
   sho ip ssh
   sho run
   wr
6. Using the command ssh -l Admin IP-Address, I was able to successfully SSH into the routers
7. From the Admin PC, I was able to successfully ping CEO1 and Employee1
8. From Employee2 Pc, I was able to successfully ping Copywriter1 and Dialer1





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