Lab Task 1: Design an IP Address Scheme.

Jakub Jędrzejczak

1.

Subnet Number	Network Address	Usable Host address Range	Broadcast Address
1.	172.16.10.0/27	*172.16.10.1-30*	172.16.10.31
2.	172.16.10.32/27	172.16.10.1-62	172.16.10.63
3.	172.16.10.64/27	172.16.10.65-94	172.16.10.95
4.	172.16.10.96/27	172.16.10.97-126	172.16.10.127
5.	172.16.10.128/27	172.16.10.129-158	172.16.10.159
6.	172.16.10.160/27	172.16.10.161-190	172.16.10.191
7.	172.16.10.192/27	172.16.10.193-222	172.16.10.223
8.	172.16.10.224/27	172.16.10.225-254	172.16.10.255

2.

Nowa maska podsieci to 255.255.255.224 lub /27.

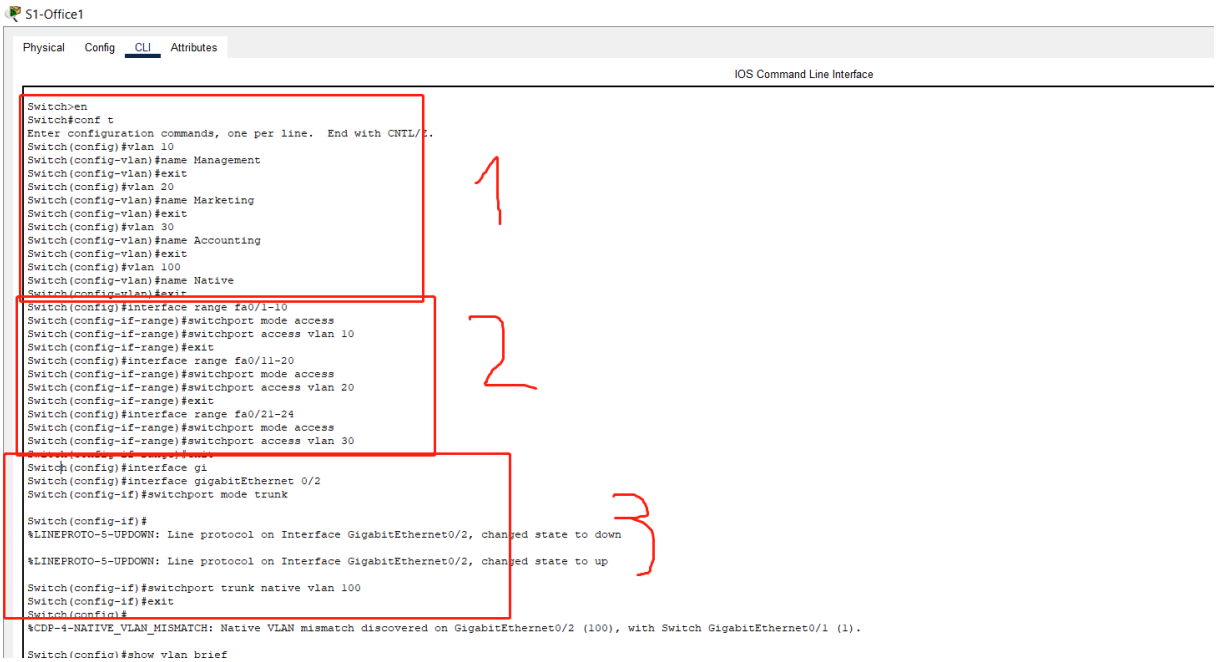
3.

Z pozostałymi 5 bitami hosta (2^5 = 32) i odejmując adresy sieciowe i rozgłoszeniowe, pozostaje 30 użytecznych adresów hosta na podsieć.

Lab Task2: Implement VLANs and Trunk.

1-5.

S1-Office1




```
Switch#show vlan brief

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Gig0/1
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
Switch#show interfaces trunk
Port        Mode         Encapsulation  Status        Native vlan
Gig0/2      on           802.1q         trunking      100

Port        Vlans allowed on trunk
Gig0/2      1-1005

Port        Vlans allowed and active in management domain
Gig0/2      1,10,20,30,100

Port        Vlans in spanning tree forwarding state and not pruned
Gig0/2      10,20,30

Switch#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (100), with Switch GigabitEthernet0/

Switch#copy run
Switch#copy running-config st
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

4

```
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface range fa0/1-10, fa0/11-20, fa0/21-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport nonegotiate
Switch(config-if-range)#A
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (100), with Switch GigabitEthernet0/1 (1).

%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/2 (100), with Switch GigabitEthernet0/1 (1).
```

5

S2-Office1

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name Management
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name Marketing
Switch(config-vlan)#exit
Switch(config)#vlan 30
Switch(config-vlan)#name Accounting
Switch(config-vlan)#exit
Switch(config)#vlan 100
Switch(config-vlan)#name Native
Switch(config-vlan)#exit
Switch(config)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (1), with Switch GigabitEthernet0/2 (
```

1

```
Switch(config)#interface range fa0/1-10
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#interface range fa0/11-20
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#interface range fa0/21-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 30
Switch(config-if-range)#exit
```

2

```
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interg
Switch(config)#interf
Switch(config)#interface gig
Switch(config)#interface gigabitEthernet 0/1
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on GigabitEthernet0/1 (1), with Switch GigabitEthernet0/2 (100).

Switch(config-if)#switchport mode turnk
                                  ^
% Invalid input detected at '^' marker.

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)#switchport trunk nstive vlan 100
                                  ^
% Invalid input detected at '^' marker.

Switch(config-if)#switchport trunk native vlan 100
Switch(config-if)#exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
copy run
Switch#copy running-config s
Switch#copy running-config st
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#show vlan brief
```

3

4

```
[OK]
Switch#show 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
Switch#show int
Switch#show interfaces tr
Switch#show interfaces 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
```

```
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface range fa0/1-10, fa0/11-20, fa0/21-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport nonegotiate
Switch(config-if-range)#exit
Switch(config)#
```

Lab Task 3: Assign IP Addresses.

1.

R3

```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#inter
Router(config)#interface gig
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip address 172.16.10.1 255.255.255.224
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#
```

2.

R3

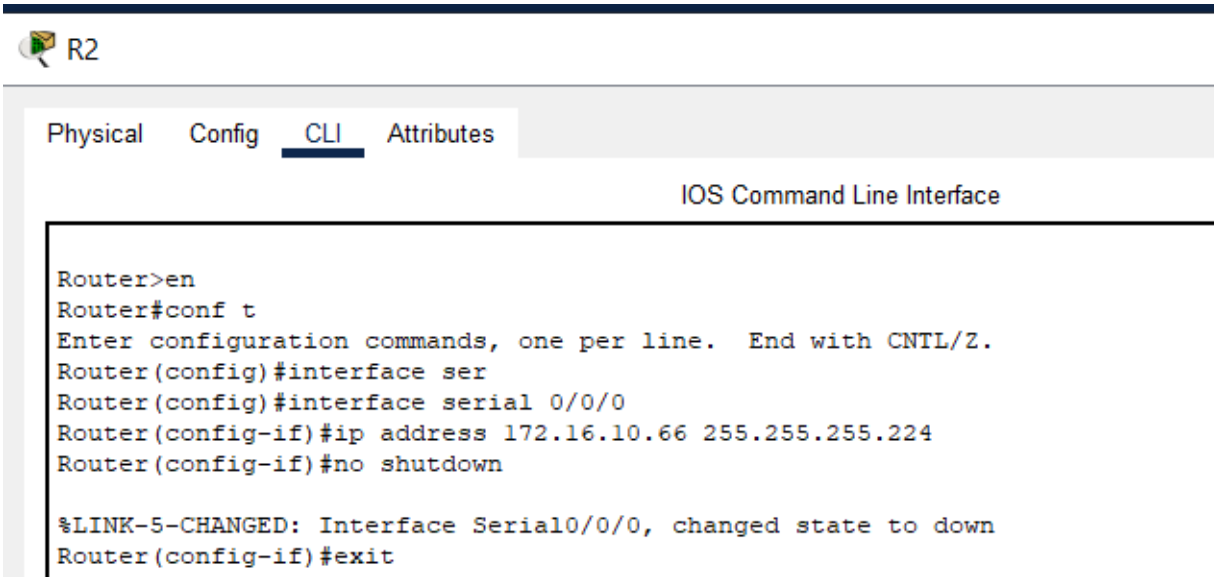
```
Router(config)#inter
Router(config)#interface gig
Router(config)#interface gigabitEthernet 0/1
Router(config-if)#ip address 172.16.10.33 255.255.255.224
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if)#exit
Router(config)#
```

3.

R1

```
Router(config)#
Router(config)#interface ser
Router(config)#interface serial 0/0/0
Router(config-if)#ip address 172.16.10.65 255.255.255.224
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Router(config-if)#exit
Router(config)#
```

R2



4.

R1

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to

Router(config)#
Router(config)#interface ser
Router(config)#interface serial 0/0/1
Router(config-if)#ip address 172.16.10.97 255.255.255.224
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Router(config-if)#exit
Router(config)#
```

R3

```
Router(config)#
Router(config)#interface seri
Router(config)#interface serial 0/0/1
Router(config-if)#ip adress 172.16.10.98 255.255.255.224
                     ^
% Invalid input detected at '^' marker.

Router(config-if)#ip address 172.16.10.98 255.255.255.224
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
Router(config-if)#no shutdown
Router(config-if)#shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to administratively down
Router(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
Router(config-if)#exit
Router(config)#
```

5.

R2

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to

Router(config)#interfac
Router(config)#interface seri
Router(config)#interface serial 0/0/1
Router(config-if)#ip address 172.16.10.129 255.255.255.224
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Router(config-if)#exit
Router(config)#
```

R3

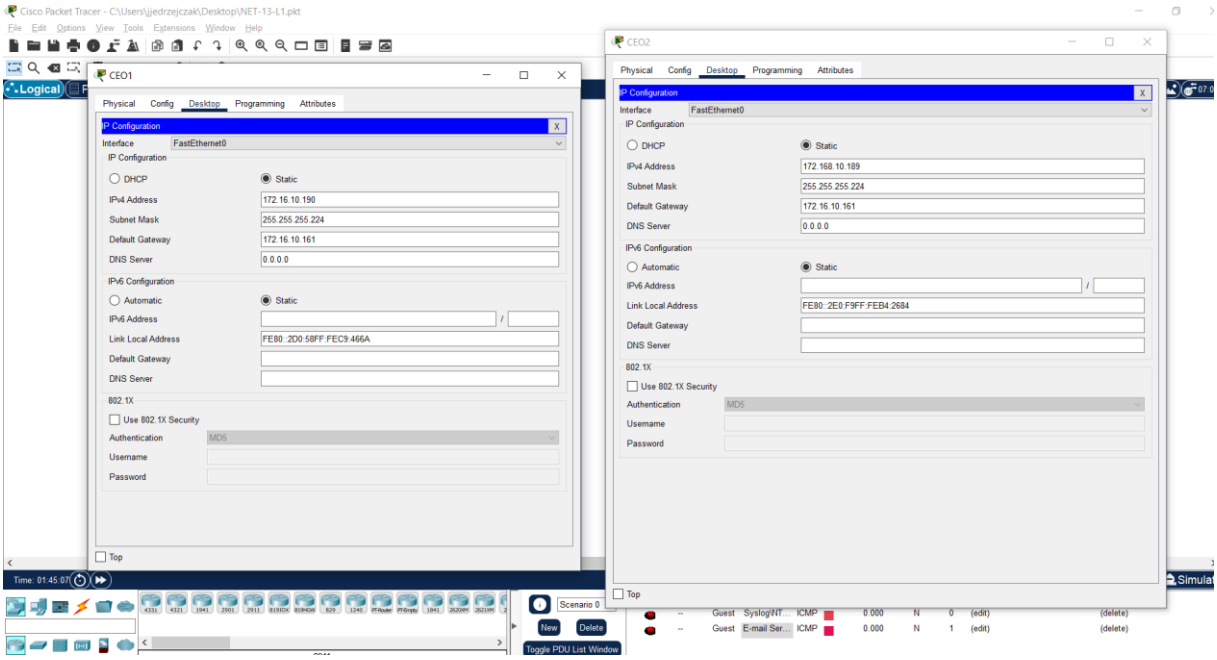
R3

Physical Config CLI Attributes

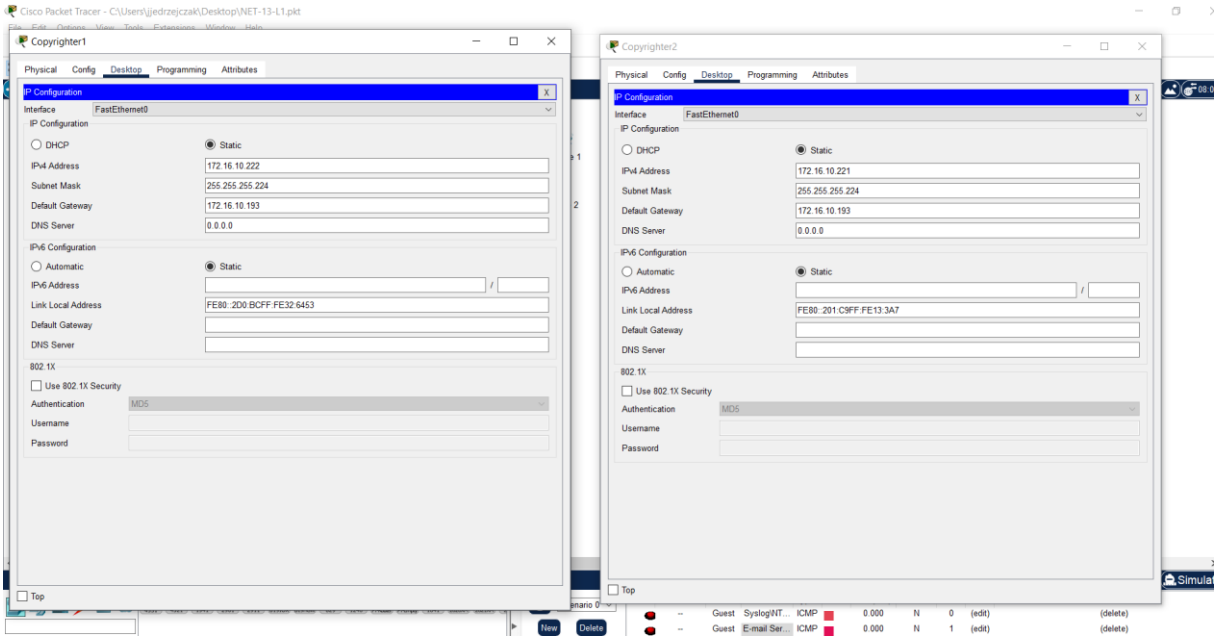
IOS Command Line Interface

```
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to down
Router(config-if)#exit
Router(config)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up

Router(config)#inter
Router(config)#interface seria
Router(config)#interface serial /0/0/1
                                ^
% Invalid input detected at '^' marker.

Router(config)#ip address 172.16.10.130 255.255.255.224
                  ^
% Invalid input detected at '^' marker.

Router(config)#no shutdown
                  ^
% Invalid input detected at '^' marker.

Router(config)#interface serial /0/0/1
                                ^
% Invalid input detected at '^' marker.

Router(config)#interface serial 0/0/1
Router(config-if)#ip address 172.16.10.130 255.255.255.224
Router(config-if)#no shutdown
Router(config-if)#shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to down
no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Router(config-if)#exit
Router(config)#
```

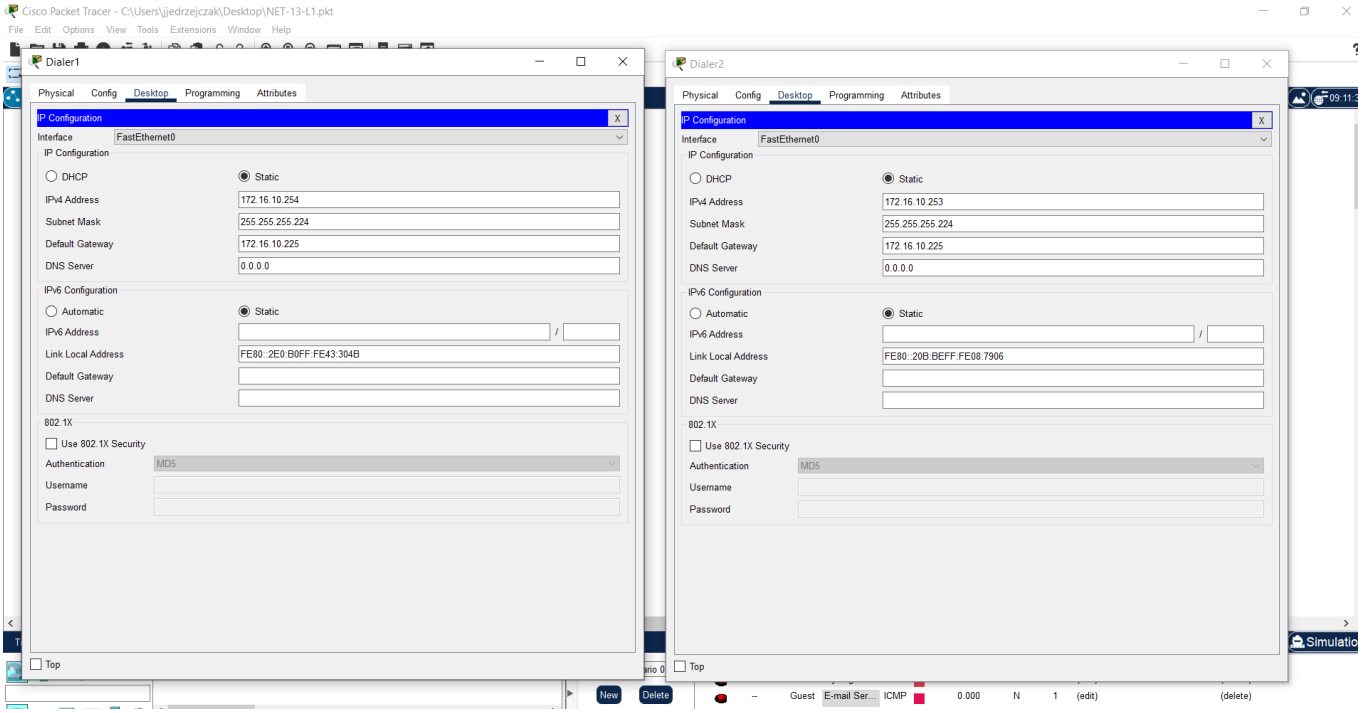
6.


Cisco Packet Tracer - C:\Users\jjedrzejczak\Desktop\NET-13-L1.pkt
CEO1
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address 172.16.10.190
Subnet Mask 255.255.255.224
Default Gateway 172.16.10.161
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::2D0:58FF:FEC9:466A
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Username
Password
Top
CEO2
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address 172.168.10.189
Subnet Mask 255.255.255.224
Default Gateway 172.16.10.161
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::2E0:F9FF:FEB4:2684
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Username
Password
Top
Time: 01:45:07
Scenario 0
New
Delete
Toggle PDU List Window
Guest Syslog/NT... ICMP 0.000 N 0 (edit) (delete)
Guest E-mail Ser... ICMP 0.000 N 1 (edit) (delete)

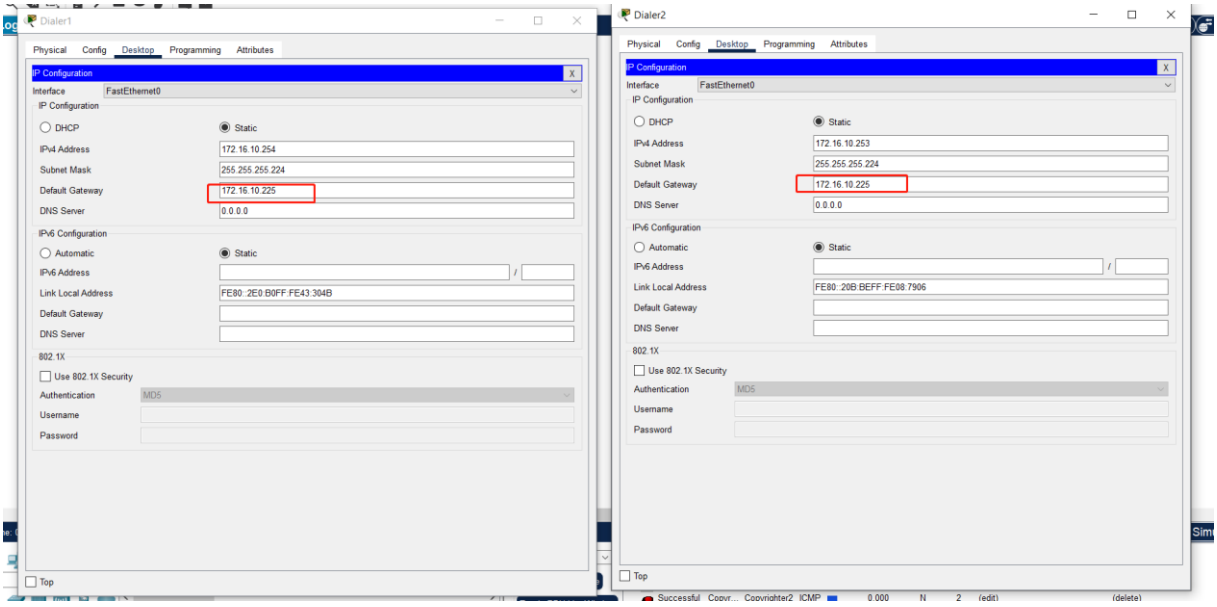
7.


Cisco Packet Tracer - C:\Users\jjedrzejczak\Desktop\NET-13-L1.pkt
Copyrighter1
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address 172.16.10.222
Subnet Mask 255.255.255.224
Default Gateway 172.16.10.193
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::2D0:BCFF:FE32:6453
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Username
Password
Top
Copyrighter2
Physical Config Desktop Programming Attributes
IP Configuration
Interface FastEthernet0
IP Configuration
DHCP
Static
IPv4 Address 172.16.10.221
Subnet Mask 255.255.255.224
Default Gateway 172.16.10.193
DNS Server 0.0.0.0
IPv6 Configuration
Automatic
Static
IPv6 Address
Link Local Address FE80::201:C9FF:FE13:3A7
Default Gateway
DNS Server
802.1X
Use 802.1X Security
Authentication MD5
Username
Password
Top
New
Delete
Guest Syslog/NT... ICMP 0.000 N 0 (edit) (delete)
Guest E-mail Ser... ICMP 0.000 N 1 (edit) (delete)

8.

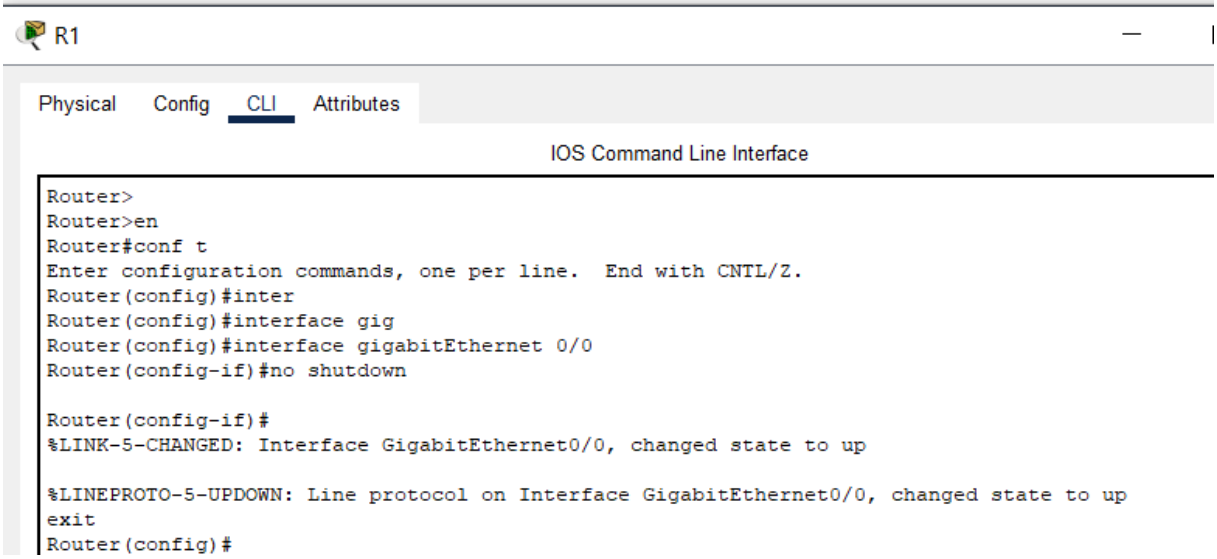


9.

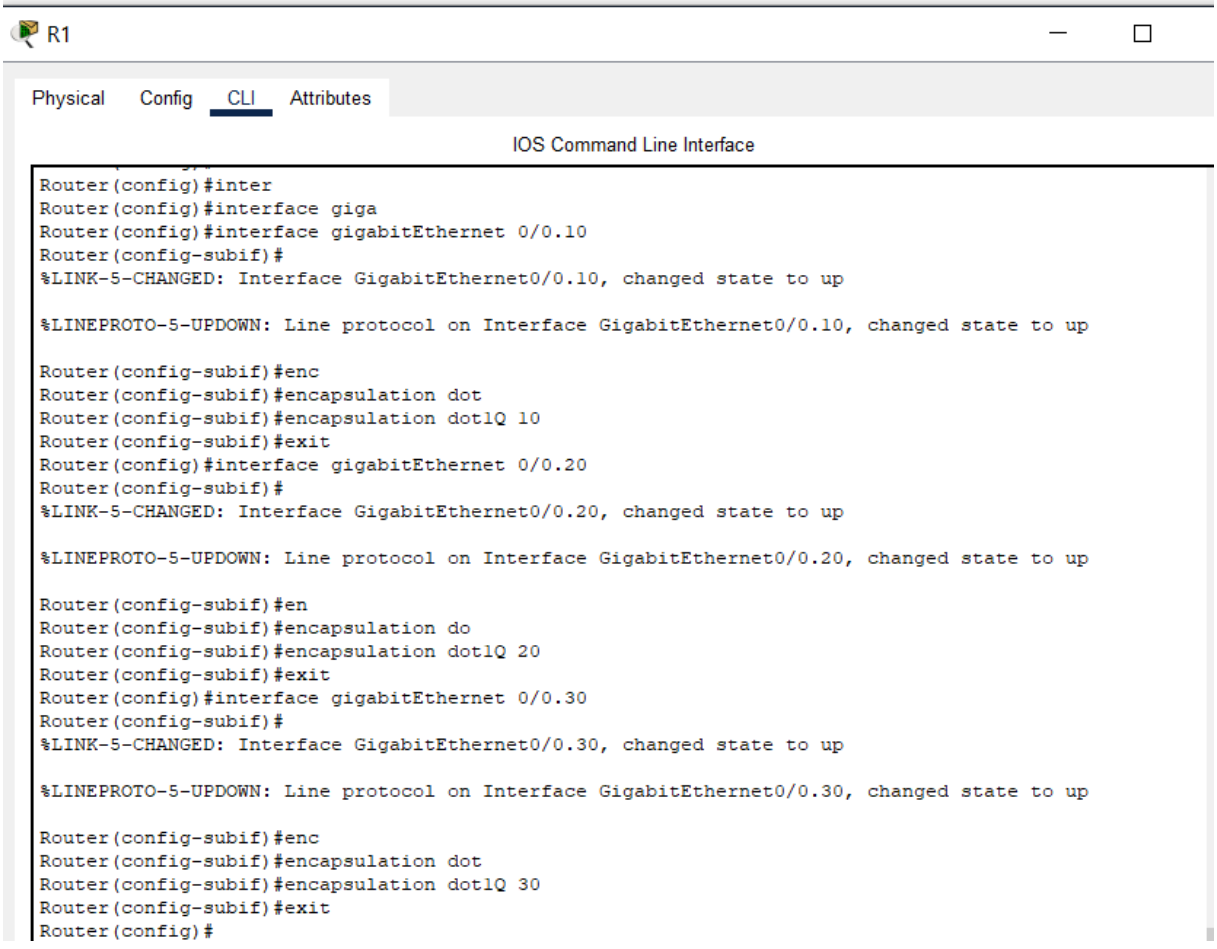


Lab Task 4: Configure R1 for Inter-VLAN Routing.

1.


R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#inter
Router(config)#interface gig
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
exit
Router(config)#

2.


R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router(config)#inter
Router(config)#interface giga
Router(config)#interface gigabitEthernet 0/0.10
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.10, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.10, changed state to up
Router(config-subif)#enc
Router(config-subif)#encapsulation dot
Router(config-subif)#encapsulation dot1Q 10
Router(config-subif)#exit
Router(config)#interface gigabitEthernet 0/0.20
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.20, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.20, changed state to up
Router(config-subif)#en
Router(config-subif)#encapsulation do
Router(config-subif)#encapsulation dot1Q 20
Router(config-subif)#exit
Router(config)#interface gigabitEthernet 0/0.30
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0.30, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0.30, changed state to up
Router(config-subif)#enc
Router(config-subif)#encapsulation dot
Router(config-subif)#encapsulation dot1Q 30
Router(config-subif)#exit
Router(config)#

3-4.

```
Router(config)#
Router(config)#
Router(config)#interface gigabitEthernet 0/0.10
Router(config-subif)#ip address 172.16.10.161 255.255.255.224
Router(config-subif)#exit
Router(config)#interface gigabitEthernet 0/0.20
Router(config-subif)#ip address 172.16.10.193 255.255.255.224
Router(config-subif)#exit
Router(config)#interface gigabitEthernet 0/0.30
Router(config-subif)#ip address 172.16.10.225 255.255.255.224
Router(config-subif)#exit
Router(config)#
```

5.

R1

Physical Config CLI Attributes

```
Router(config)#
Router(config)#
Router(config)#
Router(config)#do show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0     unassigned      YES NVRAM  up                    up
GigabitEthernet0/0.10  172.16.10.161   YES manual up                    up
GigabitEthernet0/0.20  172.16.10.193   YES manual up                    up
GigabitEthernet0/0.30  172.16.10.225   YES manual up                    up
GigabitEthernet0/1     unassigned      YES NVRAM  administratively down down
Serial0/0/0            172.16.10.65    YES manual up                    up
Serial0/0/1            172.16.10.97    YES manual up                    up
Vlan1                  unassigned      YES unset  administratively down down
Router(config)#do show interface GigabitEthernet 0/0.10
GigabitEthernet0/0.10 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0001.6427.4901 (bia 0001.6427.4901)
  Internet address is 172.16.10.161/27
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 10
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never

Router(config)#do show interface GigabitEthernet 0/0.20
GigabitEthernet0/0.20 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0001.6427.4901 (bia 0001.6427.4901)
  Internet address is 172.16.10.193/27
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 20
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never

Router(config)#do show interface GigabitEthernet 0/0.30
GigabitEthernet0/0.30 is up, line protocol is up (connected)
  Hardware is PQUICC_FEC, address is 0001.6427.4901 (bia 0001.6427.4901)
  Internet address is 172.16.10.225/27
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation 802.1Q Virtual LAN, Vlan ID 30
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last clearing of "show interface" counters never
```

6.

S1-Office1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interf
Switch(config)#interface gig
Switch(config)#interface gigabitEthernet 0/1
Switch(config-if)#switc
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)#switchpor
Switch(config-if)#switchport trunk native vlan 100
Switch(config-if)#exit
Switch(config)#interface gigabitEthernet 0/2
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport trunk native vlan 100
Switch(config-if)#exit
```

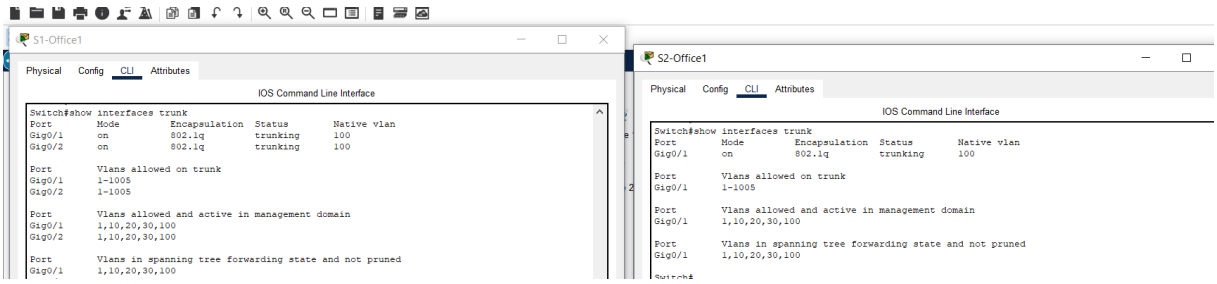
S2-Office1

Physical Config CLI Attributes

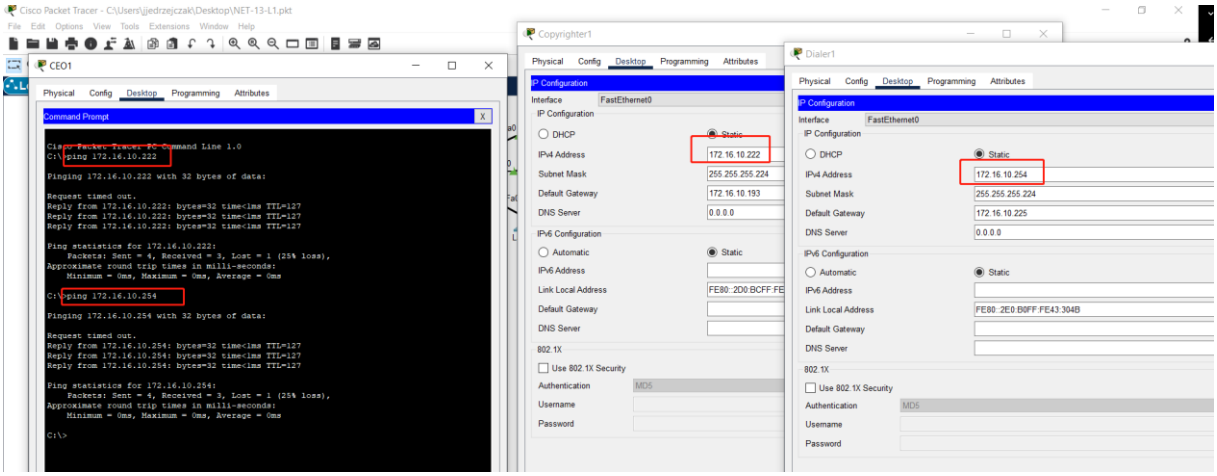
IOS Command Line Interface

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#inter
Switch(config)#interface gigab
Switch(config)#interface gigabitEthernet 0/1
Switch(config-if)#switch
Switch(config-if)#switchport mode trunk
Switch(config-if)#swicth
Switch(config-if)#swicth trunk native vlan 100
                  ^
% Invalid input detected at '^' marker.

Switch(config-if)#switch trunk native vlan 100
Switch(config-if)#switchport trunk native vlan 100
Switch(config-if)#exit
```

7.

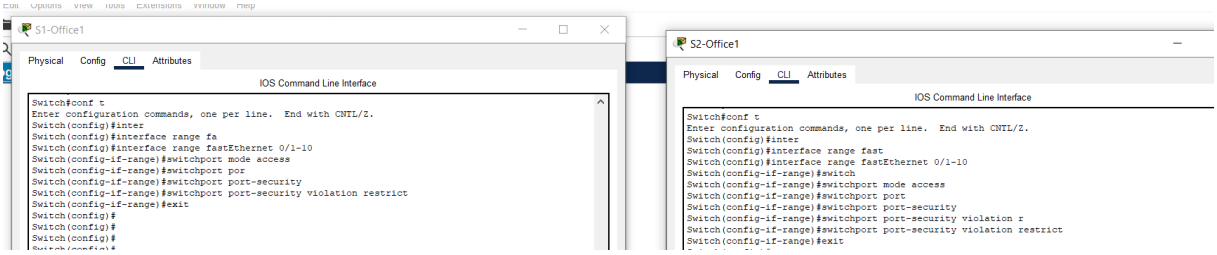


8.

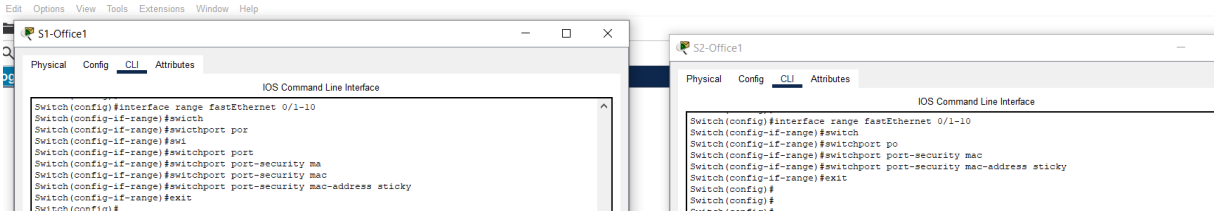


Lab Task5: Secure Switch Physical Ports.

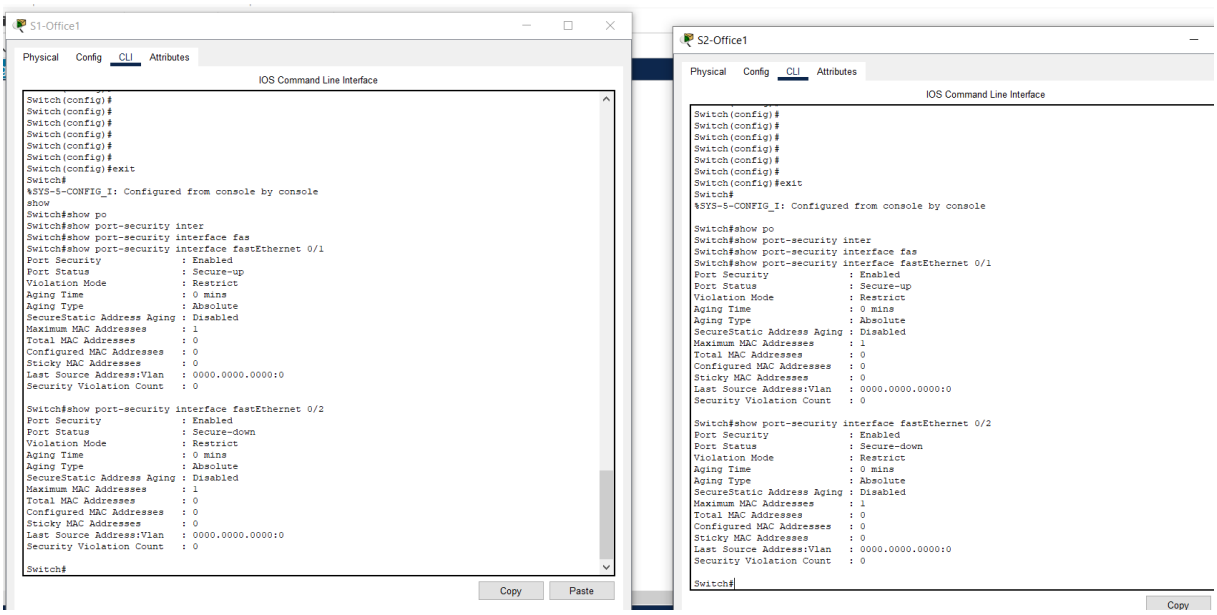
1.



2.



3.


S1-Office1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
show
Switch#show po
Switch#show port-security inter
Switch#show port-security interface fas
Switch#show port-security interface fastEthernet 0/1
Port Security : Enabled
Port Status : Secure-up
Violation Mode : Restrict
Aging Time : 0 mins
Aging Type : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses : 1
Total MAC Addresses : 0
Configured MAC Addresses : 0
Sticky MAC Addresses : 0
Last Source Address:Vlan : 0000.0000.0000:0
Security Violation Count : 0
Switch#show port-security interface fastEthernet 0/2
Port Security : Enabled
Port Status : Secure-down
Violation Mode : Restrict
Aging Time : 0 mins
Aging Type : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses : 1
Total MAC Addresses : 0
Configured MAC Addresses : 0
Sticky MAC Addresses : 0
Last Source Address:Vlan : 0000.0000.0000:0
Security Violation Count : 0
Switch#
Copy
Paste
S2-Office1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#show po
Switch#show port-security inter
Switch#show port-security interface fas
Switch#show port-security interface fastEthernet 0/1
Port Security : Enabled
Port Status : Secure-up
Violation Mode : Restrict
Aging Time : 0 mins
Aging Type : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses : 1
Total MAC Addresses : 0
Configured MAC Addresses : 0
Sticky MAC Addresses : 0
Last Source Address:Vlan : 0000.0000.0000:0
Security Violation Count : 0
Switch#show port-security interface fastEthernet 0/2
Port Security : Enabled
Port Status : Secure-down
Violation Mode : Restrict
Aging Time : 0 mins
Aging Type : Absolute
SecureStatic Address Aging : Disabled
Maximum MAC Addresses : 1
Total MAC Addresses : 0
Configured MAC Addresses : 0
Sticky MAC Addresses : 0
Last Source Address:Vlan : 0000.0000.0000:0
Security Violation Count : 0
Switch#
Copy

4.

S1-Office1

Physical Config CLI Attributes

```
Switch(config)#interface range fastEthernet 0/1
Switch(config-if-range)#exit
Switch(config)#interface range fastEthernet 0/11-24
Switch(config-if-range)#shutdown


%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down


%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
Switch(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/21, changed state to down

Switch(config-if-range)#exit
Switch(config)#write memory
               ^
% Invalid input detected at '^' marker.

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

Switch#write memory
Building configuration...
[OK]
```

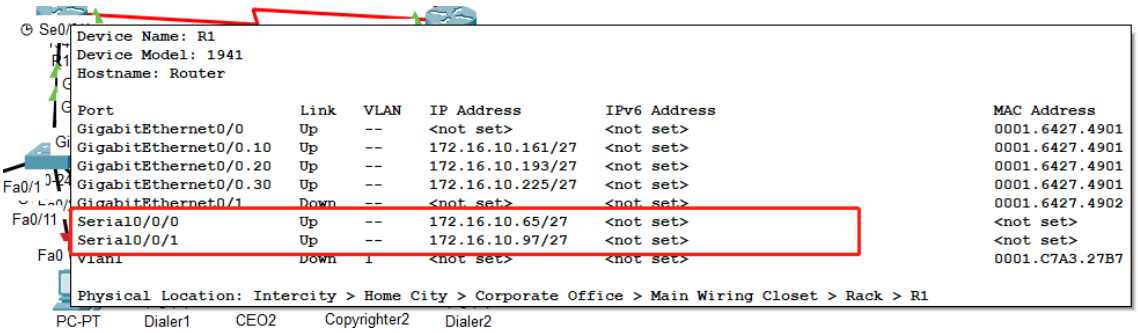
S2-Office1

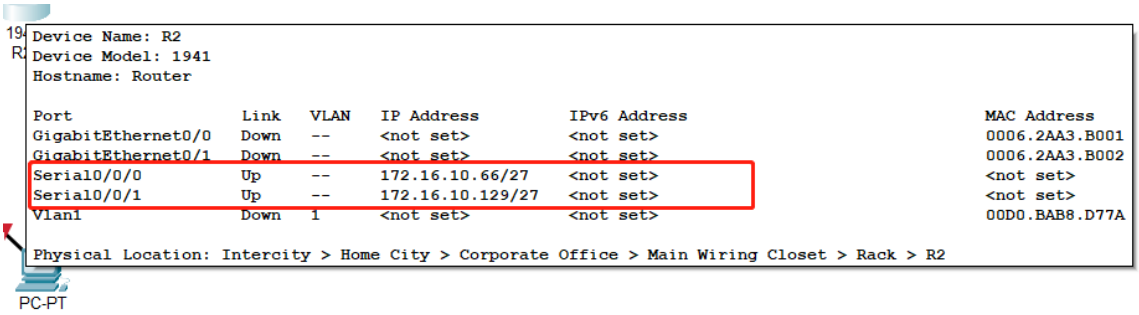
Physical Config CLI Attributes

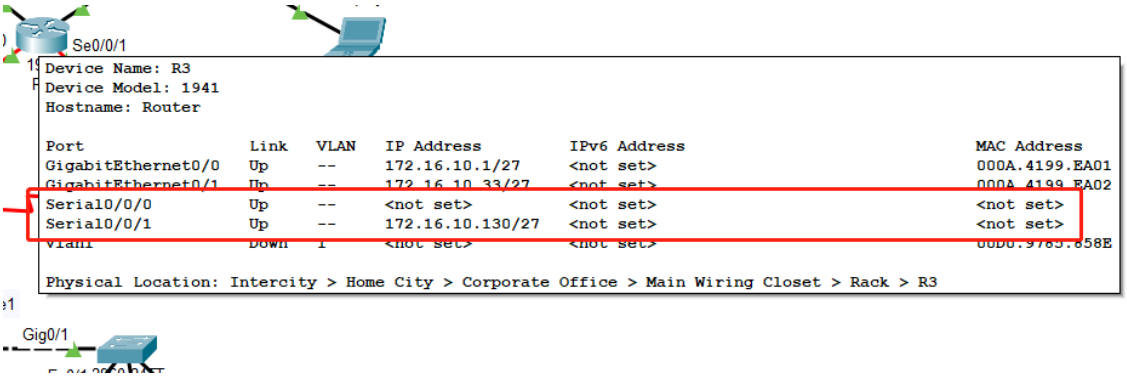
```
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#in
Switch(config)#interface ran
Switch(config)#interface range fa
Switch(config)#interface range fastEthernet 0/11-24
Switch(config-if-range)#shutdown


%LINK-5-CHANGED: Interface FastEthernet0/12, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/13, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/14, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/15, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/16, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/17, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/18, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/19, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/20, changed state to administratively down


%LINK-5-CHANGED: Interface FastEthernet0/22, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/23, changed state to administratively down

%LINK-5-CHANGED: Interface FastEthernet0/24, changed state to administratively down
Switch(config-if-range)#
%LINK-5-CHANGED: Interface FastEthernet0/11, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/11, changed state to down

%LINK-5-CHANGED: Interface FastEthernet0/21, changed state to administratively down

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/21, changed state to down
exit
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#write memory
Building configuration...
[OK]
Switch#
```

Lab Task 6: Configure OSPF。

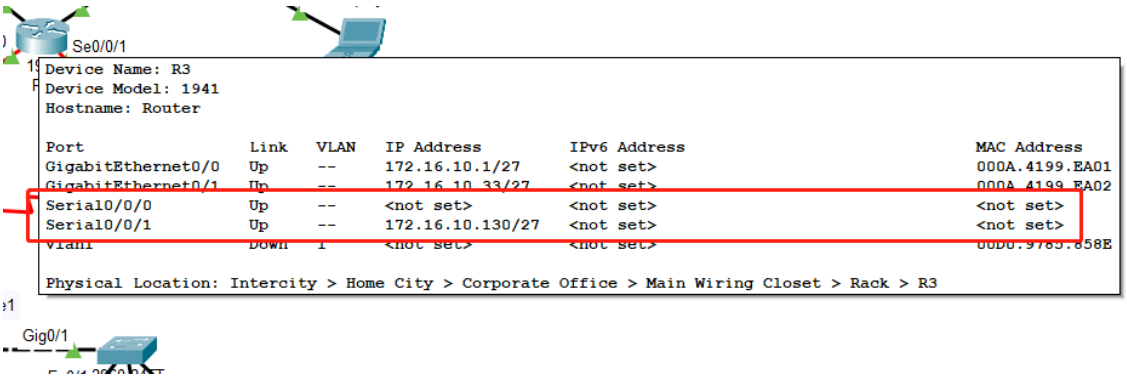
1.





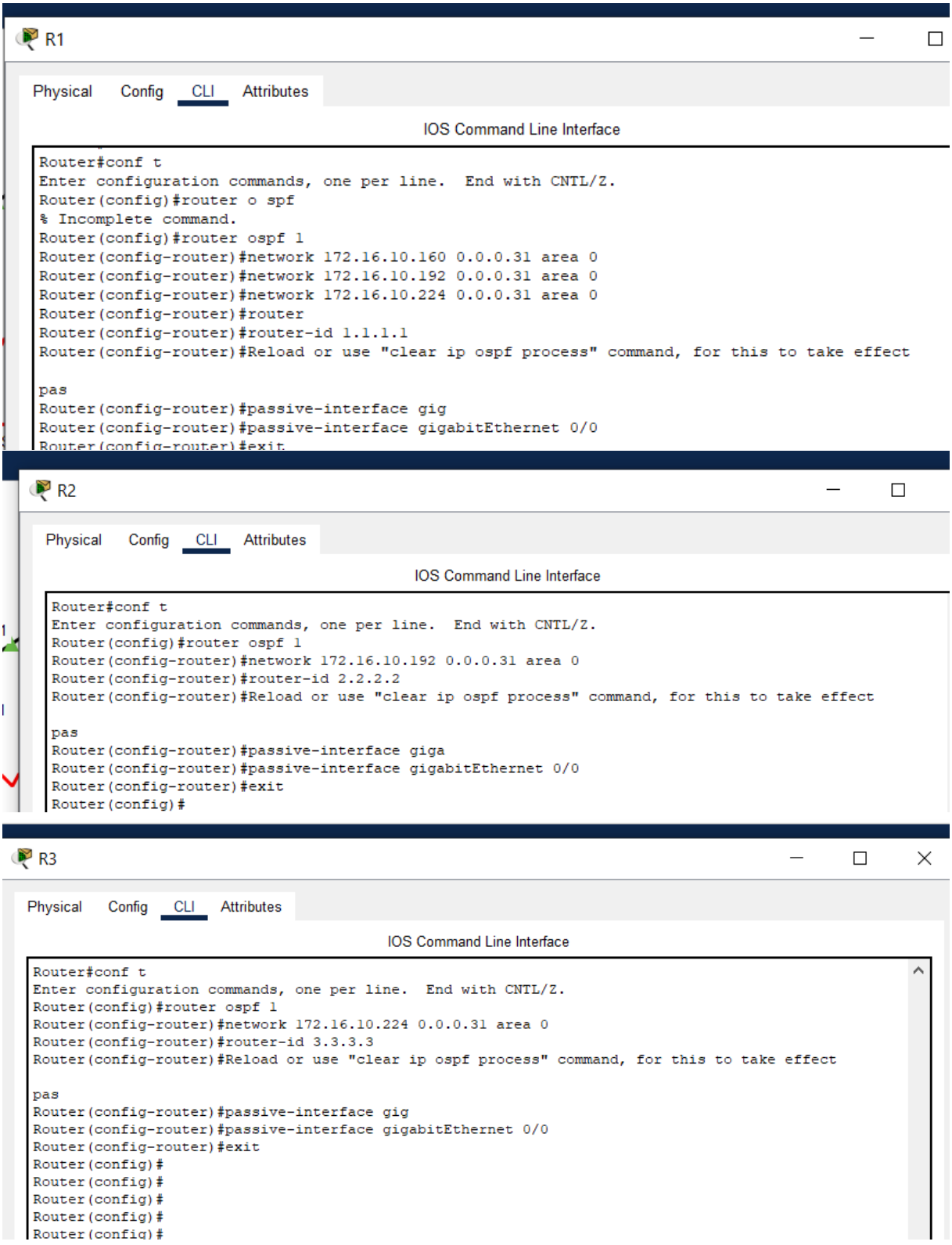


2.

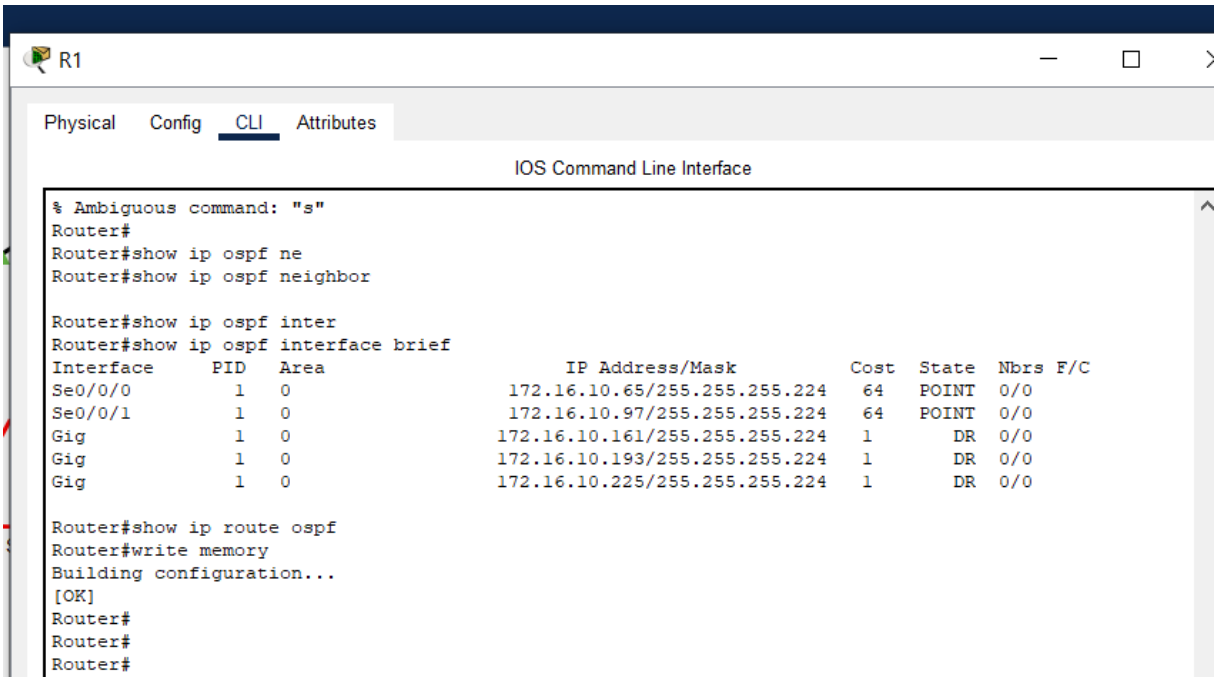


R3(config)# interface Serial0/0/0
R3(config-if)# no shutdown
R3(config-if)# exit
R3(config)# interface GigabitEthernet0/0
R3(config-if)# no shutdown
R3(config-if)# exit

3-4.

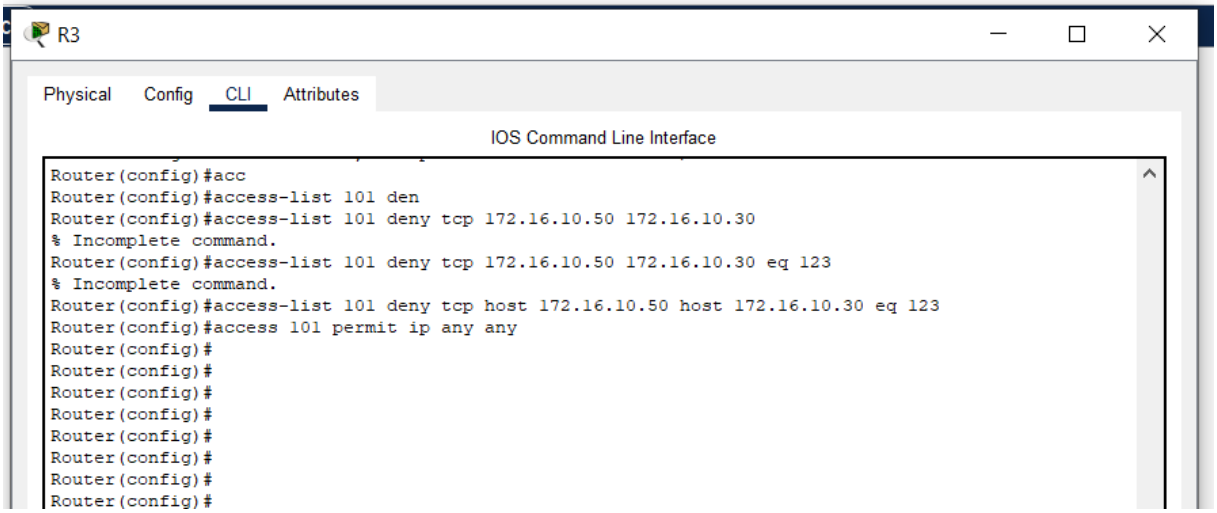

R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router o spf
% Incomplete command.
Router(config)#router ospf 1
Router(config-router)#network 172.16.10.160 0.0.0.31 area 0
Router(config-router)#network 172.16.10.192 0.0.0.31 area 0
Router(config-router)#network 172.16.10.224 0.0.0.31 area 0
Router(config-router)#router
Router(config-router)#router-id 1.1.1.1
Router(config-router)#Reload or use "clear ip ospf process" command, for this to take effect
pas
Router(config-router)#passive-interface gig
Router(config-router)#passive-interface gigabitEthernet 0/0
Router(config-router)#exit
R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 172.16.10.192 0.0.0.31 area 0
Router(config-router)#router-id 2.2.2.2
Router(config-router)#Reload or use "clear ip ospf process" command, for this to take effect
pas
Router(config-router)#passive-interface giga
Router(config-router)#passive-interface gigabitEthernet 0/0
Router(config-router)#exit
Router(config)#
R3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 172.16.10.224 0.0.0.31 area 0
Router(config-router)#router-id 3.3.3.3
Router(config-router)#Reload or use "clear ip ospf process" command, for this to take effect
pas
Router(config-router)#passive-interface gig
Router(config-router)#passive-interface gigabitEthernet 0/0
Router(config-router)#exit
Router(config)#
Router(config)#
Router(config)#
Router(config)#
Router(config)#

5.

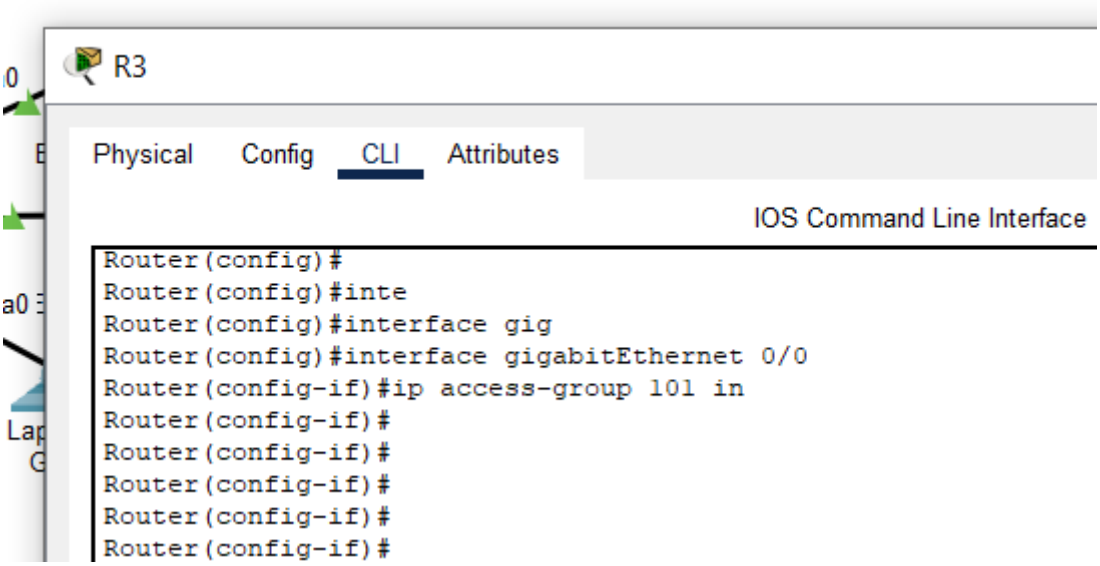


Lab Task 7: Extended ACL

1.



2.

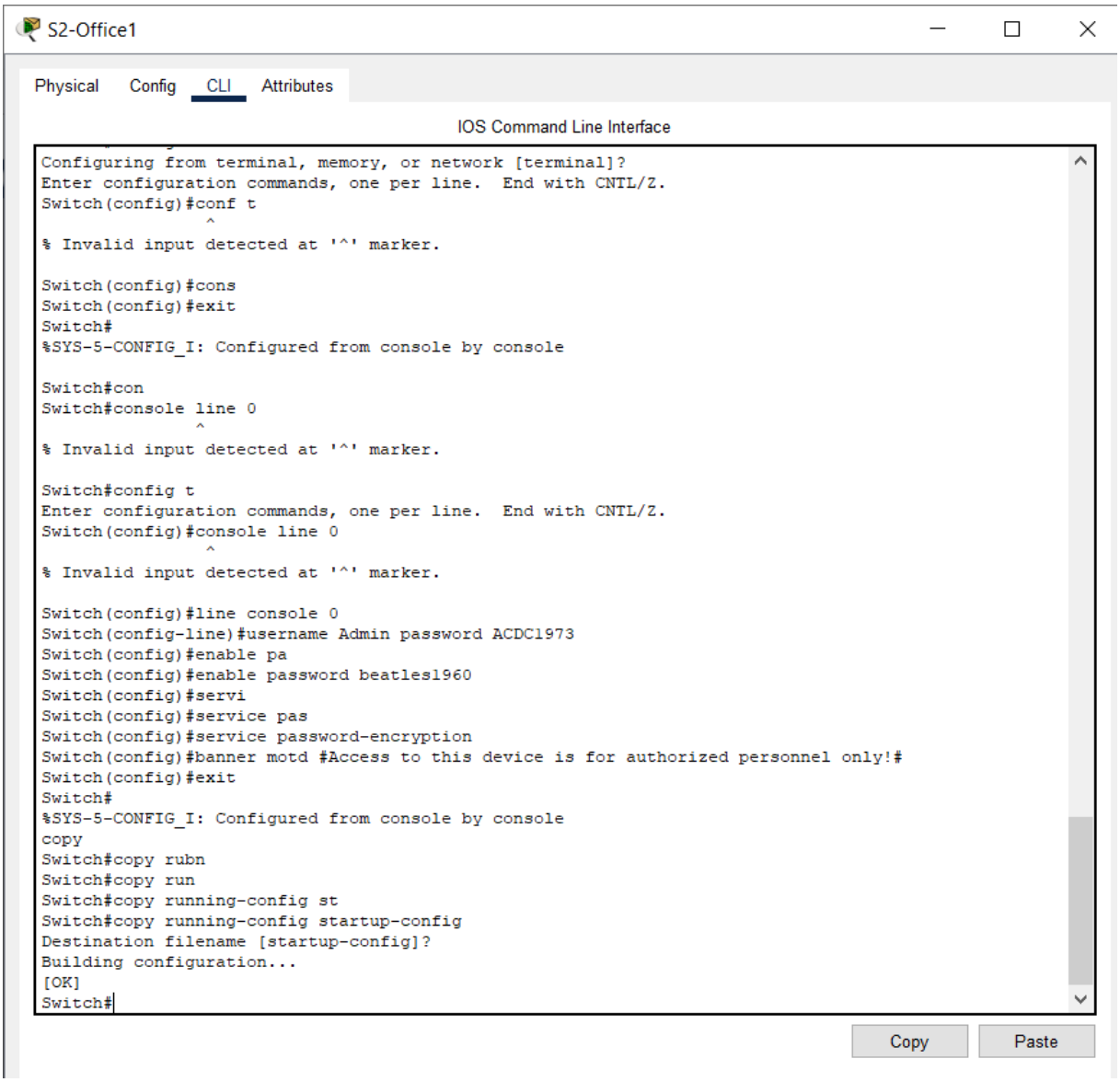


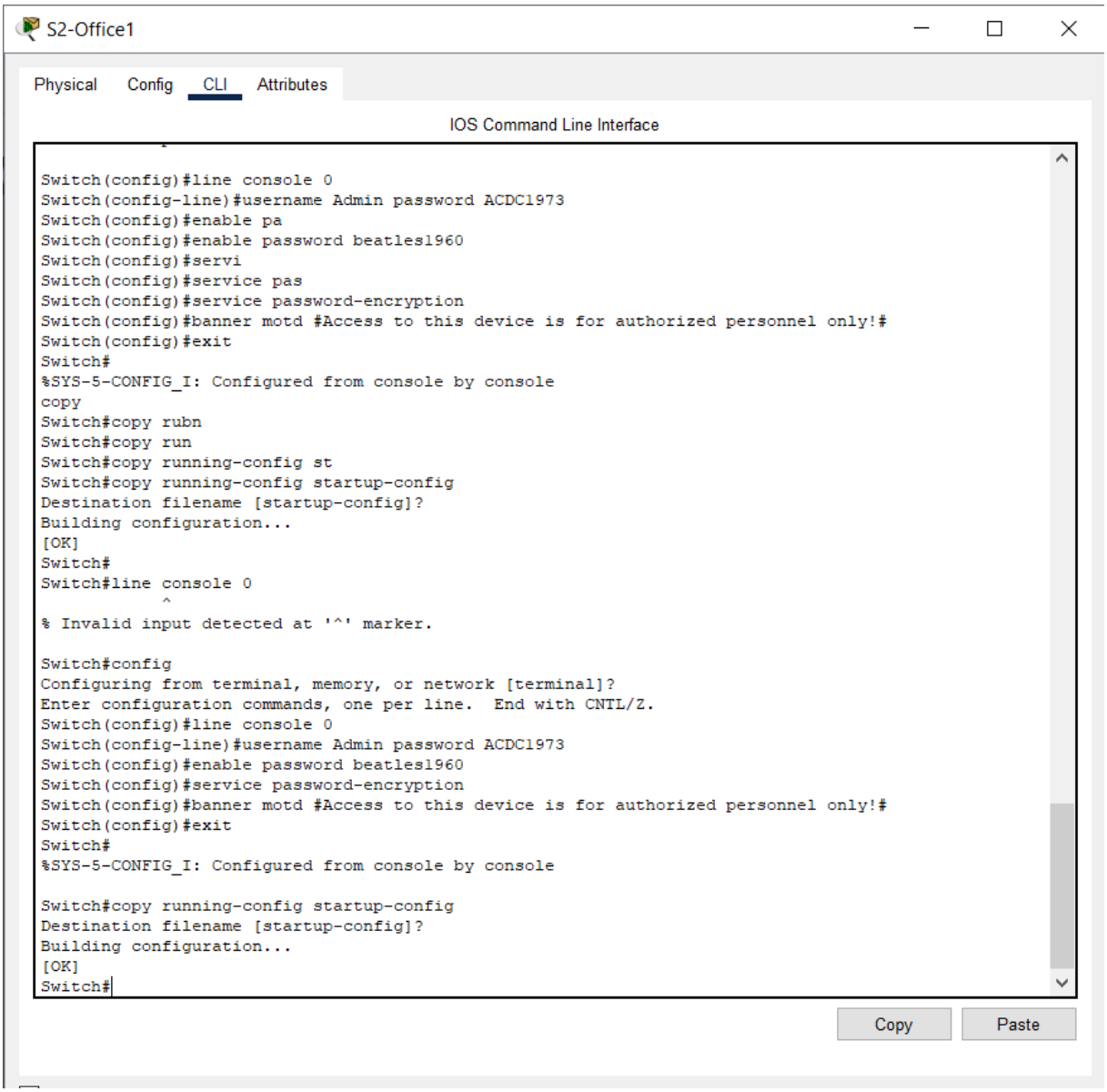
3.

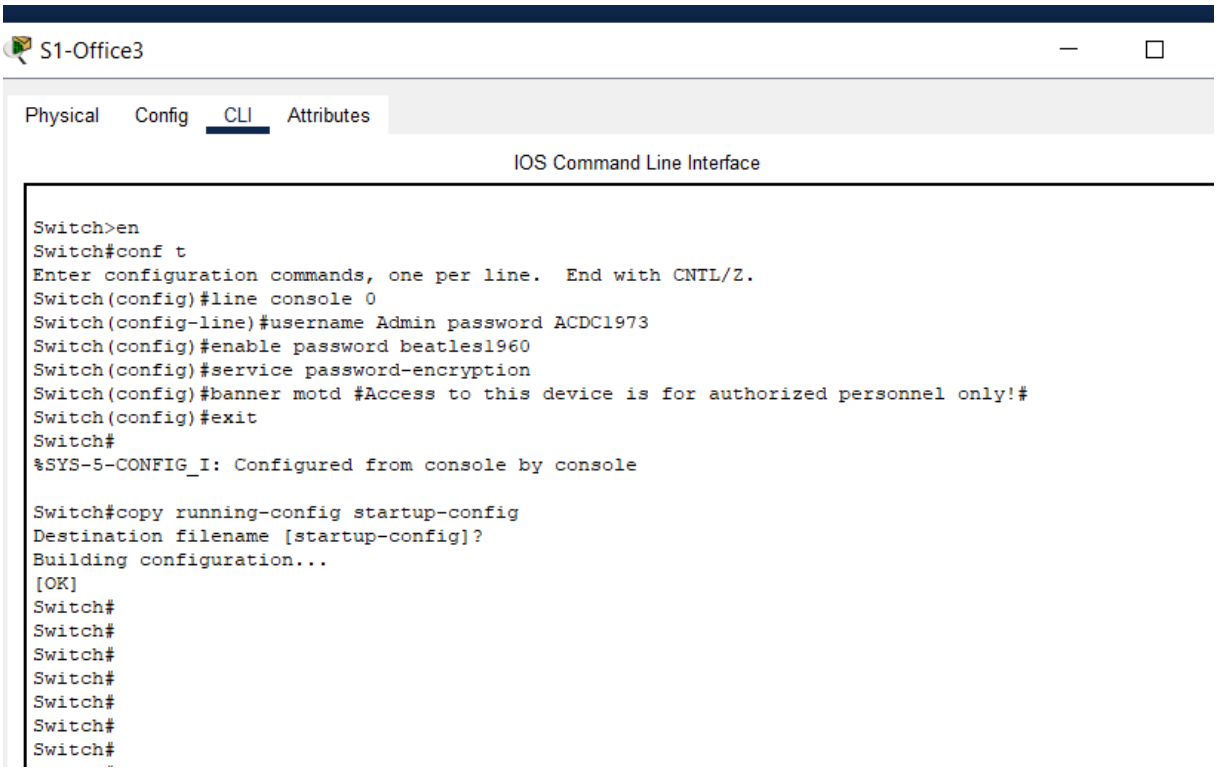
```
%SYS-5-CONFIG_I: Configured from console by console

Router#show access-list
Extended IP access list 101
    10 deny tcp host 172.16.10.50 host 172.16.10.30 eq 123
    20 permit ip any any

Router#
```

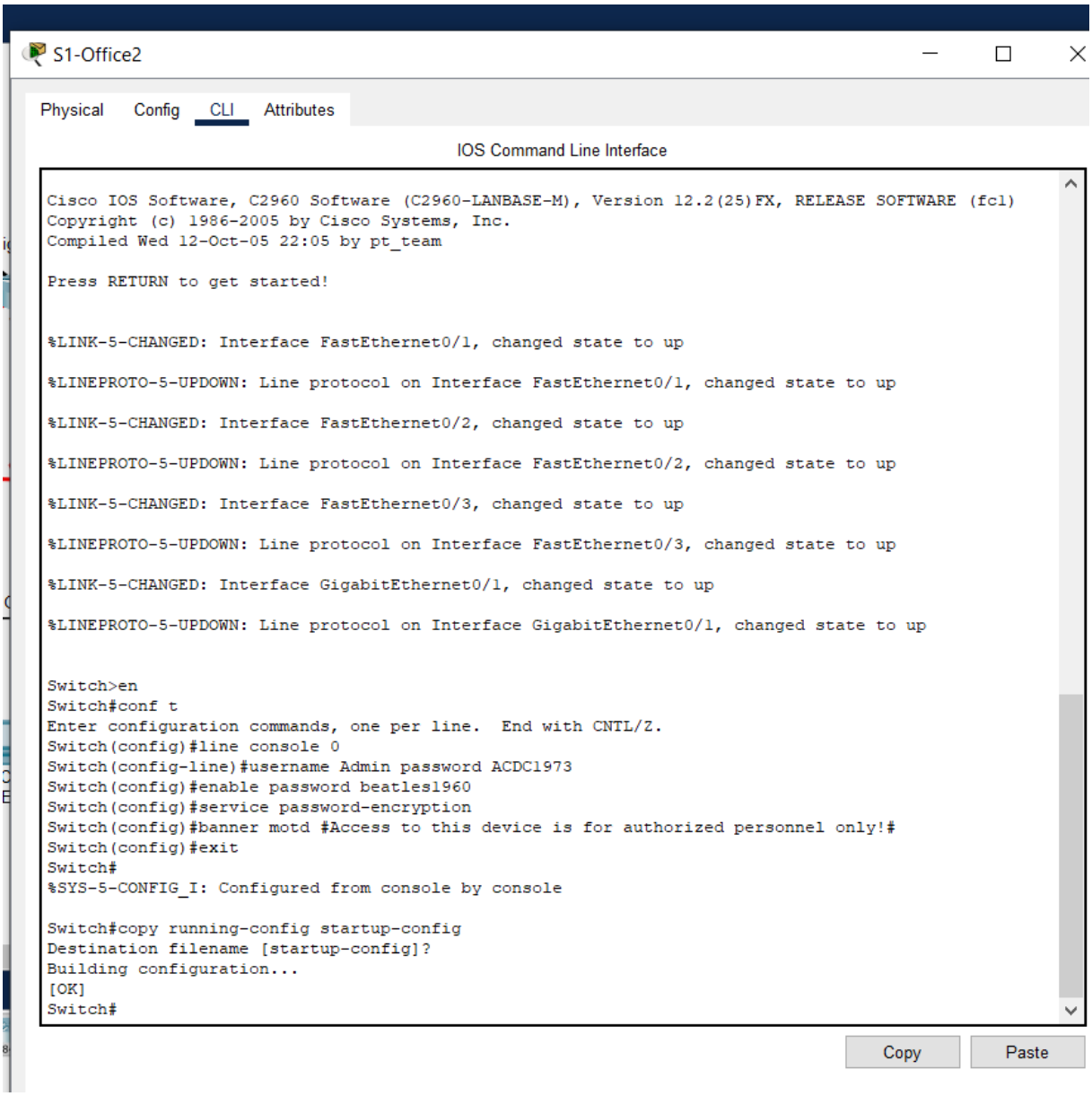
Lab Task 8: Initial and Security Settings for Network Devices

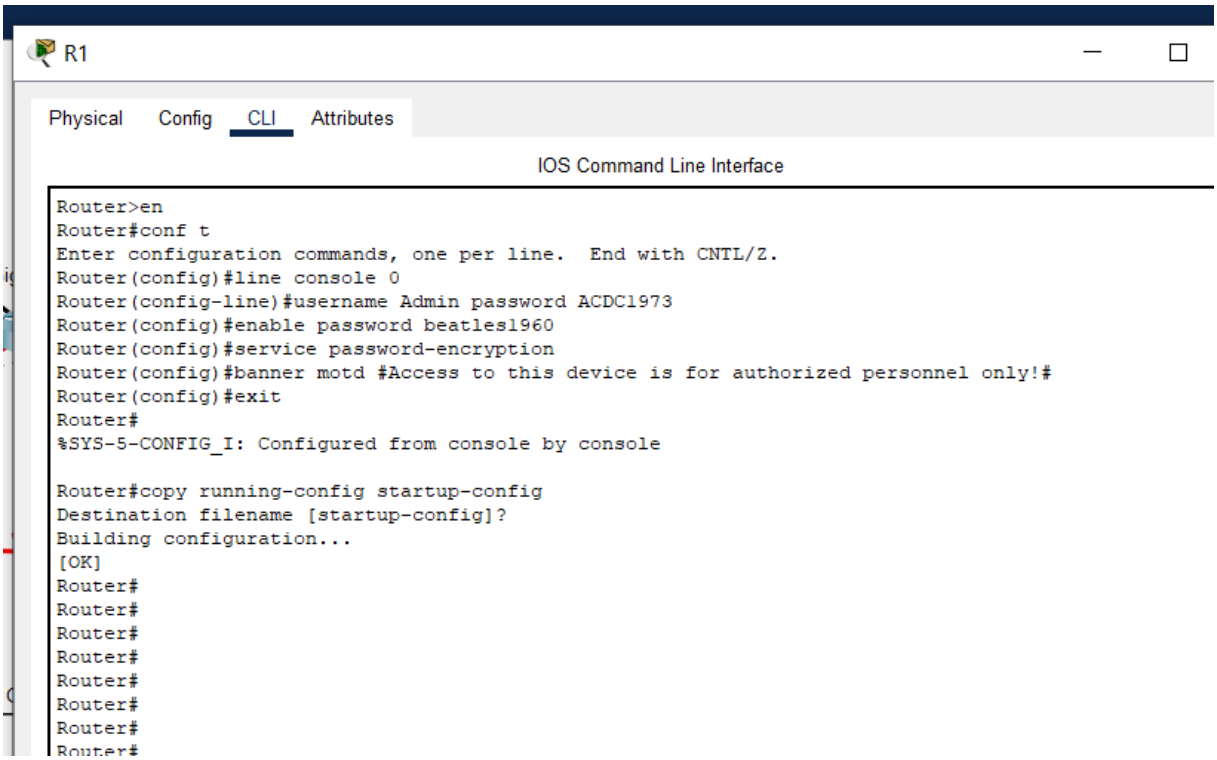
1-5.

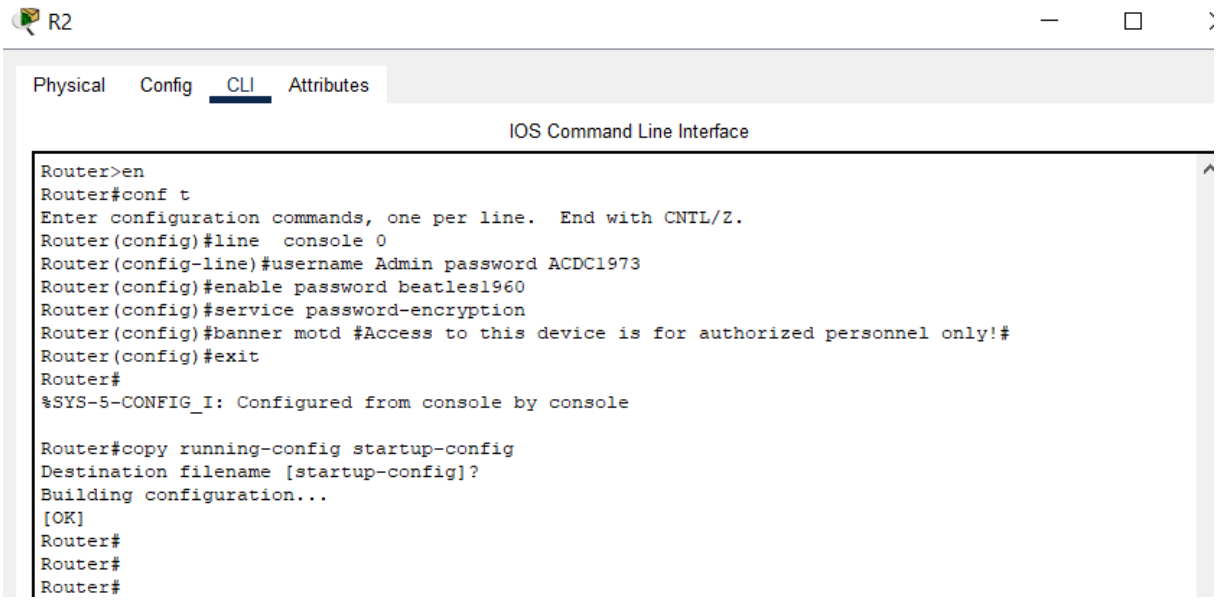

S2-Office1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#conf t
               ^
% Invalid input detected at '^' marker.
Switch(config)#cons
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#con
Switch#console line 0
              ^
% Invalid input detected at '^' marker.
Switch#config t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#console line 0
              ^
% Invalid input detected at '^' marker.
Switch(config)#line console 0
Switch(config-line)#username Admin password ACDC1973
Switch(config)#enable pa
Switch(config)#enable password beatles1960
Switch(config)#servi
Switch(config)#service pas
Switch(config)#service password-encryption
Switch(config)#banner motd #Access to this device is for authorized personnel only!#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
copy
Switch#copy rubn
Switch#copy run
Switch#copy running-config st
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#
Copy
Paste

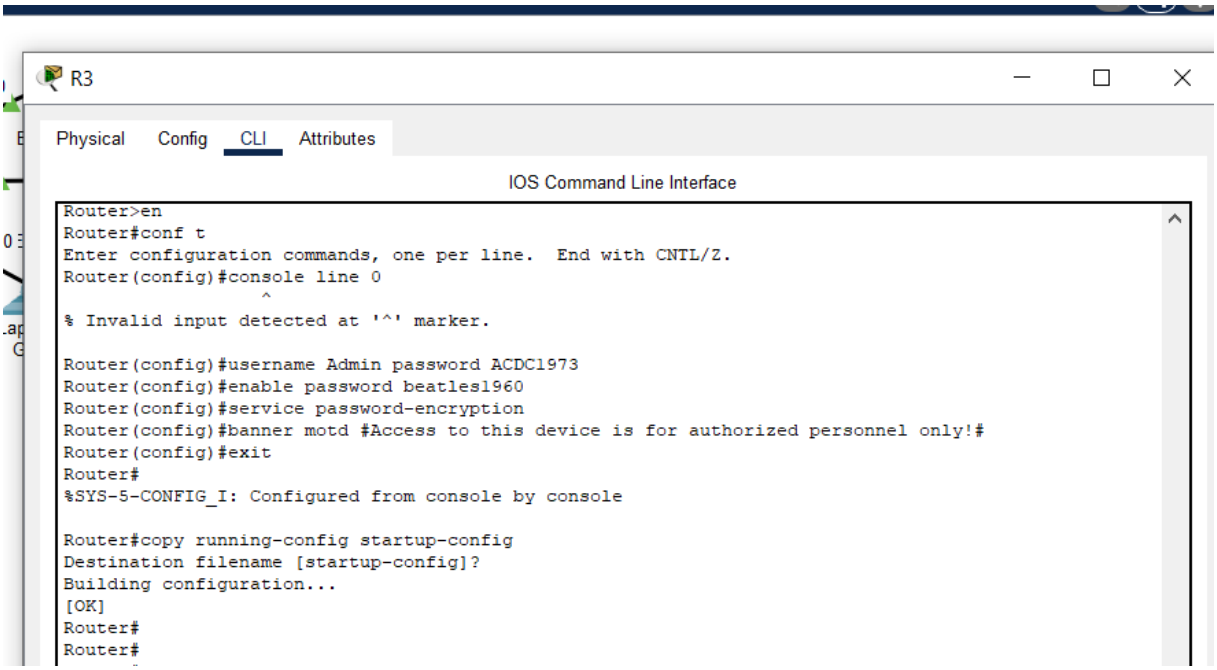

S2-Office1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch(config)#line console 0
Switch(config-line)#username Admin password ACDC1973
Switch(config)#enable pa
Switch(config)#enable password beatles1960
Switch(config)#servi
Switch(config)#service pas
Switch(config)#service password-encryption
Switch(config)#banner motd #Access to this device is for authorized personnel only!#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
copy
Switch#copy rubn
Switch#copy run
Switch#copy running-config st
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#
Switch#line console 0
^
% Invalid input detected at '^' marker.
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#line console 0
Switch(config-line)#username Admin password ACDC1973
Switch(config)#enable password beatles1960
Switch(config)#service password-encryption
Switch(config)#banner motd #Access to this device is for authorized personnel only!#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#
Copy
Paste


S1-Office3
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#line console 0
Switch(config-line)#username Admin password ACDC1973
Switch(config)#enable password beatles1960
Switch(config)#service password-encryption
Switch(config)#banner motd #Access to this device is for authorized personnel only!#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#
Switch#
Switch#
Switch#
Switch#
Switch#
Switch#


S1-Office2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Cisco IOS Software, C2960 Software (C2960-LANBASE-M), Version 12.2(25)FX, RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2005 by Cisco Systems, Inc.
Compiled Wed 12-Oct-05 22:05 by pt_team
Press RETURN to get started!
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up
%LINK-5-CHANGED: Interface FastEthernet0/3, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/3, changed state to up
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#line console 0
Switch(config-line)#username Admin password ACDC1973
Switch(config)#enable password beatles1960
Switch(config)#service password-encryption
Switch(config)#banner motd #Access to this device is for authorized personnel only!#
Switch(config)#exit
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Switch#
Copy
Paste


R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#line console 0
Router(config-line)#username Admin password ACDC1973
Router(config)#enable password beatles1960
Router(config)#service password-encryption
Router(config)#banner motd #Access to this device is for authorized personnel only!#
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#


R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#line console 0
Router(config-line)#username Admin password ACDC1973
Router(config)#enable password beatles1960
Router(config)#service password-encryption
Router(config)#banner motd #Access to this device is for authorized personnel only!#
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
Router#
Router#



Switch(config)#line console 0

Switch(config-line)#username Admin password ACDC1973

Switch(config)#enable password beatles1960

Switch(config)#service password-encryption

Switch(config)#banner motd #Access to this device is for authorized personnel only!#

Switch(config)#exit

Switch#copy running-config startup-config

Lab Task 9: Secure Remote Access.

1-5.

```
 00002984  0000434c  00002c29  00001ee6  00000edd  000035e0  00
 00004851  000076ef  000047a9  000075ad  0000293b  00003b30  00
R1#copy run
R1#copy running-config st
R1#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

R2

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config)#ip domain-name Cyber.local
Router(config)#hostname R2
R2(config)#crypto key generate rsa
% You already have RSA keys defined named R2.Cyber.com .
% Do you really want to replace them? [yes/no]: yes
The name for the keys will be: R2.Cyber.local
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]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

R2(config)#ip ssh version 2
*Mar 1 13:18:20.421: %SSH-5-ENABLED: SSH 1.99 has been enabled
R2(config)#line vty 0 4
R2(config-line)#login local
R2(config-line)#transport input ssh
R2(config-line)#exit
R2(config)#shhow up ssh
           ^
% Invalid input detected at '^' marker.

R2(config)#show up ssh
           ^
% Invalid input detected at '^' marker.

R2(config)#show ip ssh
           ^
% Invalid input detected at '^' marker.

R2(config)#do show ip ssh
SSH Enabled - version 2.0
Authentication timeout: 120 secs; Authentication retries: 3
R2(config)#exit
R2#
%SYS-5-CONFIG_I: Configured from console by console
show crypto key mypubkey rsa
% Key pair was generated at: 13:18:19 UTC March 1 1993
Key name: R2.Cyber.local
 Storage Device: not specified
 Usage: General Purpose Key
 Key is not exportable.
 Key Data:
 00002c81  00005693  0000157d  000011cd  00006068  00001de4  00004dbd  000018b6
 00002deb  00003adf  0000617a  00002bb4  00005f95  00006638  00001dac  00003ead
 00004942  000055aa  00000d2e  00006cdb  000025d3  000072de  00006417  06d0
% Key pair was generated at: 13:18:19 UTC March 1 1993
Key name: R2.Cyber.local.server
Temporary key
 Usage: Encryption Key
 Key is not exportable.
```

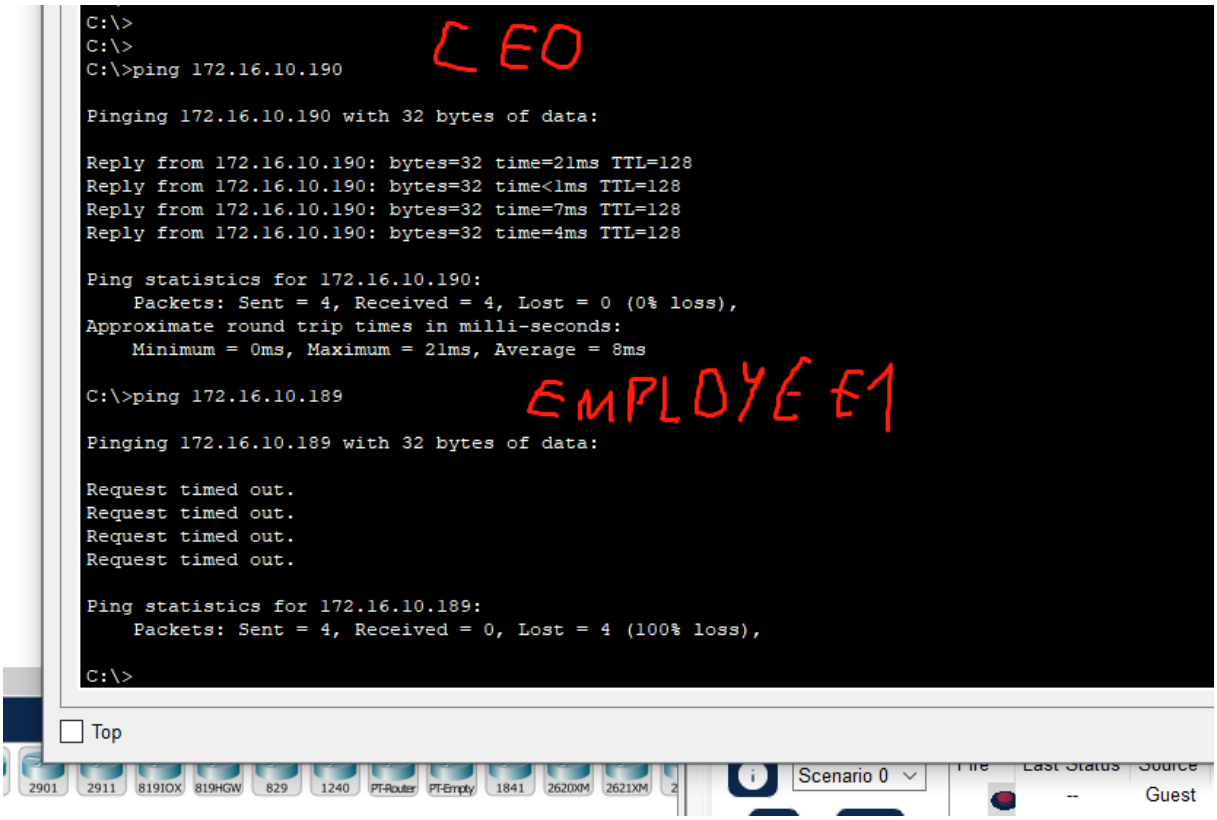
```
 00004942  000055aa  00000d2e  00006cdb  000025d3  000072de  00006417  06d0
% Key pair was generated at: 13:18:19 UTC March 1 1993
Key name: R2.Cyber.local.server
Temporary key
 Usage: Encryption Key
 Key is not exportable.
 Key Data:
 00007d26  0000798f  00003547  000041b8  00002646  000040ec  00002640  00006bdf
 000039de  0000343d  00001538  00004a73  000008f4  00003eca  0000656c  0000048a
 00006bd3  00002ef8  000065b6  00003f66  00007d49  000054b6  00000562  4ff8
R2#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R2#
```

IOS Command

```
Password:
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R3
R3(config)#ip domain-name Cyber.local
R3(config)#crypto key generate rsa
% You already have RSA keys defined named R3.Cyber.com .
% Do you really want to replace them? [yes/no]: yes
The name for the keys will be: R3.Cyber.local
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]: 1024
% Generating 1024 bit RSA keys, keys will be non-exportable...[OK]

R3(config)#ip ssh version 2
*Mar 1 13:20:42.42: %SSH-5-ENABLED: SSH 1.99 has been enabled
R3(config)#line vty 0 4
R3(config-line)#login local
R3(config-line)#transport input ssh
R3(config-line)#exit
R3(config)#exit
R3#
%SYS-5-CONFIG_I: Configured from console by console

R3#show ip ssh
SSH Enabled - version 2.0
Authentication timeout: 120 secs; Authentication retries: 3
R3#show crypto key mypubkey rsa
% Key pair was generated at: 13:20:41 UTC March 1 1993
Key name: R3.Cyber.local
 Storage Device: not specified
 Usage: General Purpose Key
 Key is not exportable.
 Key Data:
 00002dda  00007bae  00005285  00001e39  000056e3  00007442  00003602  00001357
 00000309  00000e92  0000470d  00000b88  000036bd  000043dc  0000463a  00000023
 000014cf  00003f42  00003774  00001570  00006032  0000687a  000011e7  1b02
% Key pair was generated at: 13:20:41 UTC March 1 1993
Key name: R3.Cyber.local.server
Temporary key
 Usage: Encryption Key
 Key is not exportable.
 Key Data:
 00004b00  000006c8  0000271d  00006647  000036bd  00001029  00000566  00003b5d
 000049e0  000078d1  0000597e  00003827  00007e8f  000016d8  0000136a  000075a1
 00000eab  00006e31  000052a3  00005370  0000610c  000078db  00005d76  21be
R3#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

6.

7.


C:\>
C:\>
C:\>ping 172.16.10.190
CEO
Pinging 172.16.10.190 with 32 bytes of data:
Reply from 172.16.10.190: bytes=32 time=21ms TTL=128
Reply from 172.16.10.190: bytes=32 time<1ms TTL=128
Reply from 172.16.10.190: bytes=32 time=7ms TTL=128
Reply from 172.16.10.190: bytes=32 time=4ms TTL=128
Ping statistics for 172.16.10.190:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 21ms, Average = 8ms
C:\>ping 172.16.10.189
EMPLOYE E1
Pinging 172.16.10.189 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 172.16.10.189:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>
Top
2901
2911
819IOX
819HGW
829
1240
PT-Router
PT-Empty
1841
2620XM
2621XM
Scenario 0
Guest

8.