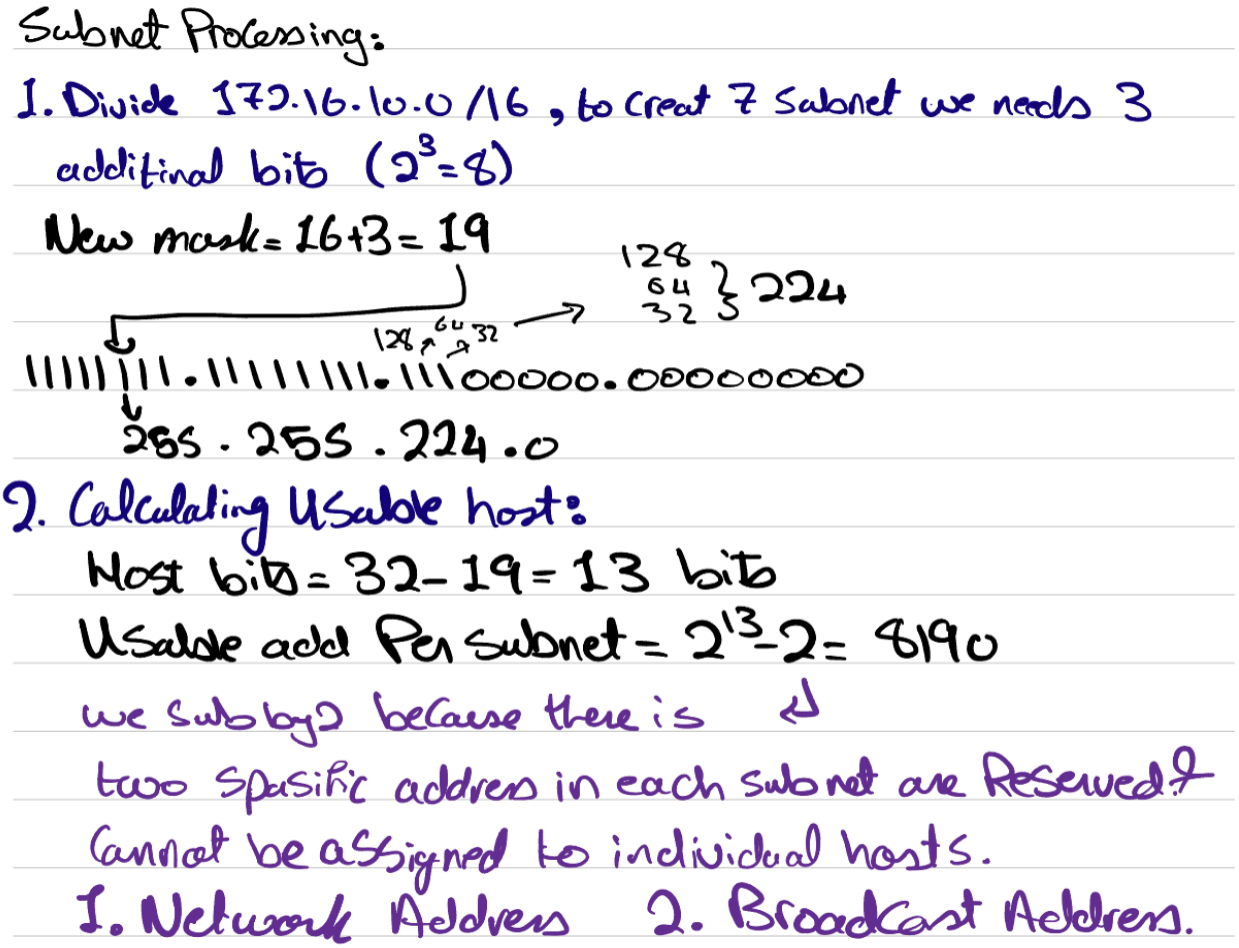
Final Project

Lab Task 1: Design an IP Address Scheme site24x7

1. The network 172.16.10.0/16 was divided into seven subnets, as outlined below:



2. The value of the new subnet mask is 255.255.224.0
3. 2^19=8190 usable hosts exist per subnet.
4.

Subnet ID	Subnet Address	Host Address Range	Broadcast Address
1	172.16.0.0	172.16.0.1 - 172.16.31.254	172.16.31.255
2	172.16.32.0	172.16.32.1 - 172.16.63.254	172.16.63.255
3	172.16.64.0	172.16.64.1 - 172.16.95.254	172.16.95.255
4	172.16.96.0	172.16.96.1 - 172.16.127.254	172.16.127.255
5	172.16.128.0	172.16.128.1 - 172.16.159.254	172.16.159.255
6	172.16.160.0	172.16.160.1 - 172.16.191.254	172.16.191.255
7	172.16.192.0	172.16.192.1 - 172.16.223.254	172.16.223.255

Lab Task 2: Implement VLANs and Trunk

(Listed commands were executed on S1-Office1 and 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
3.

- ***On S1-Office1:***

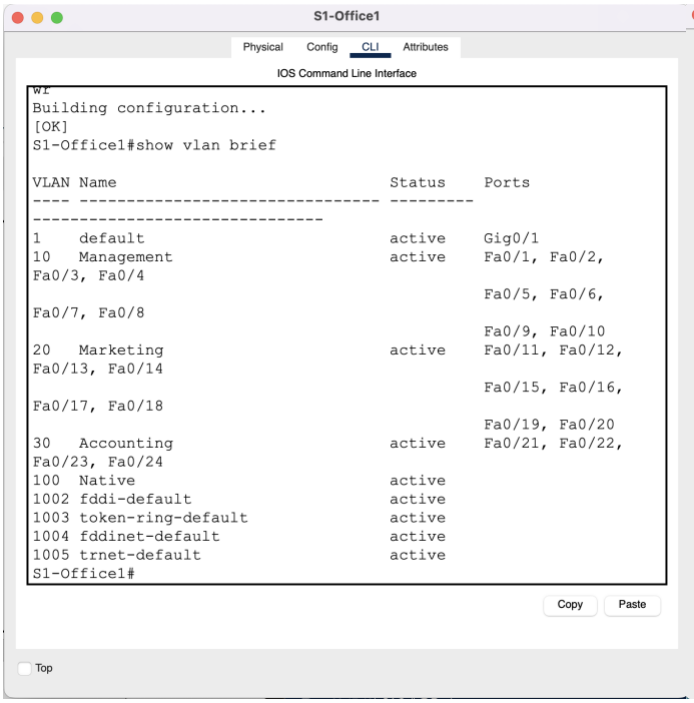
  int gi0/2
  switchport mode trunk
  switchport trunk native vlan 100
  exit
  show vlan brief
  show int trunk

- ***On S2-Office1:***

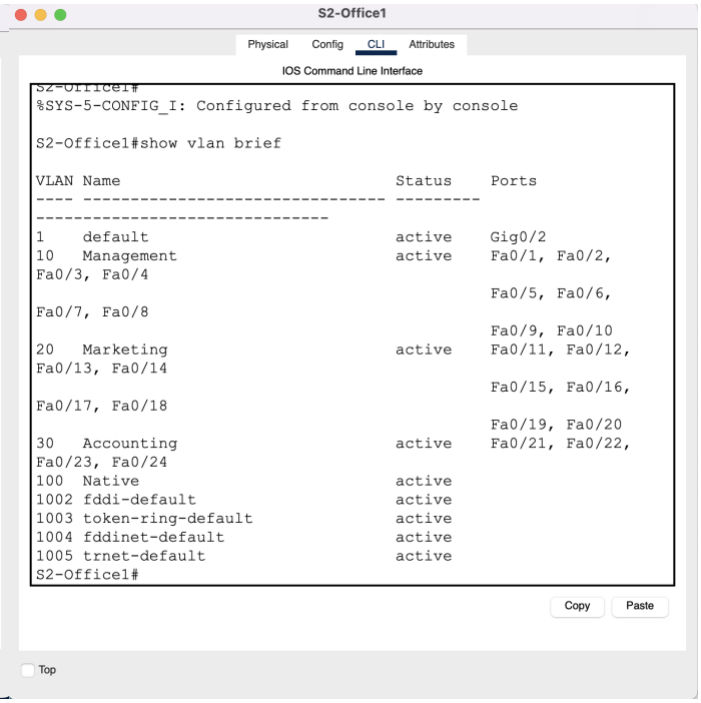
  int gi0/1
  switchport mode trunk
  switchport trunk native vlan 100
  exit
  show vlan brief
  show int trunk

4. int range fa0/1-24
   switchport nonegotiate
   exit
   wr

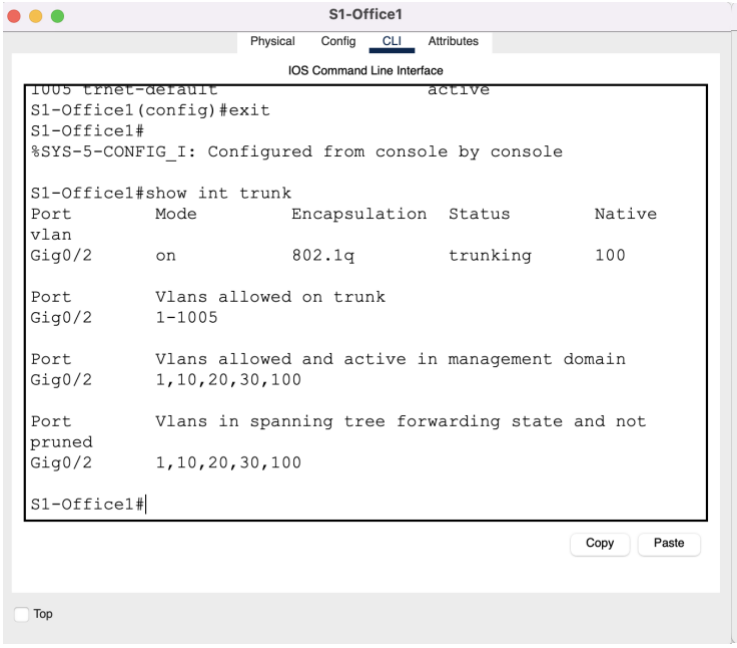
S1-Office1# show vlan brief



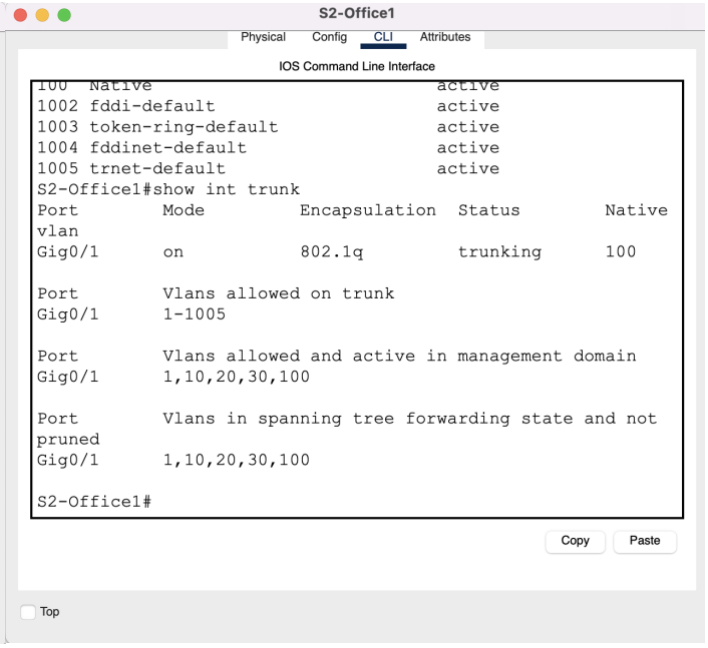
S2-Office1# show vlan brief



S1-Office1#show int trunk



S2-Office1#show int trunk



Lab Task 3: Assign IP Addresses

Device	Interface	Address	Subnet Mask	Default Gateway
R1	Gig0/0/0	---	255.255.224.0	---
	Serial0/1/0	172.16.128.1	255.255.224.0	---
	Serial0/1/1	172.16.160.1	255.255.224.0	---
	Gig0/0/0.10	172.16.0.1	255.255.224.0	---
	Gig0/0/0.20	172.16.32.1	255.255.224.0	---
	Gig0/0/0.30	172.16.64.1	255.255.224.0	---
R2-Edge_router	Serial0/1/0	172.16.96.2	255.255.224.0	---
	Serial0/1/1	172.16.160.2	255.255.224.0	---
R3	Gig0/0/0	172.16.192.1	255.255.224.0	---
	Serial0/1/0	172.16.128.2	255.255.224.0	---
	Serial0/1/1	172.16.96.1	255.255.224.0	---
S1-Office1	VLAN 10 (Management)	---	255.255.224.0	172.16.32.1
	VLAN 20 (Marketing)	---	255.255.224.0	172.16.32.1
	VLAN 30 (Accounting)	---	255.255.224.0	172.16.32.1
S2-Office1	VLAN 10 (Management)	---	255.255.224.0	172.16.160.1
	VLAN 20 (Marketing)	---	255.255.224.0	172.16.160.1
	VLAN 30 (Accounting)	---	255.255.224.0	172.16.160.1
CEO1	FastEthernet0/0	172.16.0.2	255.255.224.0	172.16.0.1
CEO2	FastEthernet0/1	172.16.0.3	255.255.224.0	172.16.0.1
Dialer1	FastEthernet0/2	172.16.32.2	255.255.224.0	172.16.32.1
Dialer2	FastEthernet0/0	172.16.32.3	255.255.224.0	172.16.32.1
Copywriter1	FastEthernet0/1	172.16.64.2	255.255.224.0	172.16.64.1
Copywriter2	FastEthernet0/2	172.16.64.3	255.255.224.0	172.16.64.1
Emp1	FastEthernet0/0	172.16.192.2	255.255.224.0	172.16.192.1
Emp2	FastEthernet0/1	172.16.192.3	255.255.224.0	172.16.192.1
guest	FastEthernet0/2	172.16.192.4	255.255.224.0	172.16.192.1

Configure R2:

- **Seiral 0/1/0:**

  En
  Conf t
  Interface se0/1/0
  Ip address 172.16.96.2 255.255.224.0
  No shutdown
  Exit

- **Seiral 0/1/1:**

  Interface se0/1/1
  Ip address 172.16.160.2 255.255.224.0
  No shutdown
  Exit
  Exit
  wr

Configure R3:

- **Seiral 0/1/0:**
  En
  Conf t
  Interface se0/1/0
  Ip address 172.16.128.2 255.255.224.0
  No shutdown
  Exit
- **Seiral 0/1/1:**
  Interface se0/1/1
  Ip address 172.16.96.1 255.255.224.0
  No shutdown
  Exit
- **Gig 0/0/0:**
  Interface gig0/0/0
  Ip address 172.16.192.1 255.255.224.0
  No shutdown
  Exit
  Exit
  wr

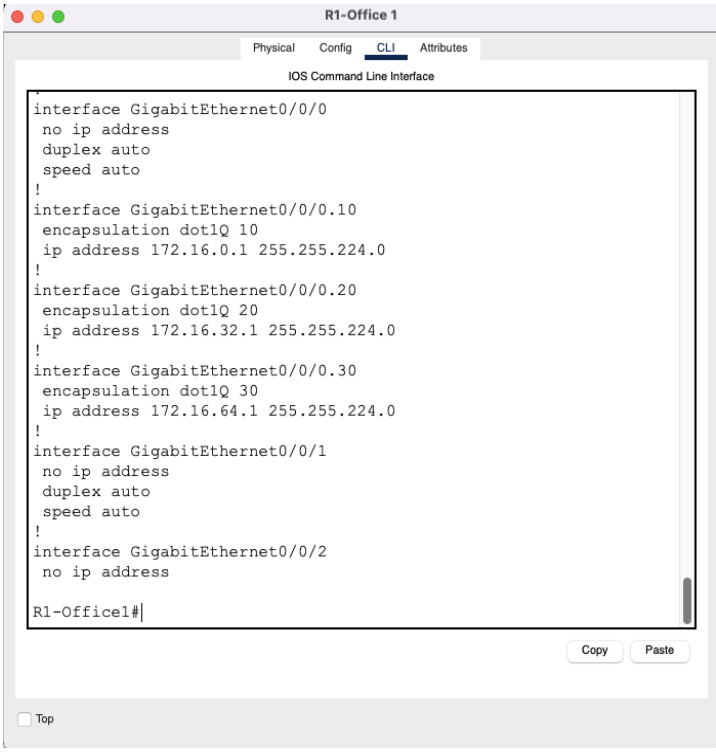
Configure R1:

- **Seiral 0/1/0:**
  En
  Conf t
  Interface se0/1/0
  Ip address 172.16.128.1 255.255.224.0
  No shutdown
  Exit
- **Seiral 0/1/1:**
  Interface se0/1/1
  Ip address 172.16.160.1 255.255.224.0
  No shutdown
  Exit
- **Gig 0/0/0:**
  Interface gig0/0/0
  No shutdown
  Exit

Lab Task 4: Configure R1 for Inter-VLAN Routing

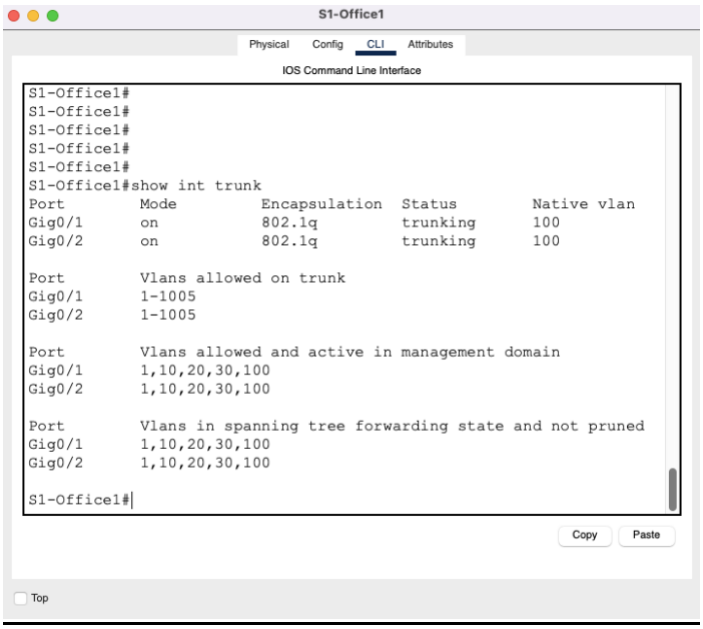
(Listed commands were executed on R1, unless otherwise stated.)

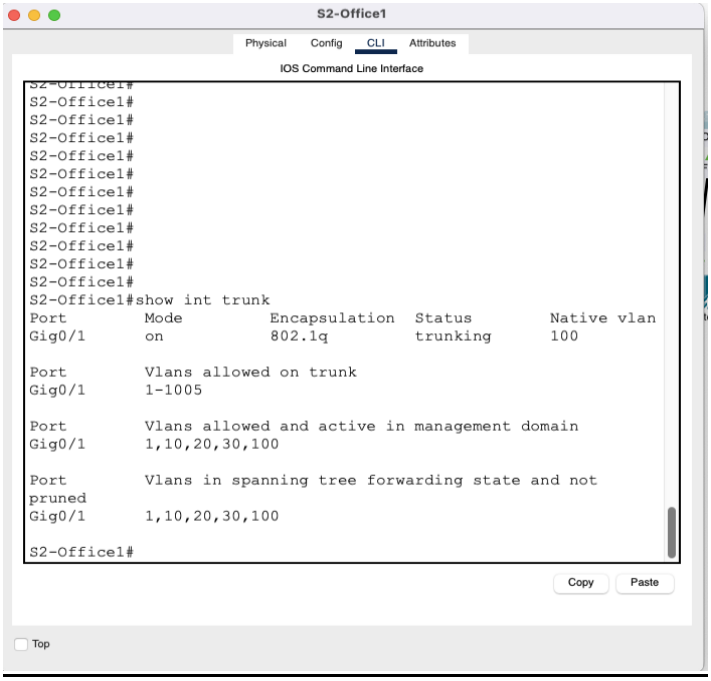
- **Gig0/0/0.10**
  int g0/0/0.10
  encapsulation dot1q 10
  ip add 172.16.0.1 255.255.224.0
  exit
- **Gig0/0/0.20**
  int g0/0/0.20
  encapsulation dot1q 20
  ip add 172.16.32.1 255.255.224.0
  exit
- **Gig0/0/0.30**
  int g0/0/0.30
  encapsulation dot1q 30
  ip add 172.16.64.1 255.255.224.0
  exit



- **On S1-Office1 & S2-Office2, set GigabitEthernet 0/1 as Trunk, with appropriate Native VLAN.**

  en
  conf t
  int gig0/1
  switchport mode trunk
  switchport trunk native vlan 100
  no shutdown
  exit





Lab Task 5: Static Routing for network devices

- **R3-Office 2:**

  En
  Conf t
  ip route 172.16.0.0 255.255.224.0 172.16.128.1
  ip route 172.16.32.0 255.255.224.0 172.16.128.1
  ip route 172.16.64.0 255.255.224.0 172.16.128.1
  ip route 172.16.96.0 255.255.224.0 172.16.96.2
  ip route 172.16.160.0 255.255.224.0 172.16.96.2
  exit
  wr

- **R2-Edge_router:**

  En
  Conf t
  ip route 172.16.0.0 255.255.224.0 172.16.160.1
  ip route 172.16.32.0 255.255.224.0 172.16.160.1
  ip route 172.16.64.0 255.255.224.0 172.16.160.1
  ip route 172.16.128.0 255.255.224.0 172.16.96.1
  ip route 172.16.192.0 255.255.224.0 172.16.96.1
  exit
  wr

- **R1-Office 1:**
  en
  conf t
  ip route 172.16.96.0 255.255.224.0 172.16.96.2
  ip route 172.16.192.0 255.255.224.0 172.16.128.2
  ip route 0.0.0.0 0.0.0.0 172.16.160.2
  exit

Lab Task 7: Initial and Security Settings for Network Devices

(Listed commands were executed on all routers and switches)

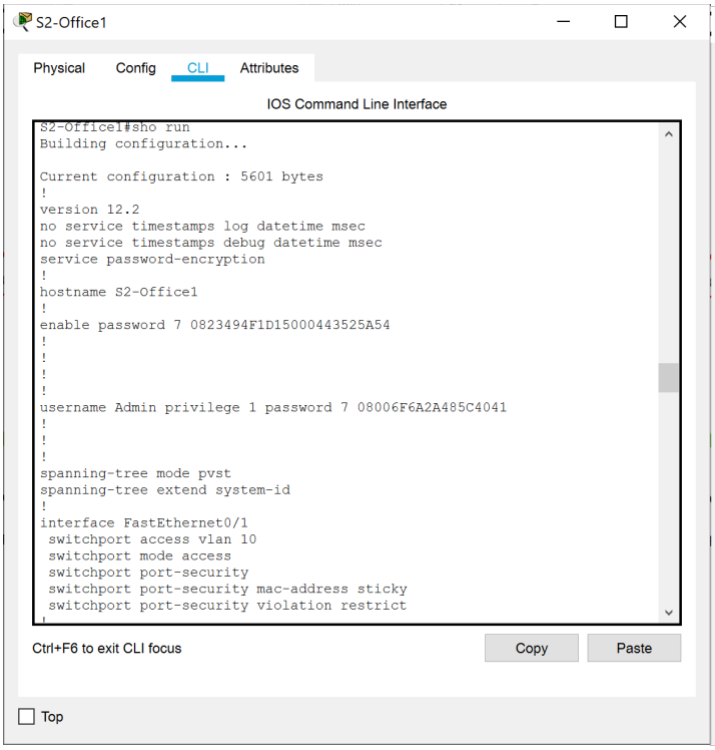
1. ```
   en
   conf t
   username Admin password ACDC1973
   ```

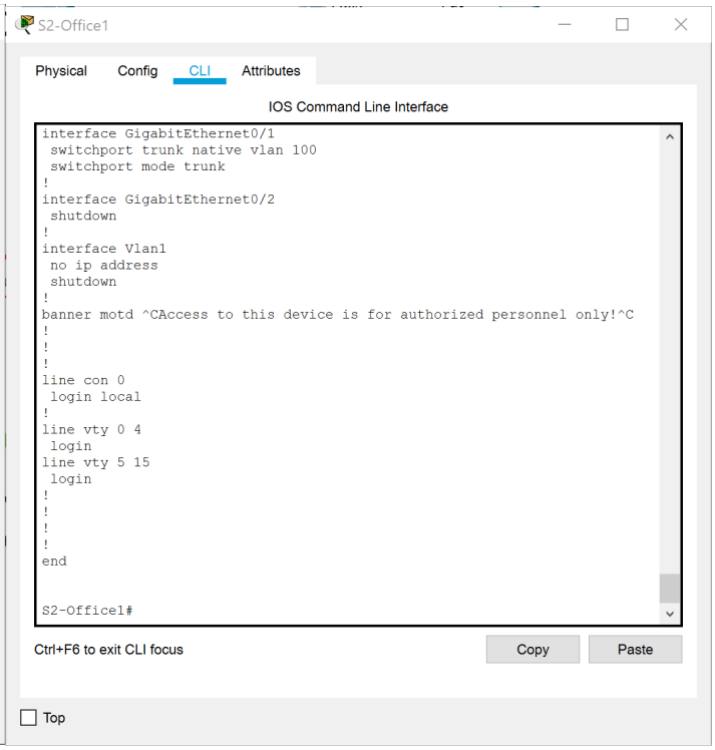
2. ```
   line console 0
   login local
   exit
   ```

3. ```
   enable password beatles1960
   ```

4. ```
   service password-encryption
   ```

5. ```
   banner motd #Access to this device is for authorized personnel only!#
   ex
   wr
   ex
   ```

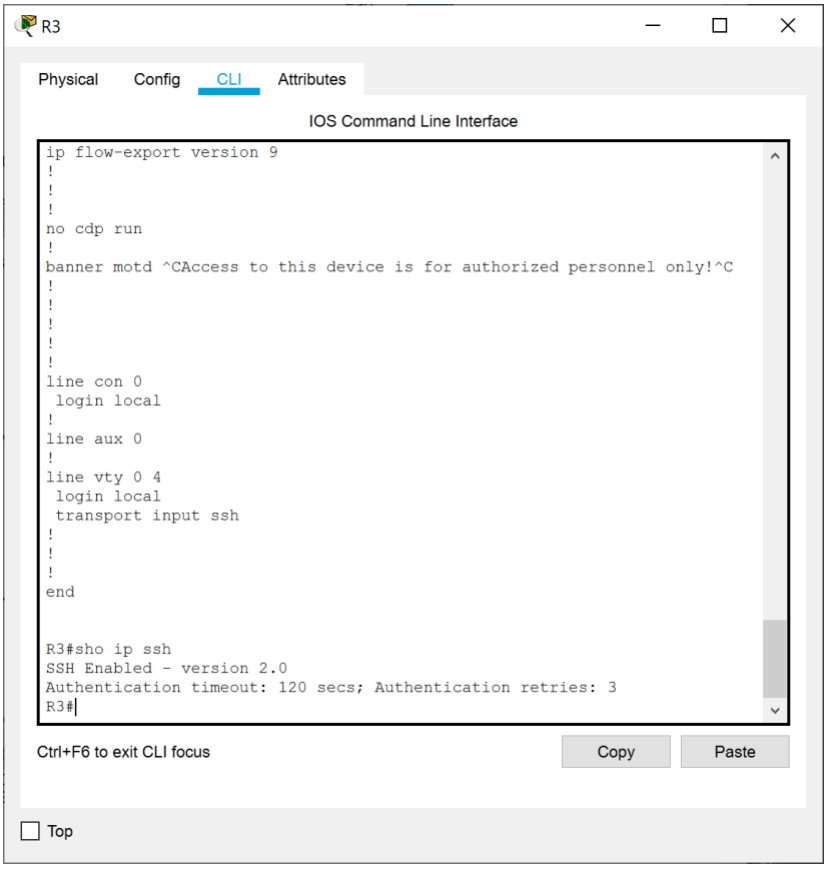



   ```

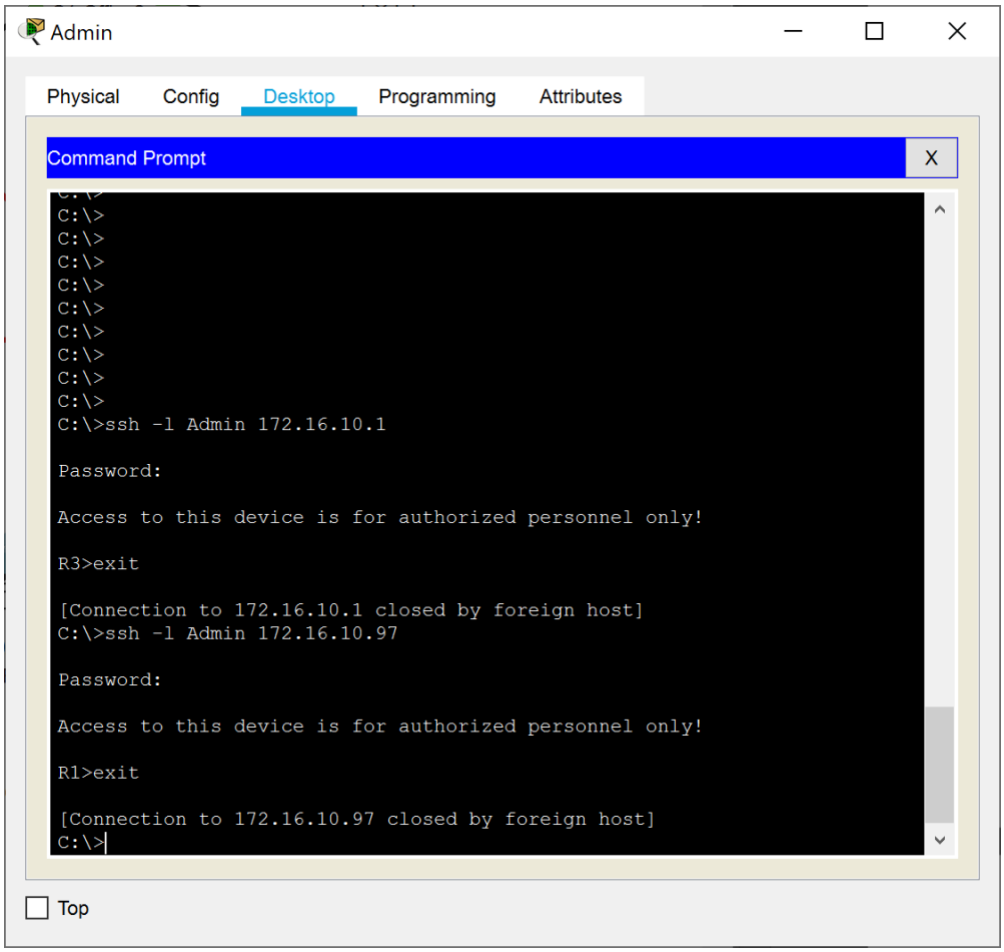
Lab Task 8: Secure Remote Access

(Listed commands were executed on R1, R2, and R3)

1. `ip domain-name aast.com`
2. `crypto key generate rsa 1024`
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.


Admin
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>ssh -l Admin 172.16.10.1
Password:
Access to this device is for authorized personnel only!
R3>exit
[Connection to 172.16.10.1 closed by foreign host]
C:\>ssh -l Admin 172.16.10.97
Password:
Access to this device is for authorized personnel only!
R1>exit
[Connection to 172.16.10.97 closed by foreign host]
C:\>
Top