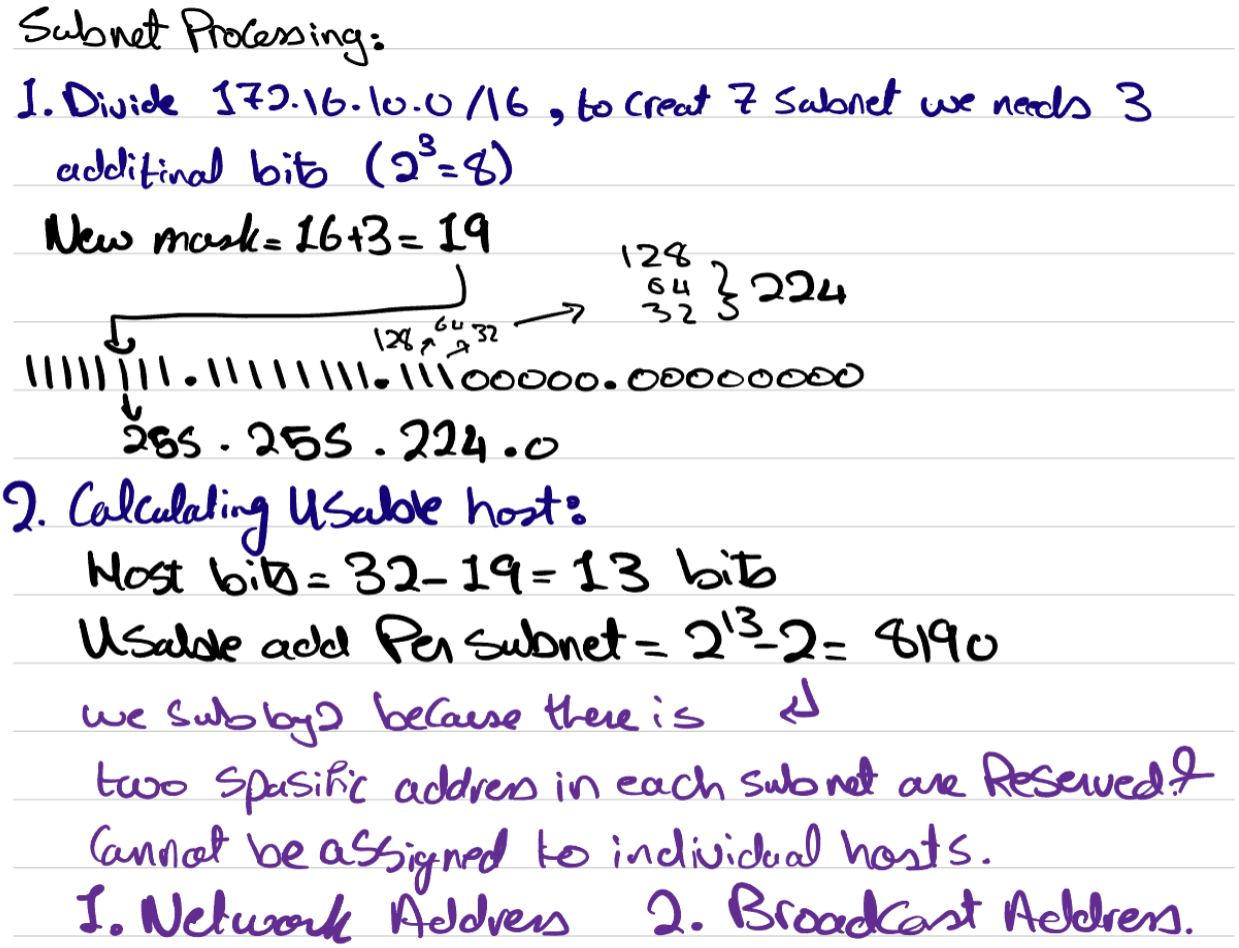
Final Project

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	Network address	Host Address Range	Broadcast Address	Subnet mask
1	172.16.0.0	172.16.0.1 - 172.16.31.254	172.16.31.255	255.255.224.0
2	172.16.32.0	172.16.32.1 - 172.16.63.254	172.16.63.255	255.255.224.0
3	172.16.64.0	172.16.64.1 - 172.16.95.254	172.16.95.255	255.255.224.0
4	172.16.96.0	172.16.96.1 - 172.16.127.254	172.16.127.255	255.255.224.0
5	172.16.128.0	172.16.128.1 - 172.16.159.254	172.16.159.255	255.255.224.0
6	172.16.160.0	172.16.160.1 - 172.16.191.254	172.16.191.255	255.255.224.0
7	172.16.192.0	172.16.192.1 - 172.16.223.254	172.16.223.255	255.255.224.0

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

   don't forget to make sure when connecting to pc's to be connected in the same order of vlan range's like CEO1 with fa0/1 in the same range of VLan 10 and copywriter1 with fa0/24 in the same range of Vlan 30

3.

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

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

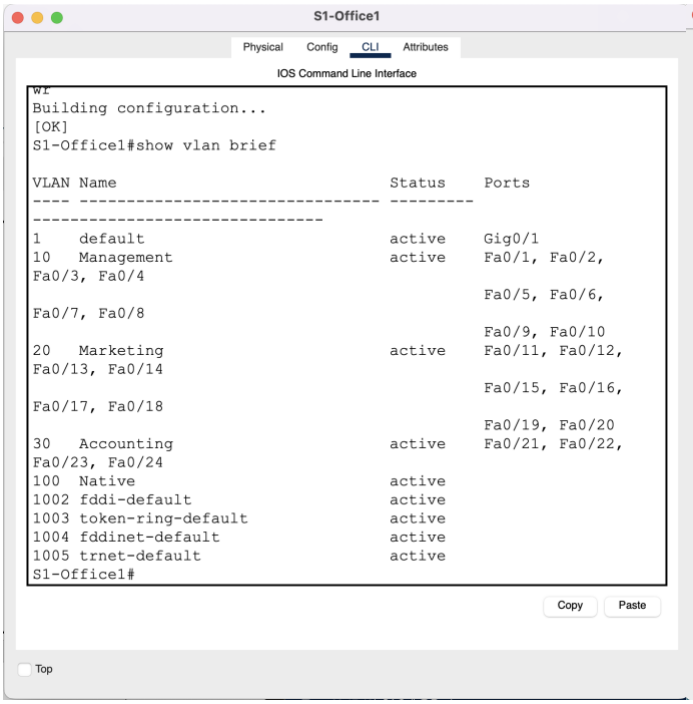
- ***On S2-Office1:***

  int gi0/1
  switchport mode trunk

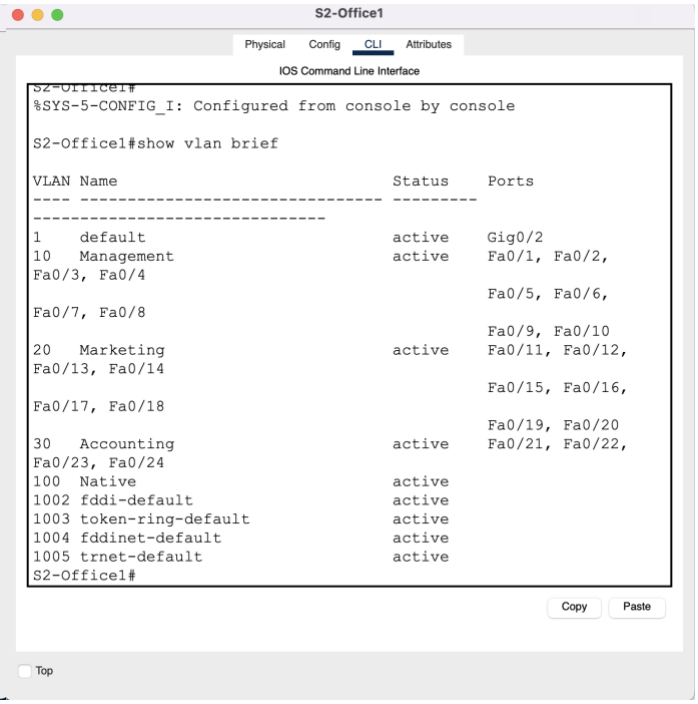
switchport trunk native vlan 100
exit
show vlan brief
show int trunk

4. Interface gig0/1
   switchport nonegotiate
   exit
   wr

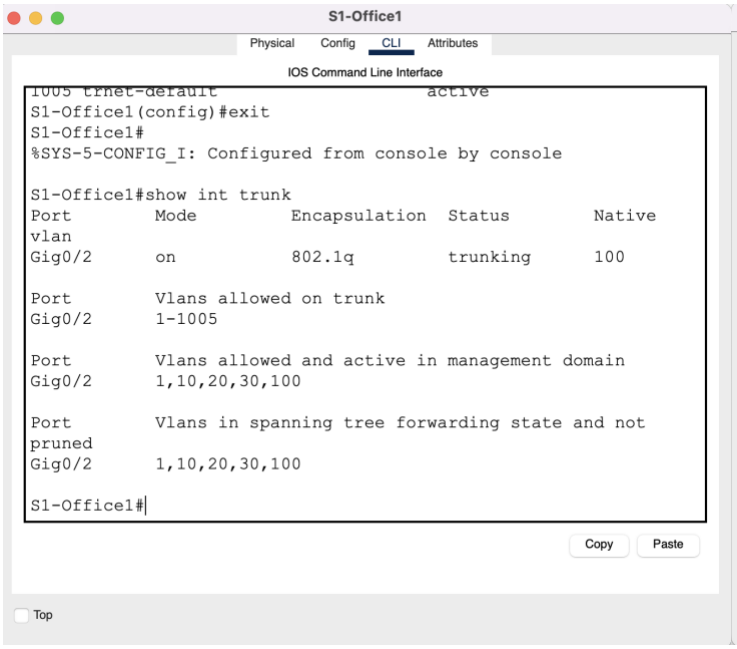
S1-Office1# show vlan brief



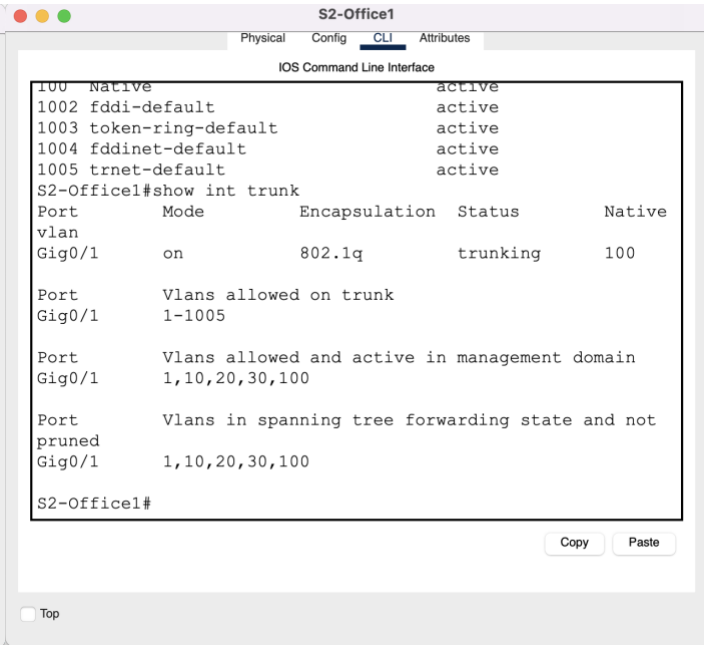
S2-Office1# show vlan brief



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	172.16.64.9	255.255.224.0	172.16.64.1
Copywriter2	FastEthernet0/2	172.16.64.2	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

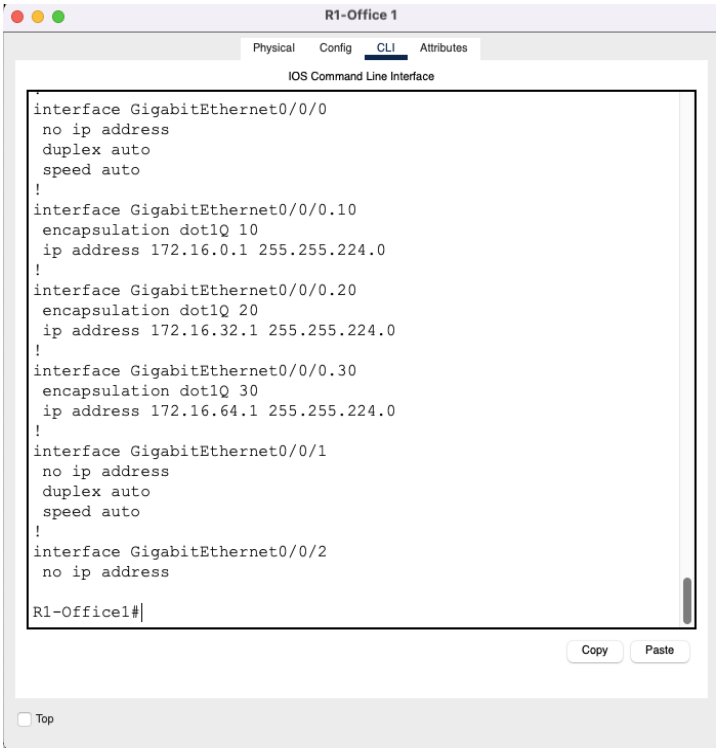
Configure R1:

- **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

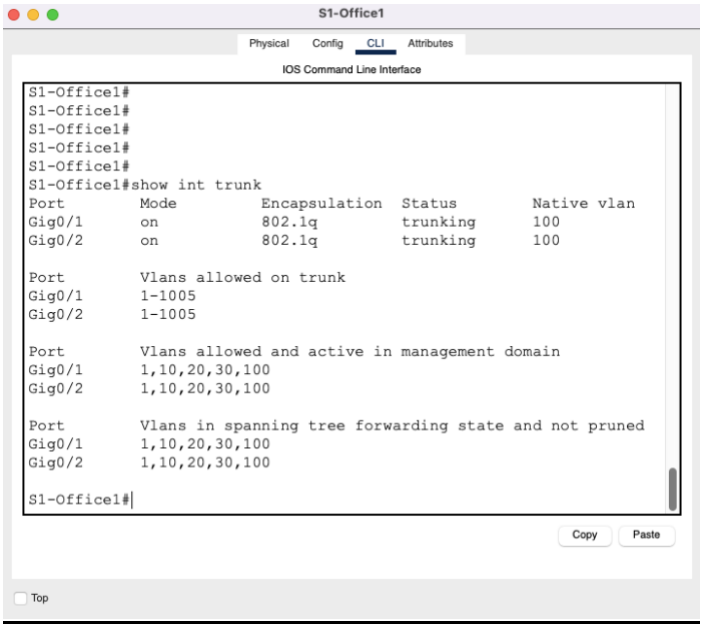
(Listed commands were executed on R1, unless otherwise stated.)

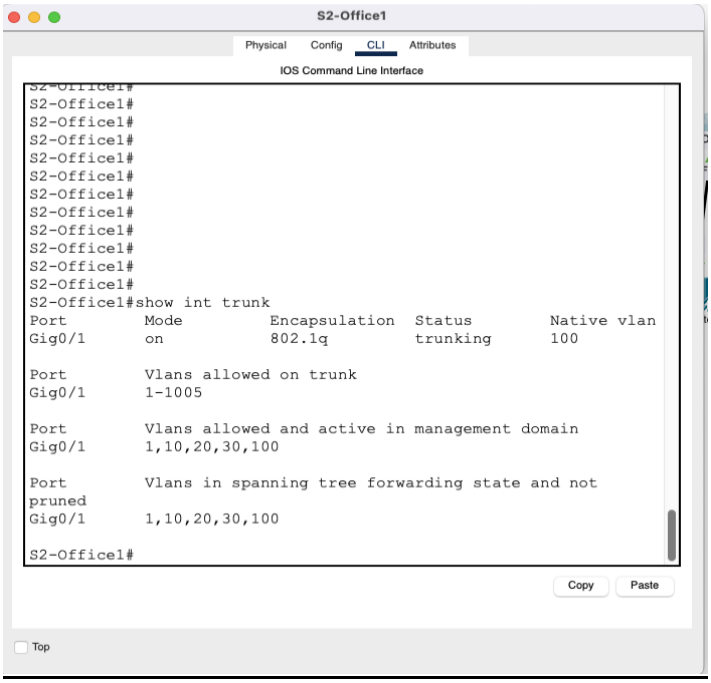
- **Gig0/0/0.10**
  int g0/0/0.10
  encapsulation dot1q 10
  ip add 172.16.0.1 255.255.224.0
  exit
- **Gig0/0/0.20**
  int g0/0/0.20
  encapsulation dot1q 20
  ip add 172.16.32.1 255.255.224.0
  exit
- **Gig0/0/0.30**
  int g0/0/0.30
  encapsulation dot1q 30
  ip add 172.16.64.1 255.255.224.0
  exit



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

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





<u>Lab Task 5: Static Routing for network devices</u>

- **<u>R3-Office 2:</u>**

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

- **<u>R2-Edge_router:</u>**

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 6: Initial and Security Settings for Network Devices

(Listed commands were executed on all routers and switches)

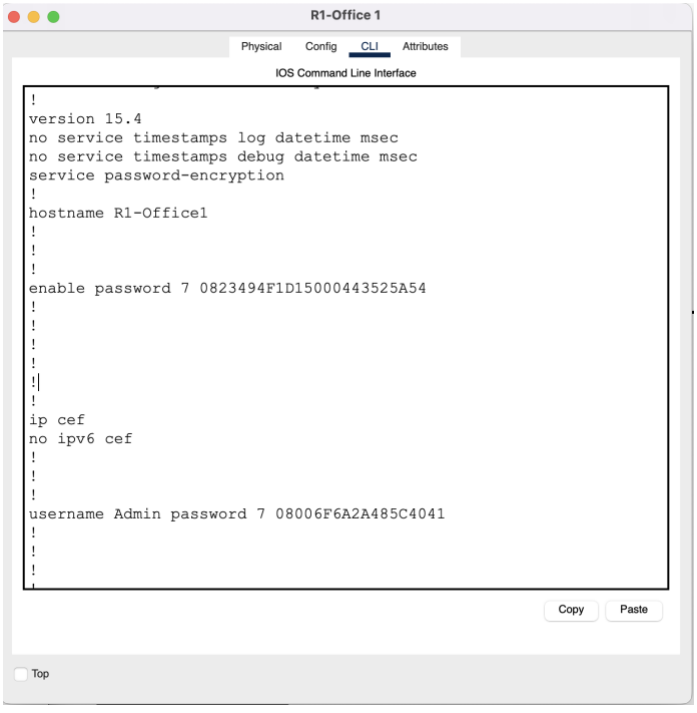
1. ```
   en
   conf t
   username Admin password ACDC1973
   ```

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

3. ```
   enable password beatles1960
   ```

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

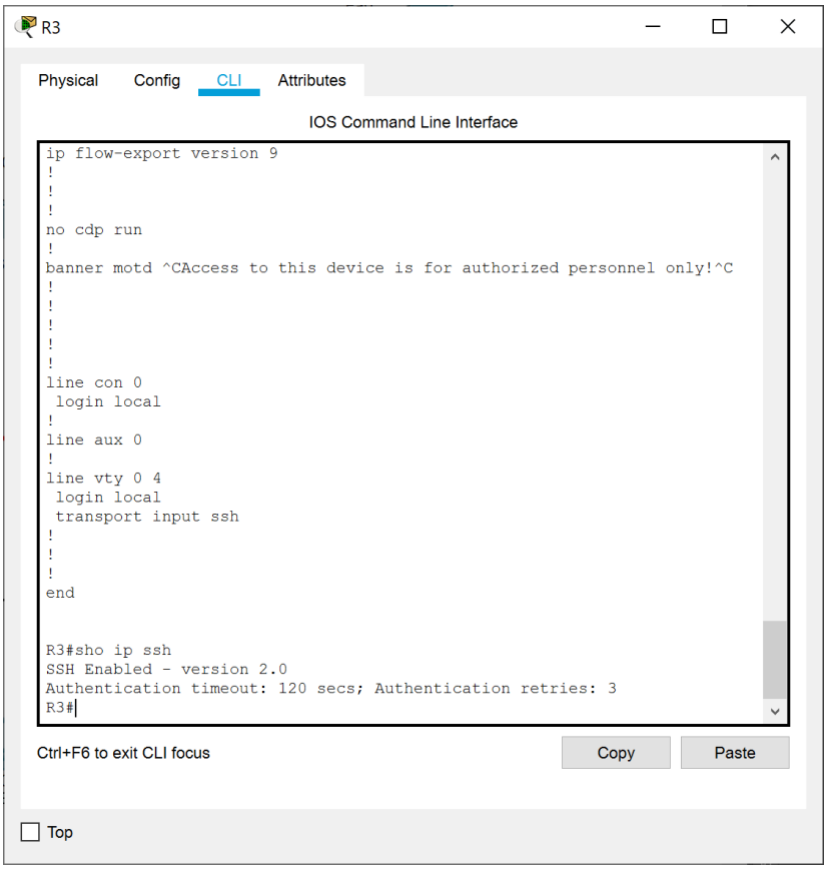
5. ```
   banner motd #ONLY for admin's#
   ex
   wr
   ex
   ```


   ```

Lab Task 7: Secure Remote Access

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

1. `ip domain-name aast.com`
2. `crypto key generate rsa`
3. `1024`
4. `ip ssh version 2`
5. `line vty 0 4`
   `login local`
   `transport input ssh`
   `exit`
6. `ex`
   `sho ip ssh`
   `sho run`
   `wr`



7. Using the command `ssh -l Admin` *`IP-Address`*, I was able to successfully SSH into the routers.