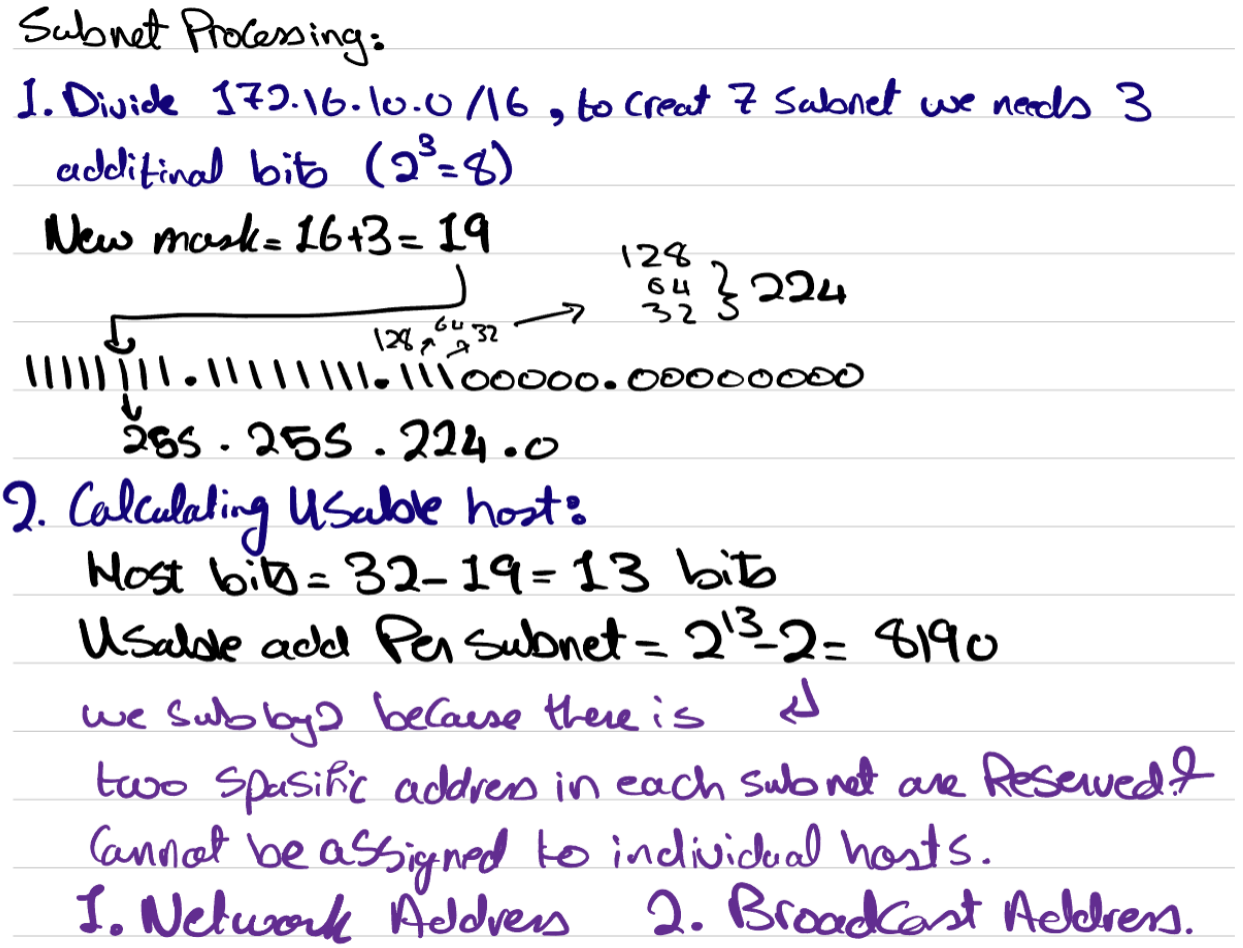
**Final Project**

**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 | 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

   Make sure that you connect pc's to switch in the correct Range so fucking dummmmmmmmmmmmmmm

3.

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

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

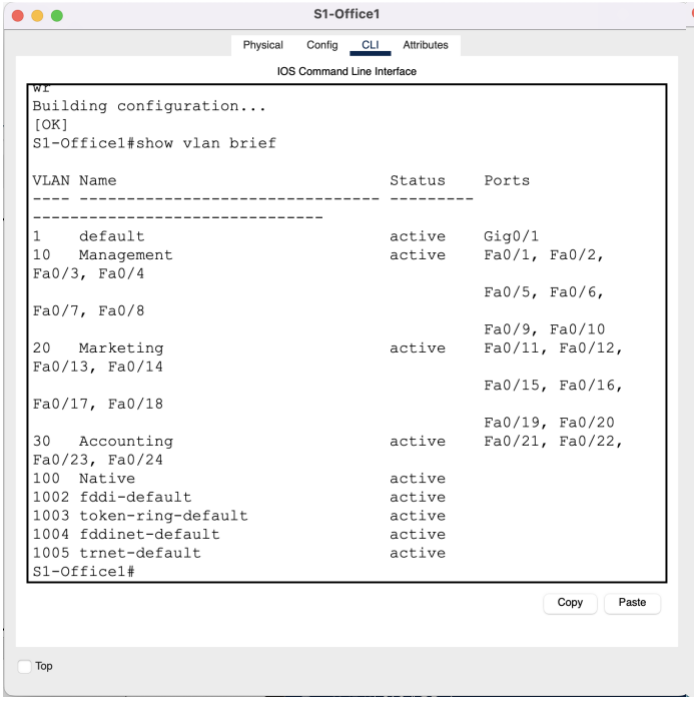
- ***On S2-Office1:***

  int gi0/1

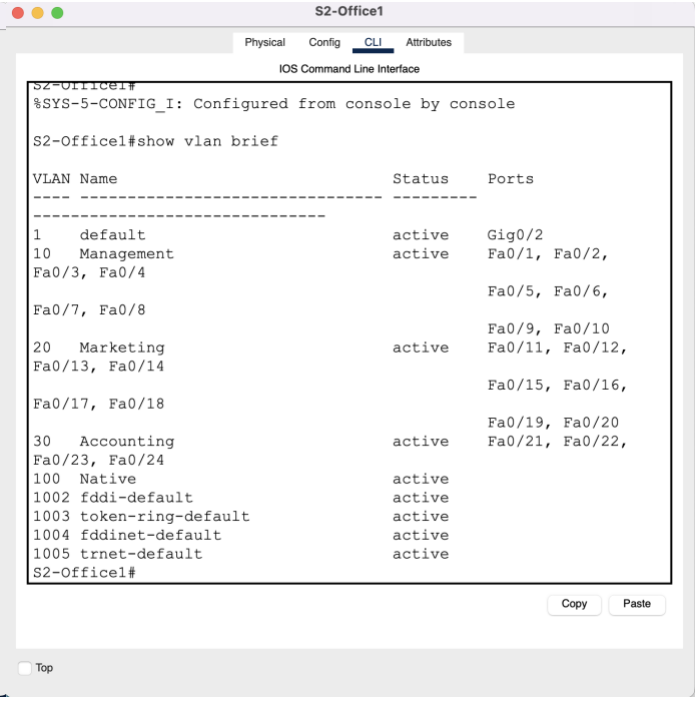
switchport mode trunk
switchport trunk native vlan 100
exit
show vlan brief
show int trunk

4. Interface gig0/1
   switchport nonegotiate
   exit
   wr

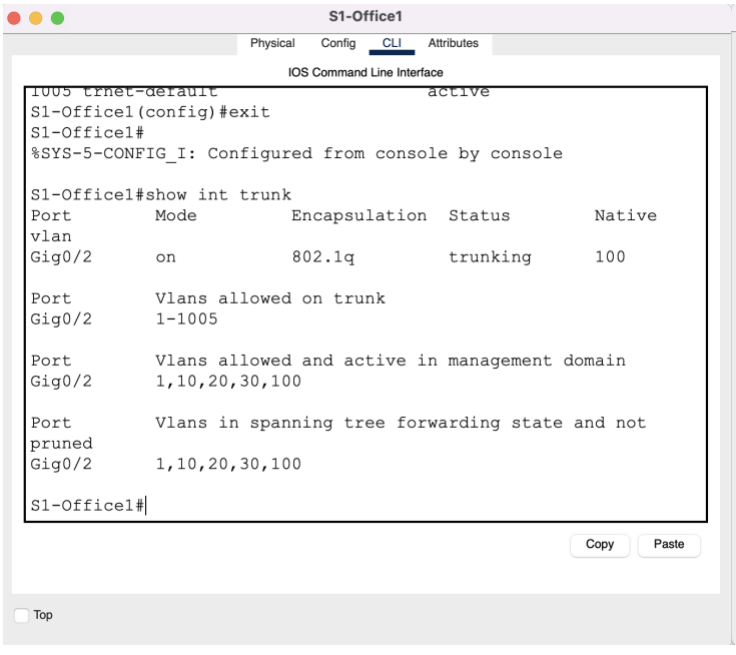
S1-Office1# show vlan brief



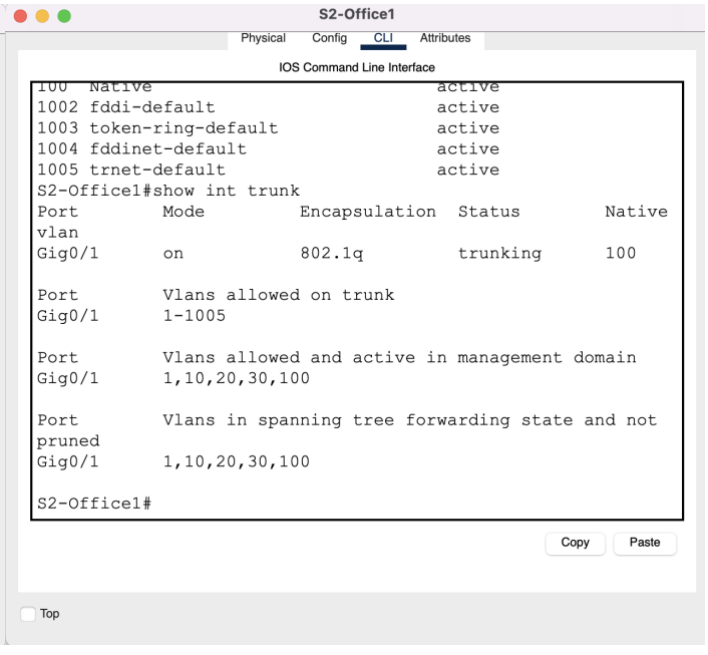

S2-Office1# show vlan brief




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

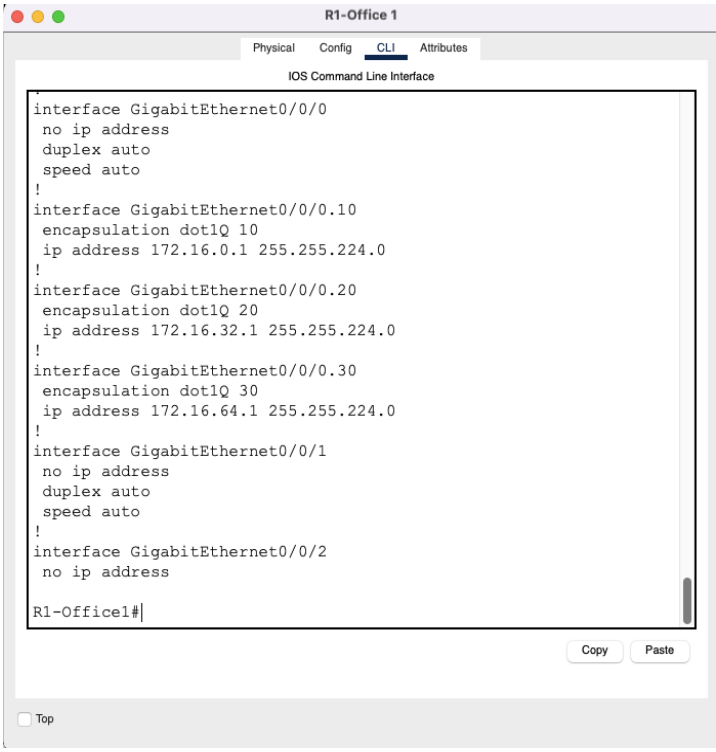
## Configure R1:

- **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

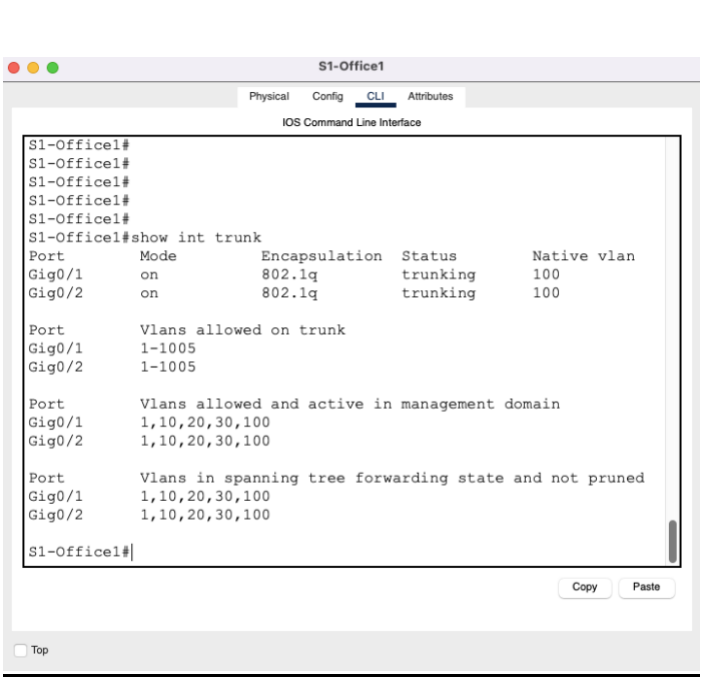
*(Listed commands were executed on R1, unless otherwise stated.)*

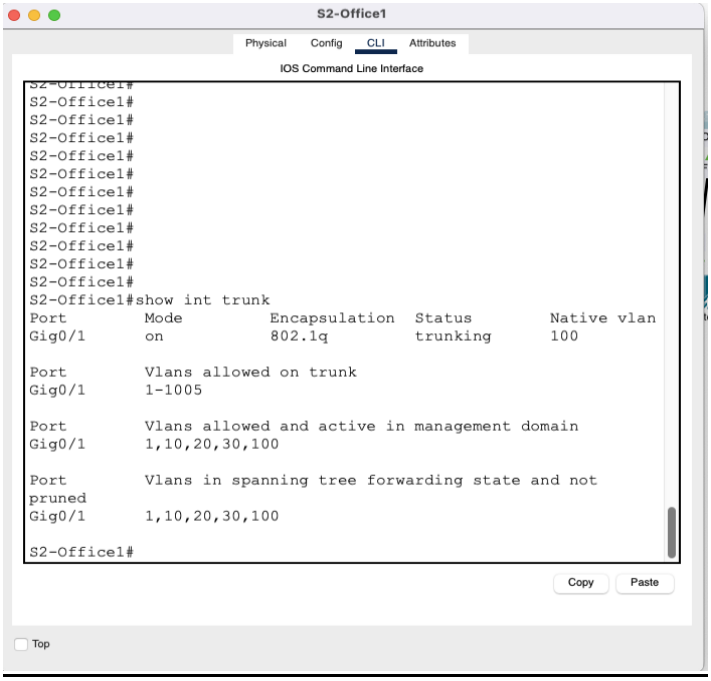
- **Gig0/0/0.10**
  int g0/0/0.10
  encapsulation dot1q 10
  ip add 172.16.0.1 255.255.224.0
  exit
- **Gig0/0/0.20**
  int g0/0/0.20
  encapsulation dot1q 20
  ip add 172.16.32.1 255.255.224.0
  exit
- **Gig0/0/0.30**
  int g0/0/0.30
  encapsulation dot1q 30
  ip add 172.16.64.1 255.255.224.0
  exit



- **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 6: Initial and Security Settings for Network Devices

*(Listed commands were executed on all routers and switches)*

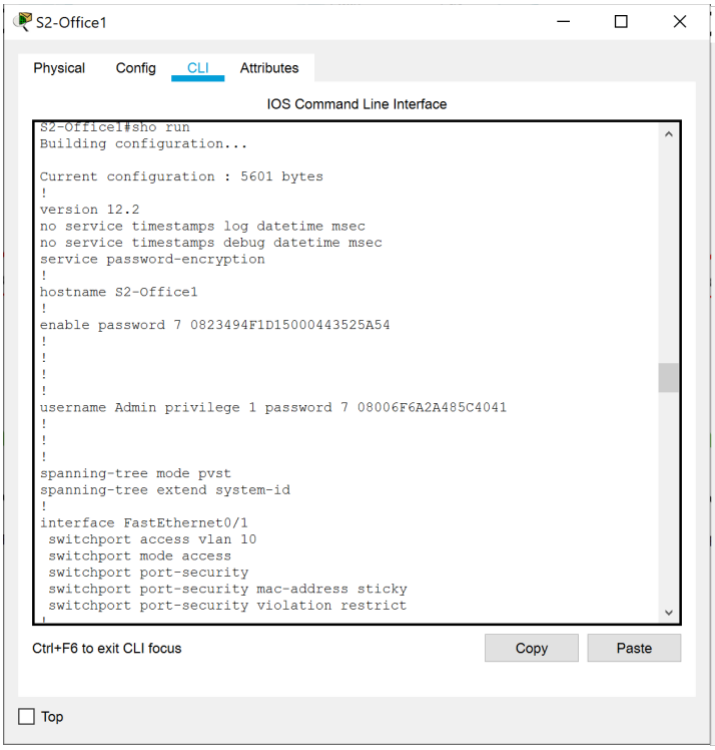
1. ```
   en
   conf t
   username Admin password ACDC1973
   ```

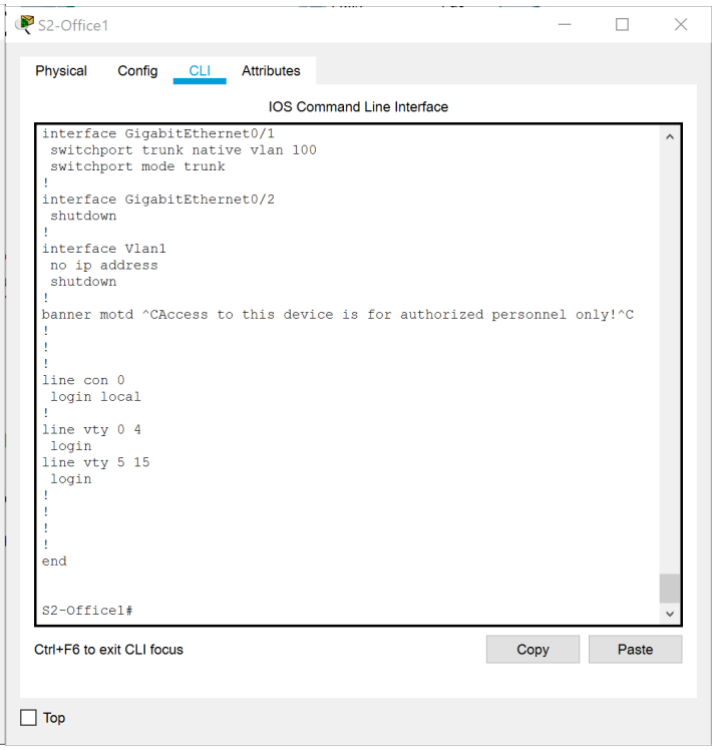
2. ```
   line console 0
   login local
   exit
   ```

3. ```
   enable password beatles1960
   ```

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

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

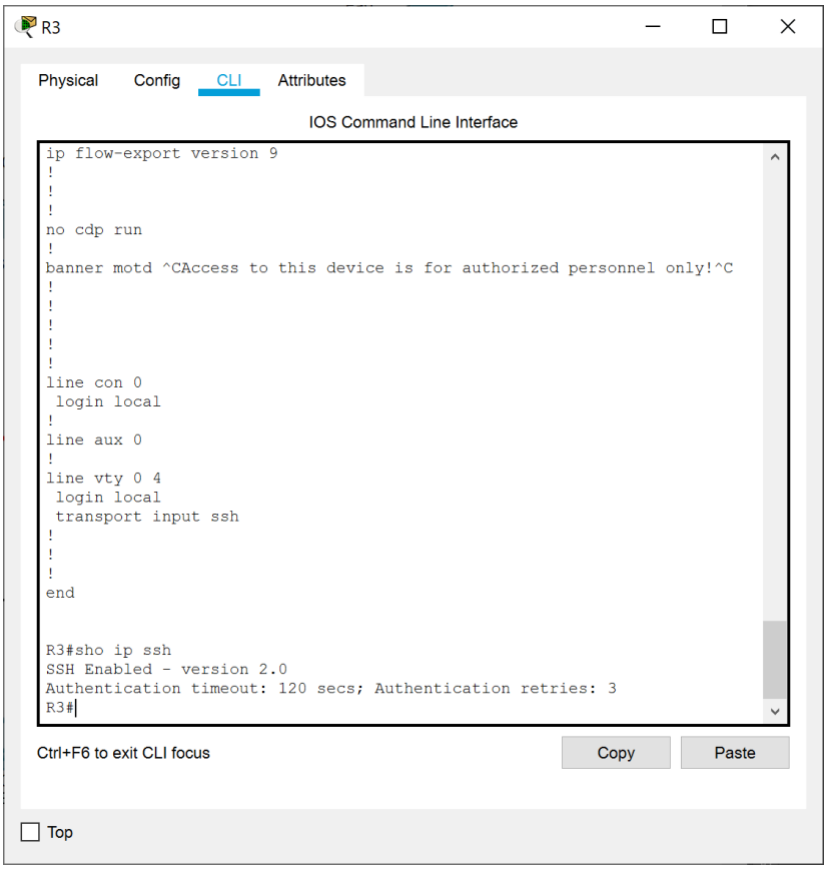




   ```

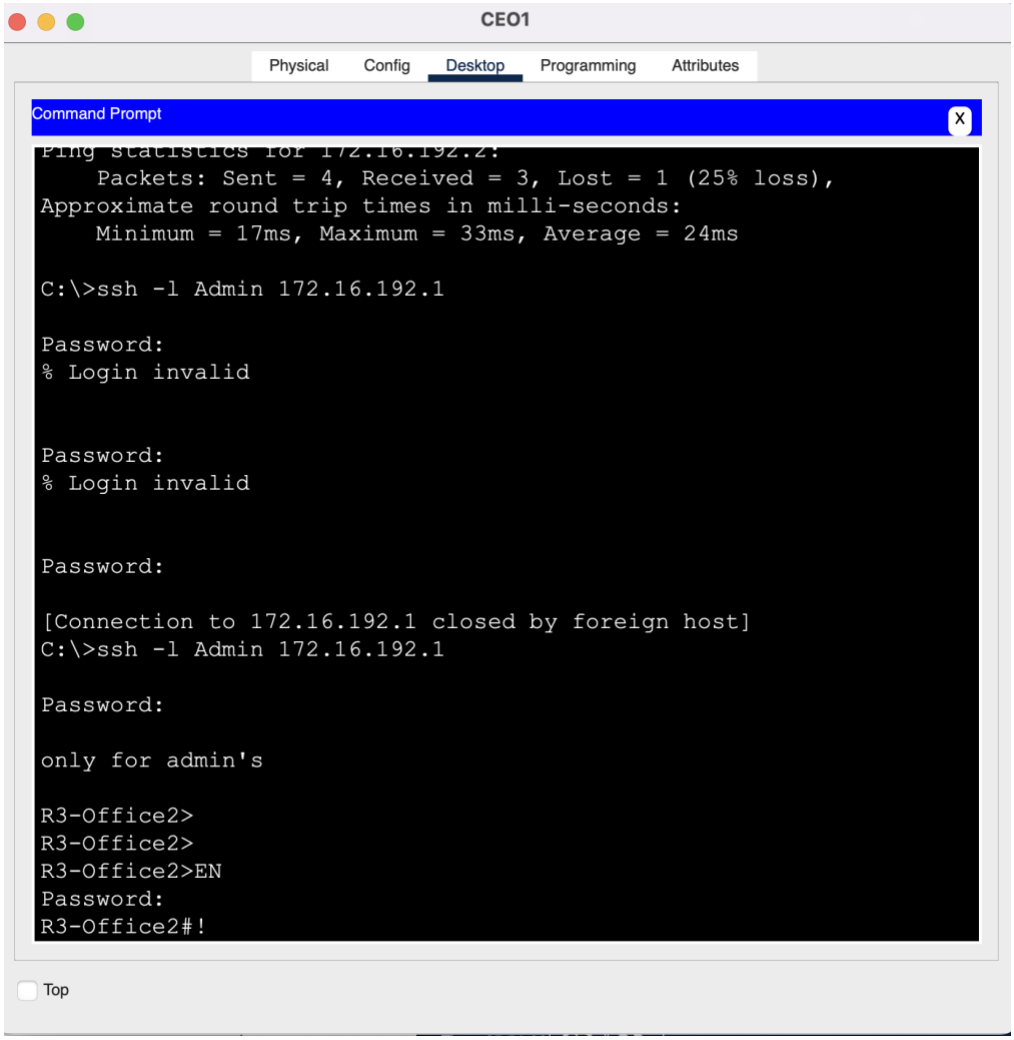
**Lab Task 7: Secure Remote Access**

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

1. `ip domain-name aast.com`
2. `crypto key generate rsa 1024`
3. `ip ssh version 2`
4. `line vty 0 4`
   `login local`
   `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.


CEO1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Ping statistics for 172.16.192.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 17ms, Maximum = 33ms, Average = 24ms
C:\>ssh -l Admin 172.16.192.1
Password:
% Login invalid
Password:
% Login invalid
Password:
[Connection to 172.16.192.1 closed by foreign host]
C:\>ssh -l Admin 172.16.192.1
Password:
only for admin's
R3-Office2>
R3-Office2>
R3-Office2>EN
Password:
R3-Office2#!
Top