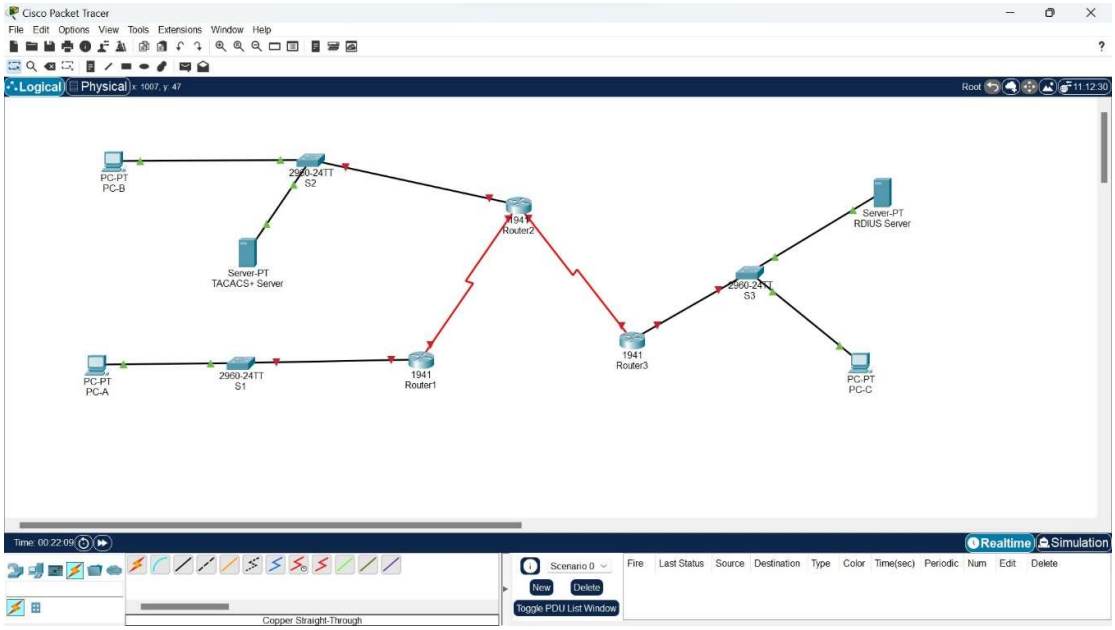
Date: 29/01/2024 **Security in Computing**

Practical 2:

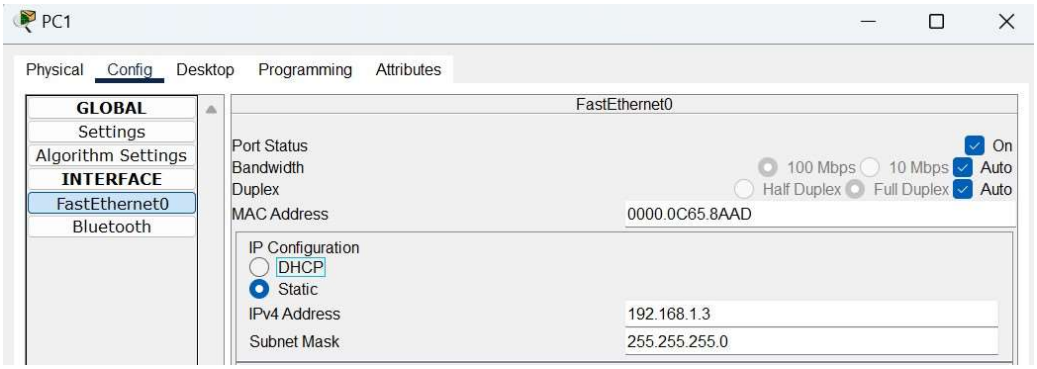
- **Aim: Configure AAA Authentication.**
  a. Configure a local user account on Router and configure authenticate on the console and vty lines using local AAA.
  b. Verify local AAA authentication from the Router console and the PC-A client.

- **Topology Diagram:**



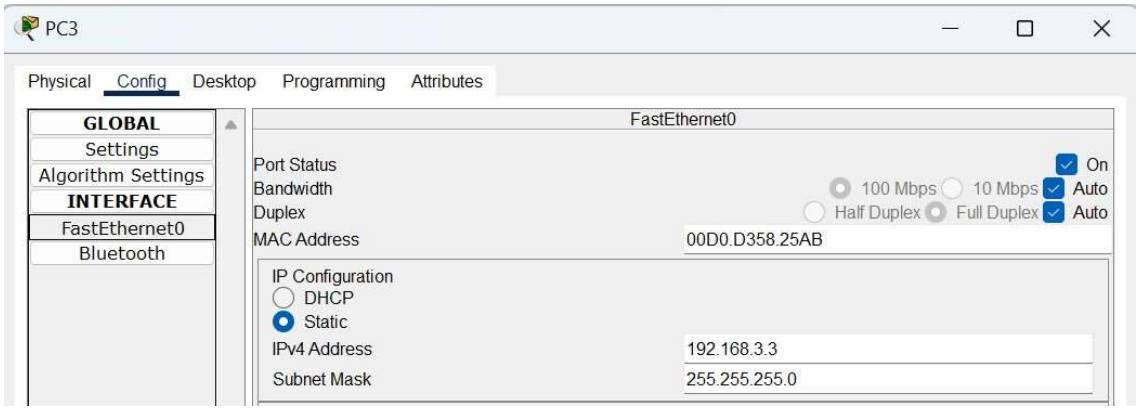
- **Assigning IP Address:**

1. PC1

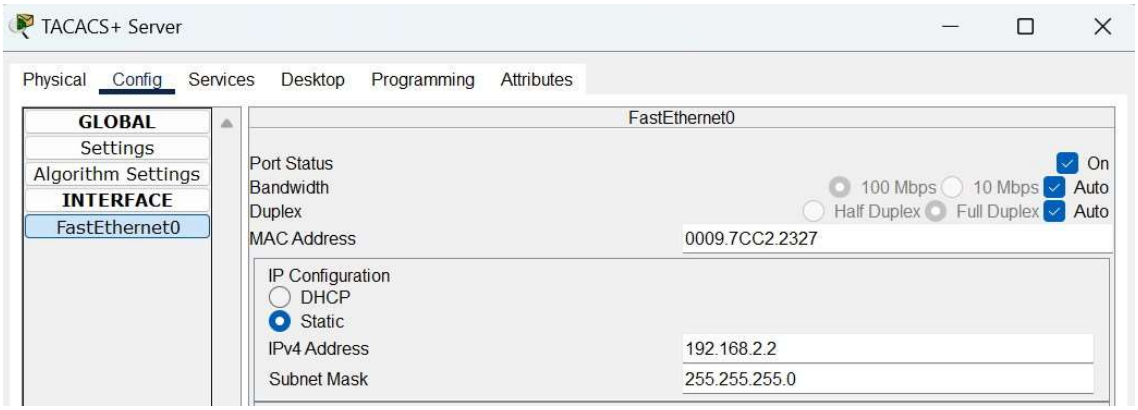


2. PC2

3. PC3

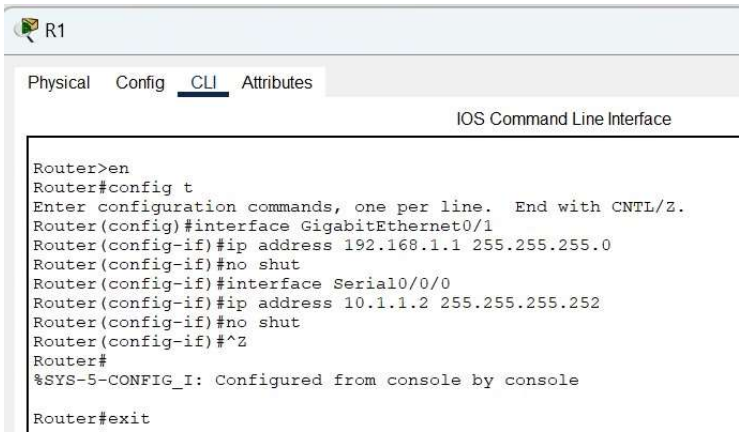


4. TACACS+ Server

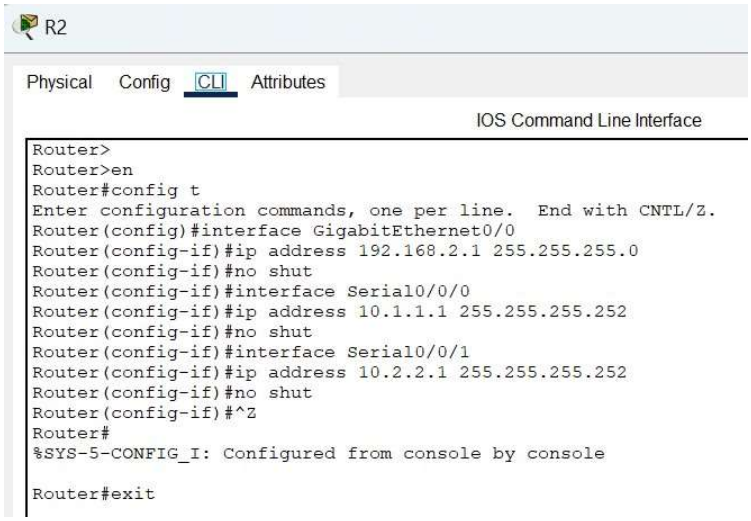


5. RADIUS Server

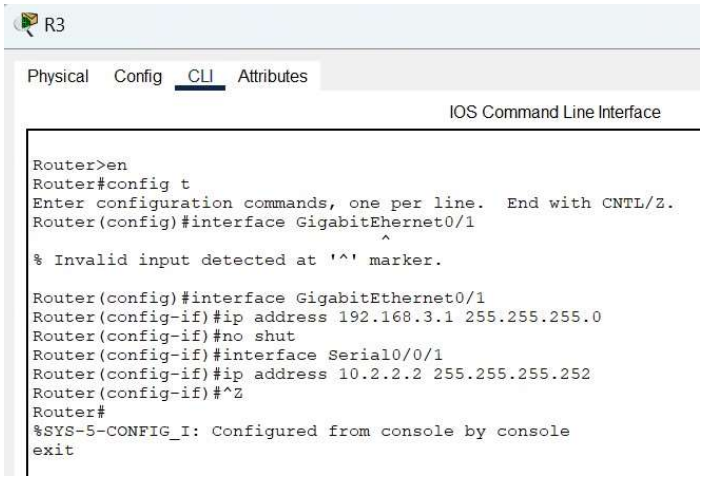
6. R1



7. R2

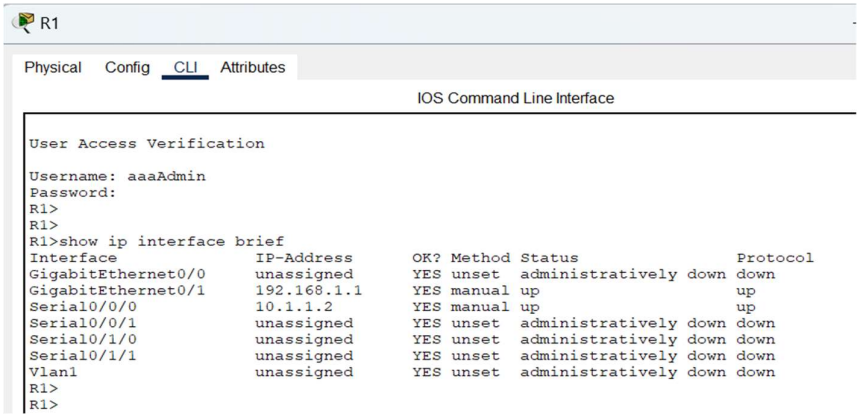


8. R3

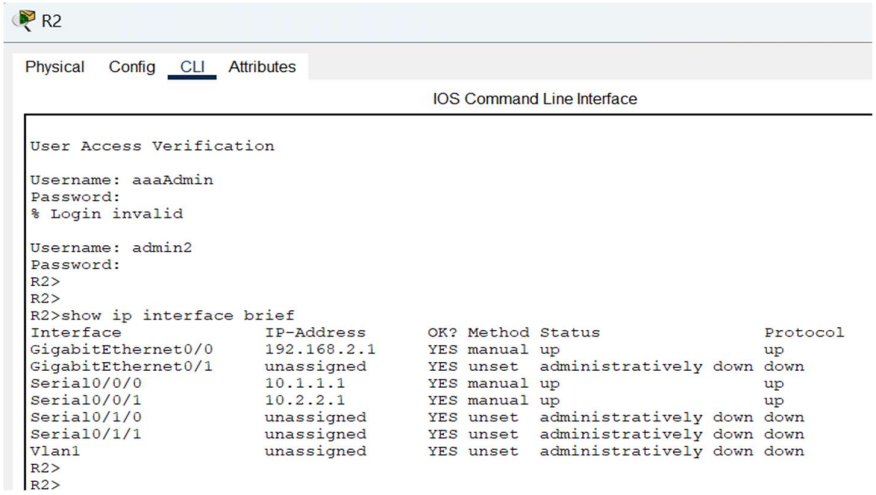


➢ Displaying IP Address Details of Routers

1. R1



2. R2

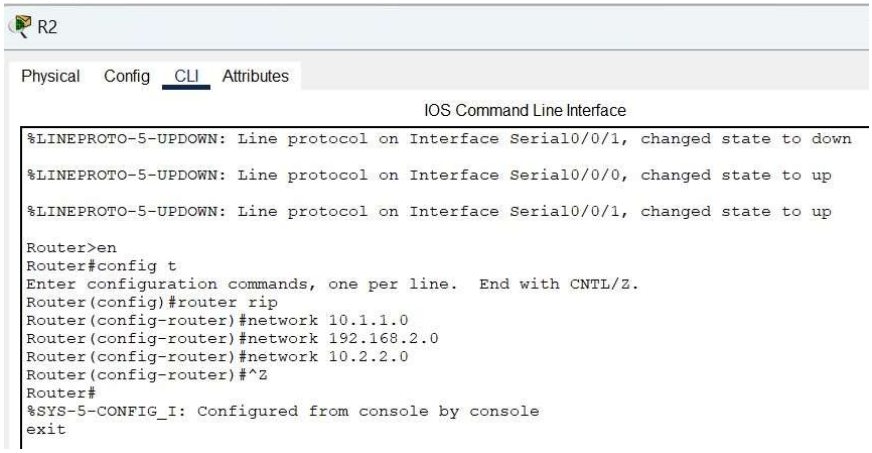


3. R3

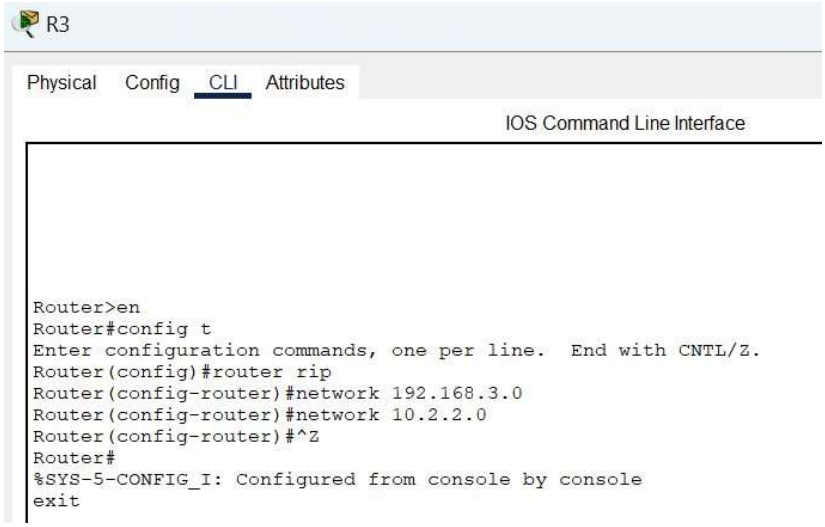
➢ Configure RIP on routers

1. R1

2. R2

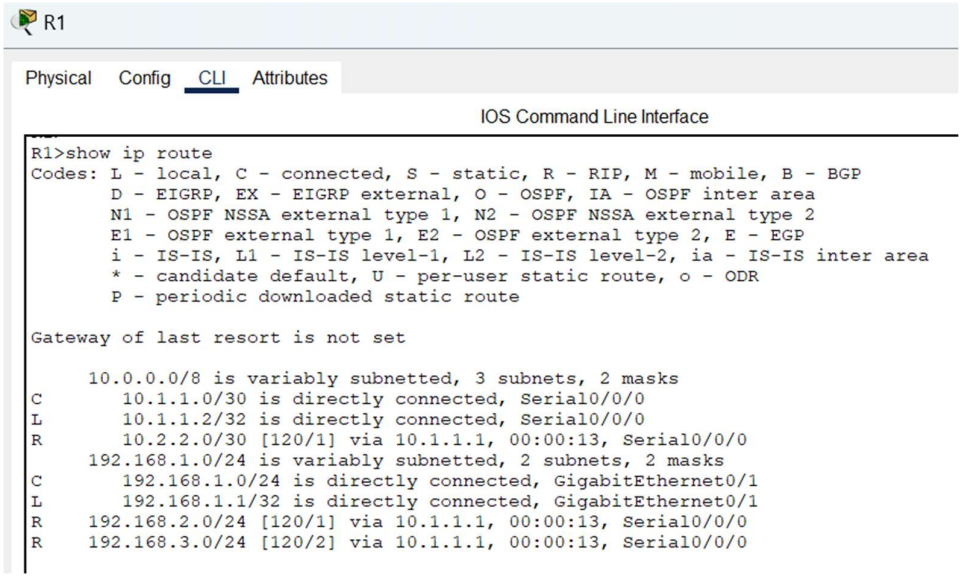


3. R3

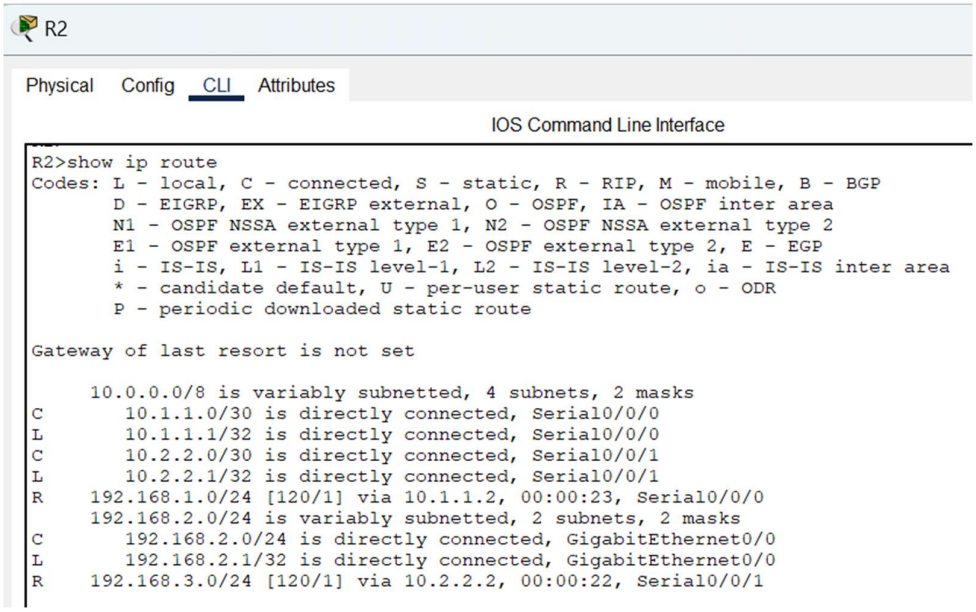


➢ Displaying routing tables of routers

1. R1

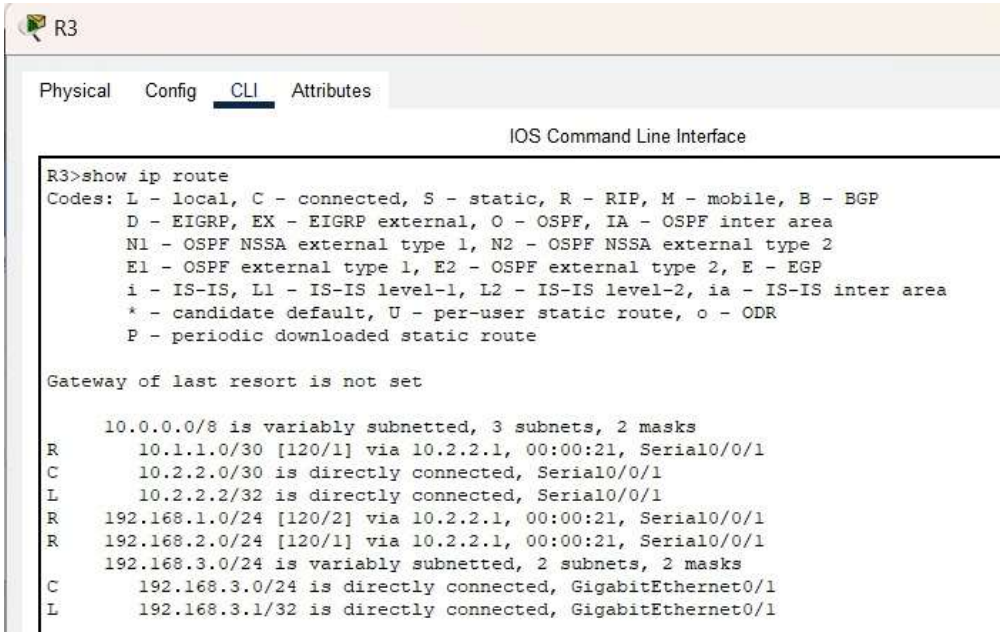


2. R2




```
R2>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       10.1.1.0/30 is directly connected, Serial0/0/0
L       10.1.1.1/32 is directly connected, Serial0/0/0
C       10.2.2.0/30 is directly connected, Serial0/0/1
L       10.2.2.1/32 is directly connected, Serial0/0/1
R    192.168.1.0/24 [120/1] via 10.1.1.2, 00:00:23, Serial0/0/0
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, GigabitEthernet0/0
L       192.168.2.1/32 is directly connected, GigabitEthernet0/0
R    192.168.3.0/24 [120/1] via 10.2.2.2, 00:00:22, Serial0/0/1
```

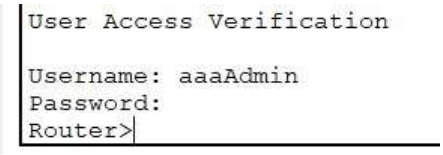
3. R3



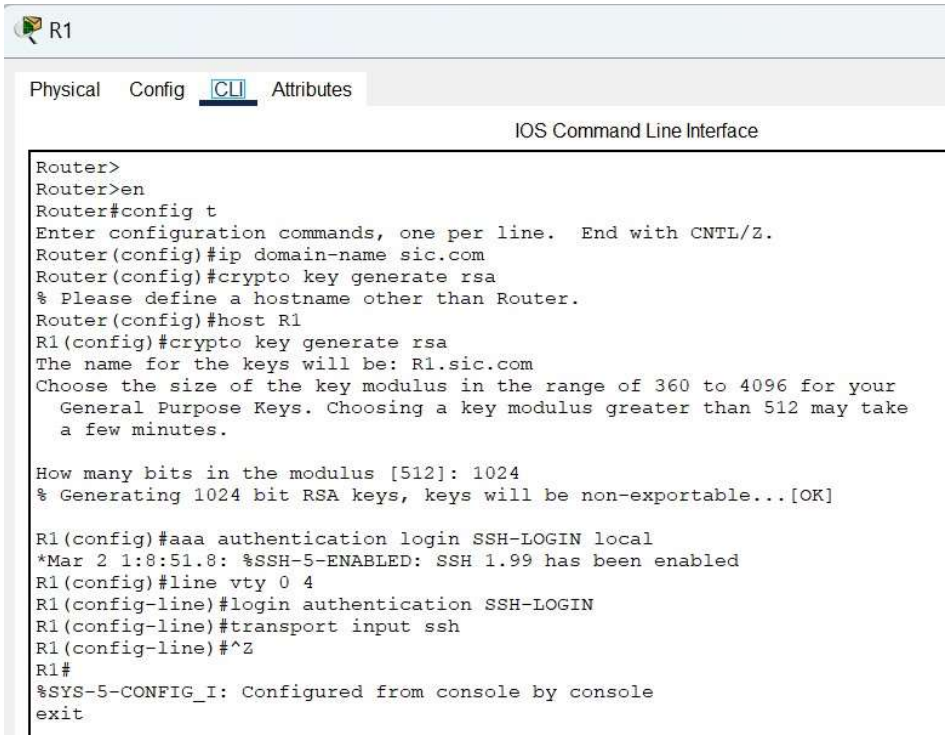

```
R3>show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
R       10.1.1.0/30 [120/1] via 10.2.2.1, 00:00:21, Serial0/0/1
C       10.2.2.0/30 is directly connected, Serial0/0/1
L       10.2.2.2/32 is directly connected, Serial0/0/1
R    192.168.1.0/24 [120/2] via 10.2.2.1, 00:00:21, Serial0/0/1
R    192.168.2.0/24 [120/1] via 10.2.2.1, 00:00:21, Serial0/0/1
     192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, GigabitEthernet0/1
L       192.168.3.1/32 is directly connected, GigabitEthernet0/1
```

➢ Configure Local AAA Authentication for Console Line on R1

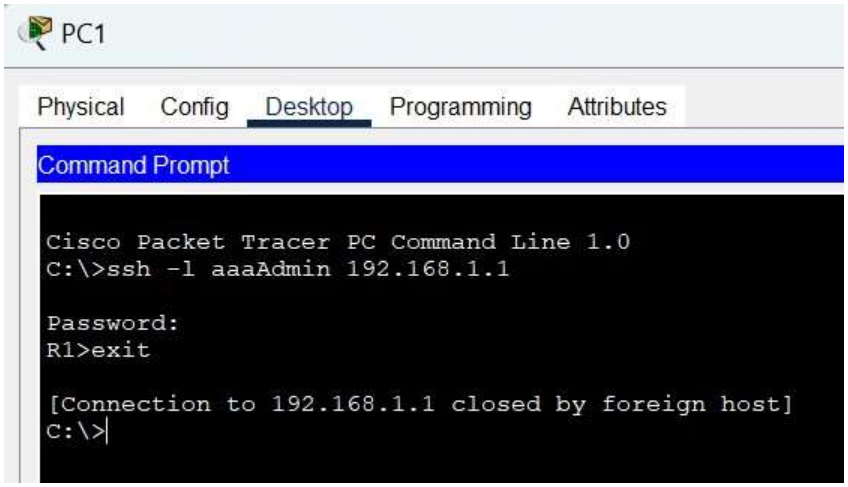
1. R1



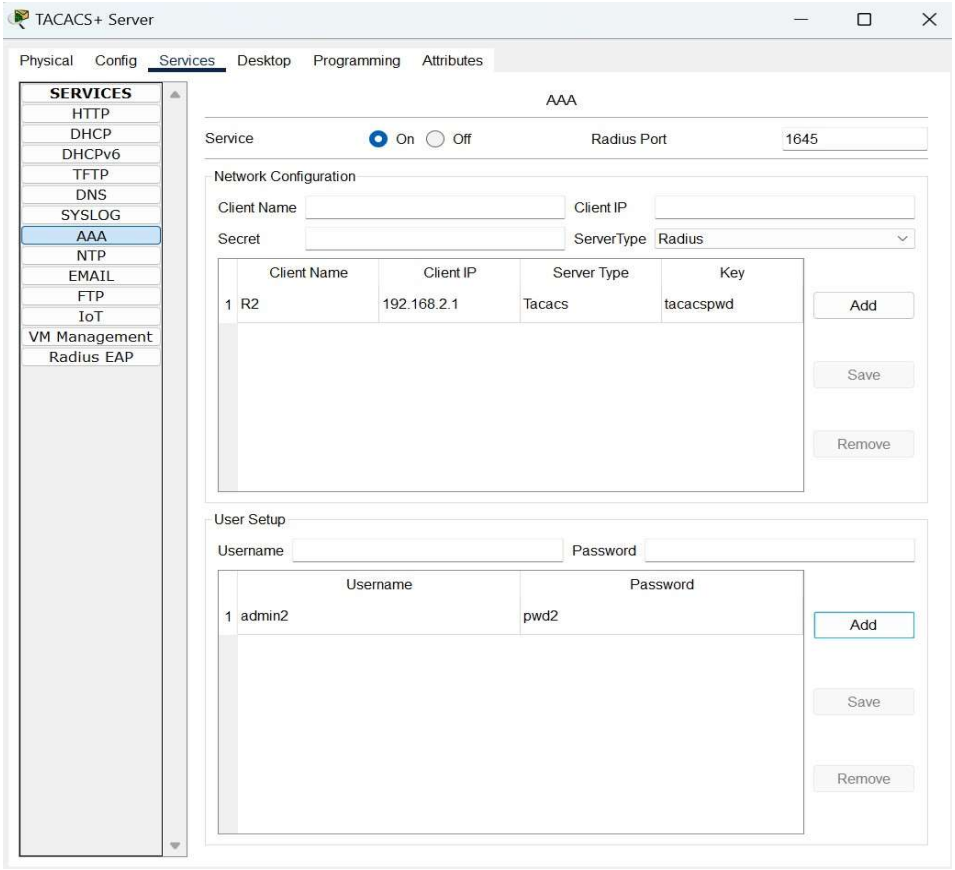
➢ Configure Local AAA Authentication for vty Lines on R1

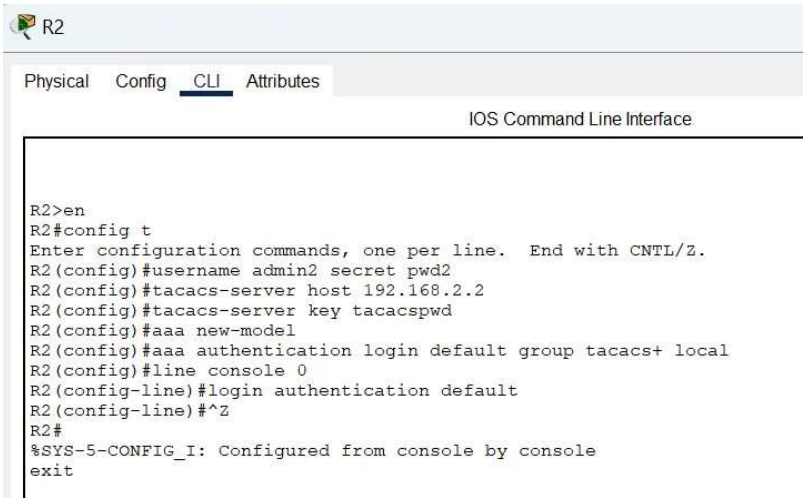


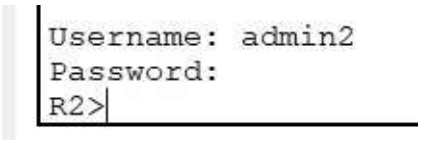
PC1



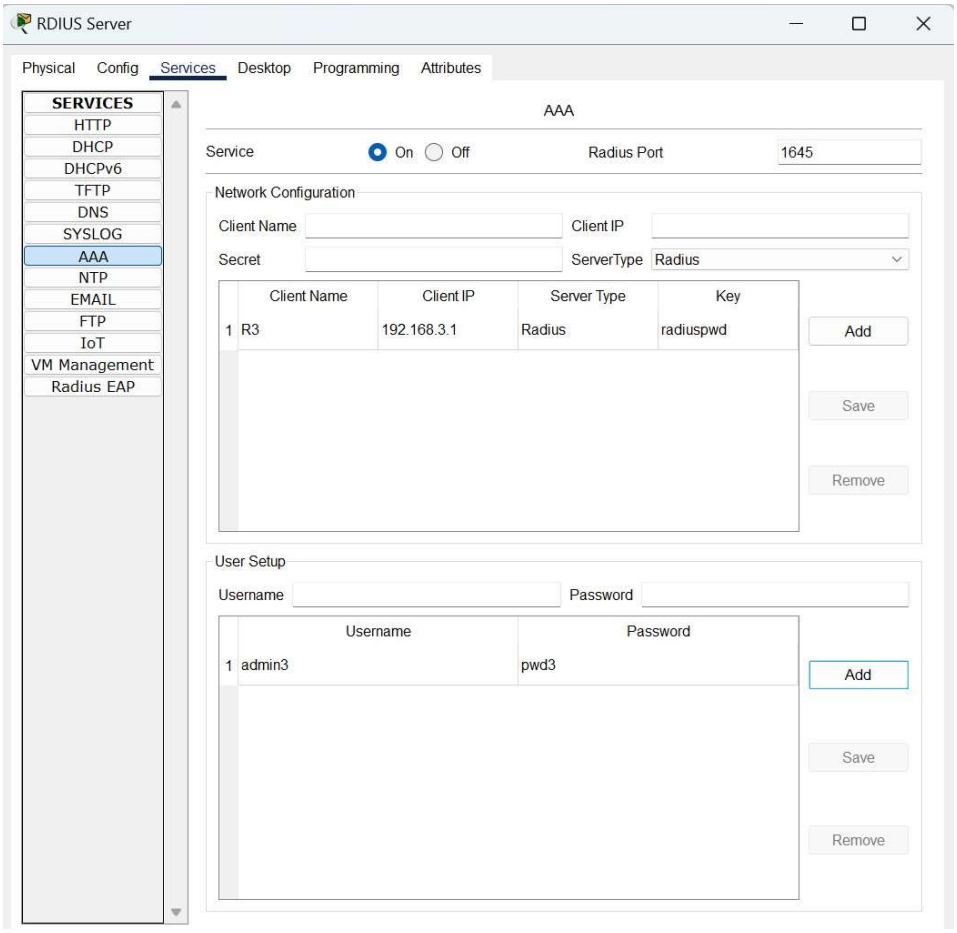
- **Configure Server-Based AAA Authentication Using TACACS+ on R2**







➢ Configure Server-Based AAA Authentication Using RADIUS on R3



R3

Physical Config CLI Attributes

IOS Command Line Interface

```
R3>en
R3#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#username admin3 secret pwd3
R3(config)#radius-server host 192.168.3.2
R3(config)#radius-server key radiuspwd
R3(config)#aaa new-model
R3(config)#aaa authentication login default group radius local
R3(config)#line console 0
R3(config-line)#login authentication default
R3(config-line)#^Z
R3#
%SYS-5-CONFIG_I: Configured from console by console
exit
```

```
User Access Verification

Username: admin3
Password:
```