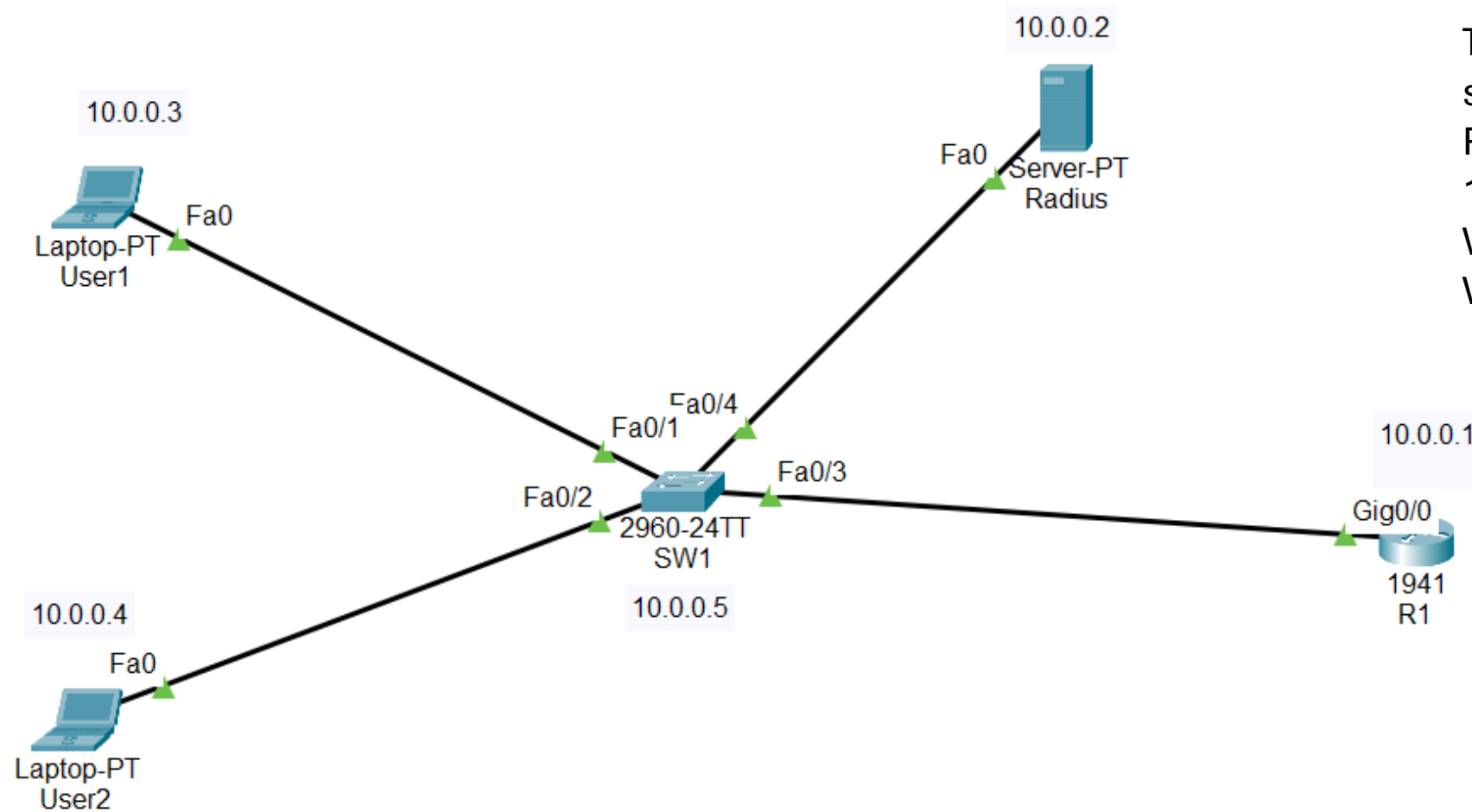




Mehmet Resat Abdusselam

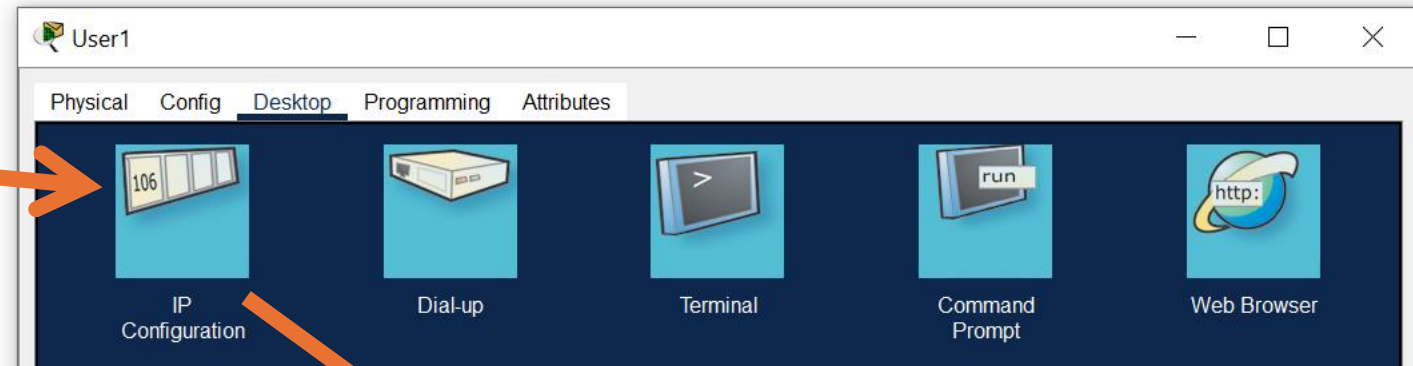
Mehmetresat.com

RADIUS - AAA Configuration On Cisco Devices

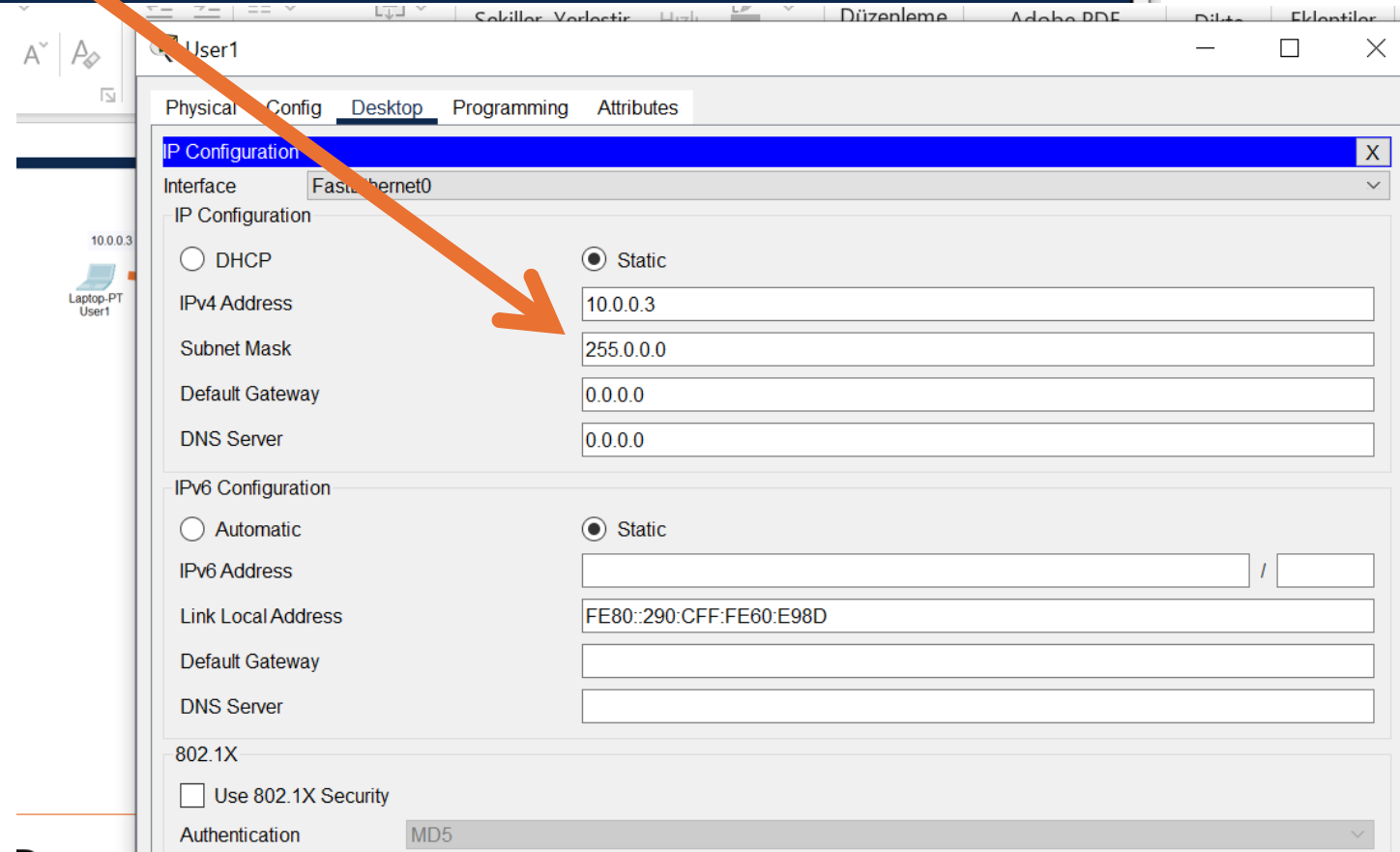


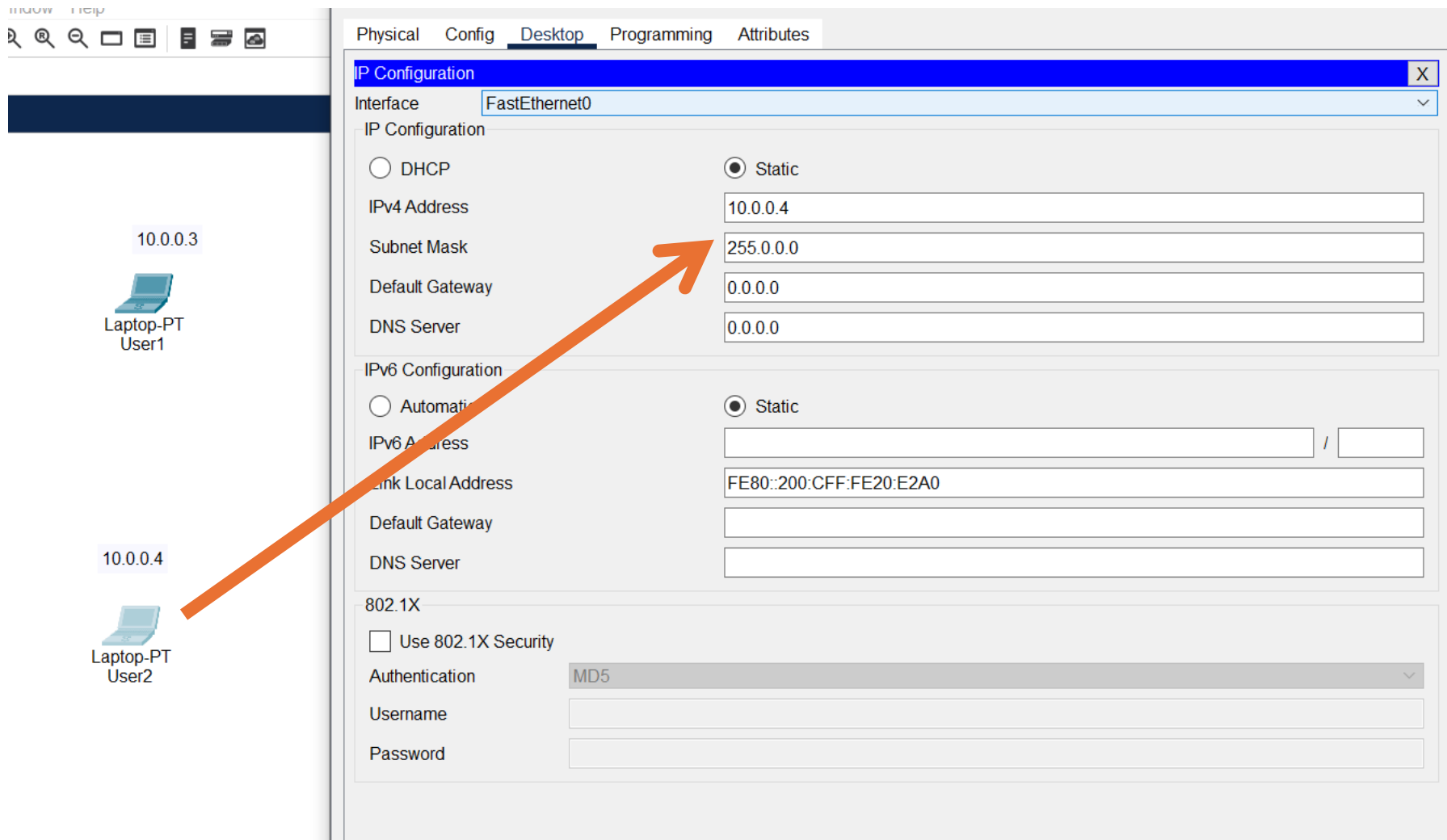
The topology we will make is as shown in the figure. ip of devices :
Radius server 10.0.0.2/8 – Router 10.0.0.1 – Switch 10.0.0.5 –
Workstation user1 10.0.0.3 –
Workstation user2 10.0.0.4

10.0.0.3
Laptop-PT
User1



Give ip to devices :
User1

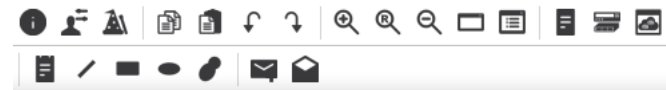




Give ip to devices :
User2

: Tracer

ons View Tools Extensions Window Help



Radius

Physical Config Services **Desktop** Programming Attributes

IP Configuration X

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 10.0.0.2

Subnet Mask 255.0.0.0

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::203:E4FF:FE9C:625D

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

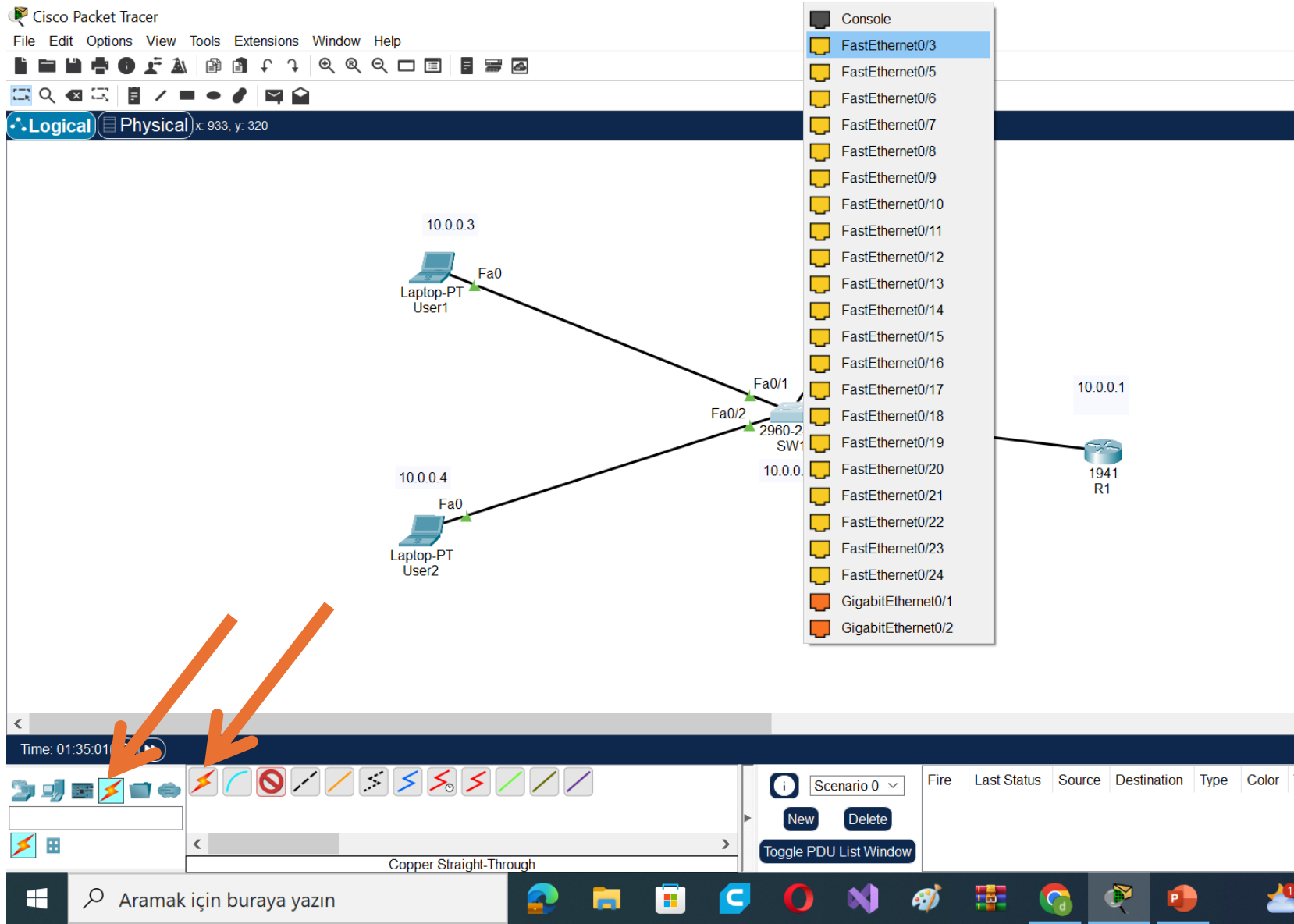
Authentication MD5

Username

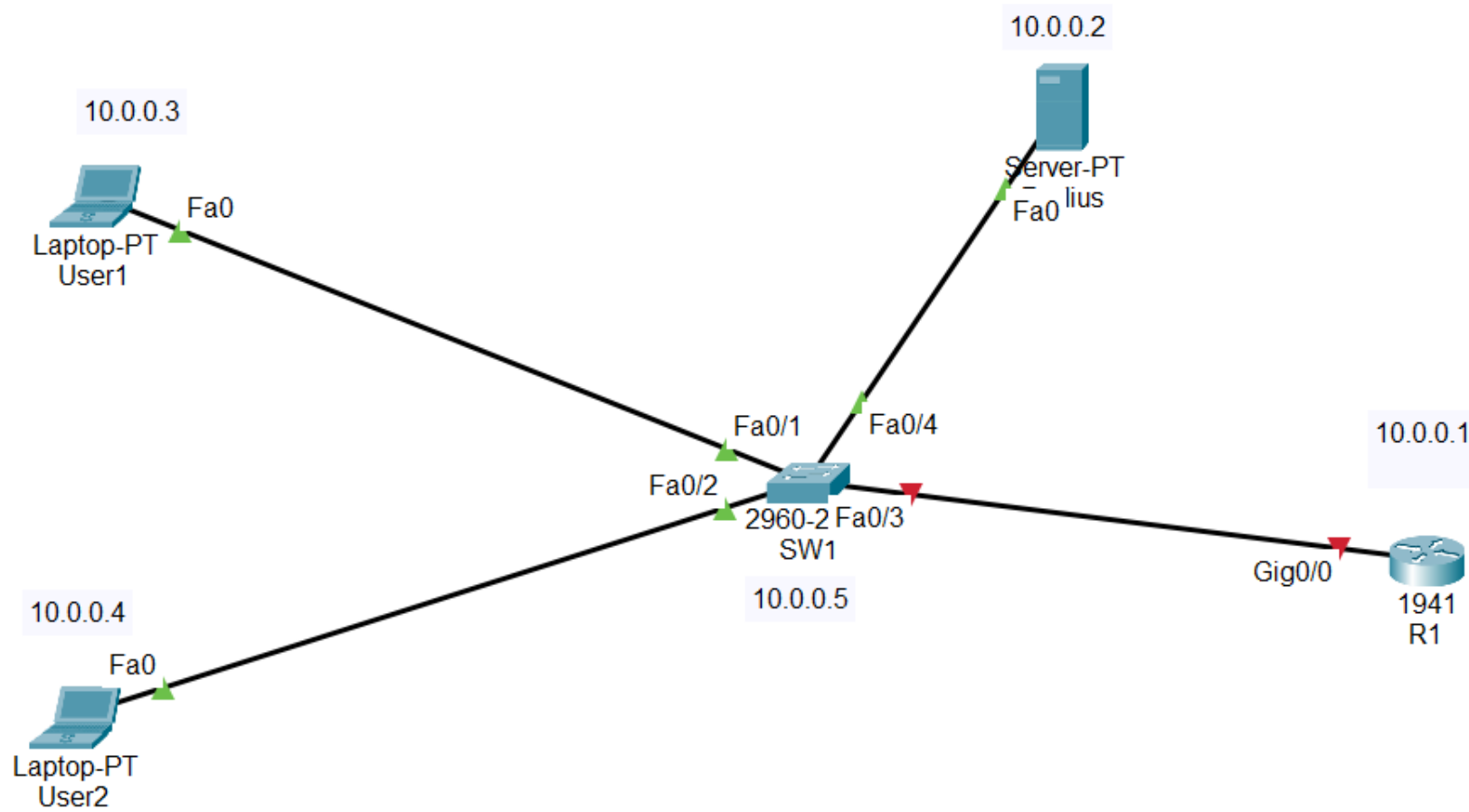
10.0.0.2

Server-PT
Radius

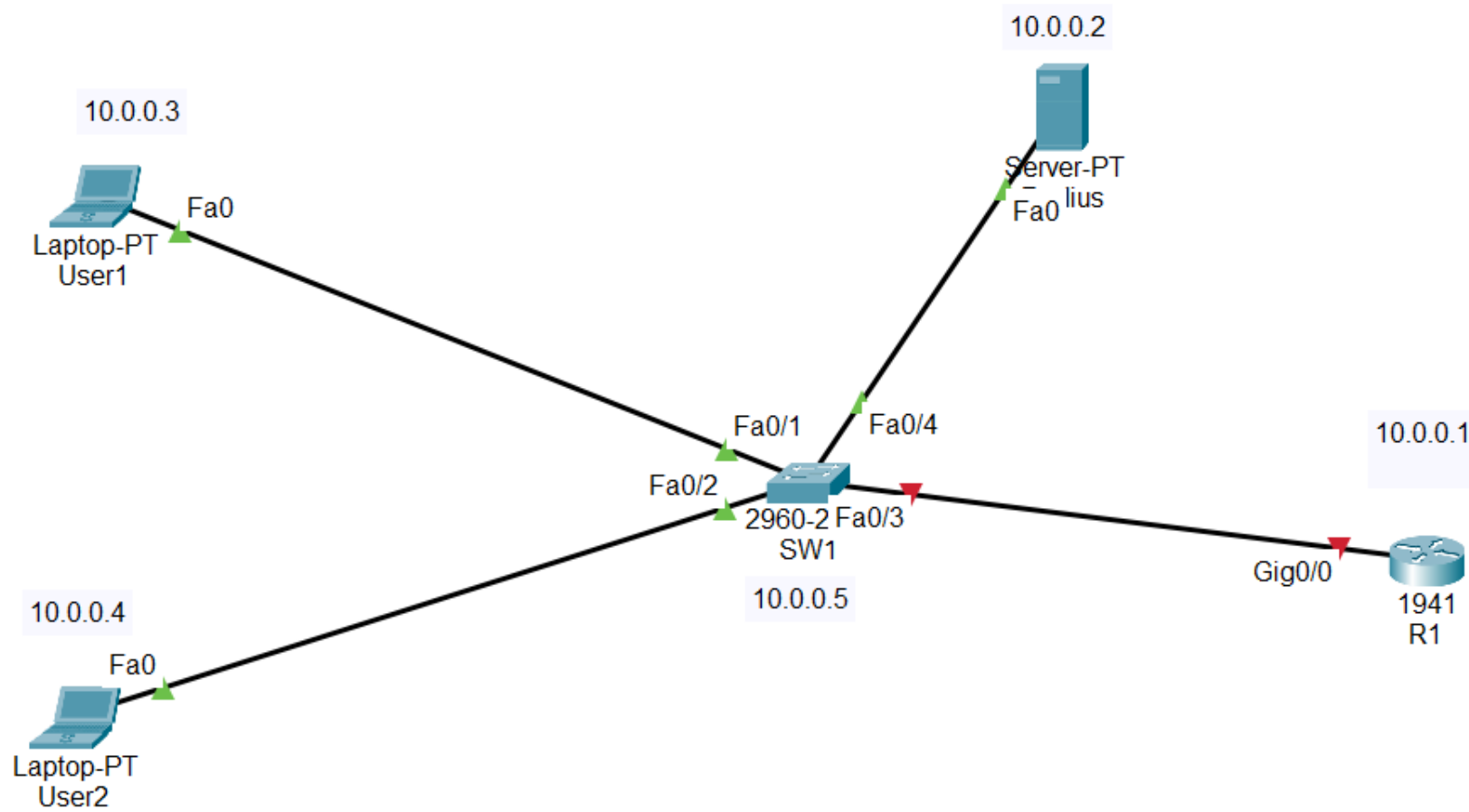
Give ip to devices :
Radius Server



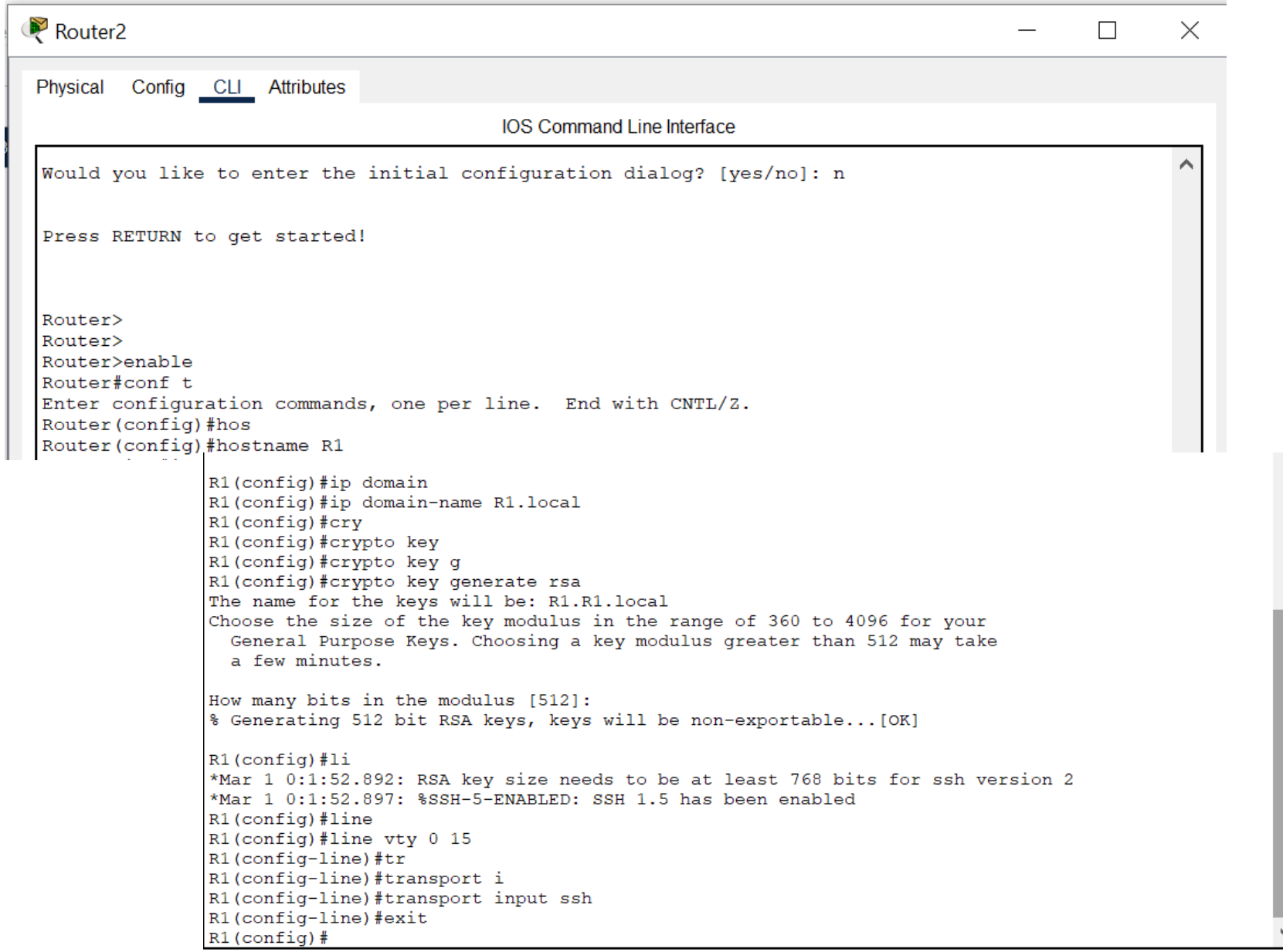
We connect the devices



final state of
topology



final state of
topology



The screenshot shows a window titled "Router2" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following sequence of commands and responses:

```
Would you like to enter the initial configuration dialog? [yes/no]: n

Press RETURN to get started!

Router>
Router>
Router>enable
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hos
Router(config)#hostname R1

R1(config)#ip domain
R1(config)#ip domain-name R1.local
R1(config)#cry
R1(config)#crypto key
R1(config)#crypto key g
R1(config)#crypto key generate rsa
The name for the keys will be: R1.R1.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

R1(config)#li
*Mar 1 0:1:52.892: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:1:52.897: %SSH-5-ENABLED: SSH 1.5 has been enabled
R1(config)#line
R1(config)#line vty 0 15
R1(config-line)#tr
R1(config-line)#transport i
R1(config-line)#transport input ssh
R1(config-line)#exit
R1(config)#
```

Enable SSH in
router

```
>configure terminal
# hostname R1
# ip domain-name r1.local
# crypto key generate rsa
# line vty 0 15
# transport input ssh
# exit
```

```
Switch>
Switch>
Switch>
Switch>enable
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hos
Switch(config)#hostname SW1
SW1(config)#ip domain-name sw1.local
SW1(config)#crypto key generate rsa
The name for the keys will be: SW1.sw1.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]:
% Generating 512 bit RSA keys, keys will be non-exportable...[OK]

SW1(config)#
*Mar 1 0:24:2.273: RSA key size needs to be at least 768 bits for ssh version 2
*Mar 1 0:24:2.273: %SSH-5-ENABLED: SSH 1.5 has been enabled
SW1(config)#line vty 0 15
SW1(config-line)#transport input ssh
SW1(config-line)#ext
^
% Invalid input detected at '^' marker.

SW1(config-line)#exit
SW1(config)#
```

Copy

Paste

Enable SSH in Switch

```
>configure terminal
# hostname SW1
# ip domain-name sw1.local
# crypto key generate rsa
# line vty 0 15
# transport input ssh
# exit
```

☐ Top

in buraya yazın



Router2

Physical Config CLI Attributes

IOS Command Line Interface

```
% Unknown command or computer name, or unable to find computer address

R1#
R1#
R1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#
R1(config)#interface gig 0/0
R1(config-if)#ip ad
R1(config-if)#ip address 10.0.0.1 255.0.0.0
R1(config-if)#no shut

R1(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

R1(config-if)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console

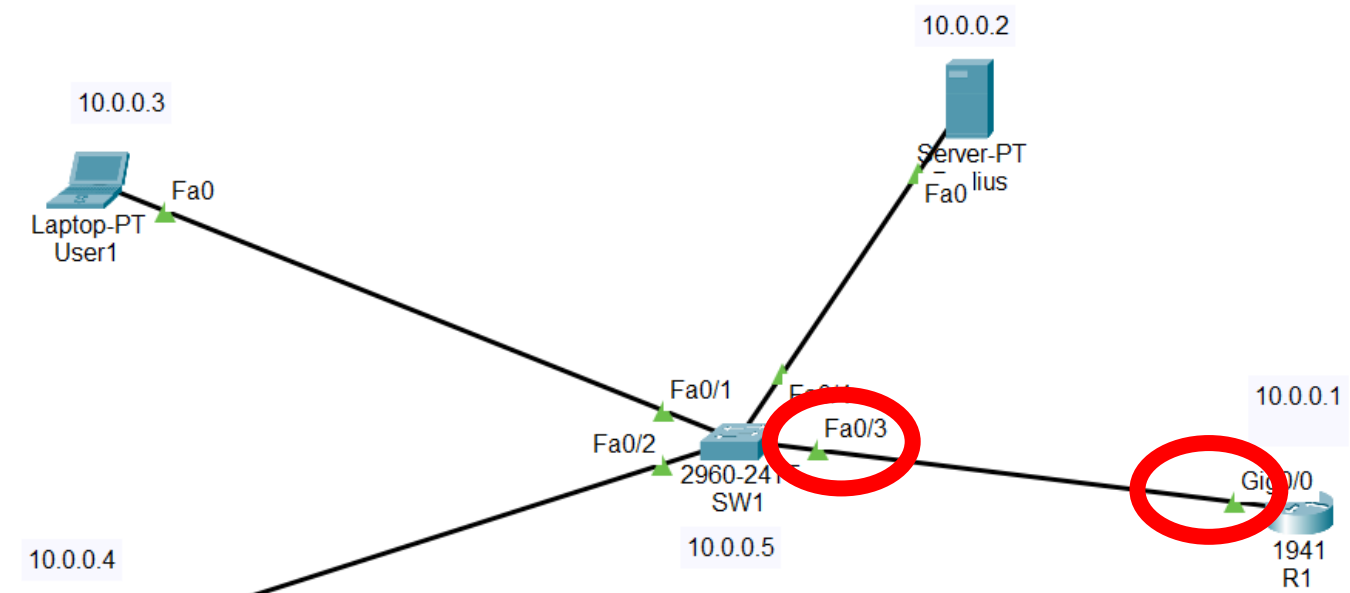
R1#
```

Copy Paste

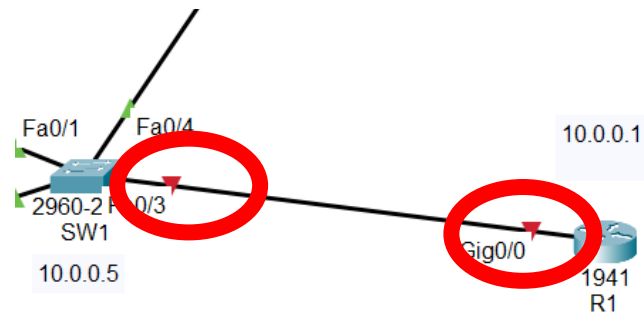
Top

Active Router port
gig 0/0

```
>enable
#conf t
#interface gig 0/0
#ip address 10.0.0.1 255.0.0.0
#no shut
#end
```



Connection turn to green and be active



```
SW1#  
SW1#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
SW1(config)#int vlan1  
SW1(config-if)#ip address 10.0.0.5 255.0.0.0  
SW1(config-if)#no shut  
  
SW1(config-if)#  
%LINK-5-CHANGED: Interface Vlan1, changed state to up  
  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan1, changed state to up  
  
SW1(config-if)#end  
SW1#  
%SYS-5-CONFIG_I: Configured from console by console  
  
SW1#
```

Copy

Paste

☐ Top

Active Switch vlan
port

```
>enable  
#conf t  
#int vlan1  
#ip address 10.0.0.5 255.0.0.0  
#no shut  
#end
```

Radius

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA**
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

AAA

Service ☒ On ☐ Off Radius Port 1645

Network Configuration

Client Name R1 Client IP 10.0.0.1

Secret word ServerType Radius

	Client Name	Client IP	Server Type	Key	
1	R1	10.0.0.1	Radius	word	Add

Save

Remove

User Setup

Username Password

Username Password Add

Add R1 as a client
to Radius Server

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA**
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

AAA

Service ☒ On ☐ Off Radius Port

Network Configuration

Client Name Client IP

Secret ServerType

	Client Name	Client IP	Server Type	Key	
1	R1	10.0.0.1	Radius	word	Add
					Save
					Remove

User Setup

Add SW1 as a client
to Radius Server

Radius

Physical Config **Services** Desktop Programming Attributes

SERVICES

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA**
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

AAA

Service ☒ On ☐ Off Radius Port

Network Configuration

Client Name Client IP

Secret ServerType

	Client Name	Client IP	Server Type	Key	
1	R1	10.0.0.1	Radius	word	Add
2	SW1	10.0.0.5	Radius	word	Save
					Remove

User Setup

Username Password

	Username	Password	
1	User1	123456	Add
			Save
			Remove

Add User1 and User2 with password to connecting with ssh

Active Radius Server in the Router

```
R1>enable
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#aaa new-model
R1(config)#radius-server host 10.0.0.2 key word
R1(config)#aaa authen
R1(config)#aaa authentication login de
R1(config)#aaa authentication login default gr
R1(config)#aaa authentication login default group ra
R1(config)#aaa authentication login default group radius local
R1(config)#aaa authentication enable default group radius
R1(config)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console
R1#
```

Copy

Paste

>configure terminal
aaa new-model
radius-server host 10.0.0.2 key
word
aaa authentication login
default group radius **local**
aaa authentication enable
default group radius

- group radius: First try RADIUS for authentication
- local: If RADIUS is unavailable, use the router's local database

```
SW1>
SW1>enable
SW1#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
SW1(config)#aaa new-model
SW1(config)#rad
SW1(config)#radi
SW1(config)#radius
SW1(config)#radius-server host 10.0.0.2 key word
SW1(config)#aaa auth
SW1(config)#aaa authen
SW1(config)#aaa authentication log
SW1(config)#aaa authentication login d
SW1(config)#aaa authentication login default gr
SW1(config)#aaa authentication login default group ra
SW1(config)#aaa authentication login default group radius local
SW1(config)#aaa authentication enable default group radius
SW1(config)#end
SW1#
%SYS-5-CONFIG_I: Configured from console by console
SW1#
```

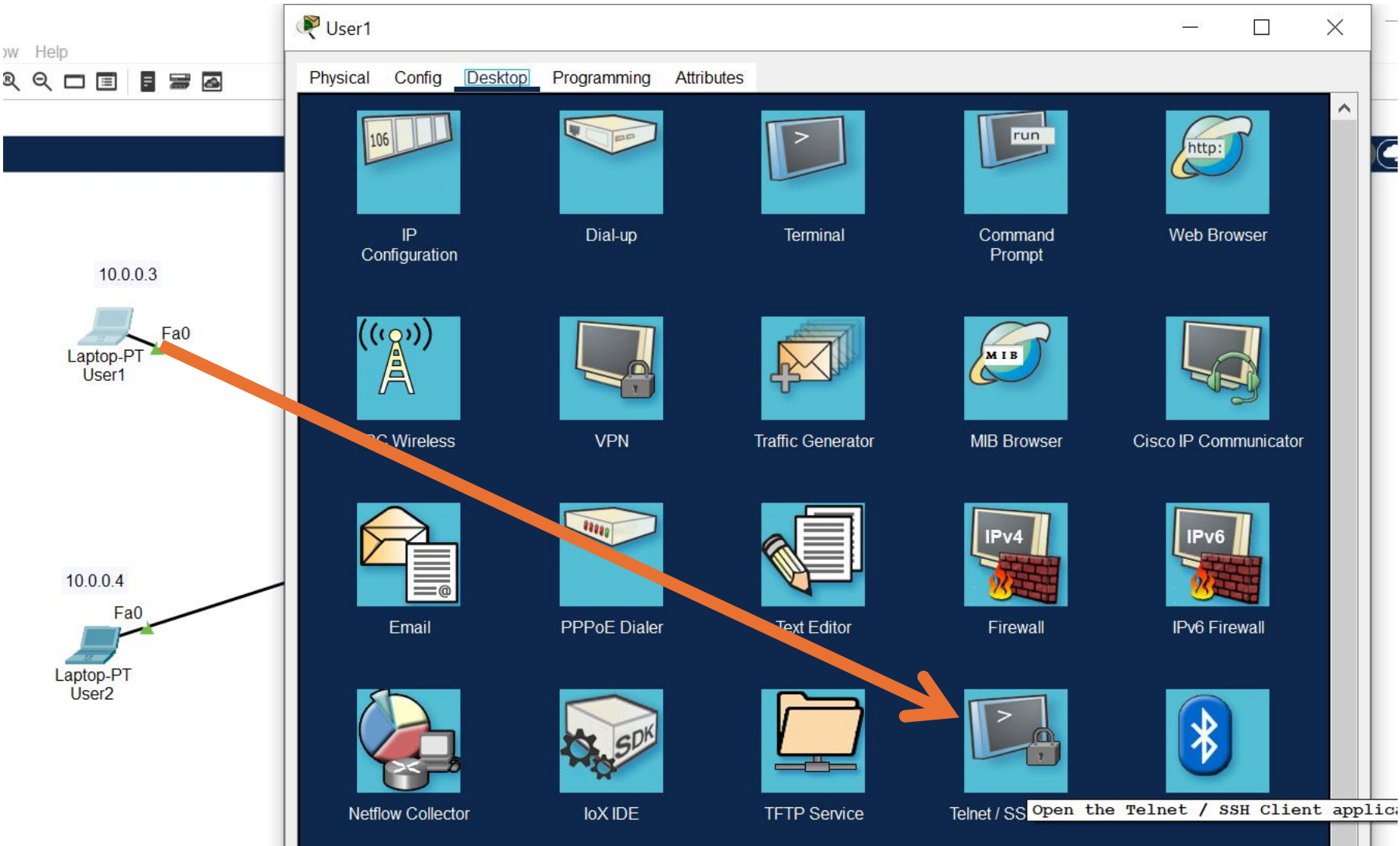
Copy Paste

Top

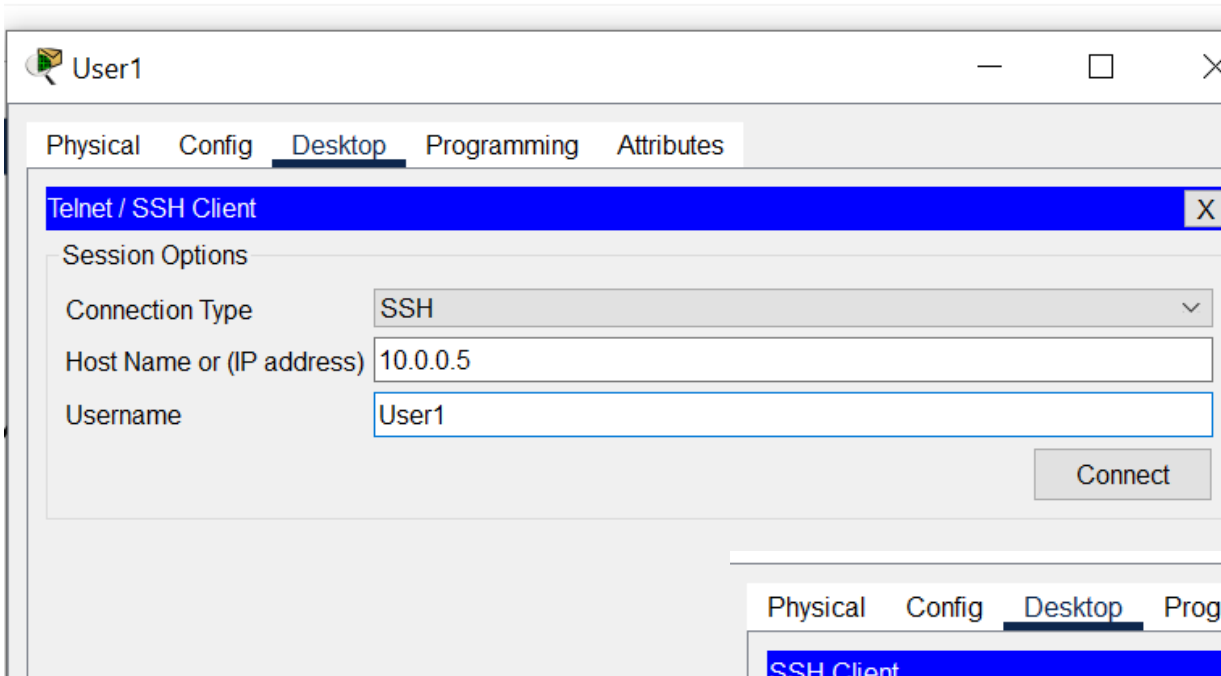
Active Radius Server in the Switch

>configure terminal
aaa new-model
radius-server host 10.0.0.2 key
word
aaa authentication login
default group radius **local**
aaa authentication enable
default group radius

- group radius: First try RADIUS for authentication
- local: If RADIUS is unavailable, use the router's local database

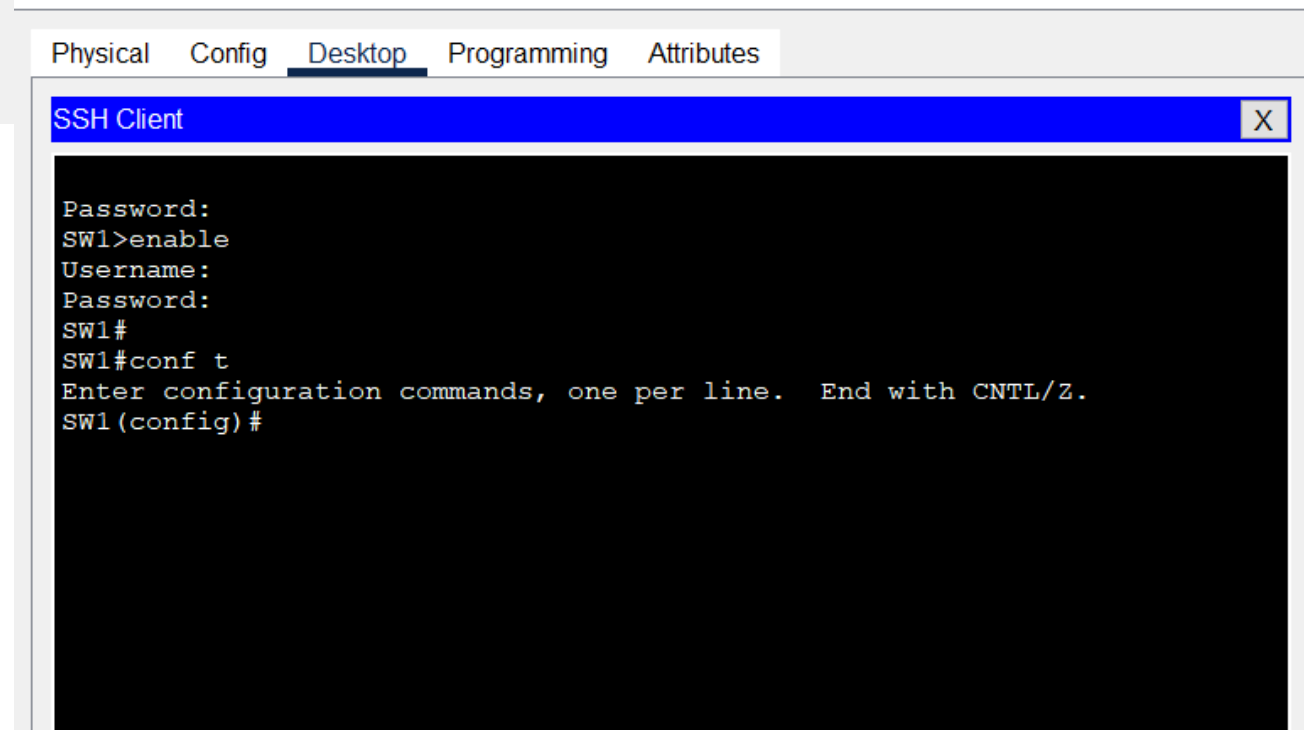


Use SSH to
connection



Use SSH to connect
to the Switch

Username : User1
Password : 123456



User2

Physical Config Desktop Programming Attributes

Telnet / SSH Client X

Session Options

Connection Type SSH

Host Name or (IP address) 10.0.0.1

Username User2

Connect

Use SSH to connect
to the Router

Username : User2
Password : 654321

Physical Config Desktop Programming Attributes

SSH Client X

```
Password:
R1>enable
Username:
Password:
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config) #
```