Assignment 2: Packet Tracer WLAN configuration

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Packet Tracer - WLAN Configuration

Addressing Table

Device	Interface	IP Address
Home Wireless Router	Internet	DHCP
	LAN	192.168.6.1/27
RTR-1	G0/0/0.2	192.168.2.1/24
RTR-1	G0/0/0.5	192.168.5.1/24
RTR-1	G0/0/0.100	192.168.100.1/24
RTR-1	G0/0/1	10.6.0.1/24
SW1	VLAN 200	192.168.100.100/24
LAP-1	G0	DHCP
WLC-1	Management	192.168.100.254/24
RADIUS Server	NIC	10.6.0.254/24
Home Admin	NIC	DHCP
Enterprise Admin	NIC	192.168.100.200/24
Web Server	NIC	203.0.113.78/24
DNS Server	NIC	10.100.100.252
Laptop	NIC	DHCP
Tablet PC	Wireless0	DHCP

Smartphone	Wireless0	DHCP
Wireless Host 1	Wireless0	DHCP
Wireless Host 2	Wireless0	DHCP

WLAN Information

WLAN	SSID	Authentication	Username	Password
Home Network	HomeSSID	WPA2-Personal	N/A	Cisco123
WLAN VLAN 2	SSID-2	WPA-2 Personal	N/A	Cisco123
WLAN VLAN 5	SSID-5	WPA-2 Enterprise	userWLAN5	userW5pass

Note: It is not a good practice to reuse passwords as is done in this activity. Passwords have been reused to make it easier to work through the tasks.

Introduction

This report details the configuration and verification of a WLAN setup using Cisco Packet Tracer, focusing on both home and enterprise environments. The exercise involves setting up a home wireless router with WPA2-PSK security and configuring a Wireless LAN Controller (WLC) for enterprise use, implementing both WPA2-PSK and WPA2-Enterprise security measures. The tasks aim to enhance security, manage IP addressing, and ensure seamless connectivity for various wireless devices.

Objectives

In this activity, you will configure both a wireless home router and a WLC-based network. You will implement both WPA2-PSK and WPA2-Enterprise security.

• Configure a home router to provide Wi-Fi connectivity to a variety of devices. •

Configure WPA2-PSK security on a home router.

• Configure interfaces on a WLC.

• Configure WLANs on a WLC.

• Configure WPA2-PSK security on a WLAN and connect hosts to WLAN.

• Configure WPA2-Enteprise on a WLAN and connect hosts to the WLAN.

• Verify connectivity WLAN connectivity.

Background / Scenario

You will apply your WLAN skills and knowledge by configuring a home wireless router and an enterprise WLC. You will implement both WPA2-PSK and WPA2-Enterprise security. Finally, you will connect hosts to each WLAN and verify connectivity.

Instructions

Part 1: Configure a Home Wireless Router.

You are installing a new home wireless router at a friend's house. You will need to change settings on the router to enhance security and meet your friend's requirements.

Step 1: Change DHCP settings.

a. Open the Home Wireless Router GUI and change the router IP and DHCP settings according to the information in the Addressing Table.

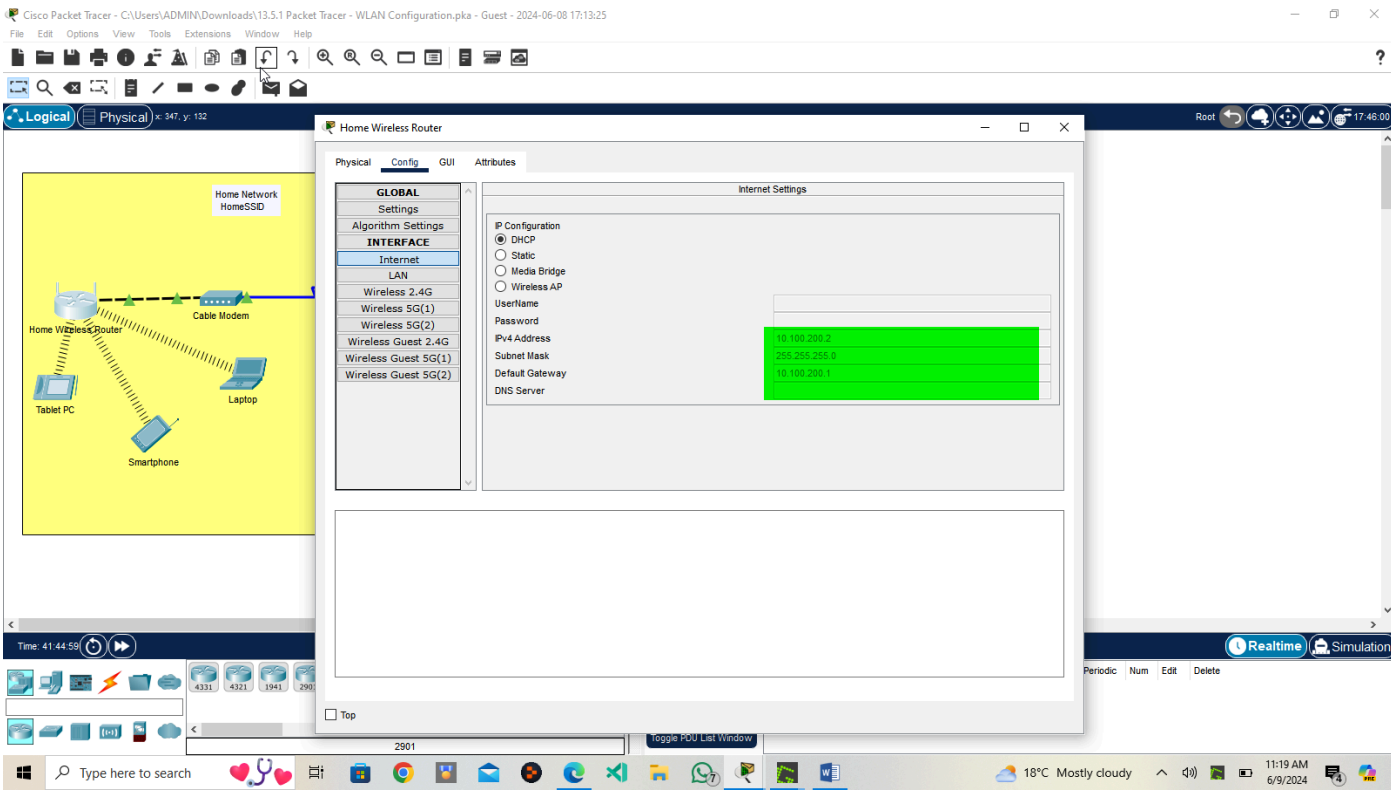
b. Permit a maximum of **20** addresses to be issued by the router.

c. Configure the DHCP server to start with IP address .**3** of the LAN network.

d. Configure the internet interface of the router to receive its IP address over DHCP.

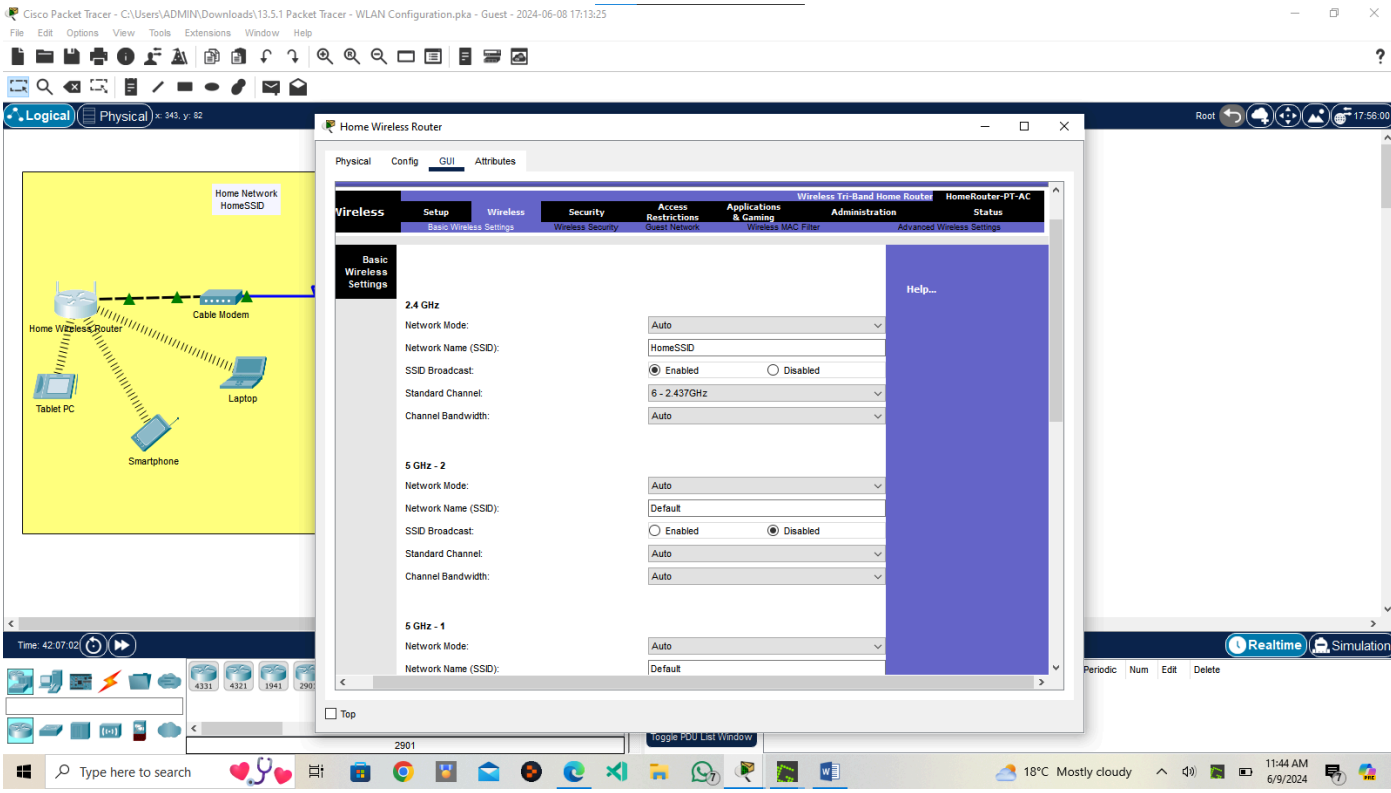
Verify the address. What address did it receive? 10.100.200.2

e. Configure the static DNS server to the address in the Addressing Table.



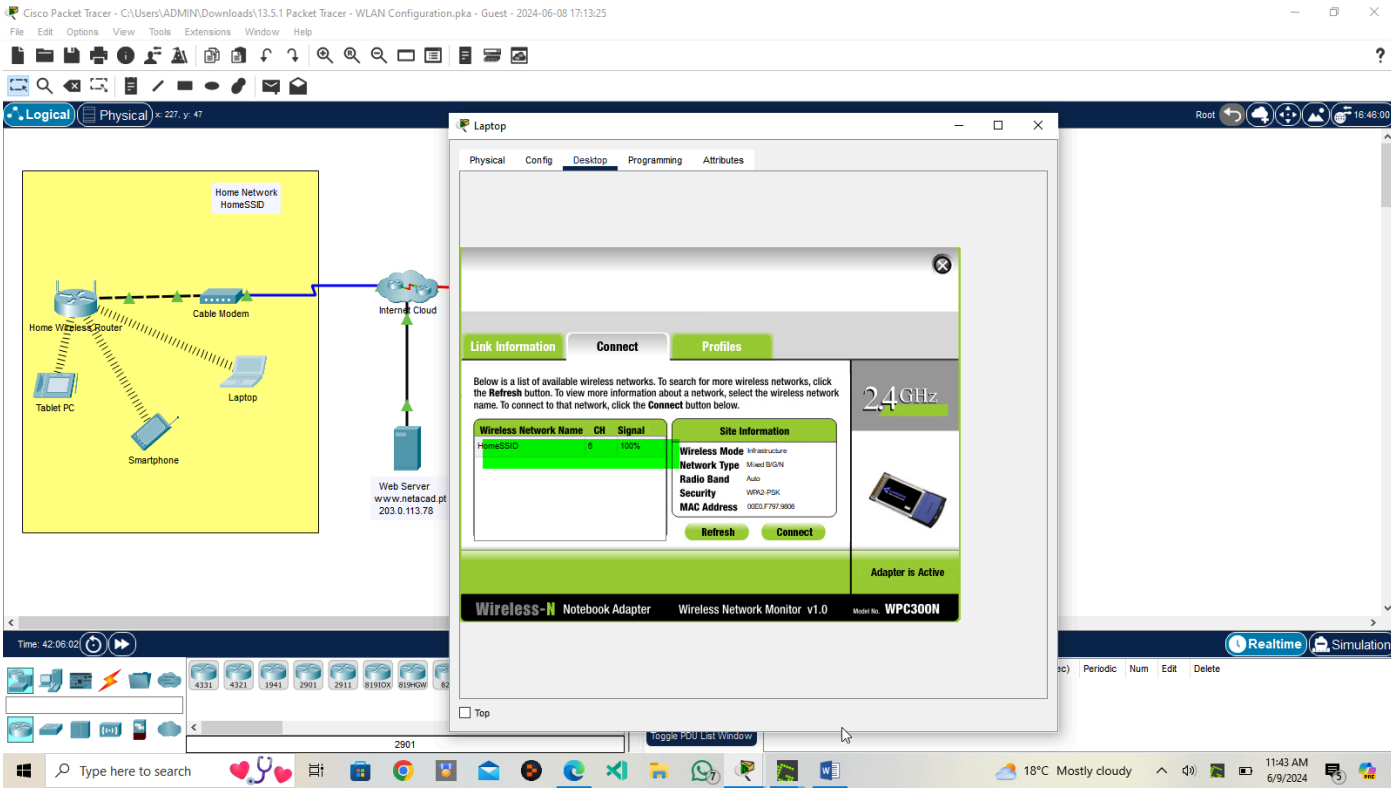
Step 2: Configure the Wireless LAN.

a. The network will use the 2.4GHz Wireless LAN interface. Configure the interface with the SSID shown in the Wireless LAN information table.



b. Use **channel 6**.

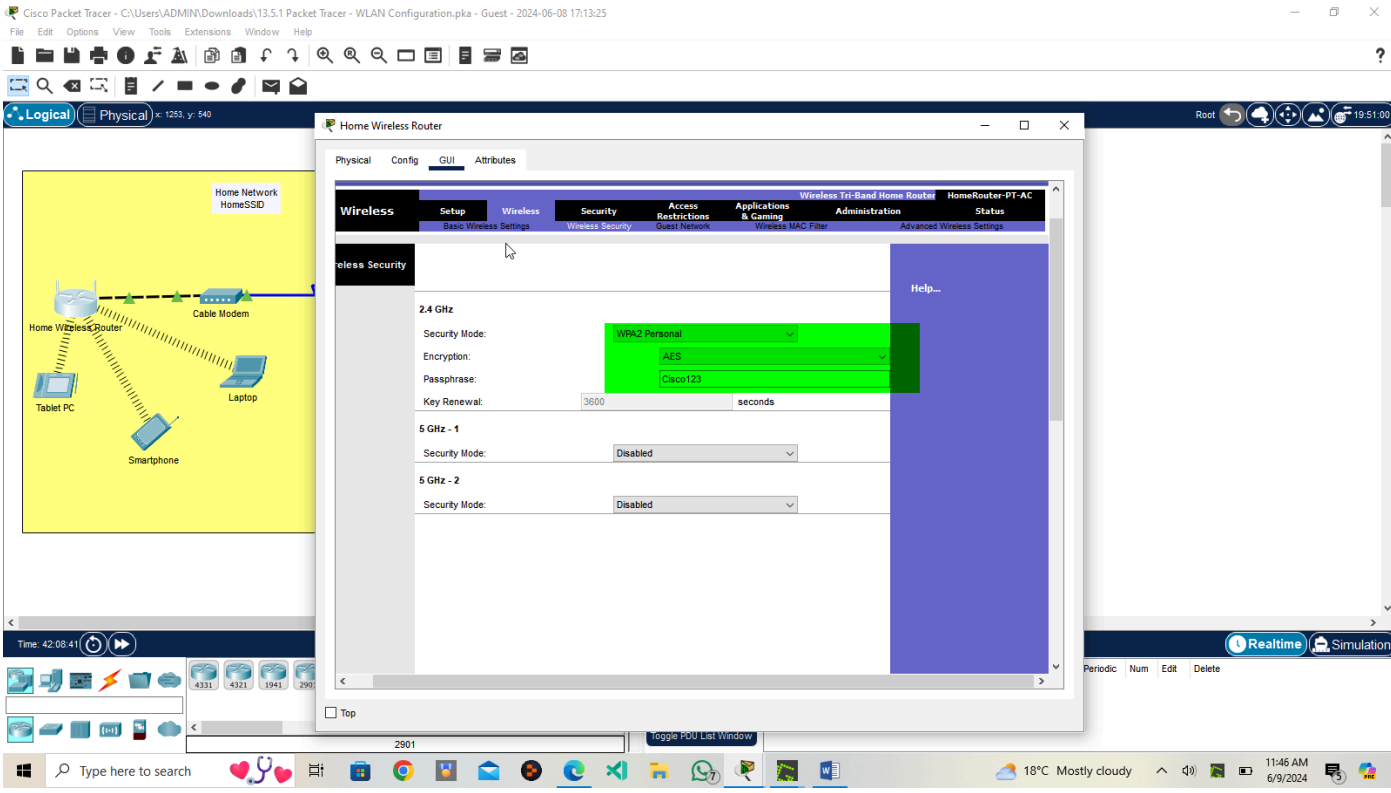
c. Be sure that all wireless hosts in the home will be able to see the SSID.



Step 3: Configure security.

a. Configure wireless LAN security. Use WPA2 Personal and the passphrase shown in the Wireless LAN information table.

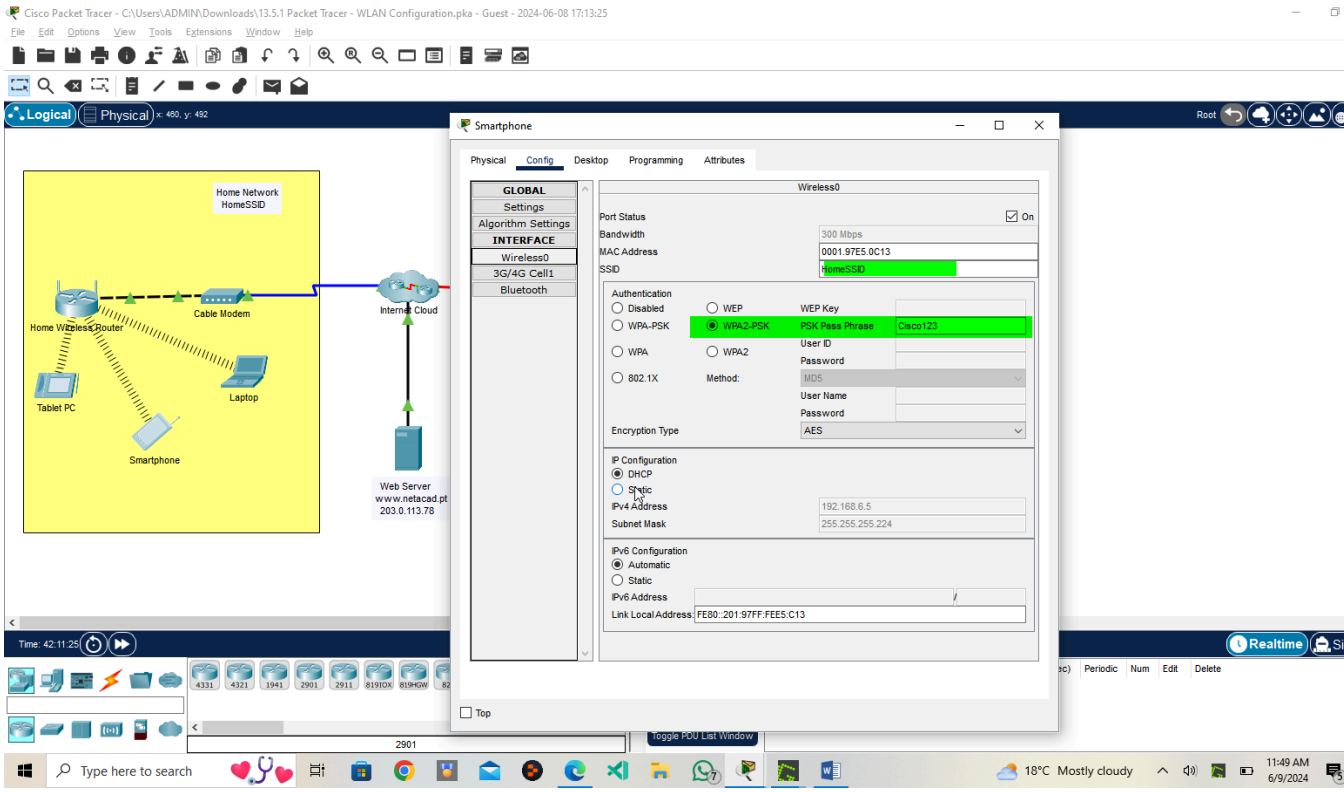
b. Secure the router by changing the default password to the value shown in the Wireless LAN information table.



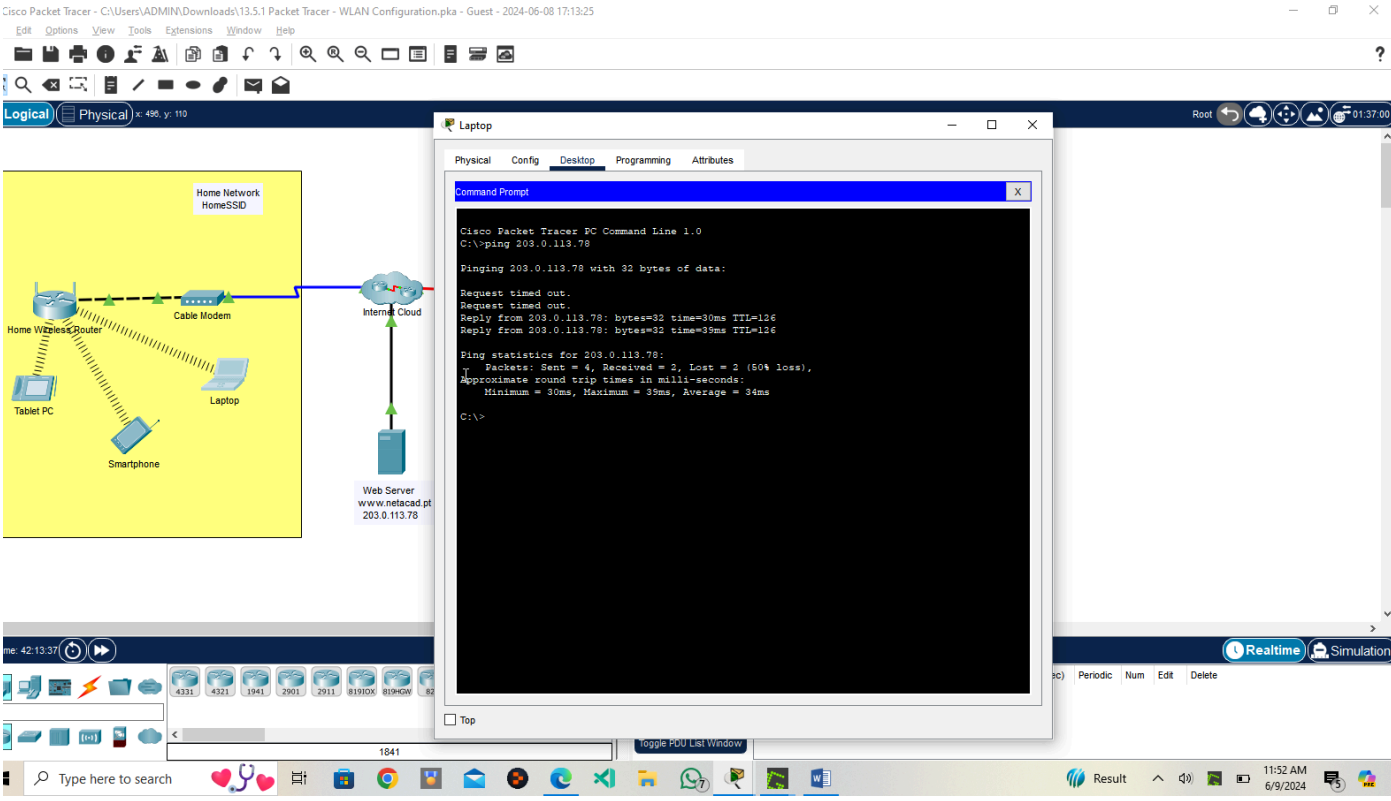
Step 4: Connect clients to the network.

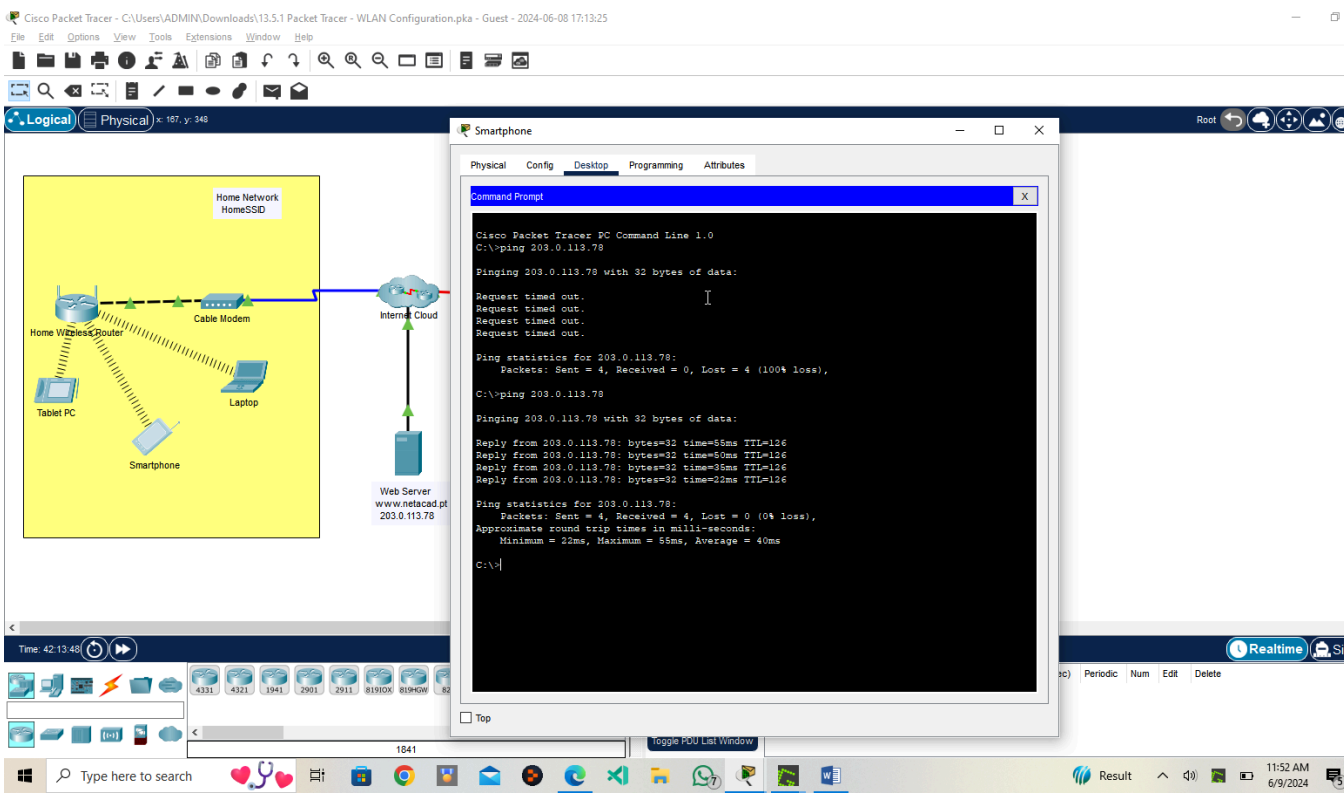
a. Open the PC Wireless app on the desktop of the laptop and configure the client to connect to the network.

b. Open the Config tab on the Tablet PC and Smartphone and configure the wireless interfaces to connect to the wireless network.



c. Verify connectivity. The hosts should be able to ping each other and the web server. They should also be able to reach the web server URL.


Cisco Packet Tracer - C:\Users\ADMIN\Downloads\13.5.1 Packet Tracer - WLAN Configuration.pka - Guest - 2024-06-08 17:13:25
Logical
Physical
Home Network
HomeSSID
Home Wireless Router
Cable Modem
Internet Cloud
Tablet PC
Laptop
Smartphone
Web Server
www.netacad.pt
203.0.113.78
Laptop
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 203.0.113.78
Pinging 203.0.113.78 with 32 bytes of data:
Request timed out.
Request timed out.
Reply from 203.0.113.78: bytes=32 time=30ms TTL=126
Reply from 203.0.113.78: bytes=32 time=39ms TTL=126
Ping statistics for 203.0.113.78:
Packets: Sent = 4, Received = 2, Lost = 2 (50% loss),
Approximate round trip times in milli-seconds:
Minimum = 30ms, Maximum = 39ms, Average = 34ms
C:\>
Top
Realtime
Simulation
1841
Type here to search
Result
11:52 AM
6/9/2024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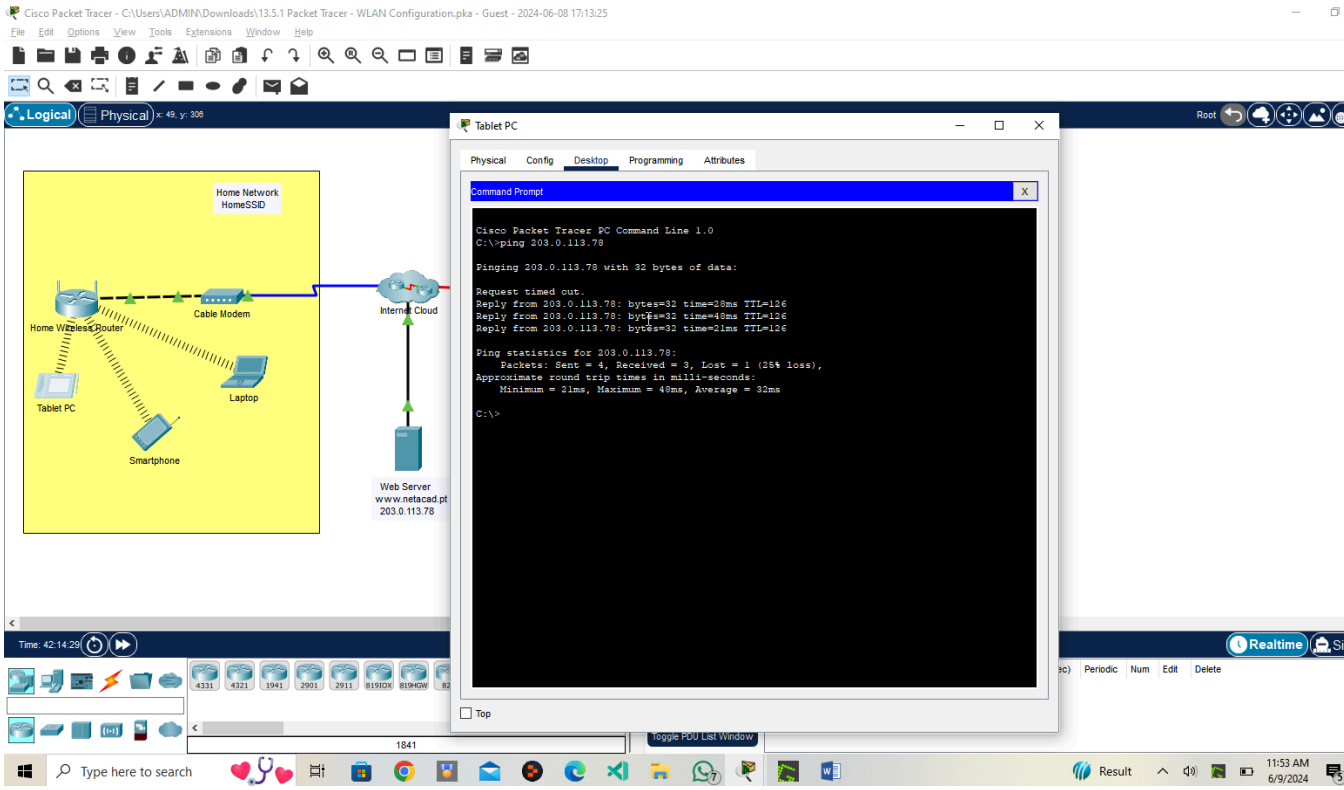
Request timed out.
Request timed out.
Request timed out.
Ping statistics for 203.0.113.78:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
C:\>ping 203.0.113.78
Pinging 203.0.113.78 with 32 bytes of data:
Reply from 203.0.113.78: bytes=32 time=55ms TTL=126
Reply from 203.0.113.78: bytes=32 time=50ms TTL=126
Reply from 203.0.113.78: bytes=32 time=35ms TTL=126
Reply from 203.0.113.78: bytes=32 time=22ms TTL=126
Ping statistics for 203.0.113.78:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 22ms, Maximum = 55ms, Average = 40ms
C:\>
Top
Realtime
1841
Type here to search
Result
11:52 AM
6/9/2024



Part 2: Configure a WLC Controller Network

Configure the wireless LAN controller with two WLANs. One WLAN will use WPA2-PSK authentication. The other WLAN will use WPA2-Enterprise authentication. You will also configure the WLC to use an SNMP server and configure a DHCP scope that will be used by the wireless management network.

Step 1: Configure VLAN interfaces.

a. From the Enterprise Admin, navigate to the WLC-1 management interface via a web browser. To log into WLC-1, use **admin** as the username and **Cisco123** as the password.

b. Configure an interface for the first WLAN.

Name: **WLAN 2**

VLAN Identifier: **2**

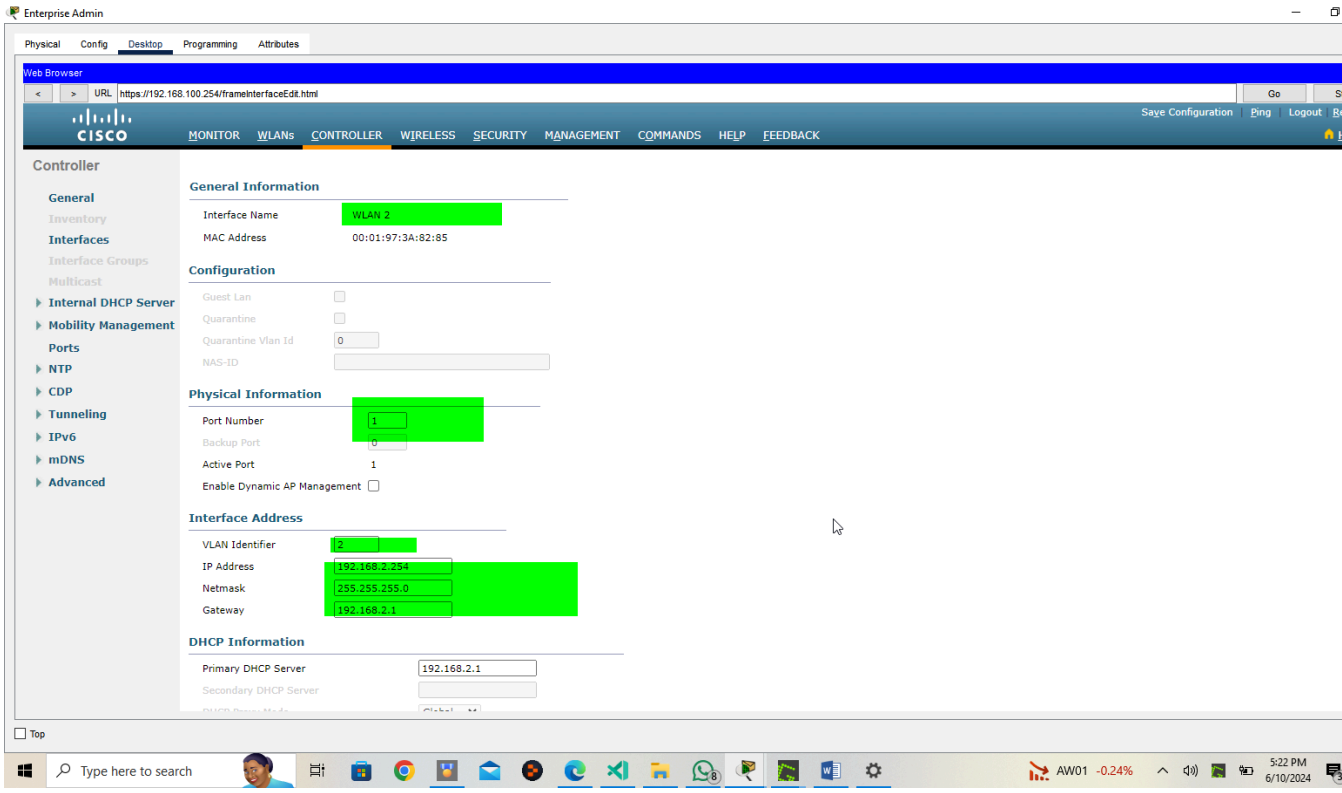
Port Number: **1**

Interface IP Address: **192.168.2.254**

Netmask: **255.255.255.0**

Gateway: **RTR-1 G0/0/0.2 address**

Primary DHCP Server: **Gateway address**



c. Configure an interface for the second WLAN.

Name: **WLAN 5**

VLAN Identifier: **5**

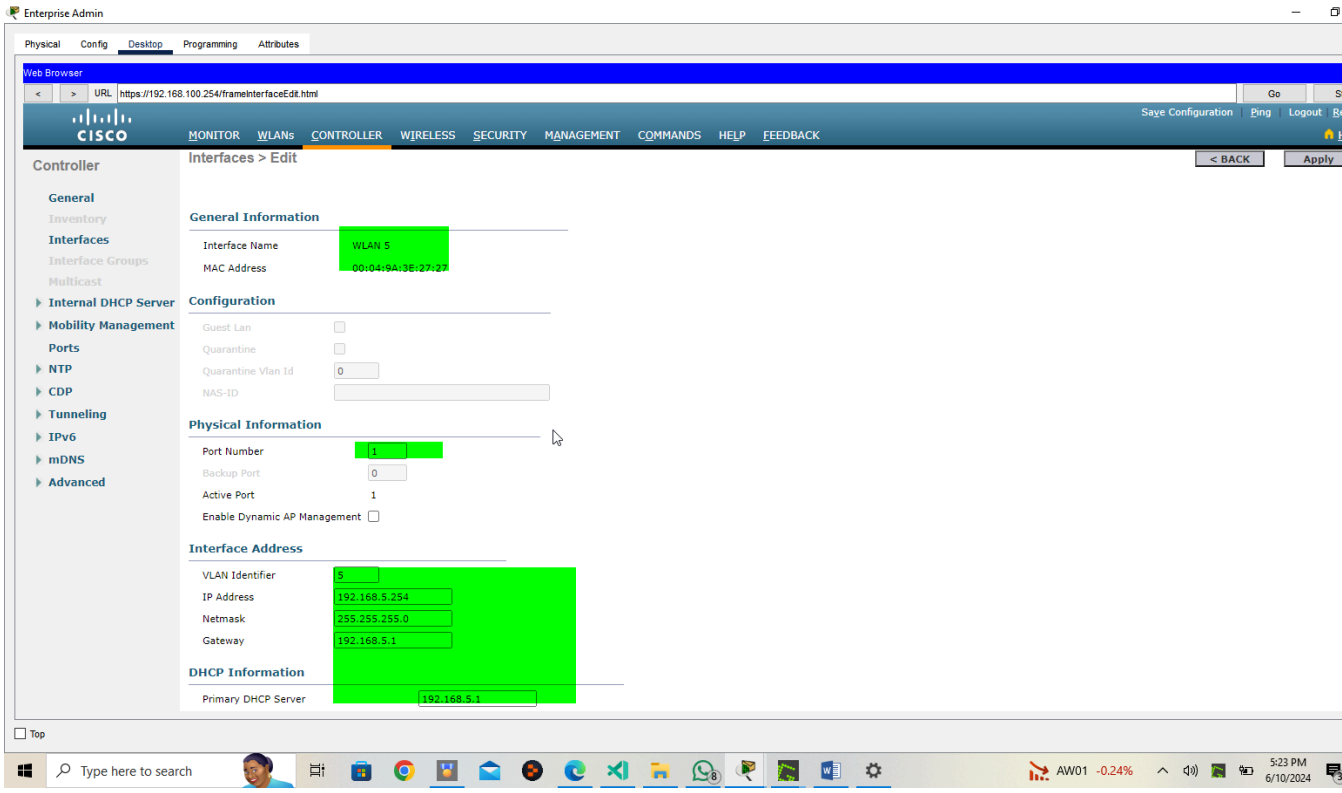
Port Number: **1**

Interface IP Address: **192.168.5.254**

Netmask: **255.255.255.0**

Gateway: **RTR-1 interface G0/0/0.5 address**

Primary DHCP Server: **Gateway address**



Step 2: Configure a DHCP scope for the wireless management network. Configure and enable an internal DHCP scope as follows:

Scope Name: **management**

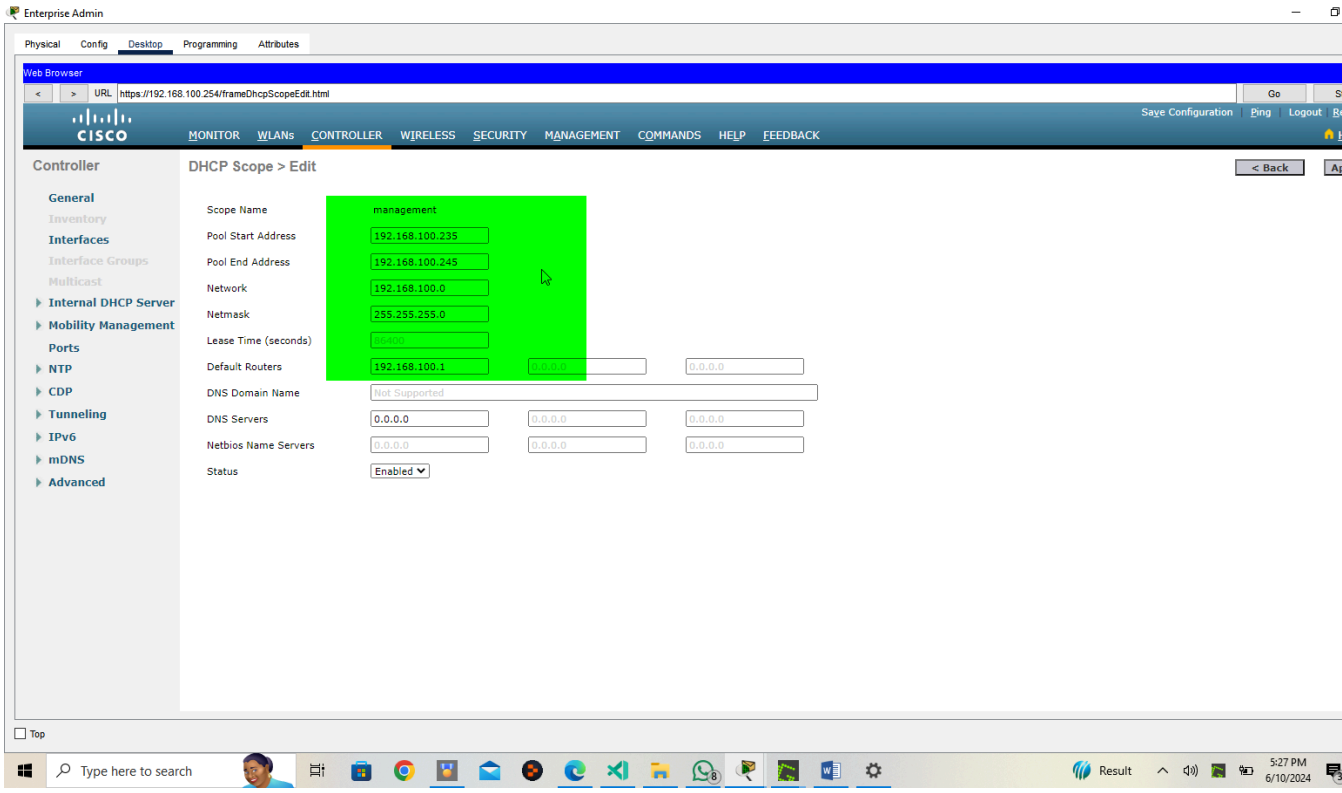
Pool Start Address: **192.168.100.235**

Pool End Address: **192.168.100.245**

Network: **192.168.100.0**

Netmask: **255.255.255.0**

Default Routers: **192.168.100.1**

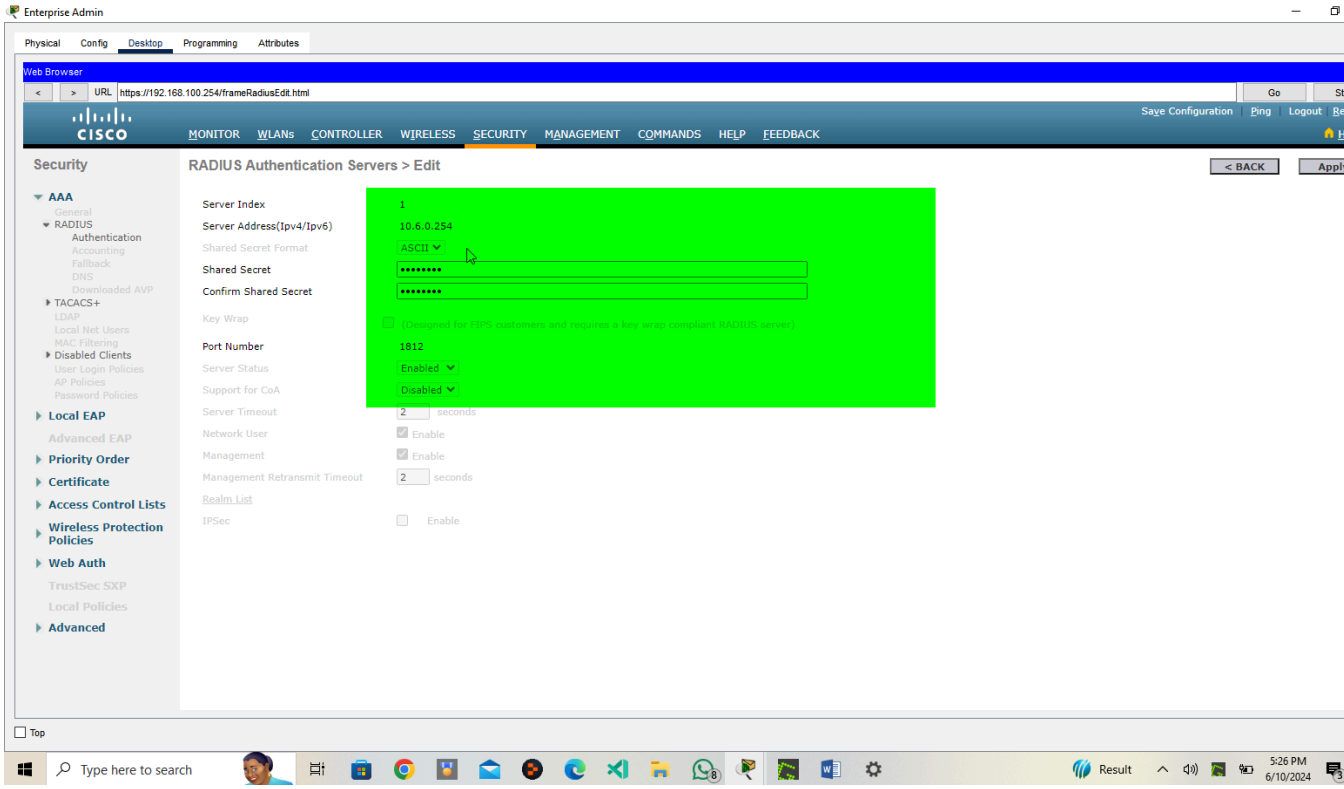


Step 3: Configure the WLC with external server addresses. a. Configure the RADIUS server information as follows:

Sever Index: **1**

Sever Address: **10.6.0.254**

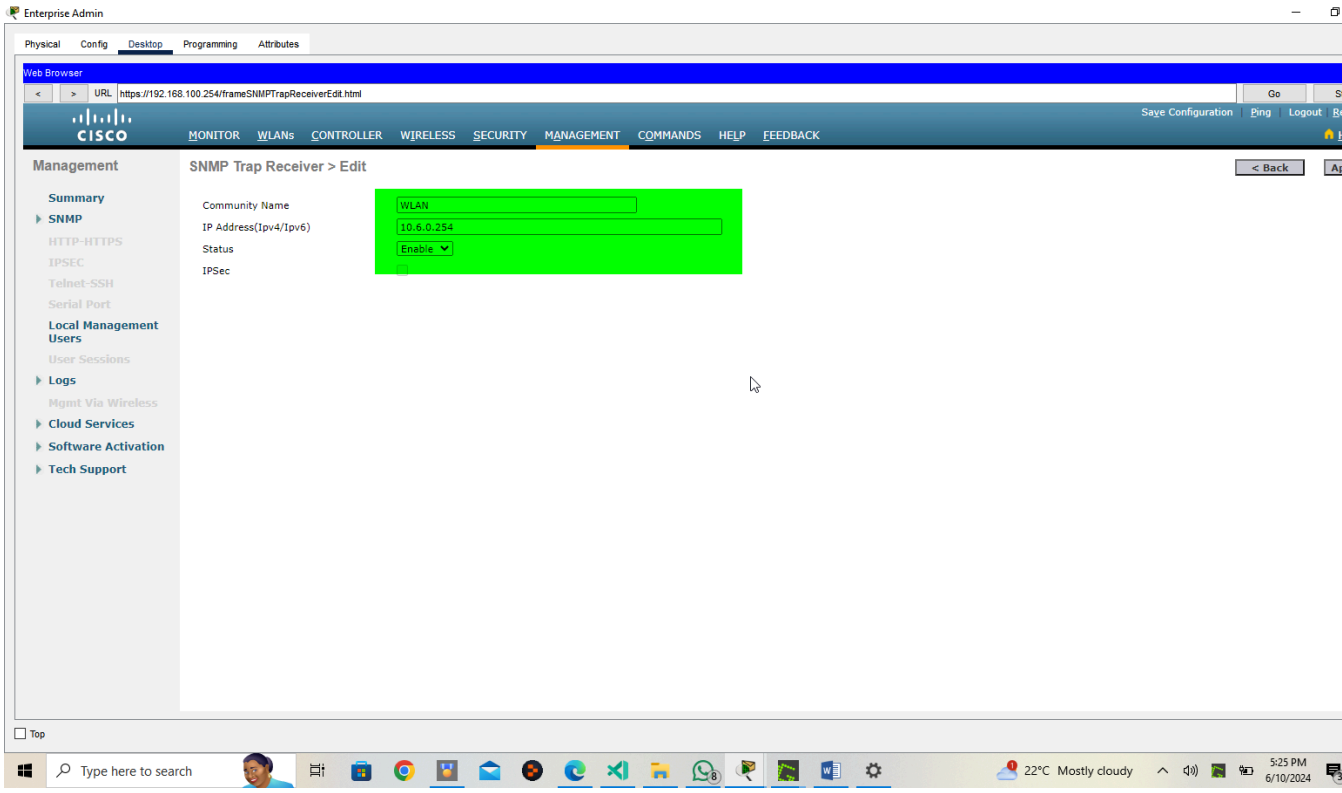
Shared Secret: **RadiusPW**



b. Configure the WLC to send logs information to an SNMP server.

Community Name: **WLAN**

IP Address: **10.6.0.254**



Step 4: Create the WLANs.

a. Create the first WLAN:

Profile Name: **Wireless VLAN 2**

WLAN SSID: **SSID-2**

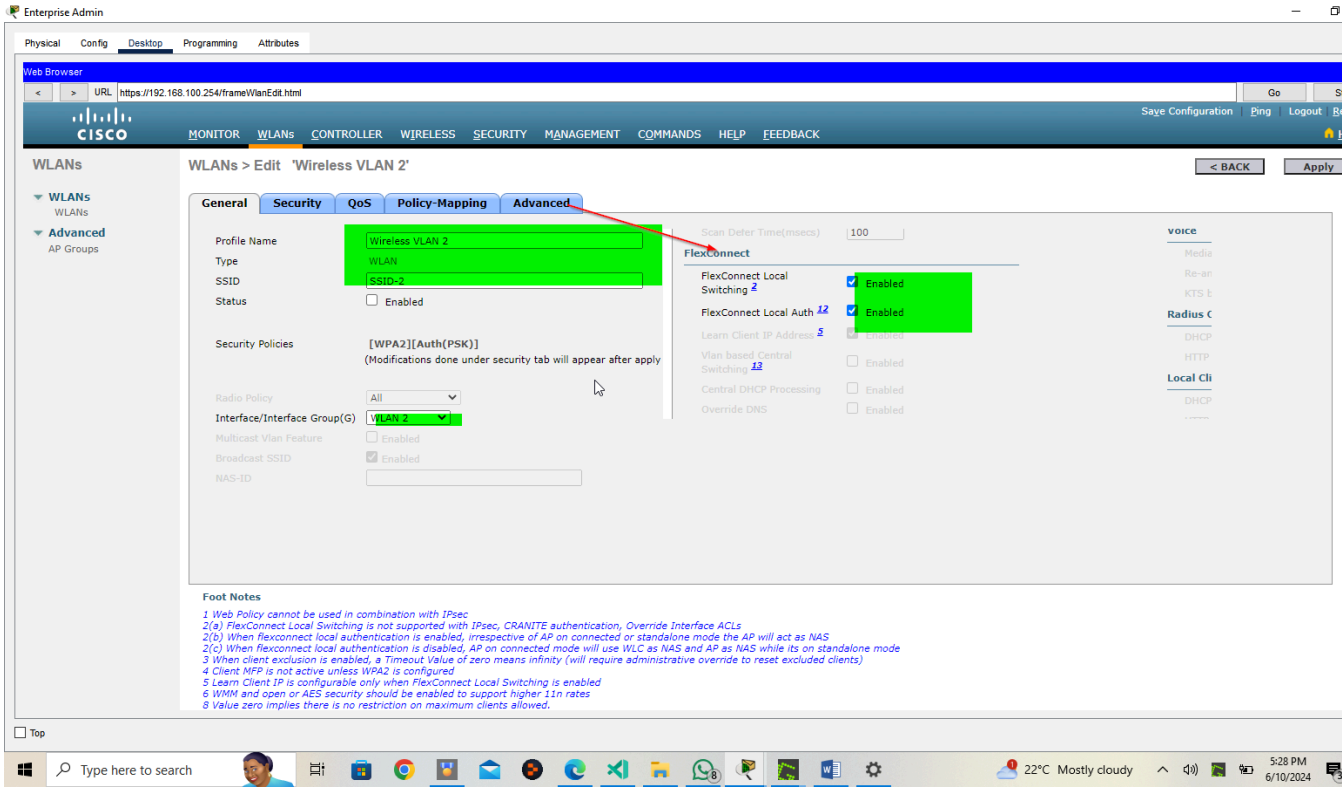
ID: **2**

Interface: **WLAN 2**

Security: **WPA2-PSK**

Passphrase: **Cisco123**

Under the Advanced tab, go to the FlexConnect section. Enable **FlexConnect Local Switching** and **FlexConnect Local Auth**.



b. Create the second WLAN:

Profile Name: **Wireless VLAN 5**

WLAN SSID: **SSID-5**

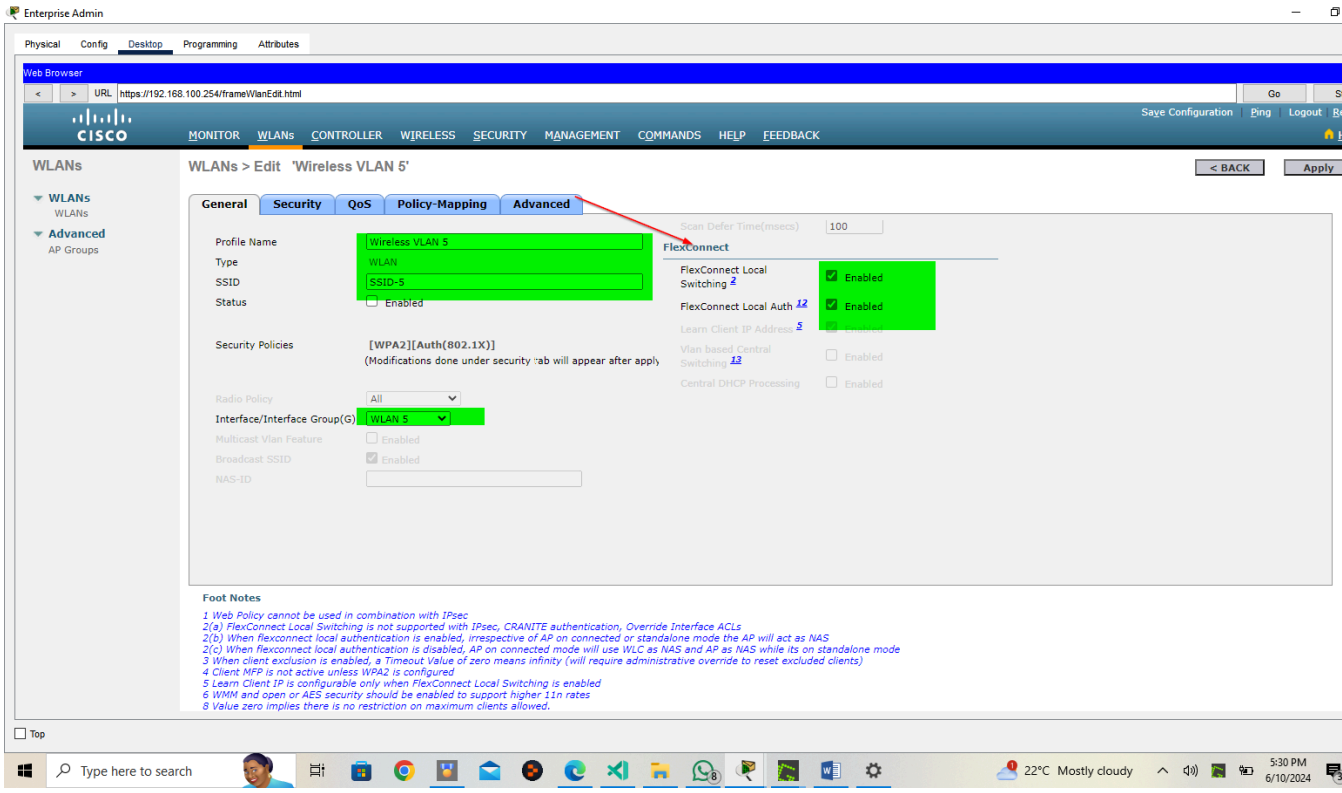
Interface: **WLAN 5**

ID: **5**

Security: **802.1x - WPA2-Enterprise**

Configure the WLAN to use the RADIUS server for authentication.

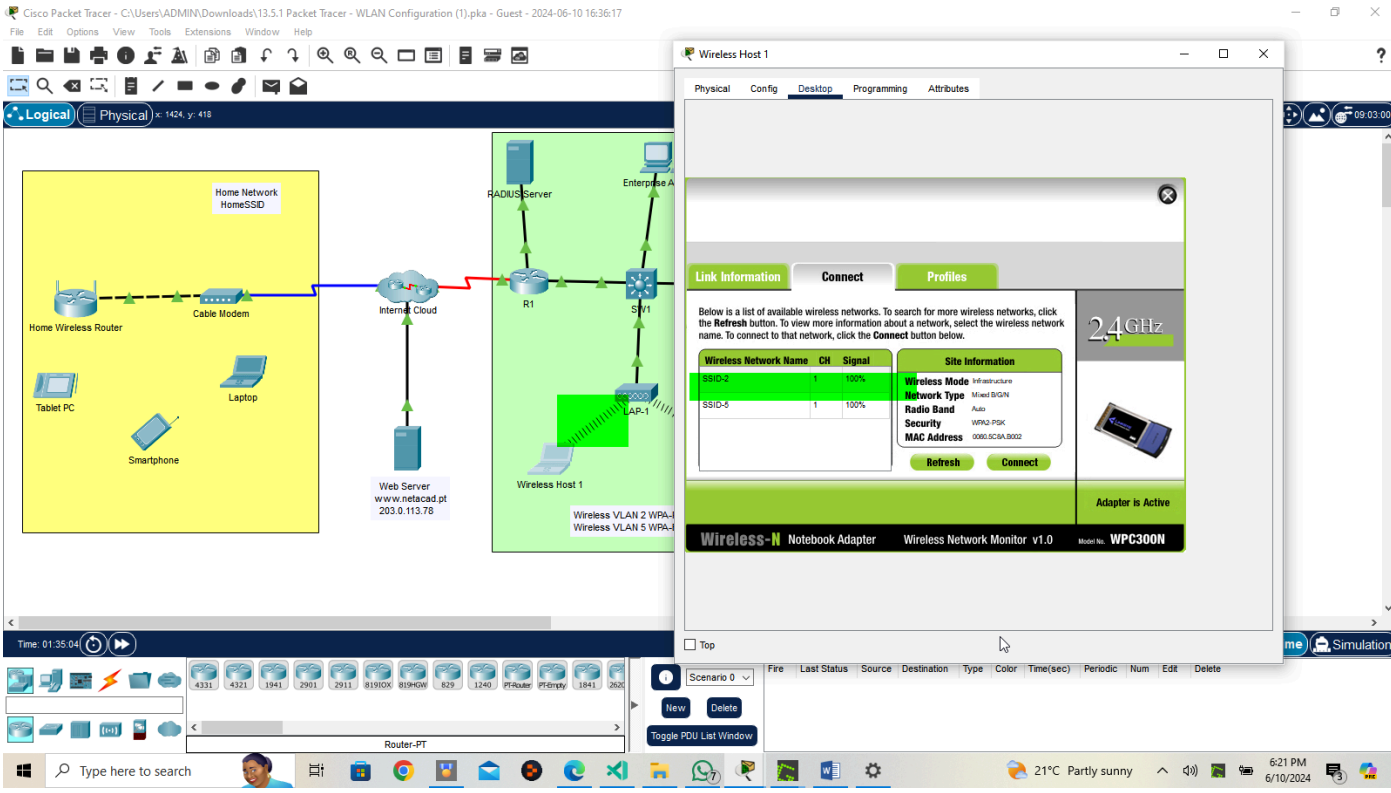
Make the **FlexConnect** settings as was done in Step 4a.



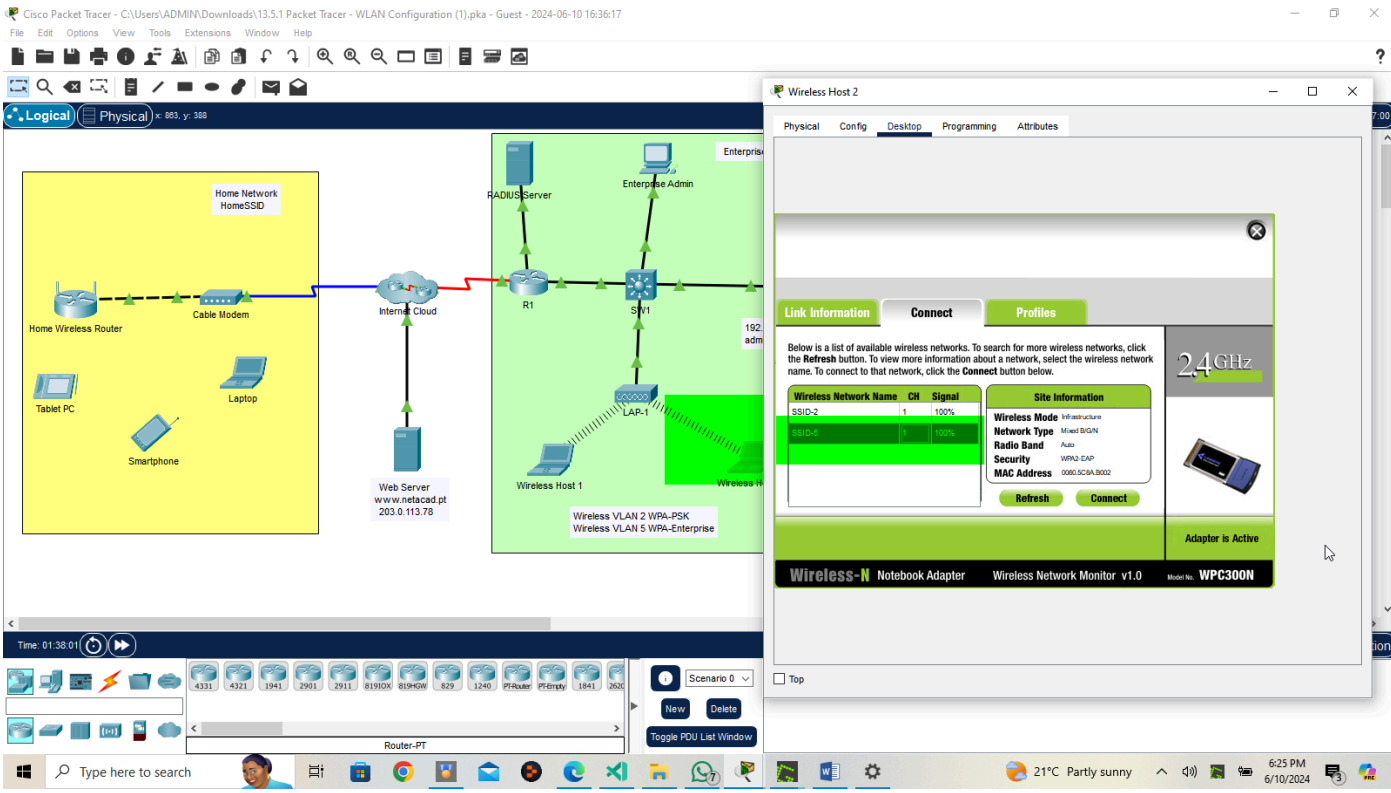
Step 5: Configure the hosts to connect to the WLANs.

Use the desktop PC Wireless app to configure the hosts as follows:

a. Wireless Host 1 should connect to Wireless VLAN 2.



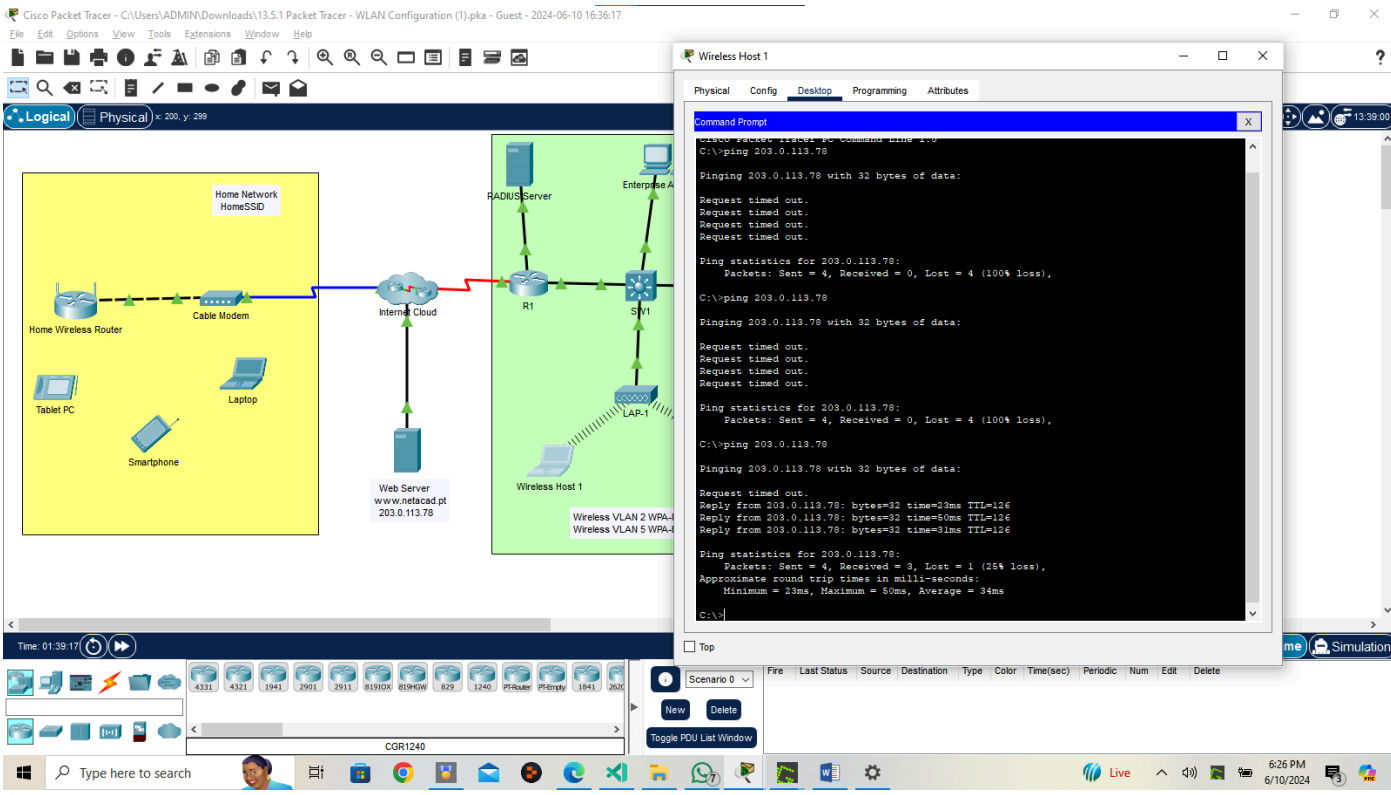
b. Wireless Host 2 should connect to Wireless VLAN 5 using the credentials in the WLAN information table.

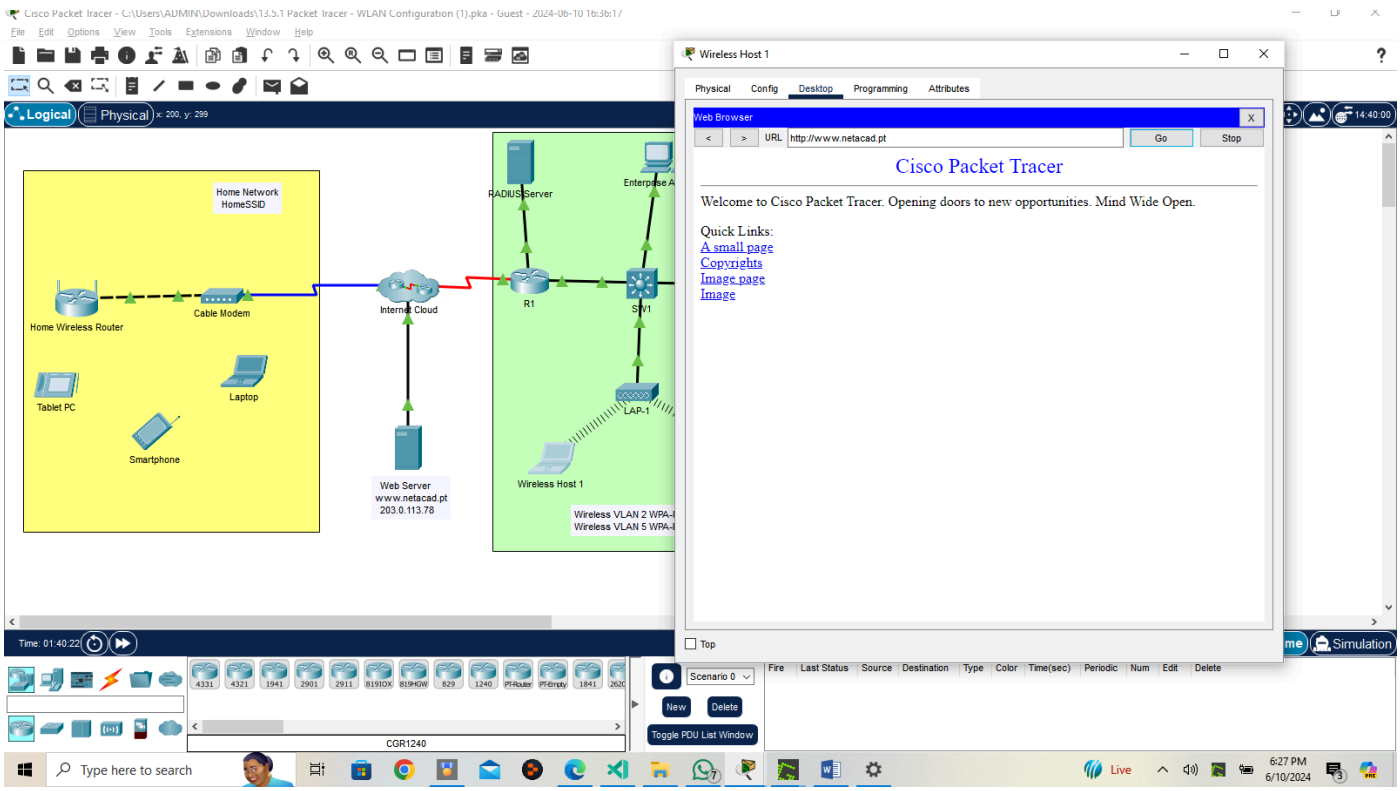


Step 6: Test connectivity.

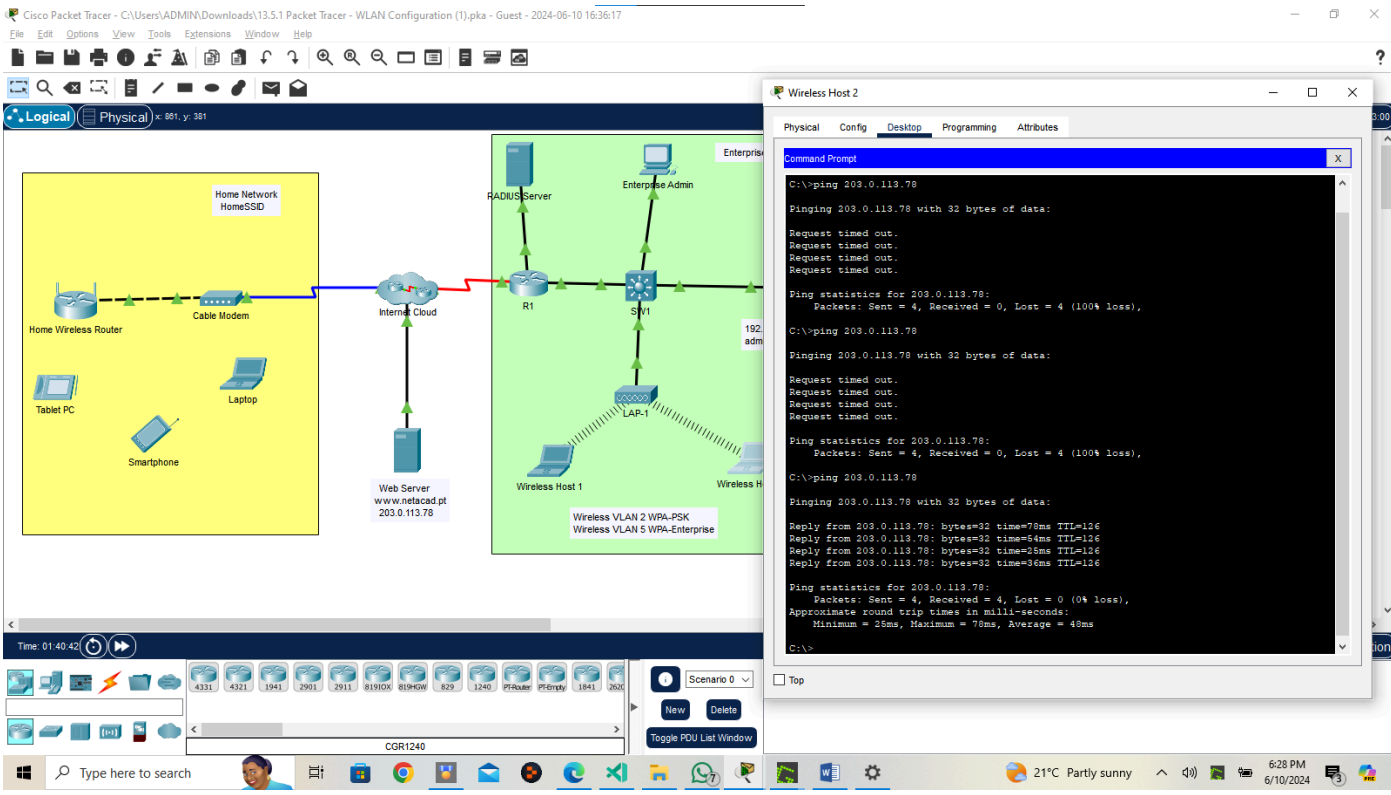
Test connectivity between the wireless hosts and the Web Server by ping and URL.

Wireless host 1





Wireless host 2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Smartphone
Internet Cloud
Web Server
www.netacad.pt
203.0.113.78
RADIUS Server
Enterprise Admin
R1
SW1
LAP-1
Wireless Host 1
Wireless VLAN 2 WPA-PSK
Wireless VLAN 5 WPA-Enterprise
Wireless Host 2
Physical
Config
Desktop
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Command Prompt
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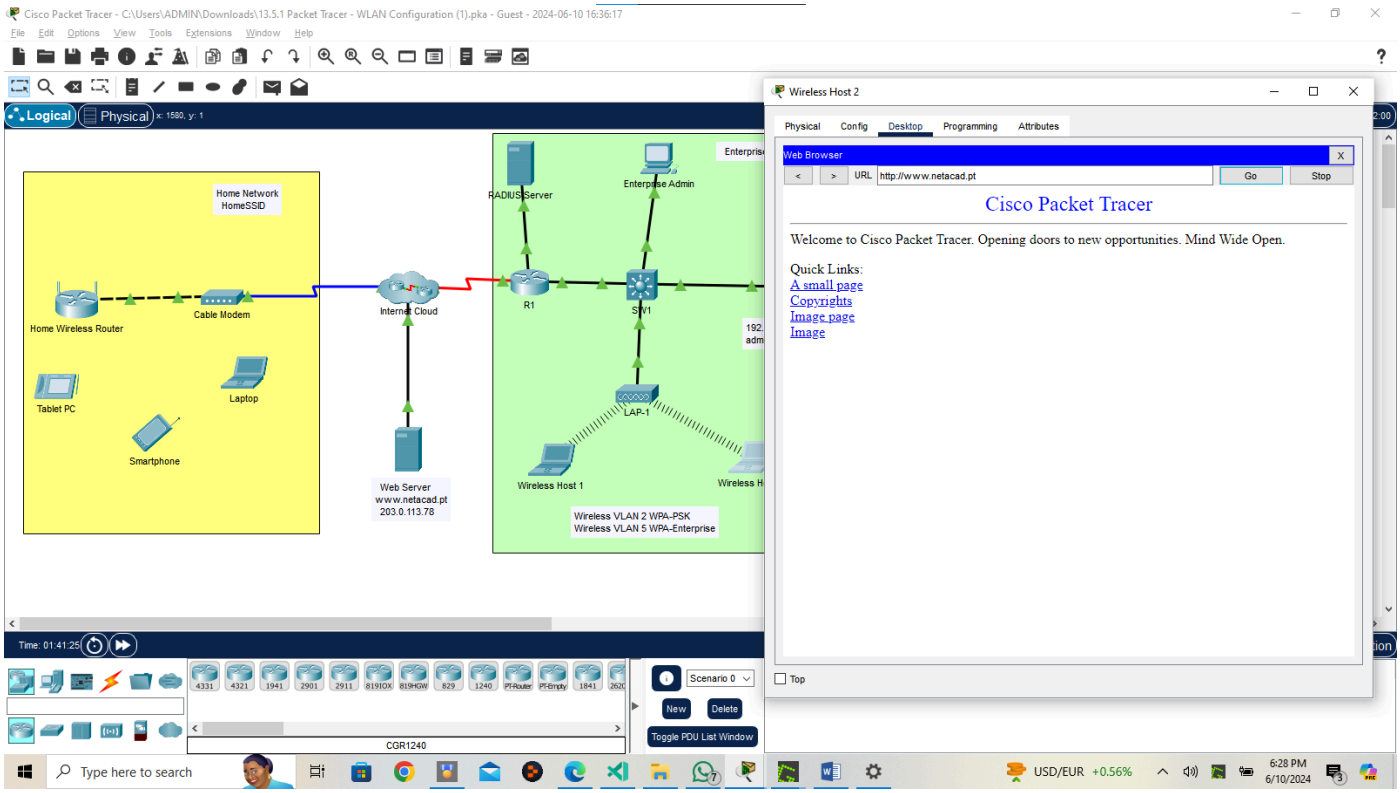
C:\>ping 203.0.113.78
Pinging 203.0.113.78 with 32 bytes of data:
Reply from 203.0.113.78: bytes=32 time=78ms TTL=126
Reply from 203.0.113.78: bytes=32 time=54ms TTL=126
Reply from 203.0.113.78: bytes=32 time=35ms TTL=126
Reply from 203.0.113.78: bytes=32 time=36ms TTL=126
Ping statistics for 203.0.113.78:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 25ms, Maximum = 78ms, Average = 48ms
C:\>
Top
Time: 01:40:42
CGR1240
Scenario 0
New
Delete
Toggle PDU List Window
Type here to search
21°C Partly sunny
6:28 PM
6/10/2024

Z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R1
SW1
LAP-1
Wireless Host 1
Wireless VLAN 2 WPA-PSK
Wireless VLAN 5 WPA-Enterprise
Wireless Host 2
Physical
Config
Desktop
Programming
Attributes
Web Browser
URL
http://www.netacad.pt
Go
Stop
Cisco Packet Tracer
Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open.
Quick Links:
A small page
Copyrights
Image page
Image
Top
Time: 01:41:25
CGR1240
Scenario 0
New
Delete
Toggle PDU List Window
Type here to search
USD/EUR +0.56%
6:28 PM
6/10/2024

Conclusion

The successful completion of this assignment demonstrates proficiency in configuring both home and enterprise WLANs using Cisco Packet Tracer. By securing the networks with WPA2-PSK and WPA2-Enterprise authentication methods, and verifying connectivity across multiple devices, the objectives of enhancing network security and ensuring reliable wireless communication were achieved. This exercise provides a solid foundation for managing and securing WLANs in real-world scenarios.