ASSIGNMENT 3: WLAN CONFIGURATION WRITEUP

Introduction

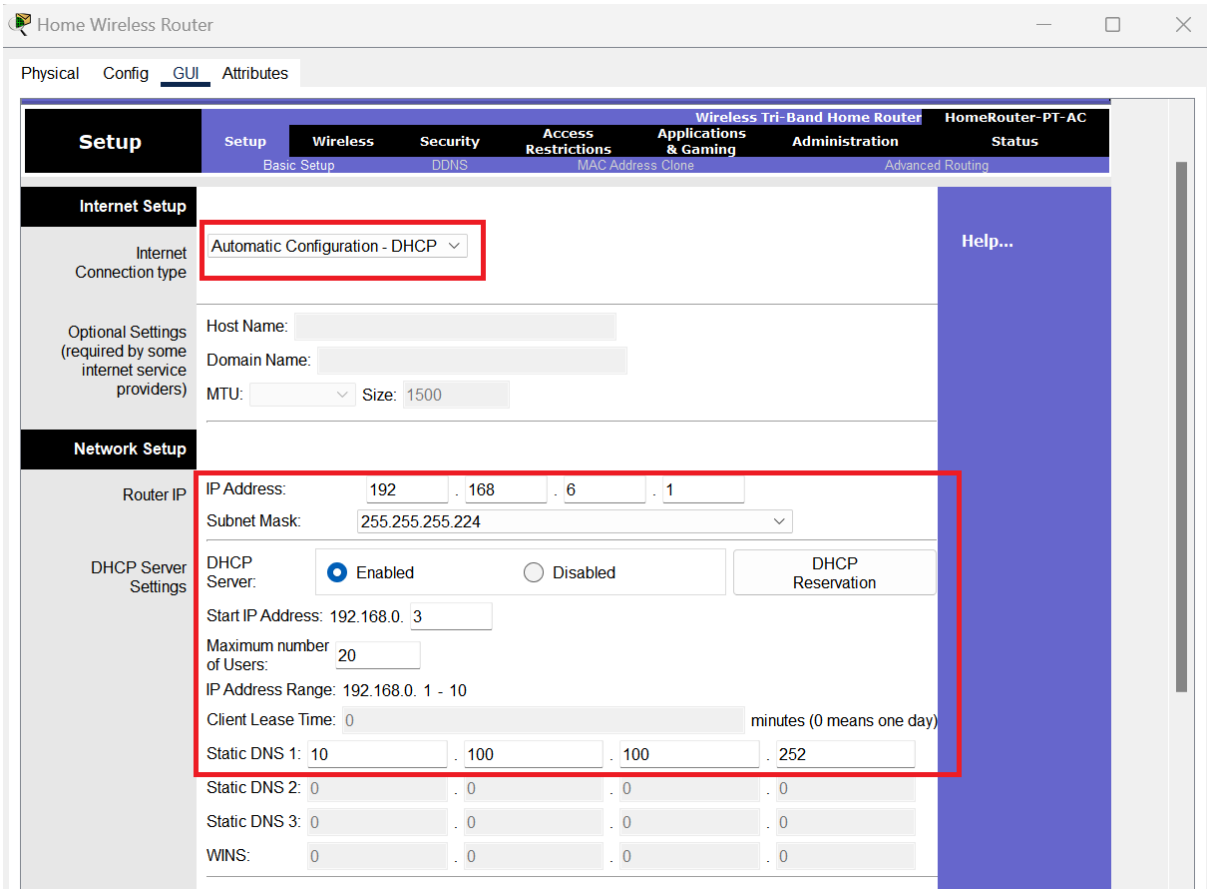
In the world of wireless networking, practical application of skills and knowledge is essential for understanding the complexities of configuring and managing Wireless Local Area Networks (WLANs). This assignment served as an opportunity to delve into the world of WLANs by configuring a home wireless router and an enterprise Wireless LAN Controller (WLC), while implementing robust security measures such as WPA2-PSK and WPA2-Enterprise. Additionally, we connected hosts to each WLAN and verified their connectivity, thereby solidifying our understanding of WLAN deployment and troubleshooting.

Part 1: Configure a Home Wireless Router.

This section details the step-by-step process of configuring the home wireless router.

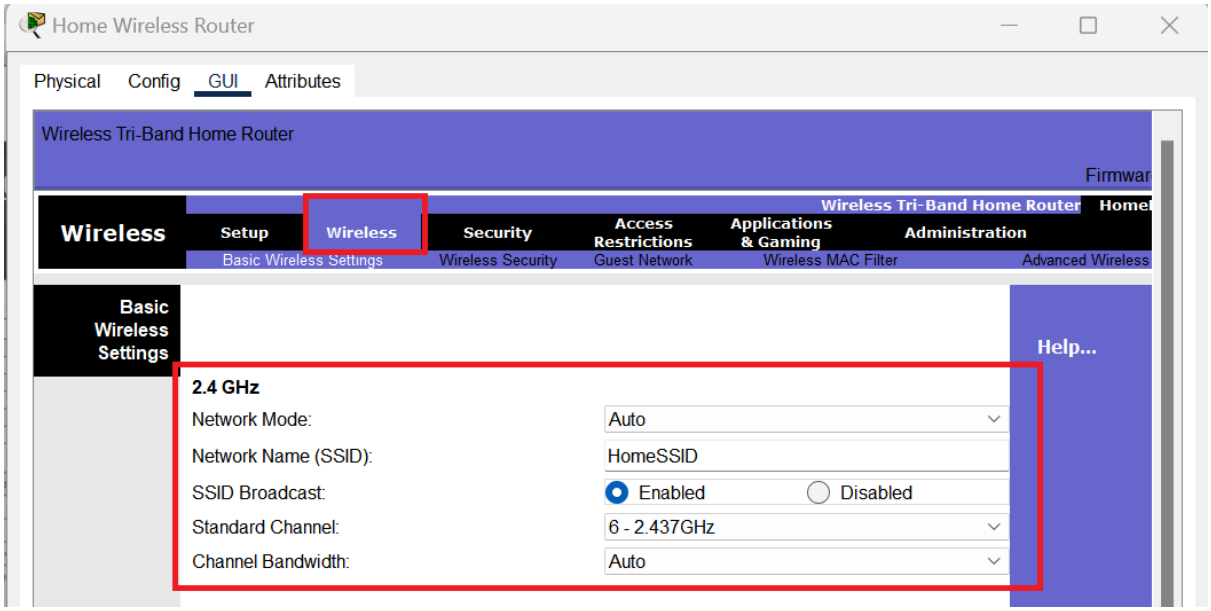
Step 1: Change DHCP settings.

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



Step 2: Configure the Wireless LAN.

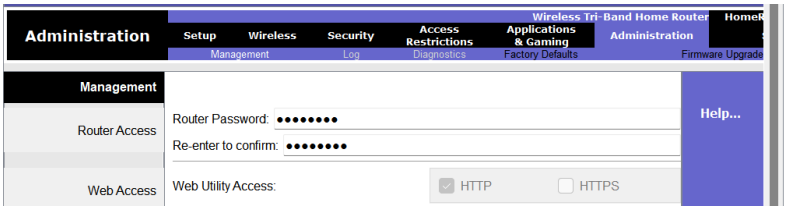
In this step configuration of the wireless LAN was done. The network will use the 2.4GHz Wireless LAN interface. Configuration the interface with the SSID shown in the Wireless LAN information table.



Step 3: Configure security.

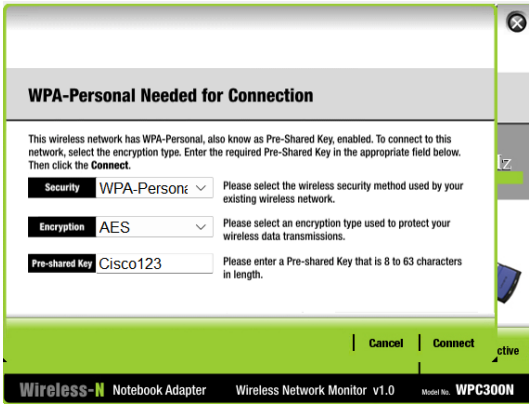
In the step configuration of a wireless LAN security was done by using WPA2 Personal and the passphrase shown in the Wireless LAN information table. (Cisco123)

Then securing the router by changing the default password to Cisco123 as shown in the Wireless LAN information table.

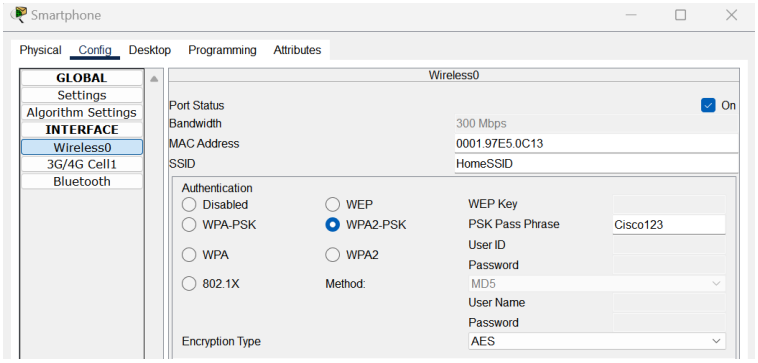


Step 4: Connect clients to the network.

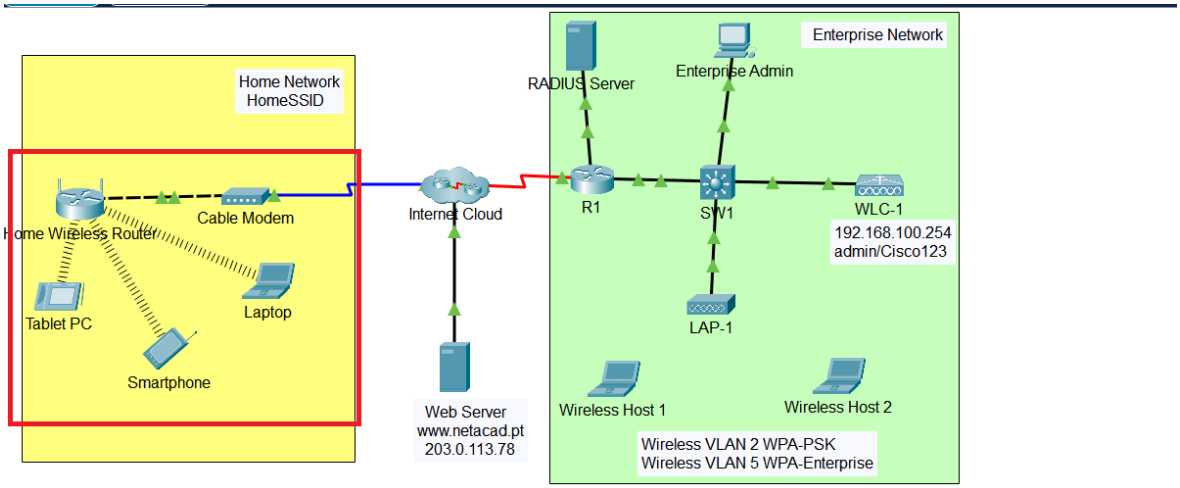
In this step configuration of the client to connect to the network was done through the PC Wireless app on the desktop of the laptop.



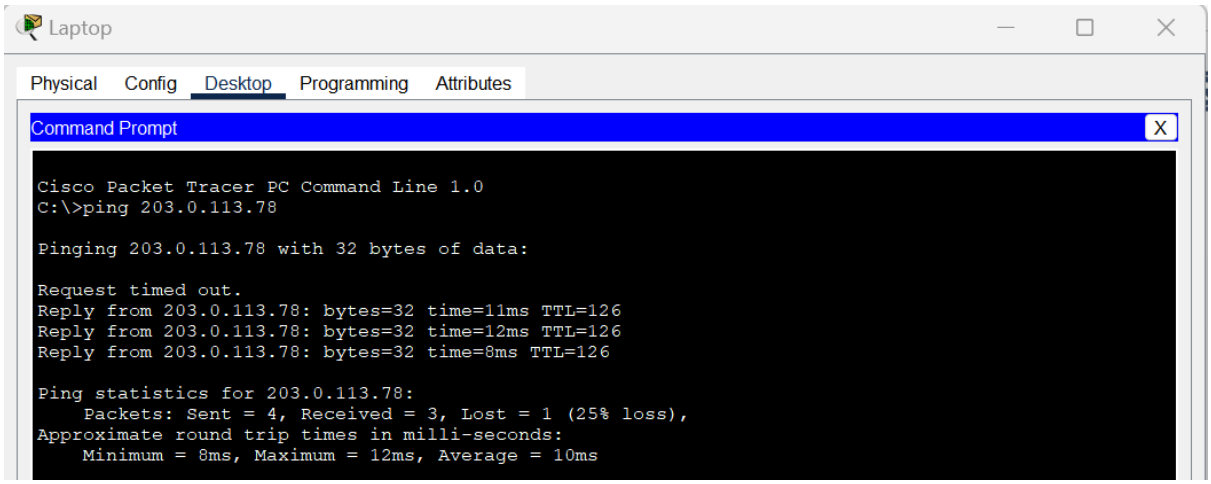
Then configuration of the wireless interfaces to connect to the wireless network through the Config tab on the Tablet PC and Smartphone as shown below.

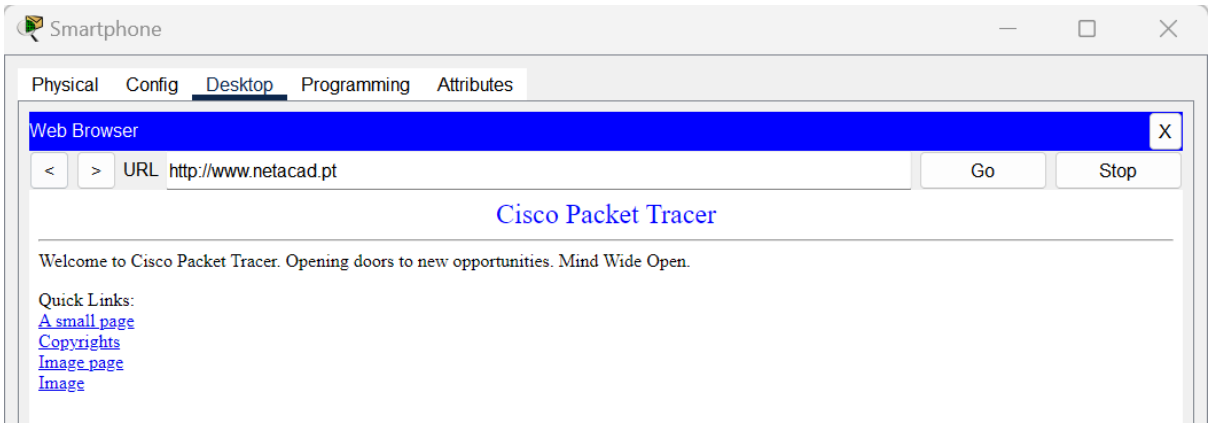


The connection should be established in the topology as shown below.



To 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 as shown in the pictures below.



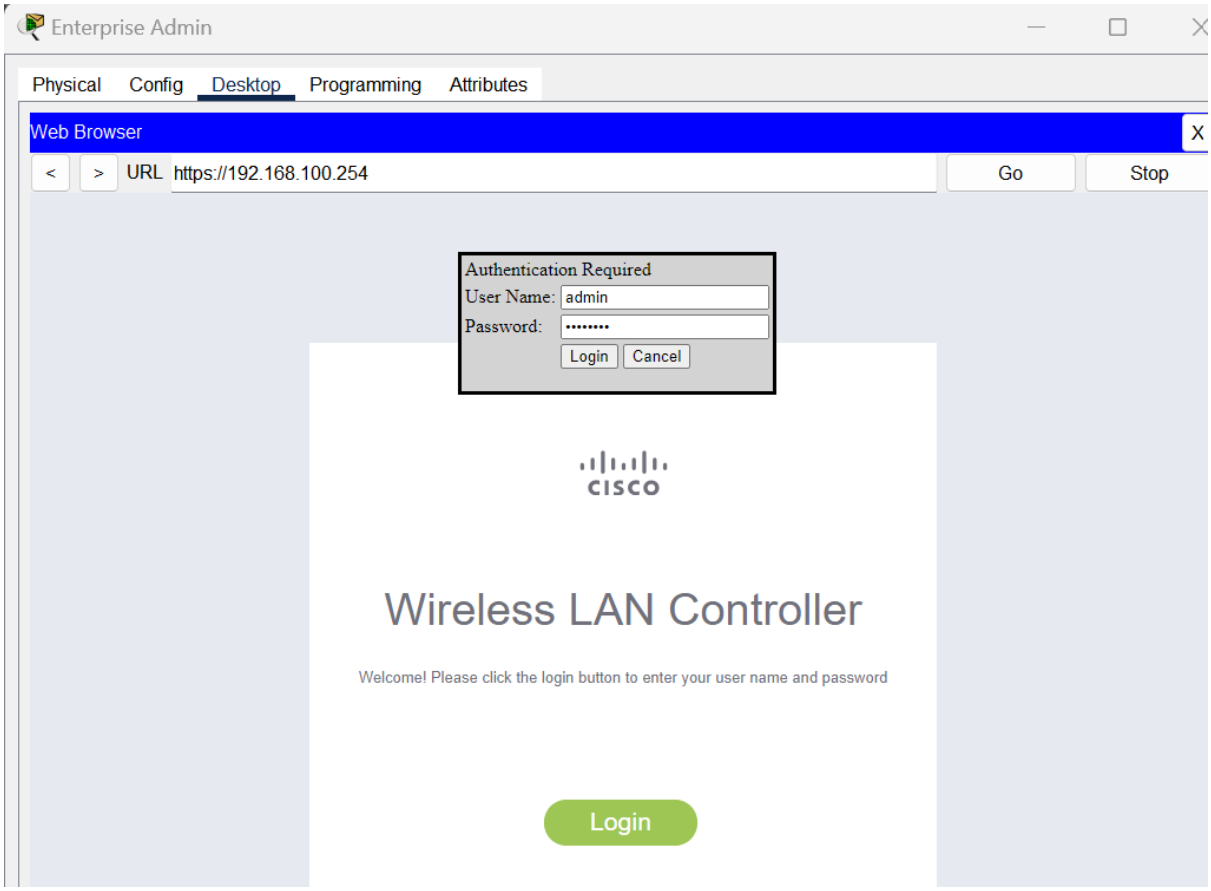


Part 2: Configure a WLC Controller Network

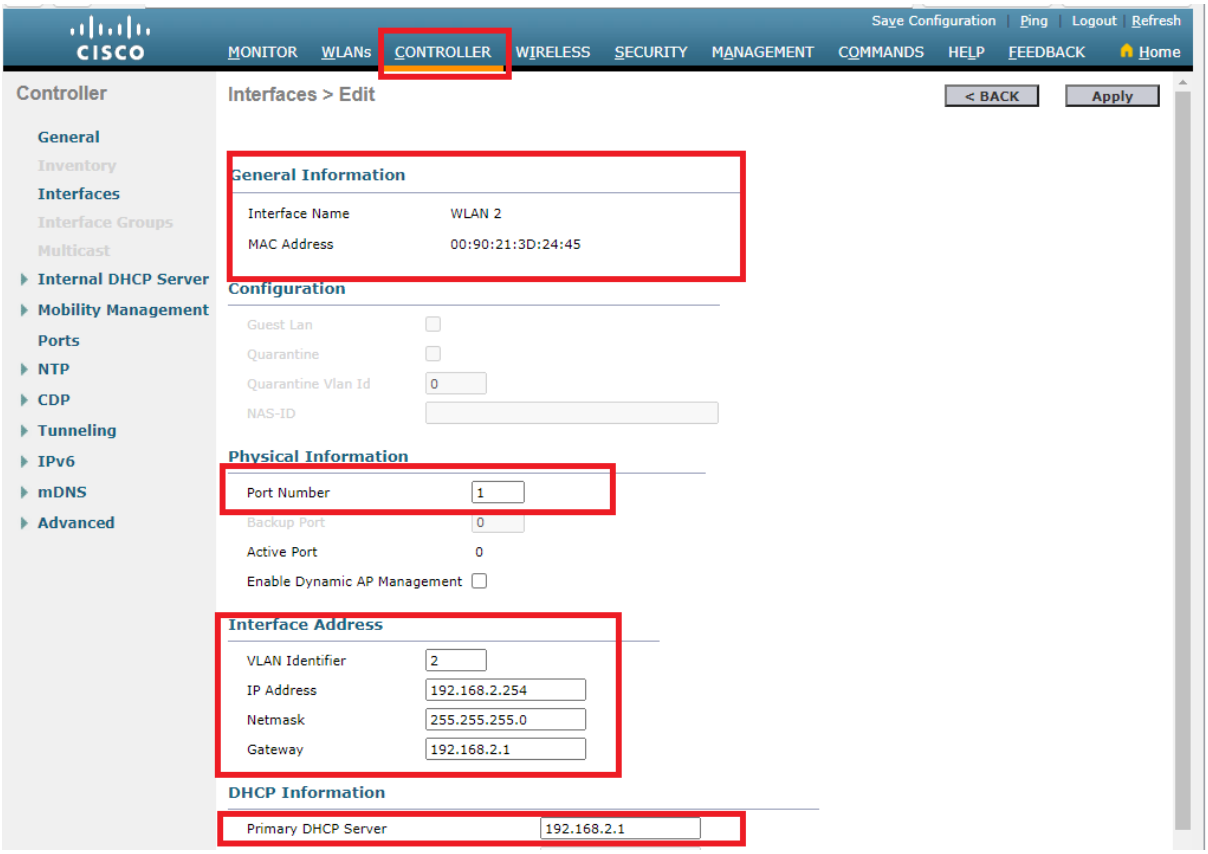
In this section presents a step-by-step process of configuring the wireless LAN controller with two WLANs. One WLAN will use WPA2-PSK authentication. The other WLAN will use WPA2-Enterprise authentication. It will also show how configuration of the WLC to use an SNMP server and configure a DHCP scope that will be used by the wireless management network was done.

Step 1: Configure VLAN interfaces.

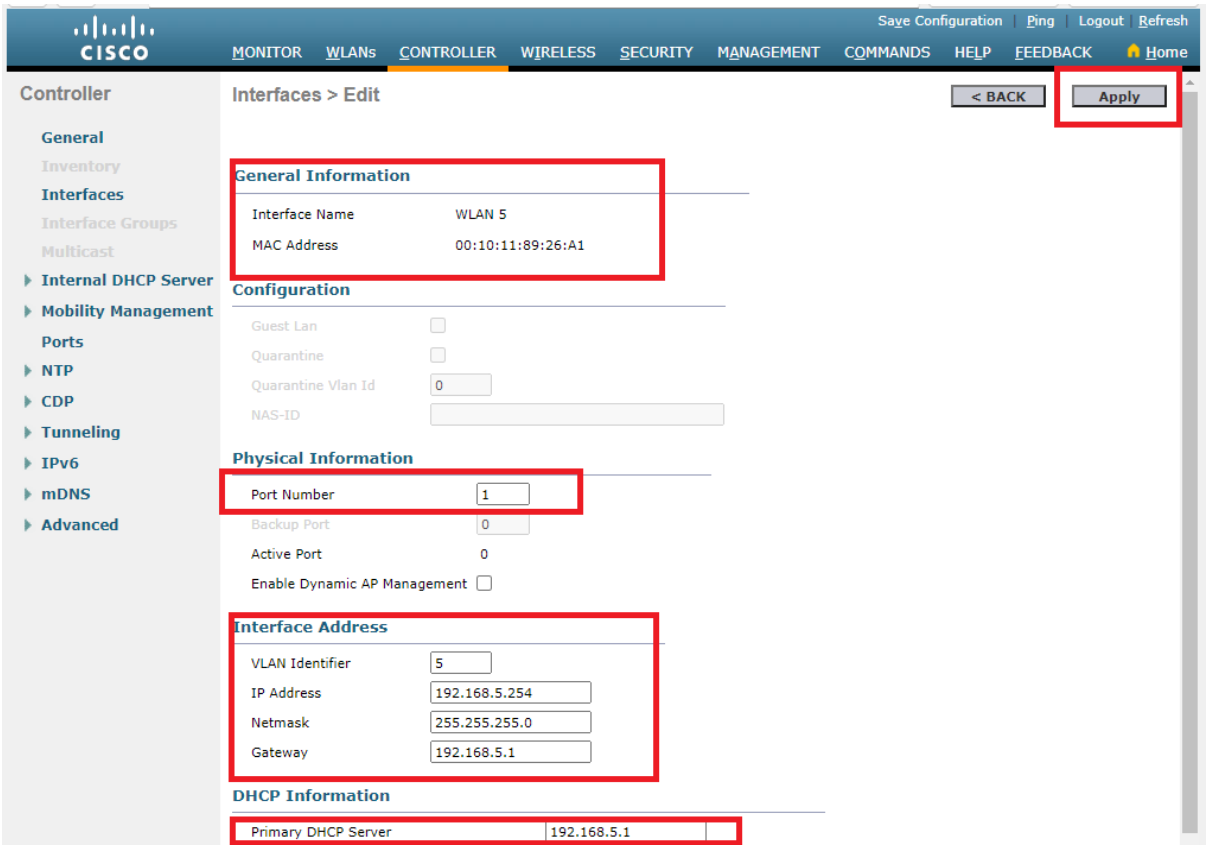
In this step, from the Enterprise Admin, we navigated to the WLC-1 management interface via a web browser. To log into WLC-1, use admin as the username and Cisco123 as the password.



We then configured an interface for the first WLAN.

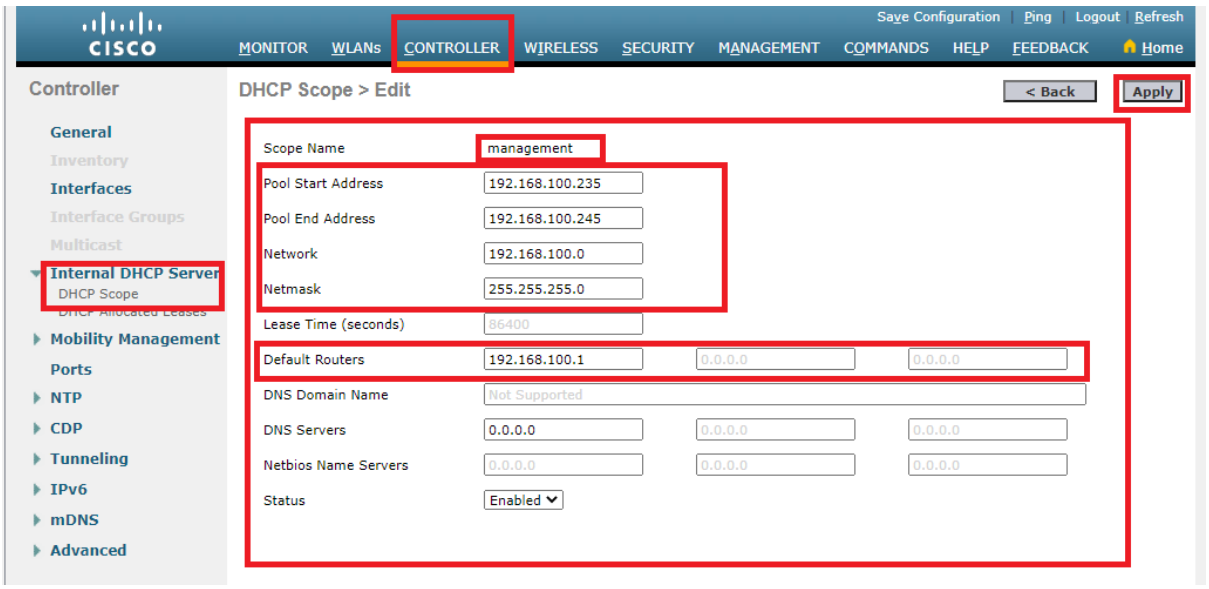


We also configured an interface for the second WLAN.



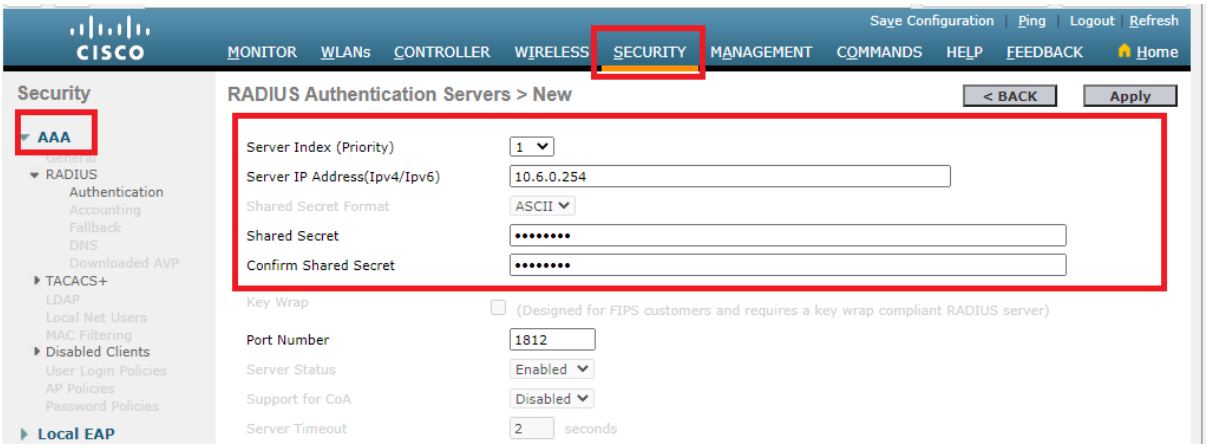
Step 2: Configure a DHCP scope for the wireless management network.

In this step configuration and enabling of an internal DHCP scope was done by going to the controller section under internal DHCP server and configure as below:

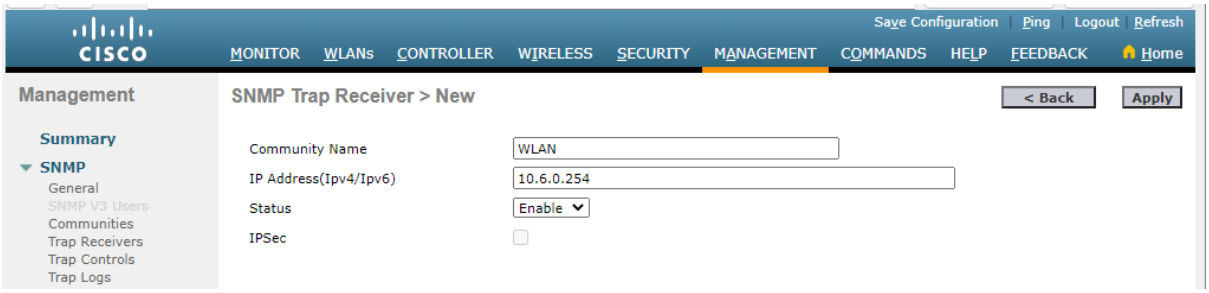


Step 3: Configure the WLC with external server addresses.

In this step configuration of the RADIUS server information as follows:

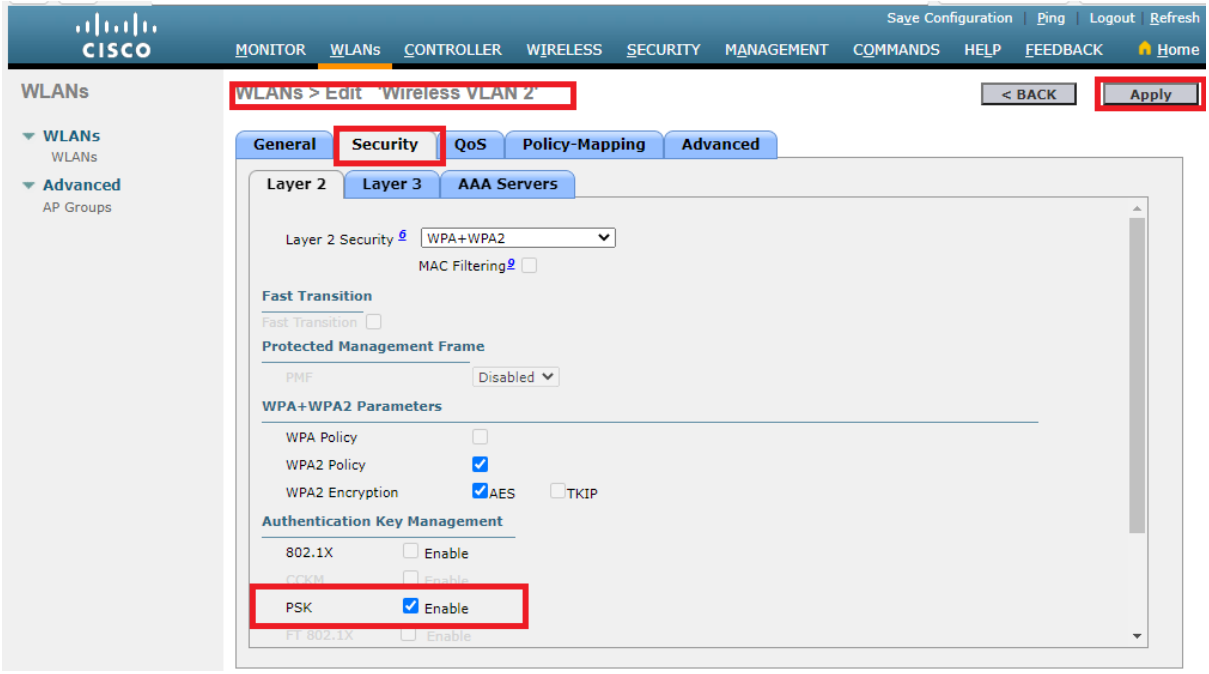


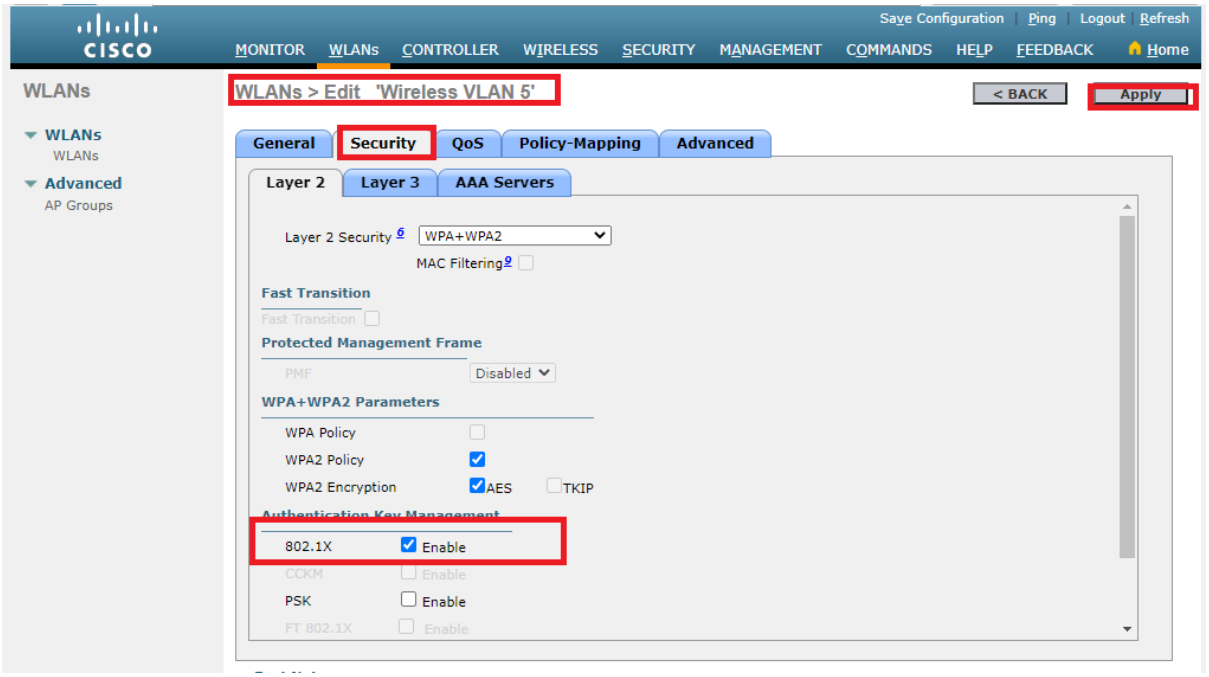
Then configuration of the WLC to send logs information to an SNMP server.



Step 4: Create the WLANs.

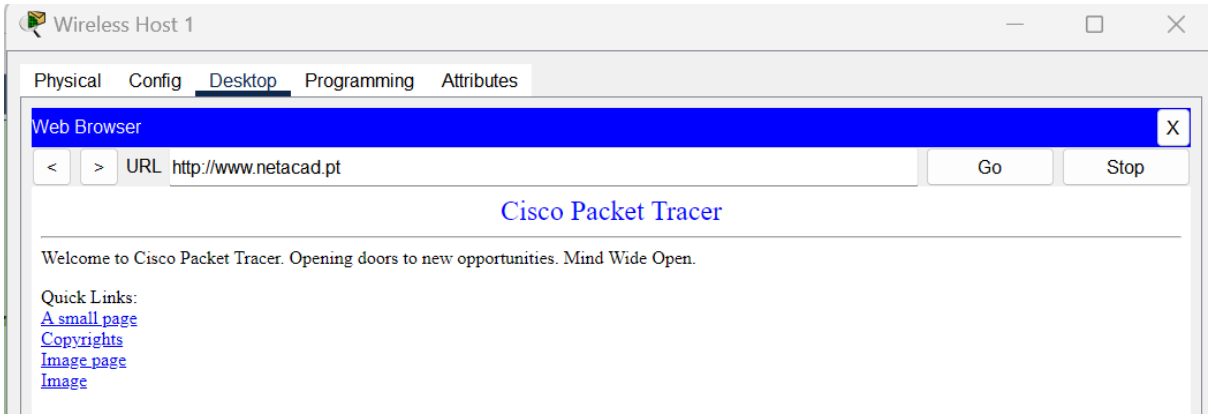
In this section we created 2 WLAN namely Wireless VLAN 2 and Wireless VLAN 5 with Security: 802.1x - WPA2-Enterprise respectively by going to the WLANS and creating new as shown below:





Step 5: Configure the hosts to connect to the WLANs and test connectivity.

Using the desktop PC Wireless app to configure the hosts by connecting the Wireless Host 1 to Wireless VLAN 2 and Wireless Host 2 to Wireless VLAN 5 using the credentials in the WLAN information table. To test the connectivity, go to the netcad.pt webpage through one of the wireless hosts as shown below:



Conclusion

In conclusion, this assignment provided us with valuable hands-on experience in applying our WLAN skills and knowledge by configuring a home wireless router and an enterprise Wireless LAN Controller (WLC), we were able to gain practical insight into the setup and management of wireless networks in both residential and professional settings. One of the key aspects we focused on was implementing robust security measures to protect the WLANs. We successfully configured both WPA2-PSK and WPA2-Enterprise security protocols, ensuring that the wireless networks were safeguarded against unauthorized access. This is particularly crucial in today's digital landscape, where data privacy and network security are of paramount importance.

Furthermore, we connected hosts to each WLAN, effectively establishing wireless connectivity. Through this process, we verified that the configurations we implemented were functioning as intended.With this knowledge, we are well-equipped to tackle real-world WLAN challenges and contribute to the ever-evolving field of wireless networking.